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## MENINGOCOCCIC INFECTION IN SOLDIERS

LIEUTENANT COLONEL WORTH B DANIELS  
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CAPTAIN SYDNEY SOLOMON  
MEDICAL CORPS ARMY OF THE UNITED STATES  
AND

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One hundred and twelve patients with meningococcic infection were studied at the Station Hospital at Fort Bragg North Carolina, between Jan 1 1942 and April 17, 1943. Eighty of these patients had meningitis and 32 had bacteremia without localization in the meninges. Our purpose in the present communication is to describe certain observations in connection with meningococcic infections particularly as they relate to pathogenesis and to present data on the efficiency of the treatment of this infection with sulfadiazine.

During 1942 at this post the disease occurred sporadically and there were only 16 cases in a large troop population. Beginning on Dec 30, 1942 there was a decided increase in incidence. The weekly rate for the post as a whole reached 8 per thousand annually while the weekly rate for organizations composed of unseasoned troops went as high as 20 per thousand annually. Approximately one third of the soldiers at this post have had less than three months' service. This group furnished 59 per cent of all patients with meningococcic infection.

The rate for meningococcus carriers in troops during nonepidemic periods may range from 2 to 10 per cent<sup>1</sup>. In periods of epidemic the rate in healthy troops may reach 80 per cent<sup>2</sup>. The organism probably invades the body from the nasopharynx and infection in this region may or may not be indicated by clinical disease. The subsequent manifestations are those of sepsis and localization. The present observations seem to confirm clearly the opinion of Herrick<sup>3</sup> and others that the course of events consists of an invasion of the blood stream and is not prevented by spontaneous resistance or therapy. Localization in the meninges joints skin, eyes or other body tissues. There is every reason to abandon the idea that meningitis is due to direct infection of the meninges through the cribriform plate except in those cases in which there is known trauma with fracture. It is essential to view this disease as a generalized sepsis

that is sometimes overshadowed by the advent of the more dramatic symptoms of meningitis. It is highly important that the stage of sepsis be recognized early and that the patient be treated promptly for in this way the disease can usually be terminated before localization in the meninges occurs. If meningitis does supervene in spite of early treatment, the advantages of prompt therapy have been afforded. The disease has been recognized in the stage of sepsis in 35 per cent of the cases in this series.

### ANALYSIS OF CASES OF MENINGOCOCCEMIA

The diagnosis of meningococcemia without meningitis was made in 32 cases. These all occurred during the first four months of 1943 when there was increased incidence of meningococcic meningitis at this post. The onset of acute illness was usually preceded by vague complaints. In 78 per cent of the patients symptoms of disease of the respiratory tract were present for from twelve hours to fifteen days prior to diagnosis. The average period was six days. Feverishness was noted for an average of three days. Table 1 indicates the incidence of the important symptoms and findings in this group.

The incidence of headache was high. There were extremely few patients however in whom there was difficulty in distinguishing the intense bursting headache of meningitis from the much less severe one of meningococcemia. Nausea in 59 per cent of the patients emphasizes the fact that more patients with meningococcic infection have nausea and vomiting than persons suffering from other infections of equal severity. Rash is essential to a clinical diagnosis and was present in all our cases.

The blood leukocyte count ranged from 8100 to 30,800 and averaged 17,000 per cubic millimeter. The blood culture was positive for meningococci in 56 per cent of the cases. Lumbar puncture was performed in every case in which meningitis was suspected, but in every case the spinal fluid was normal.

Meningococcic sepsis begins as a rule with prodromal symptoms of disease of the upper respiratory tract. After an indefinite period of from one to many days the manifestations become more acute. There is usually a sudden chill with rapid rise in temperature, but this may be gradual. Malaise extreme weakness aching or muscles moderate headache nausea vomiting pains in the joints or actual acute inflammation of joints develop. The most characteristic manifestation is the rash. Its presence is essential to clinical diagnosis prior to the advent of meningeal localization. The rash may be so sparse that careful and frequently repeated search is necessary to find it or it may be obvious and noted by the patient. A wide variety of forms of rash occur, and knowledge of each variety is essential to the recognition of the disease. The commonest lesion in our experience is petechial or purpuric and varies from 1 to 15 mm

From the Medical Service Station Hospital Fort Bragg North Carolina.

<sup>1</sup> Dingle J H and Finland Maxwell. Diagnosis Treatment and Prevention of Meningococcic Meningitis. War Medicine 2:1 (Jan) 1942.

<sup>2</sup> Cheever F S. Sulfadiazine in the Treatment of Meningococcus Carriers to be published.

<sup>3</sup> Herrick W W. Early Diagnosis and Intravenous Serum Treatment of Epidemic Cerebrospinal Meningitis. J A M A 71:612 (Aug 24) 1918.

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in diameter. In addition to this type, which has been emphasized by most observers, other forms of rash, not commonly described, have been generally seen. Ill defined faint pink macules similar to the rose spots of typhoid are common. These may be quite evanescent, and not infrequently a scattered few may constitute the

TABLE 1—*Meningococcemia: Incidence of Symptoms and Findings in Thirty-Two Cases\**

Infection of Upper Respiratory Tract	Chill	Headache	Nausea or Vomiting	Pains in Joints	Rash
78	47	78	59	37	100

\* The figures are percentages

only cutaneous manifestation. Maculopapular lesions are usually present, and in a few instances they have a central petechia. The larger ones of this type are nodular or plaque-like and often tender. When on the extremities these nodules bear a striking resemblance to the smaller lesions of erythema nodosum. Any combination of the cutaneous manifestations may occur, and indeed most patients have shown more than one type of lesion. The petechiae occasionally are present in the conjunctivas and the oral mucous membranes. The rash may occur anywhere on the body but usually spares the face and is less common on the palms and soles. It may occur in crops. The macular lesions may recede with fall in temperature, only to reappear as the temperature again rises. The rapidity with which the rash may appear makes it necessary to examine carefully every suspected patient at hourly intervals. It may advance from a few vague spots to a widespread eruption in a few hours. The larger ecchymotic lesions have been noted to become vesicular, and in 1 instance ulceration occurred. The rapid disappearance of the maculopapular component of the rash within from twelve to eighteen hours after the beginning of sulfadiazine therapy is almost diagnostic.

Herpes simplex is common, usually occurring about the second day of the illness. Herpes zoster involving the ophthalmic and maxillary branches of the fifth cranial nerve occurred in 1 case.

The temperature on admission of these patients ranged from 97 to 105.6 F. It was generally between

TABLE 2—*Meningitis: Incidence of Symptoms and Signs in Eighty Cases\**

Infection of Upper Respiratory Tract	Headache	Nausea	Chill	Pains in Joints	Stupor	Stiff Neck	Kernig's Sign	Signs of Disturbance of Cranial Nerves	Rash†
56	99	91	51	24	44	99	95	10	83

\* The figures are percentages

† Of 16 sporadic cases 44 per cent, and of 64 epidemic cases 92 per cent, showed rash

101 and 102 F. Leukocytosis with an increase in polymorphonuclear cells was the rule, but in 4 cases (12 per cent) the leukocyte count was normal.

Table 4 summarizes the data on the cases of meningococcemia.

#### ANALYSIS OF CASES OF MENINGITIS

The prodromal symptoms of the soldiers in whom meningitis developed were similar to those of the patients with uncomplicated meningococcemia. Fifty-

six per cent of the patients with meningitis had respiratory complaints for an average period of eleven days. Fever was present for three days prior to diagnosis. A shaking chill preceded the onset of meningitis by from three hours to fourteen days (average period thirty hours) in 36 per cent. This seems to be further evidence that sepsis is the initial phase in meningococcal meningitis. It was estimated that actual meningeal involvement existed for an average of one day before diagnosis. Table 2 shows the incidence of the important symptoms and signs in 80 cases of meningococcal meningitis.

The initial blood leukocyte count ranged from 10,500 to 43,500 with an average of 21,600 per cubic millimeter. The average spinal fluid leukocyte count was 6,800 with a range of from 0 to 23,000 per cubic millimeter.<sup>4</sup> There was no constant relation between the level of sugar in the spinal fluid and the severity of the disease, the spinal fluid cell count or the presence of meningococci on smear or culture. Meningococci were demonstrated on smear of the spinal fluid in 70 per cent of the cases and on culture in 81 per cent. The blood culture was positive in 40 per cent of the cases of meningitis.

In December of 1942, when it began to appear that there might be an epidemic of meningitis, an excellent system of coordination between the clinician and the laboratory was established. The bacteriologist was

TABLE 3—*Laboratory Findings*

	Per Cent Positive with Good Laboratory Facilities (16 Cases)	Per Cent Positive with Special Laboratory Facilities (64 Cases)
Blood cultures	28	45
Spinal fluid cultures	52	93
Spinal fluid smears	47	73
Bacteriologic diagnoses	78	95

always notified before lumbar puncture was done, and spinal fluid for culture was taken at the bedside in warmed culture mediums. The increased efficiency of this and other special laboratory procedures is brought out in table 3.

The increase in the proportion of positive bacteriologic diagnoses in the second group in table 3 cannot be entirely attributed to improvement in bacteriologic technique. There is another variable involved. Most of the cases in the first group occurred during the period when meningitis was sporadic, and those in the second group during the period of increased incidence of the disease. During periods of epidemic, cultures positive for meningococci are more commonly obtained. With this excellent laboratory<sup>5</sup> and clinical coordination during the period of increased incidence of meningococcal meningitis it was possible to achieve bacteriologic confirmation in 97.5 per cent of the patients who had not previously received any sulfonamide compound. It is equally significant that the meningococcus was not grown from the blood or the spinal fluid of any patient who had been treated with a sulfonamide compound prior to culturing. This was true in spite of the addition of paraaminobenzoic acid to the mediums.

Table 5 summarizes the findings in 80 cases of meningitis.

4 In 3 cases meningococci were found on culture of the spinal fluid at a time when the cell count was normal.

5 Lieut. Col. Frederick J. Pohle of the Medical Corps and the staff of the laboratory of the Station Hospital made such coordination possible.

Eight cases from this series have been selected for discussion because when considered together they indicate clearly that meningococcic meningitis begins as meningococcic bacteremia. The transition from the phase of sepsis to meningeal invasion is usually easy to recognize. However cases are encountered in which there is no sharp line of demarcation either in time or in severity or character of manifestations. In some instances the only evidence of invasion of the meninges has been the presence of meningococci in otherwise normal spinal fluid. Conversely, a patient may have symptoms of meningitis with equivocal clinical findings, such as slight stiffness of the neck, and yet have normal spinal fluid. The cases to be reported in detail also illustrate some of the various forms that meningococcic infection may assume.

white blood cell count was 19,800 per cubic millimeter with 81 per cent polymorphonuclear leukocytes. Blood cultured on admission was positive for type I meningococcus. No lumbar puncture was done. As soon as the blood for culture had been taken, sulfadiazine was given by mouth. The temperature was normal within two days.

The disease may be relatively mild and subacute, so that the fever, malaise, pains in joints and rash may suggest rheumatic fever, erythema multiforme or some other infection. The illness of patient C W Y (6, table 4) is illustrative of this type.

Private C W Y aged 21, had been well until three days before admission when he suddenly had a shaking chill with development of fever, malaise and sore throat. The only significant findings were a few erythematous blotches on the chest and the legs and a palpable spleen. There was a continuous

TABLE 4—Summary of Cases of Meningococcemia

Pa- tient	Age	Prodromal Symptoms: Dura- tion in Days		Signs and Symptoms										Treatment with Sulfadiazine					Fever Dura- tion in Days After Insti- tution of Ther- apy	Rash Dura- tion in Days After Insti- tution of Ther- apy
		Months of Ser- vice	Infection of Upper Respira- tory Tract	Fever	Infection of Upper Respira- tory Tract	Chill	Fever	Head- ache	Nausea	Pain in Joints	Rash	Sever- ity *	Laboratory Findings		Aver- age Blood Level Mg per 100 Cc			Com- plica- tions Micro- scopic Hema- turia		
													Blood Cul- ture †	White Blood Cells	Initial Dose Gm	Total Dose Gm	Days of Ther- apy			
1	23	56	0	25	0	+	0	0	+	+	1	I	17 600	4	42	8	13.8	+	0	8
2	24	1	10	1	+	+	0	+	+	+	1	I	27 300	4	66	11	11.7	0	1	5
3	20	8	0	1	0	+	+	+	+	0	1	I	26 000	7½	68	8	12.4	+	3	3
4	20	1	14	1	+	+	0	+	+	+	1	I	8 900	5	62	10	7.5	0	5	11
5	24	16	1	1	+	+	+	+	+	0	+	I	27 900	5	53	7	11.2	+	1	5
6	21	2	14	13	+	+	+	+	+	0	2	IIA	16 800	4	50	5	11.4	0	1½	5
7	31	2	7	12	+	+	+	+	+	0	+	I	20 700	4	37	6	11.5	0	1	5
8	20	1	5	12	+	+	+	+	+	+	1	I	18 900	5	76	8	12.5	+	2	5
9	20	1	9	9	+	+	+	+	+	+	1	I	19 900	4	58	6	10.4	+	2	4
10	20	1	0	1	0	+	+	+	+	+	1	I	19 000	4	63	7	9.7	+	5	4
11	25	15	15	1	+	+	+	+	+	0	2	I	17 900	5	61	8	12.4	+	1	6
12	20	1	4	1	+	+	+	+	+	0	+	I	20 400	4	62	7½	10.6	+	3	6
13	37	1½	8	1	+	+	+	+	+	0	1	I	14 400	4	53	7	10.2	+	1	5
14	23	10	0	1	0	+	+	+	+	+	1	I	13 800	4	46	7½	11.2	0	1	4
15	26	6	5	1	+	+	+	+	0	+	1	I	9 600	5	45	7	10.5	0	3	7
16	23	2	1	14	+	+	+	+	0	+	1	I	17 100	3	39	3	10.8	0	1	7
17	22	8	2	1	+	+	+	+	+	0	1	I	20 100	4	38	5½	9.0	+	1	3
18	19	1	12	2	+	+	+	+	0	+	1	I	19 700	4	36	7	9.1	0	2	3
19	20	1	3	1	+	+	+	+	0	+	2	I	14 600	4	43	6	7.8	0	2	7
20	19	1	10	2	+	+	+	+	0	+	1	I	8 400	4	49	6	9.4	0	3	2
21	20	1	2	14	+	+	+	+	+	+	2	I	16 200	4	40	6	6.9	0	2	4
22	21	3	0	12	0	+	+	+	+	0	1	I	24 500	5	40	6	10.9	0	1	3
23	24	24	0	12	0	+	+	+	0	+	1	I	12 500	4	34	7	11.0	0	1	1
24	25	14	9	1	+	+	+	+	0	+	1	I	13 600	4	26	6	10.1	+	1	4
25	20	2	0	23	0	+	+	+	0	+	2	II	18 600	4	40	5	8.2	0	0	2
26	19	1	5	1	+	+	+	+	+	+	1	I	17 600	4	46	7	8.0	0	2	3
27	26	3	12	12	+	+	+	+	0	+	2	I	17 600	4	41	5½	9.0	0	1	2
28	36	4	6	6	+	+	+	+	0	+	1	I	10 800	4	28	4	6.7	0	1	2
29	34	1	10	1	+	+	+	+	0	+	1	I	19 800	4	29	5	6.3	0	2	3
30	30	11	1	1	+	+	+	+	+	0	1	+	30 800	4	20	3	4.8	0	1	3
31	19	1	12	1	+	+	+	+	+	+	3	+	8 100	4	34	5½	5.6	0	5	4
32	20	2	12	1	+	+	+	+	0	+	1	+	20 100	4	25	3	9.0	0	1	2
Aver	or per cent		6.4	3.3	75%	47%	100%	78%	59%	37%	100%	66%	17 000	4.2	40.6	6.4	9.7	34%	1.8	4

\* The severity is graded 1 (mild), 2 (moderate) and 3 (severe).

† Roman numerals indicate the types of meningococcus cultured. A plus sign indicates presence of meningococcus which was not typed.

Comment: patient 1, chronic patient 10, white blood cells 3,400 (polymorphonuclears 83%) 5th day of treatment; patient 19, white blood cells 4,000 (polymorphonuclears 92%) 5th day of treatment; patient 15, white blood cells 4,000 (polymorphonuclears 49%) 5th day of treatment; patient 23, white blood cells 4,100 (polymorphonuclears 70%) 2d day of treatment; patient 24, white blood cells 4,000 (polymorphonuclears 58%) 3d day of treatment; patient 32, white blood cells 4,000 (polymorphonuclears 44%) 2d day of treatment.

#### CASES ILLUSTRATIVE OF VARIATIONS IN MENINGOCOCCEMIA

There may be a simple acute form of meningococcemia with fever, malaise, pains in joints, rash and leukocytosis. The progress of the disease may be arrested in this stage by sulfadiazine therapy as illustrated in patient F J T (29, table 4).

F J T, a soldier aged 34, had had a slight cold for about two weeks before admission to the Station Hospital. During the afternoon of the day prior to admission he rather suddenly began to feel unusually tired and to ache all over. During the night he had chilly sensations alternating with feverishness and on the morning of admission he had a moderately severe headache. He was acutely but not seriously ill. His face was flushed and his temperature was 101.3 F. There was slight inflammation of the nose and throat, and a macular papular and petechial rash was scattered over the trunk and all extremities. Neurologic examination gave results entirely normal. The

fluctuating fever during the succeeding eleven days. A rash consisting of macular papular and nodular lesions with a few petechiae appeared in crops. Shortly after admission redness, tenderness and swelling of the right ankle developed. These findings suggested erythema multiforme and erythema nodosum. The blood leukocyte count was 16,300 per cubic millimeter with 73 per cent polymorphonuclear cells. Many erythrocytes were noted in several specimens of urine. The spinal fluid was normal. Blood cultures were positive for type IIA meningococcus. After the first dose of sulfadiazine by mouth the temperature became and remained normal. The rash faded promptly.

In other patients the course may be chronic producing a persistent low grade febrile illness which in patient R L P (1, table 4) was not severe enough to prevent him from continuing military duty.

Staff Sergeant R L P aged 23 was admitted to the orthopedic service because of an injured ankle. It was learned that for about three weeks he had been suffering from malaise

TABLE 5—Summary of Findings

Patient	Age	Months of Service	Symptoms, Duration in Days Before Diagnosis			Symptoms					Clinical Findings					Cultures	
			Infection of Upper Respiratory Tract	Fever	Meningeal Symptoms	Infection of Upper Respiratory Tract	Headache	Nausea	Chill	Fever	Pains in Joints	Stupor	Stiff Neck	Rash	Severity *	Blood	Cerebrospinal Fluid
1	26	13	5	2	1	+	+	+	+	+	0	0	+	+	2	+	0
2	22	14	0	1	1	+	+	+	+	+	0	0	+	+	2	+	0
3	26		0	1	2	0	+	+	+	+	0	+	+	+	3	0	+
4	27	3	0	2	2	0	+	+	+	+	0	+	+	+	3	1	0
5	20	0	20	14	1	+	+	+	+	+	+	+	+	+	0		0
6	31	1	7	2	1	+	+	+	+	+	0	+	+	+	3	0	1
7	18	1	42	16	1	+	+	+	+	+	0	0	+	+	3	0	1
8	23	17	0	1	1	0	+	+	0	+	0	0	+	+	2	0	(0)
9	23	15	0	1	1	0	+	0	+	+	0	+	+	0	2	+	1
10	27	24	0	10	1	0	+	+	+	+	+	0	+	0	2	0	+
11	22	7	0	1	1	0	+	+	0	+	0	0	+	0	2	0	0
12	19	21	0	1	3	0	+	+	0	+	0	0	+	0	1	0	0
13	54	4	14	11	7	+	+	+	0	+	0	+	+	0	2	0	0
14	24	8	0	6	1	0	+	+	0	+	0	+	+	+	3	0	1
15	20	6	1	1	1	+	+	+	0	+	0	+	+	0	2	0	1
16	21	2	1	1	1	+	+	+	0	+	0	+	+	0	4	0	1
17	20	1	2	2	1½	+	+	+	+	+	0	+	+	+	3	0	1
18	27	1	3	3	1	+	+	+	+	+	0	+	+	0	3	(0)	(0)
19	24	31	2	1	1	+	+	+	0	+	0	+	+	+	2	+	1
20	19	1	4	1	1	+	+	+	0	+	0	+	+	+	3	+	1
21	20	1	1	1	1	+	+	+	0	+	0	+	+	+	3	+	1
22	22	3	1	1	1	+	+	+	+	+	+	+	+	+	3	+	1
23	26	1	18	1	½	+	+	+	+	+	+	+	+	+	3	+	1
24	19	1½	0	1	1	0	+	+	0	+	+	0	+	+	1	+	0
25	29	5	0	1	1	0	+	+	0	+	0	0	+	+	1	0	1
26	20	7	1	1	1	+	+	+	+	+	0	0	+	+	2	0	1
27	24	9	2	2	2	+	+	+	0	+	0	0	+	+	1	0	1
28	20	4	2	2	1	+	+	0	+	+	0	0	+	+	2	0	1
29	22	2	2	2	1	+	+	+	0	+	0	0	+	+	3	+	1
30	21	3	0	1	1	0	+	+	0	+	0	0	+	+	1	0	1
31	27	66	6	6	1	+	+	+	+	+	0	0	+	+	3	0	1
32	27	5	3	0	1	+	+	+	+	+	0	+	+	+	3	0	1
33	29	1	30	1	1	+	+	+	+	+	0	0	+	+	2	0	1
34	25	1	1	1	½	+	+	+	+	+	0	+	+	+	2	0	1
35	23	25	0	1½	½	0	+	+	+	+	0	+	+	+	4	0	1
36	37	1	35	1	½	+	+	+	+	+	+	+	+	+	3	1	(0)
37	19	1	28	1	1	+	+	+	+	+	0	0	+	+	2	0	0
38	21	25	0	½	½	0	+	+	0	+	0	0	+	+	1	+	1
39	18	1	14	1	1	+	+	+	+	+	0	0	+	+	3	+	1
40	19	1	8	6	1½	0	+	+	+	+	0	+	+	+	2	+	1
41	22	18	0	½	½	+	+	+	+	+	0	0	+	+	1	+	(0)
42	21	1½	18	12	½	+	+	0	0	+	0	0	+	+	2	0	1
43	22	1	17	½	½	+	+	+	+	+	0	0	+	+	1	0	1
44	19	2	3	1	1	+	+	+	+	+	0	0	+	+	2	+	1
45	19	1½	0	1	1	+	+	+	0	+	0	0	+	+	1	0	1
46	21	1	7	2	½	+	+	+	0	+	0	0	+	+	1	0	1
47	18	1	17	0	1	+	+	+	0	+	+	0	+	+	2	1	1
48	20	1	5	2	1	+	+	+	0	+	0	0	+	+	1	1	1
49	22	7	5	2	1	+	+	+	+	+	0	0	+	+	1	1	1
50	20	1	1	1	0	+	+	0	+	+	0	0	+	+	2	0	1
51	20	1	12	1	1	+	+	+	0	+	0	0	+	+	2	0	1
52	20	1	3	1	3	0	+	+	+	+	0	0	+	+	2	0	1
53	20	1½	0	3	3	+	+	+	+	+	0	0	+	+	2	0	1
54	20	1½	0	1	½	+	+	+	0	+	0	0	+	+	2	0	1
55	19	1	1	1	1	+	+	+	0	+	+	0	+	+	2	0	1
56	30	1½	5	1	1	+	+	+	0	+	+	0	+	+	2	1	(0)
57	21	2	2	½	½	+	+	+	+	+	+	0	+	+	2	0	1
58	20	¼	17	2	½	+	+	+	+	+	+	0	+	+	2	0	1
59	19	1	0	2	2	0	+	+	0	+	+	0	+	+	2	0	1
60	28	1	4	1	½	+	+	+	0	+	0	0	+	+	2	0	1
61	22	3	0	1	½	0	+	+	+	+	0	0	+	+	2	0	1
62	29	2	0	1	1	+	+	+	+	+	0	0	+	+	2	1	(0)
63	28	1½	23	½	½	0	+	+	+	+	0	0	+	+	2	0	1
64	20	1	0	½	½	+	+	+	0	+	0	0	+	+	1	+	(0)
65	28	1	3	2	½	+	+	+	0	+	0	0	+	+	1	0	1
66	20	1	11	½	½	+	+	+	0	+	0	0	+	+	1	0	1
67	24	4	0	2	1	0	+	+	0	+	0	0	+	+	1	0	1
68	29	4	0	2	1	0	+	+	+	+	0	0	+	+	1	0	1
69	21	1	0	1	1	0	+	+	0	+	0	0	+	+	1	0	(0)
70	25	21	0	1	1	0	+	+	0	+	0	0	+	+	1	0	1
71	20	1	0	1	1	0	+	+	0	+	0	0	+	+	1	0	1
72	20	1	0	1	1	0	+	+	0	+	0	0	+	+	1	0	1
73	31	1	0	1	½	+	+	+	0	+	0	0	+	+	1	0	1
74	20	2	0	1	1	+	+	+	0	+	0	0	+	+	1	0	1
75	22	4	60	2	3	0	+	+	0	+	0	0	+	+	1	0	1
76	10	2	0	2	1	0	+	+	0	+	0	0	+	+	1	0	1
77	22	2½	0	½	½	0	+	+	0	+	0	0	+	+	1	0	1
78	31	10	30	1	1	0	+	+	0	+	0	0	+	+	1	0	1
79	20	1	0	1	1	0	+	+	0	+	0	0	+	+	1	0	1
80	25	13	0	1	1	0	+	+	0	+	0	0	+	+	1	0	1
Average or per cent			10.9	2.2	0.00	58%	97%	91%	51%	100%	24%	44%	97%	87%		81%	

\* The severity is graded 1 (mild) 2 (moderate) 3 (severe) and 4 fulminant.  
† Roman numeral I indicates type I meningococcus. A zero means no meningococcus was found. A plus sign indicates presence of a meningococcus which was not typed. Bacteriologic data in parentheses indicate specimens were obtained after initiation of chemotherapy.  
‡ Patients 1 and 2 were treated with sulfapyridine.

Laboratory Findings†				Treatment with Sulfadiazine *					Meningeal Signs	Fever	Complications of Therapy		Comment
Cerebrospinal Fluid				Initial Dose Cm	Total Dose Gm	Days of Therapy	Average Blood Level Mg. per 100 Cc	Average Cerebrospinal Fluid Level Mg. per 100 Cc	Duration in Days After Institution of Therapy	Duration in Days After Institution of Therapy	Microscopic Hematuria	Cross Hematuria	
Smear	Cell Count	Sugar Mg. per 100 Cc	White Blood Cells										
0	6500	7	20000	7½	97	5	10.8	6.2	8	10	+	0	
0	9100	41	14800	7½	119	8	8.5	3.3	3	3	0	0	
—	4800	53	15400	5½	10	11	15.0	11.0	3	3	0	0	Transient right 6th nerve paralysis
—	6200	51	14000	7½	73	6	11.9	11.0	6	3	0	0	Transient left 6th nerve paralysis
+	5700	44	11500	7½	108	5	11.5	7.5	5	11	0	0	Transient right 7th nerve paralysis
+	6100	—	21700	7½	100	8	11.9	12.0	2	5	0	0	Transient right 7th nerve paralysis
0	13500	1	33000	7½	101	19	12.8	9.7	7	5	0	0	
0	1100	51	24000	7½	110	9	14.8	—	6	5	0	0	
(0)	4700	—	—	—	—	—	—	—	—	—	—	—	
(0)	5700	—	21900	7½	100	11	17.7	20.8	10	2	+	0	W B C 4500 (polymorphonuclears 5%) 9th day of treatment
0	2500	5½	12000	7½	40	3	21.1	19.4	4	14	—	+	Anuria; sulfadiazine stopped
0	12111	—	11400	7½	118	10	1.0	8.8	3	1	0	0	W B C 3000 (polymorphonuclears 4%) 12th day of treatment
0	12500	1	19000	7½	100	8	8.1	6.5	2	1	0	0	
0	1900	0.6	28000	7½	69	4	18.0	15.8	2	3	0	0	
0	6940	—	15000	7½	—	9	11.3	9.9	3	5	+	0	
—	4400	14	16400	7½	87	9	11.9	13.0	6	4	—	0	
—	3330	4½	15300	7½	80	8	13.3	5.6	4	5	—	0	
—	6340	10	1700	7½	13	1	—	—	2	1	0	0	Died
—	7040	0	21000	7½	10	1½	10.7	3	4	11	—	0	Initial dose of sulfathiazole
(0)	5509	7.8	—	7½	30	9	11.2	10	3	6	+	0	
+	4100	8	35500	7½	100	10	11.5	10	3	4	—	0	Transient right 6th nerve paralysis
+	10900	18	20800	7½	10	9	11.0	8.7	—	12	+	0	
+	3300	4.3	10600	7½	10	10	12.0	—	—	5	—	0	
+	3800	13	20000	7½	87	9	11.8	—	7	5	+	0	W B C 5000 (polymorphonuclears 3%) 5th day of treatment
0	3	7.8	17400	7½	94	10	11.4	—	3	4	—	0	Fight hours between examinations of cerebro-spinal fluid
0	300	6½	—	—	—	—	—	—	—	—	—	—	
—	1140	4½	16600	7½	6	8	14.0	14.0	2	2	+	0	
—	6700	8.3	16500	7½	88	11	14.4	—	6	4	+	0	
—	4500	15	10400	7½	101	9	9.1	—	3	2	+	0	
—	2550	4	22900	7½	100	11	12.1	—	3	3	+	0	
—	16300	2½	15000	7½	34	12	14.9	14.0	6	12	—	0	
—	17100	—	24000	7½	15	1	9.3	—	6	5	—	0	Twelve hour anuria necessitated change to sulfanilamide
0	13	10½	14800	6	57	10	10.6	7.1	—	—	—	0	Typical renal colic
0	3700	7½	—	—	—	—	—	—	—	—	—	—	
+	3000	—	22800	8	91	13	12.3	9.0	6	6	+	0	Slight
+	1470	6	23000	7½	150	14	11.8	9.3	6	6	+	0	Transient right 7th nerve paralysis
—	23000	8.5	33800	7½	109	11	14.8	—	6	6	—	0	
—	15600	1	22000	7½	15	1	17.5	10.2	—	7	—	0	Change to sulfanilamide
—	3	7½	17000	5	30	2	17.7	8.2	7	8	+	—	Cross hematuria with oliguria
(0)	1700	0.6	30800	7½	63	8½	9.5	10.8	—	—	—	—	sulfanilamide substituted
(0)	1500	—	30800	7½	74	7	21.5	14.9	4	7	+	+	Sulfanilamide substituted
0	12600	31	19900	7½	102	13	13.3	—	5	5	+	0	
0	6800	40	25900	6	69	10	13.6	—	6	3	+	0	
0	5000	79	27000	3	57	1	11.3	—	4	2	—	0	
—	5000	12	22500	8	16	1	13.0	—	6	5	—	+	Sulfanilamide substituted
—	0.00	33	17000	5	83	8	12.8	—	2	1	0	0	
(0)	11	6½	32000	7½	83	7½	14.3	14.4	3	1	+	0	Corneal ulcer
0	100	43	30500	7½	22	8	11.6	—	3	2	+	0	
0	500	53	12400	5	49	8	10.9	—	4	2	+	0	
+	900	8.1	28000	7½	72	10	10.0	7.5	5	6	0	0	
+	1900	70	31800	4	9	6	10.2	—	2	3	0	0	
+	9400	1	17400	4	49	8	8.7	4.4	7	2	0	0	
+	916	64	23800	7½	10	1	14.3	—	6	5	—	—	Sulfanilamide substituted
0	11	33	31900	5	41	5½	9.9	—	3	1	0	0	
0	1000	70	24100	4	20	1	7.3	—	0	1	0	0	
0	1100	34	15300	4	50	9	8.6	—	4	4	+	0	
—	70	80	28600	4	62	8	9.3	—	6	1	0	0	Bilateral 8th nerve deafness improving
+	11500	78	22200	4	47	7	9.3	—	3	3	0	0	Pulmonary edema
+	3500	48	10900	4	83	10	11.0	—	6	3	0	0	
0	300	46	41000	4	10	8	7.5	5.3	5	10	+	0	Fusion in knee joint
(0)	0	72	—	4	50	8	10.0	7.3	5	4	0	0	Obstructive jaundice
—	500	75	24800	—	—	—	—	—	—	—	—	—	
—	5100	1	21800	4	16	9	10.7	—	6	3	0	0	
—	11300	1.5	18400	4	16	9	10.2	—	10	3	—	0	
—	10700	58	17000	4	69	8½	8.3	—	10	2½	0	0	
—	10600	20	25300	4	50	8	8.1	—	5	3	0	0	
—	9100	16	43500	5	60	8	9.0	—	5	3	+	0	
0	47	87	12400	4	64	6	13	9.7	5	—	+	0	Pain in region of bladder
(0)	945	69	—	—	—	—	—	—	—	—	—	—	
0	8300	45	10800	4	53	11½	10.7	—	6	1	0	0	
(0)	0	73	22000	4	57	8½	10.3	—	5	3	+	0	Meningeal signs developed after treatment for meningococemia started
+	5900	71	13100	4	48	7½	8.3	—	5	3	0	0	W B C 4000 (polymorphonuclears 45%) 2d day of treatment
+	112	77	10000	4	5	8½	8.3	—	4	2	0	0	
+	700	35	16800	4	15	8	10.1	—	4	2	0	0	
—	700	64	15500	5	33	1½	5.8	—	3	2	0	0	W B C 3700 (polymorphonuclears 45%) 2d day of treatment
(0)	9000	34	18500	4	38	6	7.1	—	5	3	—	0	
—	8400	47	19700	4	70	7	6.3	3.5	4	2	0	0	Transient right 6th nerve paralysis
—	5600	14	26500	4	60	7	11.8	—	5	4	0	0	
—	5000	—	10500	4	60	7	11.8	—	5	4	0	0	
—	15100	13	25700	4	45	6	10.5	6.8	10	7	—	0	
—	400	3	11000	4	8	4½	10.5	—	6	4	0	0	
—	1700	1	25100	6	34	7	10.9	—	5	4	0	0	
—	1700	—	21000	3	4	7	11.7	—	3	3	—	0	
0	400	1	23900	4	39	5	5.9	—	4	1	—	0	
0	100	4½	10500	3	6	5	6.9	—	4	0	—	0	W B C 4500 (polymorphonuclears 45%) 4th day of treatment
Cc	6500	40.3	21600	Croup A	57	26	12.9	10.9	1	4½	7½	17½	renal colic
				Croup B	54	—	8.4	—	—	—	—	—	

evening feverishness and an intermittent eruption of red nodules on his legs. While he was in the hospital his temperature ranged from normal to 102 F. There was migrating arthralgia, and a scattered erythematous papular rash appeared. This was most apparent on the extremities. The blood leukocyte count was 12,600 per cubic millimeter with 81 per cent polymorphonuclear leukocytes. Two blood cultures were positive for type I meningococcus. There were no meningeal symptoms or signs at any time, and the spinal fluid was normal. All manifestations cleared entirely within twenty-four hours after sulfadiazine began to be administered by mouth. The illness had been of four weeks' duration prior to treatment.

#### CASES ILLUSTRATIVE OF TRANSITION FROM SEPSIS TO MENINGITIS

The recognition of meningococcic sepsis before invasion of the meninges has occurred is relatively easy during epidemics, when the index of suspicion is high. It is in the sporadic case that delay in diagnosis and treatment is likely. This occurred in the following case.

Private O E M (patient 5, table 5), aged 20, was admitted with a history of sore throat which had been present for one week. On the day before admission there was a sudden onset of shaking chills, fever and painfulness of joints. There were a few small erythematous nodular lesions of the skin, and the pharynx showed mild inflammation. Both knees and both elbows and the right wrist and ankle were tender and hot but not red or swollen. The blood leukocyte count was 11,500 per cubic millimeter with 78 per cent polymorphonuclear cells. A tentative diagnosis of acute rheumatic fever was made, and a full dosage of salicylates was prescribed. In spite of this medication the temperature ranged from normal to 102.4 F for the succeeding thirteen days. On the thirteenth hospital day there was a sudden rise in temperature to 105 F with severe headache, nausea and vomiting. Within three hours the patient had lapsed into coma and presented all of the signs of severe meningitis. A dozen or so pinkish macules resembling rose spots were present on the trunk at this time. The spinal fluid contained 1,200 white blood cells per cubic millimeter with 95 per cent polymorphonuclear leukocytes. Meningococci were demonstrated in the spinal fluid. Treatment with sulfadiazine was begun before blood was taken for culture and there was no growth.

It is felt that the septic type of temperature, the involvement of many of the larger joints and the intermittent rash justify the assumption that invasion of the blood stream was present for many days before the development of meningitis.

The next case illustrates the importance of cutaneous manifestations and how the presence of only a fleeting rash during the greater portion of the stage of sepsis delayed diagnosis.

Private W D (patient 42, table 5) was admitted to the ward for patients with diseases of the respiratory tract, having had a cold with nasal congestion, slight cough and sore throat for one week. During the day before admission he had several slight chills and felt feverish. He vomited once. Examination revealed moderate inflammation of the nasopharynx and a discrete macular rash on the trunk and around the shoulder girdle, which disappeared within a few hours after admission. For about eleven days the patient's temperature was of the septic type with daily elevations to 102 F, associated with polymorphonuclear leukocytosis. He complained of intermittent pain in the popliteal spaces, and it was thought that the tip of the spleen was palpable. A tentative diagnosis of subacute bacterial endocarditis was made, and repeated blood cultures were made. Ten days after admission the temperature rose to 103 F and the patient appeared worse. There were no meningeal signs or symptoms. On the next day increasingly severe headache developed with nausea and vomiting. Examination revealed a slightly stiff neck, Kernig's sign and a sparse scattering of petechiae on the upper part of the trunk. The spinal fluid was cloudy and contained 9,700 cells per cubic millimeter, smear

and culture showed type I meningococcus. The blood taken on the day before the development of meningeal signs later gave a culture of the same organism. Recovery was rapid on sulfadiazine therapy.

The speed with which meningitis may develop in a patient with meningococcemia is extremely variable. Patient J R V (36, table 5) was one in whom early meningitis was present on admission, as indicated by recovery of meningococci on culture from an otherwise normal spinal fluid. The history, however, gives clear-cut evidence that a state of sepsis existed for about twenty-four hours before admission. This case also illustrates how rapidly meningitis can advance in spite of prompt and adequate sulfadiazine therapy. Two complications occurred.

Private J R V, aged 37, was one of the few patients observed by us who were known to have been in contact with another soldier with established meningococcic infection. He had been in good health except for intermittent colds until the day before admission. During the morning of that day he suddenly had a shaking chill and began to feel extremely weak. Headache was moderately severe but subsided during the evening. On the morning of the day of admission his headache was gone, but he noticed that he was covered with tiny dark purplish spots. His right knee was also moderately painful on walking. Severe frontal headache again developed on his admission to the ward. He was obviously acutely and seriously ill, although alert and well oriented. Scattered over the trunk and all extremities were myriads of dark petechiae, all less than 2 mm in diameter. There was no stiffness of the neck, and Kernig and Brudzinski signs were not present. A specimen of spinal fluid showed 3 lymphocytes per cubic millimeter, a normal concentration of sugar and a smear negative for organisms. By the following day, however, this fluid on culture grew type I meningococcus. Immediately after the initial lumbar puncture 5 Gm of sodium sulfadiazine was given intravenously with 1,500 cc of saline and dextrose solution.

Four hours after admission the patient was seized with projectile vomiting and rapidly became stuporous. All the signs of meningitis were present to a high degree. Five and one-quarter hours after the first lumbar puncture another specimen of spinal fluid was obtained. The spinal fluid was under greatly increased pressure and contained 17,700 leukocytes per cubic millimeter with 99 per cent polymorphonuclear cells. The concentration of sugar had fallen to 0.6 mg per hundred cubic centimeters, and the level of sulfadiazine had reached 8.2 mg per hundred cubic centimeters. Smear and culture of this second specimen were negative for meningococci in spite of the addition of paraaminobenzoic acid to the culture mediums.

During the next few days the patient's course was extremely stormy. For the first two days the level of sulfadiazine in the blood was maintained at from 15 to 20 mg per hundred cubic centimeters by parenteral administration of the sodium salt. By the evening of the second day gross hematuria and oliguria developed, and sulfamilamide 10 Gm daily was substituted. The hematuria cleared rapidly, but pulmonary edema developed to an extreme degree, and the patient responded very slowly when treated with oxygen, tourniquets on the extremities and venesection. He subsequently made a complete recovery.

The blood culture made on admission was contaminated with *Staphylococcus albus*, and no meningococci were found. The history of a shaking chill, the presence of a purpuric rash extensive enough to be noticed by the patient and a painful knee joint, all at a time when the patient was entirely free of headache, are believed to be evidence that invasion of the blood stream occurred several hours prior to admission. That meningitis was in the earliest phase at the time of admission is shown by the fact that the spinal fluid was normal in every respect except that meningococci were grown on culture. There were no meningeal signs present except for severe headache.

The following case is similar to the preceding one in the rapidity with which the meninges became involved.



but differs from it in that meningococcemia was present before meningitis was demonstrable

Private S S (patient 24, table 5), aged 19, was seen early in the period of increased incidence of meningococcic disease when we were not so familiar with all of the types of rash associated with this infection. He had been perfectly well until the day before admission when headache, vomiting and extreme weakness suddenly developed. He was pale, prostrated and obviously acutely ill. Careful search of his entire body showed a total of six faint ill defined rose macules. There were no meningeal signs, and the patient's description of his headache indicated that it did not differ from that experienced with simple infections of the upper respiratory tract. His appearance and the blood leukocyte count of 17,400 per cubic millimeter with 89 per cent polymorphonuclear cells indicated that meningococcic infection was probable. An examination of the spinal fluid on admission gave negative results. Eight hours later a reevaluation of the patient's status showed a considerable increase in the rash, which now was maculopapular, with a moderate number of petechiae scattered over the trunk and upper extremities. There was a suggestion of stiff neck, although Kernig's sign was still not observed. Another lumbar puncture yielded slightly turbid fluid with 500 cells per cubic millimeter, 80 per cent of which were polymorphonuclear leukocytes. The smear was negative for organisms but type I meningococcus was grown on culture. This organism was later recovered from the blood taken at the time of the first examination of the spinal fluid. Sulfadiazine therapy was started after the second lumbar puncture eight hours after the patient's admission to the hospital. He made an uneventful recovery.

white count was 18,800 per cubic millimeter with 80 per cent polymorphonuclear cells. The blood culture was later reported as negative, but the spinal fluid showed 9,900 leukocytes per cubic millimeter, of which 99 per cent were polymorphonuclear cells. Gram negative intracellular diplococci were seen on smear, and type I meningococcus was present on culture of the spinal fluid. Immediate sulfadiazine therapy resulted in complete recovery.

#### TREATMENT

The treatment of the soldiers with meningococcemia was simple and effective. During the period of observation of this group of patients it became obvious that those with uncomplicated meningococcemia who were treated early did not require large doses of sulfadiazine. An initial dose of 4 Gm of sulfadiazine was given, followed by 1 Gm every four hours until the temperature had been normal for two days. Parenteral administration was resorted to when patients were vomiting.

Seventy-eight of the 80 patients with meningococcic meningitis were treated with sulfadiazine, the other 2 received sulfapyridine and recovered. Two patients who did not respond rapidly to sulfadiazine were given polyvalent antimeningococcic serum intravenously and recovered. In 6 of the sulfadiazine treated patients renal complications developed severe enough to make it necessary to substitute sulfanilamide for sulfadiazine.

The first 45 of the sulfadiazine treated patients will hereafter be designated group A, and the last 33, who

TABLE 6—Comparative Results of Treatment in Groups A and B\*

Group †	Total Dose of Drug Gm	Duration of Therapy Days	Sulfadiazine Level Mg per 100 Cc		Duration of Meningeal Signs Following Therapy Days	Duration of Fever Following Therapy Days	Duration of Hospitalization Following Therapy Days	Percentage with Renal Complications‡	
			Blood	Spinal Fluid				Gross Hematuria	Anuria
A (45 patients)	87	9.6	12.9	10.9	5.1	5.1	34	15	6.6
B (33 patients)	54	7.0	8.4	6.5	5.1	8.0	29	0	0

\* The figures are averages.

† Two of the 80 patients were treated with sulfapyridine and are not included in this table.

Patients have since been seen whose disease was so much more fulminant that it is doubtful if they would have survived had therapy been delayed eight hours. Infection of the cerebrospinal spaces may have been produced by lumbar puncture in a patient suffering from sepsis. It is more likely, however, that the meningitis in this patient was the result of the normal progress of the disease. That meningitis may have been present in the region of the choroid plexus at the time of the first lumbar puncture is possible.

#### A CASE ILLUSTRATIVE OF THE COMMONEST TYPE OF MENINGITIS

The following case illustrates the commonest type of meningococcic infection. Here the results of the meningeal involvement were so dramatic as to overshadow completely those of sepsis. Sepsis and meningitis set in almost simultaneously.

Private R A B (patient 71, table 5), aged 20, was admitted in a violent negativistic delirium. The history obtained after the patient had improved indicated that he had been perfectly well until the evening of the day before admission when severe occipital headache suddenly developed with a feeling of great fatigue. During the night pain in the left elbow and ankle began. Early on the day of admission he lost consciousness and regained it only after twelve hours of treatment in the hospital. Examination revealed a gravely ill patient who had many small erythematous macules scattered over the trunk and extremities. Several of the lesions were hemorrhagic. There were pronounced rigidity of the neck, Kernig and Brudzinski signs and slight weakness of the right side of the face. The blood leuko-

were treated with smaller dosage, will be referred to as group B.

Group A received an initial intravenous "loading" dose of 0.1 Gm of sodium sulfadiazine per kilogram of body weight. A dose one half of the initial dose was given parenterally every eight hours thereafter until the patient could retain the drug given by mouth. Most of the subsequent parenteral therapy was given subcutaneously. A concentration of 0.5 per cent or less of sodium sulfadiazine in isotonic solution of sodium chloride or sterile distilled water was used. Sulfadiazine was then administered by mouth, 1.0 to 2.0 Gm every four hours, until the temperature had been normal for from five to seven days. This dosage was adjusted when necessary in an attempt to maintain the blood concentration of sulfadiazine at 15 mg per hundred cubic centimeters. The fluid intake was maintained at 4,000 cc daily and the urinary output at 1,200 cc or more. Daily urinalyses, complete blood counts and determinations of the sulfadiazine level were done.

The results achieved in patients treated according to this plan were excellent. One patient with fulminant meningitis died very quickly after the diagnosis was made, but the others recovered. In the face of these good results we were slow to change the plan of therapy. However, the high incidence of renal complications made it seem advisable to reduce the dose of sulfadiazine.

Group B received an initial 'loading' dose of 0.05 Gm of sodium sulfadiazine per kilogram of body weight

intravenously and four hours later a dose of 0.025 Gm per kilogram of body weight subcutaneously. This dose was then repeated every eight hours until the patient could retain the drug given by mouth. One gram of sulfadiazine was then given every four hours until the temperature had been normal for from five to seven days. The same fluid intake and output were maintained as in group A, with the same laboratory control.

A comparison of the results of treatment in the two groups is shown in table 6.

From an analysis of the data in table 6 it appears that the patients treated with the lower doses of sulfadiazine fared better than the group treated with the higher doses. This impression should be qualified, however, as there was a slight but definite decrease in the severity of the disease seen toward the end of this series of cases. The shorter period of hospitalization is a reflection of experience gained with the disease. Reconditioning of the patients for the trip home on furlough was begun earlier. The important difference between the two groups of patients is the lower incidence of renal complications in those receiving the smaller doses of sulfadiazine. In group A gross hematuria developed in 15 per cent of the patients and temporary anuria in 6.6 per cent. In no patient of group B, with smaller doses of sulfadiazine, did either of these complications develop. The less serious renal complications of sulfa-

TABLE 7—Mortality

	Cases	Deaths	Per Cent
Meningococcemia without meningitis	32	0	0
Meningococcal meningitis	80	1	1.25
Combined meningococcemia and meningitis	112	1	0.89

diazine therapy, such as crystalluria and microscopic hematuria, were also much more common in the patients treated with large doses.

No anemia and no severe leukopenia were noted in any of the patients. In 1 soldier fever and a morbilliform rash developed on the sixth day of treatment with the lower doses, but this cleared after the drug was discontinued.

Complications of the disease were rare in this group of patients. Ten per cent of those with meningitis had lesions involving the sixth, seventh or eighth cranial nerve. Complete recovery occurred in all these patients except one with nerve deafness. On discharge from the hospital he was still showing progressive improvement. One patient has extensive diffuse cortical atrophy as revealed by encephalogram and is to be discharged from the Army for disability. Corneal ulceration occurred in one patient and herpes zoster of the ophthalmic branch of the fifth cranial nerve in another.

The excellent results with both treatment schedules is indicated in table 7.

## COMMENT

The conclusion that meningococcal meningitis results from preceding septicemia has been reached by several previous observers. Unassailable proof that it does has never been brought forward and indeed proof may be impossible. The evidence provided by these data and other similar studies is overwhelmingly in favor of the validity of the theory. This material is presented not because the foregoing concept of the disease is not known by members of the medical profession but because it is felt that the members of the profession have not been sufficiently aware of its importance. From the practical standpoint it is vital to view this

disease primarily as meningococcal septicemia. It is only in this way that the diagnosis can be made before meningitis develops with all of its grave implications. The advent of sulfonamide compounds as therapeutic agents has made this even more important than in the past, since early administration of one of these drugs brings the septicemia to an end with almost miraculous speed. It is natural to speculate on what would be the course of the disease if simple acute meningococcal septicemia should be left untreated. There is no way to ascertain this without jeopardizing the life of the patient. Those who have observed the patients who are the subjects of this report have a strong impression that many and probably most of them would have developed meningitis. It is probable that in a few of these patients the infection might have become subacute or chronic. However, it is also probable that there are mild forms of meningococcal bacteremia which are never recognized and from which spontaneous recovery takes place.

It should be noted that in only 56 per cent of these cases of meningococcemia uncomplicated by meningitis was the diagnosis confirmed by a positive blood culture. This illustrates a most important point. An accurate diagnosis of meningococcemia can and indeed must be made long before there is any report of the results of blood culture if one hopes to prevent the advent of meningitis. The clinical picture in most cases is sufficiently clear to permit a positive diagnosis. In these cases therapy with sulfadiazine was started as soon as the diagnosis was made and one blood sample taken for culture. Had therapy been delayed and repeated blood samples taken for culture, the number of cases confirmed bacteriologically would undoubtedly have been higher. It is also highly probable that the number of cases of meningitis would have been increased with resultant higher mortality.

There are many factors involved in the achievement of the low mortality rate of 1.25 per cent in this series of 80 cases of meningococcal meningitis. The patients were all young adults of military age, in whom the mortality rate has always been lowest with all methods of treatment. Most soldiers are at a high level of physical fitness before the onset of their acute illness. Under the army practice of hospitalizing soldiers with mild acute illnesses, every opportunity for early diagnosis was afforded. Early in the period of increased incidence of meningococcal infection the dispensary surgeons and ward officers were called together and reminded of the necessity and the means of early diagnosis. At this point we have been fortunate in that we have not been confronted either with the Waterhouse-Friederichsen syndrome or with septicemia so fulminant that death occurred before treatment could become effective.

It has been demonstrated that a high degree of success with a low complication rate can be attained with a dosage maintaining the blood concentration of sulfadiazine at 8 mg per hundred cubic centimeters. It is probable that smaller doses will suffice. Further careful study is indicated to determine how much lower the dose can be brought with safety and success. Dowling and Lepper<sup>6</sup> have reported that no urinary calculi formed in any of their patients unless the blood level of sulfadiazine reached 9.2 mg per hundred cubic centimeters or higher. However, when confronted with

6. Dowling, H. I., and Lepper, M. H. Toxic Reactions Following Therapy with Sulfapyridine, Sulfathiazole and Sulfadiazine. J. A. M. A. 121: 1190 (April 10) 1943.

fulminant infection, it is wise to achieve a high level of sulfadiazine with large doses

In this series the use of specific serum was limited to 2 patients. It should remain part of the armamentarium for the treatment of patients with fulminant infection in whom response to sulfonamide compounds is not promptly achieved

#### SUMMARY AND CONCLUSIONS

Infection with the meningococcus arises in the nasopharynx and invades the blood stream with localization in the skin, joints, meninges and other body tissues. Meningitis is the most dramatic phase of this form of septicemia.

Diagnosis in the phase of septicemia can and must be made on clinical grounds and prompt therapy instituted to prevent the advent of meningitis.

Eighty patients with meningitis and 32 with meningococcemia have been treated with sulfadiazine with one death occurring in the former group and no deaths in the latter.

The optimal dose of sulfadiazine for the treatment of meningococcic meningitis has not yet been determined. It is probably lower than that in general use.

#### ADDENDUM

Through the courtesy of Dr. John H. Dingle of the Commission on Acute Respiratory Diseases, Fort Bragg, North Carolina, and Mrs. Muriel B. Stone, Thorndike Memorial Laboratory, Boston City Hospital, thread agglutinations were made on serums obtained during the acute and convalescent phases of the disease. The method employed has been previously described.

Confirmation of the diagnosis by serologic methods was attempted in 71 patients, 49 of whom had meningitis and the remaining 22 meningococcemia. The serums from 18 of the patients with meningitis and 5 with meningococcemia failed to show a significant rise in the agglutinin titer. Of these 23 cases, however, 19 were proved bacteriologically. The remaining cases (31 of meningitis and 17 of meningococcemia) all showed increases in titer of from twofold to eightfold. In this group, 4 cases of meningitis and 9 of meningococcemia were not confirmed bacteriologically. Only 2 of the 22 tested cases of meningococcemia had neither bacteriologic nor serologic confirmation. It would appear, using bacteriologic and serologic criteria as indexes of specific infection, that the group of cases herein reported are quite consistently instances of meningococcic infection.

7. Thomas, Lewis, Smith, H. W., and Dingle, John H. Investigation of Meningococcal Infection. II. Immunological Aspects. *J. Clin. Investigation* 22: 361 (May) 1943.

**A Strange Fact**—Each generation in America and England, or Germany and Japan may not produce more than enough cerebral cortexes able to deal effectively and quickly with higher mathematics and the other basic intellectual operations that are needed to develop and maintain the great technology of the military or the civil industrial economy of our time. This is a strange and somewhat frightening fact. It seems possible that we may be on the way to the development in war and in peace of an economy which may demand more brains or the sort that can deal with the unequivocal manipulation of mathematical and other symbols than old Mother Biology sees fit to provide. Of course we have not reached this stage yet but we are near enough to it so that it is clear that we must not wantonly waste any high abilities in our educational system—Carmichael, Leonard. *Education and America's War Manpower Mobilization*. The *Tulanean* 17: 3 (June-July) 1943.

## MENINGOCOCCIC INFECTION IN AN ARMY CAMP

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AND

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During the period Jan. 1 to April 15, 1943, 68 patients with meningococcic infection were admitted to the Station Hospital at Camp Edwards, Massachusetts. Note that we do not say meningitis, for many of these patients were admitted before the stage of meningitis had been reached. It is essential to bear in mind that infection with the meningococcus is divided into three stages.

1. **Nasopharyngeal infection** or sometimes even tonsillitis clinically differing in no way from such conditions produced by other organisms.

2. **The stage of septicemia**. The patient may die in this stage after a few hours, the infection may be overcome by proper treatment before meningitis has developed or in mild infections may be overcome by the patient himself without treatment or the septicemia may progress in a few hours or in a day or two to meningitis. The last mentioned is the most common sequence of events.

3. **The stage of meningitis**.

In dealing with this epidemic two particular things were stressed: early diagnosis and a uniform plan of treatment. Ward officers were instructed to be suspicious of any patient admitted for upper respiratory infection who vomited or complained of headache and to do lumbar punctures on all such patients. Many of our patients with meningococcic infection were originally admitted to the wards reserved for upper respiratory diseases and usually these patients had no signs indicative of meningitis on admission. As soon as the diagnosis of meningococcic infection was made they were transferred to the contagious ward. Although one officer (H. S. L.) was in charge of this ward, many of the patients were admitted at night when the ward was in charge of some one else. Therefore all members of the medical service at various times took part in the initial treatment. To insure uniformity, a detailed schedule of treatment was posted in the ward.

#### SYMPTOMATOLOGY AND PHYSICAL FINDINGS

The onset was gradual in about half of the cases, sudden in the rest. It is impossible to correlate the severity of the subsequent disease with its early manifestations. Some patients had a rather violent onset and severe initial symptoms which subsided in twenty-four to forty-eight hours while others had mild symptoms on admission with severe symptoms appearing twelve to twenty-four hours afterward (under therapy) and continuing for several days.

The cardinal symptoms and signs most important in helping to arrive at a clinical diagnosis of meningococcic infection were headache, vomiting, chills and rash. We do not place stiff neck in the cardinal group as this was of great diagnostic value when present but usually did not appear until some time after the other signs and symptoms mentioned.

Accessory symptoms commonly noted were conjunctivitis, nasopharyngitis, sore throat, drowsiness with inability to concentrate, backache, myalgia, arthralgia, stupor, delirium or coma. Many complained of being very weak and out on their feet. Most of these

From Station Hospital, Camp Edwards, Massachusetts. Col. Charles E. Riley, commanding.

patients had a characteristic pallor and looked ill and toxic despite sometimes low temperatures and pulse rates. Sometimes those with the low temperatures on admission developed into the most severe cases. The admission temperatures varied between 97.6 and 105 F.

**Headache**—Of the cardinal diagnostic symptoms, headache was the most constant. It was present in all of the 68 cases and varied from moderately severe to excruciating. The headache was usually generalized, though more severe in the frontal and occipital areas. The patient's description of the headache was first the sensation of dullness and mild pain in the frontal and postocular areas accompanied by a stupid feeling and inability to concentrate, which developed in three or four hours to a severe, pounding, excruciating pain, worse than any the individual had ever before experienced. The headache was aggravated by sound, light and motion, also by heat and cold in the first twelve hours and later helped by cold. It lasted from four to eight days, slackening in severity on about the third day after treatment was begun.

**Vomiting**—This is the second most important cardinal symptom and is of considerable value in arousing suspicion of meningococcic infection, for in the ordinary upper respiratory infections which are so commonly confused with early meningococcic infection when one is dealing with large numbers of sick persons vomiting is uncommon. Vomiting was present as an early symptom in 48 of our cases—nausea alone in 8. The nausea appeared simultaneously with the early dull headache and increased in severity until vomiting started. It was projectile in 12 cases. After the first vomiting of undigested food the vomitus became watery and pale green.

**Chills**—Early chills were present in 57 cases. These varied from chilly sensations to severe generalized shivering, and chattering teeth.

**Rash**—The rash ranged from profuse petechiae and purpura to faint pink macules. A rather insignificant appearing macular rash is just as important from a diagnostic point of view as purpura. In only 9 cases was there no rash. There were petechiae in 47. These varied from isolated petechiae on the extremities to a generalized eruption over the trunk and extremities. In 7 cases conjunctival petechiae were found. In 1 case the only evidence of vascular injury on admission was one petechia in the left conjunctiva. There were large purpuric spots in 39 cases. In no case did large purpura appear alone, but in combination with small petechiae. Petechiae often coalesced in a few hours to form a large purpuric spot. Purpuric spots were present most often on the distal parts of the extremities, occasionally on the trunk. The most common location on the trunk was the subaxillary region. One patient had profuse purpura of the extremities only, which coalesced so that there was practically no normal appearing skin visible. In 8 cases the rash was macular or blotchy and suggested erythema multiforme.

Thirteen cases presented meningococcemia only, with no signs of central nervous system irritation except headache. Headache in such cases is probably caused by edema of the brain, for the first reaction of the central nervous system to the meningococcus toxin is vascular. Before there has been any actual bacterial invasion of the meninges. These patients had had symptoms of ordinary nasopharyngitis and slight headache in the field and were sent to the hospital because of petechial or purpuric rash. Some were admitted to the hospital

wards with nasopharyngitis and developed a rash after they had been in a day or two. One such case is noteworthy. This soldier was admitted to a general medical ward with fever, swelling of the ankles and pain in the ankles and knees. Urinalysis done on admission showed albumin and many red blood cells. He was thought to have an acute glomerulonephritis and was so treated. One week later a maculopapular plaquelike rash appeared. A blood culture was taken and the meningococcus recovered.

**Abortive Cases**—These are probably not uncommon. There were two such in our series. On admission there were fever, headache, nasopharyngitis and vomiting. There were a few very questionable petechiae. Lumbar punctures showed normal spinal fluids. As these patients did not appear seriously sick and the diagnosis of meningococcic infection was, to say the least, very questionable, no treatment was started. They were apparently well on the next day. However, blood cultures taken on admission grew out meningococci in three days. Three subsequent blood cultures taken at three day intervals were negative. No specific treatment had been given. In a large army camp, when the carrier rate is high, there are probably many such cases.

**Mental Symptoms**—Stupor, coma or delirium was noted in 23 cases. Sixteen others showed slight confusion and disorientation. Ten cases showed mental excitation and apprehension. There were no major convulsions, but muscular twitchings were occasionally noted.

**Stiff Neck and Various Reflexes**—Stiff neck was present in 53 cases and the Brudzinski sign in 37. The Kernig sign was present in 44 cases, in 20 of these it was somewhat questionable. Babinski, Gordon and Oppenheim signs were questionable in most cases, with only 5 showing true reactions, hence these were of little value in diagnosis. The reflexes were exaggerated in some, absent in others. Herpes simplex was present in 5 cases.

**Complications**—There were 2 cases of unilateral arthritis of the knee joint. Both cases completely resolved in about two weeks without tapping or any treatment except physical therapy. Five cases developed ocular muscle paresis, 2 were transient and lasted only forty-eight hours, 1 lasted a week, and 2 recovered only after five weeks. One patient had moderate deafness due to involvement of the eighth nerve. This cleared up entirely, however, in eight days, quite contrary to the usual course when severe deafness occurs in meningitis. One patient had right facial palsy which lasted twelve days. There were no sequelae. All patients were discharged to duty in excellent condition.

**Severity**—Twenty-four cases were classified as mild, 33 as severe and 11 as very severe.

#### LABORATORY FINDINGS

**1 Blood**—(a) **White Count** The white count ranged from 7,000 to 48,000 with from 70 to 95 per cent polymorphonuclears.

There were 9 initial white counts under 10,000, 16 between 10,000 and 15,000, 13 between 15,000 and 20,000 and 30 over 20,000.

A low white count is of little value in ruling out meningococcic infection. A high count is of some value as confirmatory evidence when taken in connection with other findings.

(b) **Culture** Of 68 taken, 40 blood cultures were positive. This is a rather high percentage and is no

doubt accounted for by the fact that most cases were seen early. Septicemia is often transitory and is most likely to exist in the early stages of the disease. The cultures showed growth in many cases after twelve hours' incubation, while in a few growth was delayed for as long as two weeks. In 13 cases the organism could not be demonstrated either by smear or by culture from the spinal fluid but was recovered from the blood.

(c) **Blood Sugar** Blood sugar determinations were made in a few cases before intravenous dextrose was given and were found to be normal or increased. The range was from 106 to 174 mg. per hundred cubic centimeters.

2 **Spinal Fluid**—(a) **Appearance** The spinal fluid was clear in 31 of 62 fluids recovered. In 6 of our cases with mild, subacute or chronic meningococcemia, no lumbar puncture was done. When the cell count passed 500 the spinal fluid was opalescent, it was noticeably cloudy if the count passed 1,000.

(b) **Cell Count** This ranged from no cells to 23,700, depending on how far the infection had advanced before lumbar puncture. The polymorphonuclear cells varied from 20 to 100 per cent. It is interesting to note that those patients who remained severely ill the longest had less than 60 per cent polymorphonuclear cells in the spinal fluid.

(c) **Smear** Smears were positive for the meningococcus in only 38 out of 62 fluids studied. Some smears showed only a few extracellular organisms. Organisms were found occasionally in clear fluids with normal cell counts.

(d) **Culture** Cultures of the spinal fluid were positive in only 29 out of 62 fluids of which cultures were taken.

There were positive spinal fluid cultures, however, in 17 cases, when no organisms could be found by smear and when the blood culture was negative.

(e) **Spinal Fluid Sugar** Quantitative sugar determinations were done in 47 cases. Twenty-two were decreased, some below reading level.

(f) **Globulin** The globulin was increased in 24 of 47 fluids examined.

3 **Typing of Recovered Organism** (57 cases)<sup>1</sup>—Type I, 54, type II A, 2, type X, 1.

Bacteriologic diagnosis may be made by smears or culture from the spinal fluid or by culture from the blood or purpuric skin lesions. We did not use the last mentioned method. If the organism is not recovered by one method it probably will be recovered by one of the others. As may be seen from our figures, smears from the spinal fluid or blood cultures were about equal in giving positive results, positive cultures from the spinal fluid were not quite so frequent. The organism was not recovered from 11 cases which were undoubtedly meningococcic infection as shown by symptoms, petechiae, cloudy spinal fluids or all combined. As early treatment once clinical diagnosis was established, was our purpose no effort was made to establish positive bacteriologic diagnosis by delaying treatment.

The large number of clear spinal fluids is decidedly worthy of note, particularly those clear fluids from which organisms were recovered either by smear or by culture. A clear spinal fluid by no means rules out beginning meningitis due to the meningococcus.

## TREATMENT

In no disease is prompt, energetic treatment more necessary. The aim should be to establish diagnosis and start treatment before meningitis has developed. This is possible in many cases. Without treatment, progression from a beginning septicemia, which in some cases produces so few symptoms that it can be easily overlooked, to a purulent meningitis with coma may be very rapid. With vigorous treatment before the meningococcus has invaded the meninges, or at the beginning of invasion, in ordinary cases there is rapid and spectacular cure. For these reasons it is a mistake to withhold treatment until a definite bacteriologic diagnosis has been made, if the clinical signs are those of early meningococcic infection (headache, vomiting, rash) treatment should be begun at once.

This schedule embodies our routine procedure.

1 Lumbar puncture, requesting white blood cell count, differential, smear, culture, sugar and globulin.

2 Blood culture, white blood cell count, differential.

3 Diagnosis of meningitis on finding of cloudy fluid or positive smear or both.

4 If patient appears clinically to have meningitis or meningococcic septicemia, start on intravenous therapy regardless of appearance of spinal fluid or laboratory reports. This should be done immediately after spinal tap and blood culture are done.

5 **Treatment** (this routine should be adhered to in detail). Sodium sulfadiazine 5 Gm. in 100 cc. of distilled water intravenously (2 ampules\* of each) followed by 1,000 cc. of 5 per cent dextrose in isotonic solution of sodium chloride. Eight hours later give 2.5 Gm. of sodium sulfadiazine intravenously and follow with 1,000 cc. of 5 per cent dextrose in isotonic solution of sodium chloride. Repeat eight hours later. In cases of stupor or in presence of nausea or vomiting, intravenous therapy to be continued every eight hours in the same manner. If condition is satisfactory, to be given eight hours after last intravenous dose, 1.5 Gm. by mouth and repeated every four hours. Then changed to 1.5 Gm. every six hours two days after temperature recedes.

6 If patient shows evidence of circulatory shock or failure, give 1,500 cc. of 5 per cent dextrose in isotonic solution of sodium chloride intravenously and 2 cc. of adrenal cortex extract by hypodermic as often as may be required and treat for shock. When pulse and blood pressure respond and stabilize, discontinue. Sodium chloride  $\frac{1}{2}$  teaspoon by mouth every four hours to be given in conjunction with foregoing treatment. Blood pressure every three hours.

7 **Orders** Daily sulfonamide levels. Daily urinalysis. Intake 3,000 cc. or better (sulfadiazine), 1,500 cc. (sulfanilamide). Blood pressure daily for three days. Intake and output chart. In cases showing mild periodic temperature elevations during convalescence, a blood culture is to be taken three days after discontinuing sulfonamide drug and patient is to be held in ward until read three days later. Throat cultures to be taken on fifth day after admission and every third day until two negative cultures have been obtained.

8 **Serum** To be used only in following conditions: (1) fulminating cases in conjunction with sulfonamide drugs; (2) intolerance to all sulfonamide drugs.

## SULFONAMIDE DRUGS

Good results have been reported with all four sulfonamides. Sulfadiazine was used in all our cases and at the moment it seems to be the drug of choice.

## METHOD OF ADMINISTRATION

It is commonly advised that oral administration be used as a routine and intravenous only for those who are in coma or who cannot retain the drug by mouth. We do not agree with this and have treated all patients intravenously for the first twenty-four hours with the exception of a few very mild cases of subacute or chronic meningococcemia. There are no reasons for this.

1 Typing was done for us under the direction of Dr. J. Howard Mueller, professor of bacteriology and immunology at the Harvard Medical School.

1 Most patients, while not vomiting continuously, will vomit occasionally and in this way lose one or two valuable doses in the first twenty-four hours, just at the time when they are in most need of the drug. Particularly in dealing with large numbers of patients it is very desirable to know that in the early stages each

TABLE 1—Sulfadiazine Blood Levels Taken at Varying Times After Initial 5 Gram Intravenous Dose

Case No	10 Minutes	2 Hours	6 Hours
1	13.2	11.2	11.0
2	17.5	14.0	11.6
3	13.8	8.8	8.4
4	Not taken	10.4	9.3
5	13.5	10.6	7.4
6	19.8	11.0	Not taken
7	21.0	13.2	13.3
8	15.6	12.1	8.7
9	25.9	13.4	11.3
10	12.6	9.1	22.1
11	14.6	12.4	10.4
12	9.2	11.7	7.3

one has received into his blood stream a large amount of the drug and that there is no guesswork about it.

2 When sulfadiazine is absorbed quickly by the intravenous method of administration, a high blood concentration is reached at once in all instances irrespective of individual variations in absorption. It has been said that sulfadiazine is so rapidly excreted that a more constant level is maintained by oral than by intravenous administration. This may to a certain extent be true but is unimportant from a practical point of view if the intervals between intravenous doses are not too long. A twelve hour interval is commonly recommended. We thought this interval too long and felt that if it was used the blood concentration before the next dose would be too low. We therefore adopted an eight hour interval as routine. Table 1 shows the blood concentration of sulfadiazine at ten minute, two hour and six hour intervals after the initial 5 Gm dose. In severe cases, in which it is very desirable to be sure that a continuous high level is maintained during the first twenty-four hours of treatment, it is our practice to determine the blood level four hours after the initial dose and, if it is not high enough, to give the next dose immediately instead of waiting the usual eight hours. This is rarely necessary.

TABLE 2—Blood Concentration of Sulfadiazine After Second Dose

Case No	Blood Level	Time After Administration
1	13.5	8 hours
2	Below reading	8 hours
3	13.9	6 hours
4	12.9	7 hours
5	14.8	7 hours
6	11.0	8 hours
7	11.3	8 hours
8	11.4	6 hours
9	8.1	8 hours

It may be seen from the table that there is after a 5 Gm intravenous dose an initial high level, but not perhaps as high as one would expect after such a large dose. As sulfadiazine is rapidly excreted, the blood level diminishes after a few hours but not rapidly enough to be of practical importance. We feel that an initial high blood concentration, even if it is of comparatively short duration, is of distinct benefit. The blood level keeps up well after the second intravenous dose (2.5 Gm).

**Optimum Blood Concentration**—We do not know what the optimum blood concentration is but do not like to see it fall below 8 mg per hundred cubic centimeters. Table 3 shows what the daily blood concentrations of 10 average cases were while on mouth therapy after the initial three intravenous doses. The oral dose used to attain these levels was 1.5 Gm every four hours (9 Gm daily). One Gm every four hours is not enough to maintain what we consider an adequate blood level. We determined spinal fluid levels on no patients, as we do not believe this is necessary or desirable if a reasonably high blood level is maintained.

As may be seen, there is considerable variation in these levels. They were taken at varying times from the last dose of drug and it seemed likely that this was an important cause of the variation. In an attempt to settle this point, for some time we had the technician who took the blood note on the laboratory slip the time elapsed since the last dose of drug. There was no constant relationship; there were many high levels as long as eight hours after the last dose, low levels when the drug had been given only two or three hours previously. It seems likely that individual variation in rapidity of excretion, possibly associated with the amount of fluid intake, is more important. It has seemed to us that the level is likely to be lower during the acute stages of the disease, when meningococci are

TABLE 3—Blood Levels in Ten Average Cases While on Oral Therapy

Case					
1	12.7	11.3	9.9	9.7	9.7
2	6.1	12.4	11.4	8.3	9.3
3	8.0	8.8	10.7	8.8	7.7
4	9.2	10.3	19.0	12.7	12.8
5	12.9	12.7	13.3	11.0	10.0
6	13.3	14.8	11.2	11.3	7.1
7	11.6	8.3	12.8	14.4	15.6
8	11.9	11.6	15.0	9.6	10.8
9	12.9	9.3	9.1	12.0	10.5
10	11.2	15.9	9.5	8.3	8.8

present in the blood and spinal fluid, than in the later stages, when they are not.

The duration of drug treatment averaged about eleven days, the total amount of drug taken was between 60 and 70 Gm. In most cases the temperature came down to normal in about three days. Two days after the temperature became normal the dosage of sulfadiazine was reduced to 1.5 Gm every six hours. Treatment was continued for a week after the temperature had become normal. In only a few cases were second lumbar punctures done, the criterion of cure was the condition of the patient.

#### SULFADIAZINE REACTIONS

Eight patients had microscopic hematuria, 7 macroscopic hematuria, 3 drug fever, 4 renal colic, 1 a skin eruption. These reactions were not serious and were of short duration. When there was macroscopic hematuria we changed to sulfanilamide.

#### SERUM

It is our belief that, with the possible exceptions that have been noted, serum has now little place in the treatment of meningococcic infection. None of our patients received it.

#### FLUID INTAKE

It is common knowledge that with sulfadiazine therapy a high fluid intake is of the utmost importance. Immediately following each of the three intravenous doses of sulfadiazine which were given in the first twenty-four



hours, 1 000 cc of 5 per cent dextrose in saline solution was given intravenously. Thereafter, during oral treatment the daily fluid intake was kept at 3 000 cc or over and intake and output were noted on a special chart attached to the wall.

#### SYMPTOMATIC TREATMENT

Headache is the chief symptom which needs attention and during the first few days may be very severe. It should be treated with morphine, codeine, acetylsalicylic acid or ice bags are of little avail.

#### CIRCULATORY COLLAPSE

Three patients had extreme circulatory collapse, and these are of such interest that detailed reports will be given.

CASE 1—A C, admitted at about 10 a. m. on Feb. 27, 1943 had an extensive purpuric rash a temperature of 105.6 F and was in coma. His spinal fluid was clear, had a cell count of 3 sugar 86 mg per hundred cubic centimeters, no increase of globulin, no organisms found on smear. His blood culture (reported later) showed a heavy growth of meningococci. He was given the usual initial treatment. In the afternoon it appeared that he was not doing well. His respiration was labored and there were more purpuric spots. His pulse was very weak, his blood pressure 70/60 in the beginning of the afternoon and finally was so low that it could not be taken. He was given more intravenous sulfadiazine and dextrose and saline solution following which his pulse became somewhat better but soon was imperceptible again. He was then given 2 cc of adrenal cortex extract subcutaneously. In a short time the pulse could be obtained and the blood pressure, which could not be taken before, rose to 50 systolic. He was given several more doses of extract and the blood pressure gradually rose until the next day it was 105/70. He was given two more doses of adrenal cortex extract at twelve hour intervals  $\frac{1}{2}$  teaspoon of common salt by mouth every four hours and the intravenous sulfadiazine was continued. He made an uneventful recovery.

CASE 2—R S, who was admitted on March 4, 1943, was obviously a very sick man, although his temperature was only 100 F. He was an ashen gray, he had moderate numbers of small skin petechiae, his pulse and blood pressure were unobtainable. His mentality, however was clear and alert. His spinal fluid was clear, with a cell count of 7, sugar 102 mg per hundred cubic centimeters, no increase of globulin and no organisms. Cultures of the spinal fluid and blood (reported later) yielded meningococci. He was treated in the same way as patient 1 and made an uneventful recovery.

CASE 3 (similar to case 1)

These men were in a state closely resembling surgical shock. They were treated with adrenal cortex extract, salt and dextrose on the theory that they had temporary adrenal failure, which is not uncommon in severe infections. There is no proof that this was so. However, the treatment worked. There is no reason for believing that they had the Waterhouse-Friderichsen syndrome with adrenal hemorrhage, which can be diagnosed with certainty only at autopsy. If there had been adrenal hemorrhage it does not seem likely that the presumed adrenal insufficiency could have been corrected so quickly.

We regret that we did not obtain blood sugar and chloride determinations. If we have any more such cases we intend to use blood plasma.

#### MORTALITY

In the reported series of 68 consecutive cases of meningococcic infection extending from Jan. 1, 1943 to April 15, 1943 there was no mortality.<sup>2</sup>

#### SUMMARY AND CONCLUSIONS

1 It is possible to diagnose early meningococcic infection with reasonable accuracy in a high proportion of cases by clinical means alone.

2 The four cardinal signs and symptoms are headache, vomiting, chill and rash.

3 Early treatment is of the utmost importance. It should be begun without waiting for bacteriologic diagnosis.

4 Of 62 cases in which spinal puncture was done, the spinal fluid was clear in 31. Organisms were frequently recovered from clear fluids.

5 Thirteen of 68 patients had meningococcemia only, with no meningitis.

6 Positive blood cultures were obtained in 40 of 68 cases.

7 In 11 undoubted cases the organism could not be recovered either from the blood or from the spinal fluid.

8 Intravenous treatment with sulfadiazine as a routine is recommended for the first twenty-four hours.

9 In 68 consecutive cases the mortality was zero.

## REFRIGERATION ANESTHESIA IN AMPUTATIONS

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This paper comprises a critical analysis of the literature on refrigeration anesthesia for amputations based on personal experience. To the 101 cases reported by Allen, Crossman and others<sup>1</sup> we add observations on 17 cases of our own, eight amputations for peripheral vascular disease and nine amputations for trauma.

What is meant by "refrigeration"? It is the chilling of tissues. It is not freezing. Freezing damages tissues as in frostbite. Refrigeration does not. Water freezes at 0 C (32 F). Blood and tissues freeze at a slightly lower level. Refrigerating a limb with cracked ice or ice water lowers the temperature to somewhere between 0.5 and 5 above freezing. With a mechanical device the exact degree of refrigeration may be controlled. Hence there is a definite margin of safety. In no instance have we seen the tissues damaged.

In an effort to determine the exact temperatures deep in the tissues in various locations of the refrigerated extremity with and without the use of a tourniquet, internal temperature measurements have been made in two most recent amputation cases. Dr. S. L. Osborn of the Physiology Department of the Northwestern University Medical School made these readings with an L & N potentiometer, hypodermic type No. 1, Thermocouple.

CASE 1—Lower extremity refrigerated from the middle of the thigh to the toes for two and one-half weeks because of gangrene the result of crushing injury to femoral artery. At

Read before the Chicago Surgical Society in February 1943 and the Minneapolis Surgical Society in May 1943.

1. Allen F. M., Crossman L. W., Hurley Vincent, Warden C. E., and Ruggiero W. F. Refrigeration Anesthesia. *J. Intern. College of Surgeons* 5: 125 (March-April) 1942. Crossman L. W., Allen F. M., Hurley Vincent, Ruggiero W. F., and Warden C. E. Refrigeration Anesthesia. *Anesth. & Analg.* 21: 2-124 (Sept-Oct) 1942. Jackson G. R. General Anesthesia by Cooling. *Proc. Soc. Exper. Biol. & Med.* 42: 186 (Oct.) 1939. Tamm A. L., Nichols W. W., and Warden C. E. Anesthesia for Military Needs. *War Med.* 2: 789 (Nov.) 1941. Plunk N. H. Modern Concepts of Refrigeration Anesthesia. *Arch. Surg.* 74: 22-46 (Jan-Feb.) 1943. Mock H. E., Jr. Refrigeration Anesthesia for Skin Grafting. *J. A. M. A.* 122: 697-698 (June 2) 1943.

<sup>2</sup> Since this was written there have been 37 additional cases making a total of 105 with no mortality.

the end of this period a tourniquet was applied about the middle of the thigh and the entire extremity then refrigerated with cracked ice for two and one-half hours followed by amputation.

Internal temperature measurements after two and one-half weeks of refrigeration with ice bags without tourniquet and similar measurements after two hours of refrigeration with cracked ice with tourniquet are shown in table 1.

TABLE 1—Temperatures in Case 1

Region Measured	Millivolts	Temperature, F
Refrigeration without tourniquet for 2½ weeks		
Medial aspect of lower ¼ of thigh, 3 inches deep	0.540	34.3
Lateral surface of lower ¼ of lower leg, 1 inch deep	0.169	32.7
Medial aspect of mid lower leg 2 inches deep	0.161	32.7
Refrigeration with tourniquet for 2 hours		
Medial aspect of lower thigh, 3 inches deep	0.231	33.0
Lateral aspect of lower thigh, 3 inches deep	0.344	33.5

CASE 2—Arteriosclerotic gangrene of foot and ankle with infection with lower leg refrigerated for seventy-two hours by means of ice bags without tourniquet followed by refrigeration with cracked ice for two and one-half hours with tourniquet placed about the lower third of the thigh, followed by amputation just above the condyles. Temperature measurements were made at the end of forty-eight hours and again two hours later after application of tourniquet and refrigeration with cracked ice. Table 2 shows these temperature measurements.

How does lowering the temperature to this level produce anesthesia? It does so by stopping cellular metabolic processes. It puts the cells at absolute rest in a manner comparable to hibernation. Inactive cells will not respond to stimuli. Prior to the introduction of this method, all anesthetics in common use were nerve anesthetics. Refrigeration anesthesia acts on all tissues. It produces an anesthesia of protoplasm.

The use of reduced temperatures has long been known, but it was not until the past decade that refrigeration has been used for anesthesia. About twelve years ago Frederick Allen<sup>2</sup> of New York, seeking an experimental approach to the problem of diabetic gangrene, approximated conditions of inadequate circulation by depriving tissues of all blood supply with a tourniquet. The essential finding in this work was that changes in tissue metabolism by lowered temperatures prolonged the survival period from minutes or a few hours at elevated temperatures to as long as fifty-four hours at a temperature near freezing. Brooks and Duncan<sup>3</sup> showed that the survival period of constricted rat tails at low temperatures was above ninety-six hours. Temple Fay and his co-workers<sup>4</sup> brought out some astounding physiologic facts regarding local and general refrigeration of the body in the treatment of malignancy and infection. They also must be credited with the early development of mechanical means of applying refrigeration.

As an outgrowth of these experimental studies, Frederick Allen interested a group of surgeons at the New York City Hospital to apply refrigeration clinically in cases of peripheral vascular disease, with or

without diabetes, requiring amputation because of gangrene. This hospital was an ideal one for such a study because it was the dumping ground for all the other city hospitals, receiving many of the elderly, chronically ill, patients that would fall into this treatment group. Crossman, Ruggiero, Hurley, and Allen<sup>5</sup> analyzed their results in 101 amputations with refrigeration anesthesia. The mortality rate in this series was 15 per cent. McKittrick states that the mortality rate in amputation for diabetic gangrene ranges from 13 per cent to 80 per cent. Considering only the diabetic cases in the Crossman series, 10 deaths out of 47 patients with an average age of 65 years, the mortality rate rises to 21 per cent. For these men to approach the lower mortality figure, using unselected cases from an exceedingly poor risk group, is noteworthy. It speaks well for their ability and for the methods used.

In our 8 cases of amputation for peripheral vascular disease there were two deaths.

The first of these patients, a white man aged 78 with diabetes, had an amputation below the knee under refrigeration anesthesia for extensive gangrene of the foot and lower third of the leg. Gas gangrene developed in the stump but was controlled with refrigeration, x-rays, gas bacillus antiserum and sulfonamide drugs. A week later the leg was reamputated above the knee. The stump was healing and it was felt that the patient was recovering when, on the eighth postoperative day, he died suddenly of an acute coronary thrombosis. Autopsy confirmed the cause of death.

The second death was that of a man aged 76 on whom we had performed a low thigh amputation of the left gangrenous leg under refrigeration anesthesia six months previously. The gangrene was due to a pronounced arteriosclerosis which involved the right lower extremity to a lesser degree. At that time the threatened gangrene in the right foot cleared up under a short period of partial refrigeration (chilling) and the use of antispasmodics. At the end of six months the patient returned to the hospital with his right foot gangrenous and infected. His temperature was 102 F. He was in very poor condition. This leg was refrigerated without a tourniquet for three days. During that period he was given a blood transfusion, and efforts otherwise were made to improve his condition. The patient consented to an amputation "if we would freeze it and give him some whisky." A low thigh amputation was done under refrigeration anesthesia. Twenty-four hours later gas bacillus infection developed in the stump.

TABLE 2—Temperatures in Case 2

Region Measured	Millivolts	Temperature F
Refrigeration without tourniquet for 7 days		
Medial aspect upper ¼ calf, 3 inches deep	0.073	32.3
Lateral as above 3 inches deep	0.087	32.5
Lateral aspect 3 inches above malleolus 2 inches deep	0.071	32.3
Medial aspect of middle of leg, 2 inches deep	0.082	32.3
Refrigeration with tourniquet for 2 hours		
Medial aspect upper ¼ calf 3 inches deep	0.022	32.1
Lateral aspect calf 2 inches deep	0.021	32.1
Medial aspect lower ¼ of leg 2 inches deep	0.009	32.0
Lateral aspect 3 inches above malleolus 2 inches deep	0.018	32.0

This was treated in the same manner as the infection in the first fatal case. The local gas bacillus infection subsided but the patient developed multiple infected thrombi with small areas of gangrene on his penis, scrotum, left hip and back. He died apparently from sepsis sixteen days after amputation. Autopsy was not obtained.

We have had no deaths in the amputations for trauma.

<sup>2</sup> Allen, F. M. The Tourniquet and Local Asphyxia. *Am J Surg* 41: 192-200 (Aug.) 1938. Experiments Concerning Ligation and Refrigeration in Relation to Local Intoxication and Infection. *Surg., Gynec. & Obst.* 68: 1047 (June) 1939. Surgical Consideration of Temperature in Ligated Limbs. *Am J Surg* 45: 459 (Sept.) 1939. Reduced Temperatures in Surgery. *I. Surg.* 45: 225 (May) 1941. *II. Experiments on Pelvic and Reduced Temperatures in Surgery.* *III. Experiments on Pelvic and Reduced Temperatures in Surgery with Especial Reference to Traumatic and Malignant Surgery.* *ibid.* 55: 451 (March) 1942. Refrigeration Anesthesia for Limb Operations. *Anesthesiology* 4: 12-16 (Jan.) 1943.

<sup>3</sup> Brooks, Barney, and Duncan, G. W. Effects of Temperature on Survival of Anemic Tissue. *Ann Surg* 112: 130-137 (July) 1940.

<sup>4</sup> Fay, Temple, and Henry, G. C. Correlation of Body Segmental Temperature and Its Relation to the Location of Carcinomatous Metastases. *Surg. Gynec. & Obst.* 66: 512-524 (Feb. No. 2A) 1938.

<sup>5</sup> Crossman, I. W., Ruggiero, W. F., Hurley, Vincent, and Allen, F. M. Reduced Temperatures in Surgery. II. Amputation for Peripheral Vascular Disease. *Arch Surg* 14: 139 (Jan.) 1942.



The senior author's interest in this method was aroused in June 1940 at a conference of the Committee on Amputations of the Council on Physical Therapy of the American Medical Association with Drs. Allen, Crossman and Ruggiero in which the latter three gave a complete report of their methods and results. Immediately after this conference he visited these men in New York and observed their cases and witnessed an amputation under refrigeration anesthesia. The same summer the junior author spent some time with them studying their clinical and experimental work. They allowed him to assist at one amputation to learn their technique. We used refrigeration anesthesia for several amputations but we were still looking for the badly traumatized extremity to treat in this manner when the report of McElvenny's<sup>6</sup> outstanding case of bilateral high thigh traumatic amputation was published. A more classic illustration of the value of this treatment as applied to trauma could not be found.

The first step in producing refrigeration anesthesia is the application of a tourniquet. Without it the circulating blood in the extremity would prevent complete refrigeration. The use of a tourniquet is one of the great controversies in medicine. Most objections center about three points: the local asphyxia of the tissues distal to the tourniquet, the damage to the tissues compressed by the tourniquet and the shock produced by the release of the tourniquet.

While there has been insufficient investigation to establish or refute these objections definitely, animal experiments show that bloodless extremities can survive twelve to fifteen hours at room temperature without necrosis. Crossman, Allen and their co-workers report one badly ulcerated human leg that had a tourniquet applied for six hours without apparent damage. Several days later this leg was amputated and pathologic examination likewise failed to demonstrate any damage from the six hours of asphyxia. Direct pressure does injure tissues. The amount of damage depends on the tension, the elasticity and the width of the tourniquet. Naturally only sufficient tension should be applied to stop the flow of blood. Elastic materials are less harmful than cords or other materials that will not expand. Except in the arm, where there are many nerves without much tissue padding, a narrow zone of constriction is preferable. Serious systemic shock can be produced by the release of a tourniquet that has rendered large masses of tissue bloodless for a long time. The histotoxins that form in asphyxiated tissues during the usual time a tourniquet is in place are insufficient to do this. Badly traumatized tissues that have impaired local resistance are an exception. Here a tourniquet must be used guardedly unless it is in conjunction with refrigeration. Reduced temperatures obviate all the objections to tourniquets because the compressed or asphyxiated cells are at rest and not throwing off waste products.

During the early days of refrigeration the tourniquet was applied 4 to 6 inches above the site of election even in leg amputations. Now there is no hesitation whatever in placing the tourniquet about the thigh where complete control of bleeding can be obtained. This level may be as much as 18 inches above the site of amputation. No detrimental effects will be observed in the stump if the refrigeration has been carried 3 to 4 inches above the tourniquet. Refrigeration above the site of the tourniquet is imperative.

There are four generally accepted measures for producing refrigeration: immersion in ice water, applying pure gum rubber ice bags, packing in cracked ice and mechanical means. The first two are limited in their use and therefore not entirely satisfactory. Mechanical methods are no doubt the best because of cleanliness, ease of application, more rapid refrigeration and maintenance of desired temperature level with thermostatic control. However, their cost is prohibitive to the average surgeon who would rarely have occasion to use it. All our patients were refrigerated with cracked ice, first, because we did not wish to invest in a machine until we were satisfied with the method, and later because we decided to continue with this type of refrigeration in order to establish its feasibility for the surgeon with the occasional case.

Our experience has corroborated Allen's findings as regards the condition of the tissues seen in stumps of legs amputated under refrigeration anesthesia. The skin is blanched but fresh. The muscles are bright red and have a fresh appearance. The blood vessels are wide open and when the tourniquet is removed fresh red blood flows freely from them, indicating the absence of all thrombosis. As stated by Allen and as observed by all of us who have used this method, the tissues have the appearance of a leg of beef which has hung in a refrigerator for days.

The length of time required for complete through and through anesthesia depends on the depth of the tissues. An emaciated shin may require only one hour, while a thick thigh may require as long as five hours. There is no test to determine this. Using the foregoing range as a rough measuring rod, we have refrigerated most of our patients two and one-half to three hours and obtained excellent anesthesia. On almost every occasion the sciatic nerve has been picked up, crushed with an artery forceps, pulled down, injected with alcohol, and then cut without the patient showing the least change in pulse, blood pressure or respiration and without uttering the least complaint of pain. It is hard to believe this statement unless one has actually seen it happen.

On the patient's return from the operating room his first request is usually for food although one patient immediately phoned his brother, kidding him about the simplicity of losing a leg. This is offered as evidence that the operation was not an ordeal, that there was no shock and that there was no pain. This complete absence of shock is of great value in any event but particularly in elderly debilitated patients who might not otherwise survive an operation or in severely traumatized patients when avoidance of additional shock is imperative.

Frequently diabetic or arteriosclerotic patients are so debilitated or so weakened by sepsis that they are poor operative risks. Many of them sorely in need of amputation are allowed to die because experience and judgment tell us that they could not possibly survive an operation. Others of them are so badly infected that their lives can be saved only by ridding them of the infected member. In these cases it has been our practice in the past to do a quick guillotine amputation in the calf, intending if the patient survives to do a finished amputation above the knee. Many of these stumps become infected frequently with the gas bacillus. In spite of all treatment the patient too often goes into diabetic coma or develops a generalized sepsis and dies. It is in such cases that the tourniquet and refrigeration are particularly valuable. The tourniquet stops the op-

6 McElvenny, R. L. The Effect of Cooling Traumatized and Infected Limbs. Surg., Gynec. & Obst. 73: 263 (Aug.) 1941.

tion, while refrigeration inhibits cellular metabolism and retards bacterial action. Preoperative treatment is then of some benefit. A finished amputation at a site of election can then be done without much fear of stump infection. The absence of shock gives the patient a better fighting chance.

If the infection is very severe and threatening the life of the patient, the tourniquet may be placed above the site of infection and the part refrigerated for hours or even days. Later, when the patient's condition is improved to the point of standing an amputation, a second tourniquet may be applied about the thigh and refrigeration carried this high for two and one-half or more hours and the extremity removed. If this technic is carried out, the first tourniquet must never be removed.

In badly crushed extremities, shock often of an extreme degree is present as the result of hemorrhage and absorption of histotoxins from the crushed tissues. When a limb is so crushed that amputation is inevitable, we advise the immediate application of a tourniquet and the packing of that limb in ice. This checks the shock and retards bacterial growth. It permits the surgeon a few hours to give the patient a transfusion and otherwise prepare him for amputation. Finally the amputation can be done without shock and without any other anesthetic agent whatever.

There are many cases of early gangrene of the toes or a part of the foot due to peripheral vascular disease, especially among diabetic patients, in which a high amputation seems entirely too radical to the patient or to his relatives and consent is refused. Partial refrigeration of such an extremity, that is, chilling it by surrounding it with ice bags without the use of a tourniquet, is of proved therapeutic value. The metabolism in the extremity is retarded to the point that the gangrene may be checked and collateral circulation may have time to become established. If infection is present this partial refrigeration inhibits bacterial growth, thus eliminating the spread of the infection. This method, especially when combined with the treatment of the peripheral vascular disease and the control of the diabetes if present, may prove of the greatest value in limiting many amputations to the local area of gangrene or at least to the lower extremity instead of the routine thigh amputation as practiced by the majority.

We have had 1 case, and the senior author in consultation with Dr. E. H. Tannehill has had a second case in which gangrene developed in the lower extremity following severe fractures of the pelvis with obliteration of the iliac or femoral vessels. The first patient was seen nine days after the injury, and the second twenty-eight hours afterward. Partial refrigeration was applied at once. In the first case amputation seemed inevitable near the hip. However, the entire process was held in abeyance in this lower extremity by packing it in ice bags, thus giving time for development of the collateral circulation. The refrigeration process was maintained for two weeks. With the development of collateral circulation it seemed for a time that the gangrene might be localized just above the ankle. Amputation was performed under refrigeration anesthesia 6 inches below the knee. The soft tissues were fresh and healthy except for the gastrocnemius muscle, which had a few areas resembling spoiled beef. A secondary gangrene developed in the posterior portion of the stump, which again was partially refrigerated for one week and then a second amputation was done just

above the knee. We all felt that the holding of the gangrenous process in abeyance allowed sufficient collateral circulation to form to prevent a high thigh amputation. In the second case the partial refrigeration of the entire lower extremity prevented the development of the typical black moist gangrene, so frequently fatal without early amputation, in an extremity deprived of all circulation by damage to the iliac and femoral vessels. This partial refrigeration was maintained for two and one-half weeks, during which time this patient recovered from a cerebral concussion, a severe chest injury, a ruptured urethra, an infected large hematoma of the left buttock and thigh and a very serious pneumonia. He was in an oxygen tent for ten days. It was our firm conviction that at no time during the first two weeks was this patient in condition to stand a thigh amputation. Furthermore, because of the loss of circulation in the right lower extremity, such a serious gangrene would have developed if the part had been left at room temperature or if hot applications had been applied, that an earlier amputation would have been imperative. Because of the refrigeration, this extremity at operation resembled a fresh leg of beef hung in a refrigerator. The line of demarcation of the gangrene developed at the junction of the lower and middle thirds of the thigh and was indicated by a slightly bluish pallor at this level. Following a midthigh amputation under refrigeration anesthesia two and one-half weeks after injury, the stump healed and the patient recovered in spite of a serious empyema which ruptured into a bronchus ten days after the amputation, necessitating a tracheotomy when the patient almost drowned in his own pus, and in spite of a rib resection to drain the empyema cavity. No case has so impressed us with the value of partial refrigeration followed by refrigeration anesthesia for the amputation.

#### TECHNIC

The technic of refrigeration anesthesia is essentially the same in all types of cases. One hour before anesthesia is started, ice bags are closely approximated to the skin at the level at which the tourniquet is to be applied. Care must be taken to have these ice bags in continuous contact with the skin, leaving no gaps between the bags. They should be applied with pressure, so it is preferable to bandage them to the leg. This procedure "numbs" the area and permits the tourniquet to be applied with a minimum of discomfort. The leg is first drained of blood by elevation and then the tourniquet is applied sufficiently tight to restrict the blood flow but not so tight as to cut into the skin or damage soft tissues. We use a length of soft rubber tube which is wrapped around the thigh twice and held firmly by two long stomach clamps. The handles of these clamps lie along the hip, thus allowing easy removal of the tourniquet later without disturbing the sterile field. After the tourniquet is applied, a rubber sheet is tied around the leg or thigh 3 to 4 inches above the level of the tourniquet. The rubber sheet extends from this level down beyond the foot. Recently we have been using a narrow inverted cradle to form a bin to support this sheet. The rubber trough is then filled with cracked ice, which is packed completely around the extremity. Three buckets of cracked ice are usually sufficient to obtain refrigeration for the amputation. The head of the patient's bed should be elevated on shock blocks so that the water that collects from the melting ice can be drained off at the foot of the bed rather than forming a pool under the patient. The

patient should be watched constantly to see that all parts of the leg are covered with ice the entire time, more ice being added as required.

Usually we give the patient a drink of whisky at the start of the refrigeration and may repeat it at the end of one and a half hours. This greatly helps to allay the apprehension that accompanies any amputation. A few of the patients have complained of pain from the tourniquet and although this is rare it may be necessary in such cases to give a hypodermic of morphine.

At the end of the time allotted for refrigeration, which depends on the thickness of the part being refrigerated the patient is taken to the operating room with the leg still packed in ice. Refrigeration anesthesia will last approximately one hour, so the ice is not removed until the last possible moment. After the surgeon is scrubbed the ice is removed by the nurse. During operation sponges should be soaked in cold saline solution rather than in the customary warm solution so as not to raise the temperature too quickly. For the same reason the operating lights are not turned on until the surgeon is ready to start the operation.

From this point on the amputation is carried out according to standard procedure. Although the original workers stated a definite preference for either an amputation in the lower third of the leg or a modified Calender supracondylar amputation in the thigh, both of which avoid large masses of muscle, we have also performed other types of amputations with equally satisfactory results. A minimum of operative trauma is the essential need here as in any surgical procedure. After all the large blood vessels have been ligated and the nerves treated, the tourniquet is released and further bleeding controlled. A tight closure of the stump is then made, although a small drain may be inserted if desired.

Allen and Crossman advocated the application of ice bags to the stump postoperatively. Ordinarily three ice bags were put on and one was removed each day thereafter. They served a dual purpose first, to lower the metabolic requirements of the stump until collateral circulation developed and, second, to inhibit bacterial growth until the stump was better able to take care of any infection that might be present. Chilling the stump also inhibits healing just as long as it is continued. The cut surfaces do not become agglutinated. Instead they weep serum, the drainage of which has a certain irrigating action. Whenever a severe infection exists in the amputated part, postoperative chilling of the stump is indicated. In our experience, however, using it in a clean case merely prolongs the healing time. With this step omitted, stumps amputated under refrigeration anesthesia heal at essentially the same rate as those amputated under spinal or inhalation anesthesia.

#### SUMMARY

In our experience a slight delay in healing has been the only disadvantage encountered when refrigeration anesthesia is used for amputations. Its advantages are many to overcome this objection. Postoperatively there is no pain, none of our patients have required an analgesic. There is no shock or other reaction to what is commonly considered a rather shocking operation. The blood pressure, pulse and respirations show no change during or after the operation. It permits surgery to be performed in what formerly were hopeless cases because of debility or septicemia. It lowers the incidence of stump infections in those limbs requiring amputation because of infection. It is of especially great

value for diabetic patients when the absence of any post-operative reaction allows the patient to carry on without missing a meal. The diet and insulin dosage do not have to be juggled.

In severe crushing injuries of an extremity or other injuries with complications necessitating amputation, refrigeration will inhibit infection and limit the absorption of histotoxins, thus helping to overcome shock, and will give time for infusions of plasma, blood or fluids and other necessary preparatory measures. With refrigeration the amputation may be delayed until life threatening associated injuries or complications have been conquered. Finally, under refrigeration anesthesia the extremity may be amputated at the selected site without further shocking the patient.

122 South Michigan Avenue

## SULFATHIAZOLE ERUPTIONS

SENSITIVITY INDUCED BY LOCAL THERAPY  
AND ELICITED BY ORAL MEDICATION

REPORT OF FOUR CASES WITH SOME  
ALLERGIC STUDIES

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PHILADELPHIA

Local sulfathiazole therapy is now a well established procedure in the treatment of superficial pyogenic disorders of the skin.<sup>1</sup> Most authors considered this to be a relatively innocuous type of treatment, but experience has indicated that unfavorable reactions, some of them quite severe, may occur.<sup>2</sup> This report details the types of reactions which have been described following local sulfathiazole therapy and also includes an account of 4 cases with allergic studies comprising our experiences with some of the more spectacular types of reactivity.

Sams and Capland<sup>2</sup> reported an example of recurrent contact dermatitis following repeated applications of sulfathiazole powder to the ears for a recurrent chronic dermatitis. Subsequent oral administration of the drug precipitated a severe dermatitis of the ears followed shortly by a widely disseminated eruption. A patch test with the sulfathiazole powder gave negative results.

Miller<sup>2</sup> lists 5 cases of contact dermatitis due to sulfathiazole. Two of these followed the application of a 50 per cent sulfathiazole ointment. They began as local papulovesicular eruptions which within one week spread to involve much of the cutaneous surface. One of the patients was given a patch test with the ointment,

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1. Linn E. S. Sulfanilamide in Glycerin in Local Treatment for Piodermia. *Arch. Dermat. & Syph.* 44: 257-258 (Aug.) 1941. Hrad O. Chemotherapy of Infectious Diseases of Skin. *Dermat. Wechschr.* 112: 190-194 (March 8) 1941. Pillbury D. M., Warlock V. S., Livingood C. S. and Nichols A. C. The Local Treatment of Pyogenic Cutaneous Infections with Sulfathiazole in an Emulsion Base. *Am. J. M. Sc.* 202: 808-822 (Dec.) 1941. Seigman A. J. Sulfathiazole Ointment in the Treatment of Impetigo. *Bull. M. T.* 1: 121 (Jan.) 1942. Winer L. H. and Strakosch E. A. The Value of Sulfathiazole Ointment in the Treatment of Pyogenic Infections of the Skin. *J. A. M. A.* 115: 221 (Jan. 17) 1942. Shaffer Bertram. The Use of the Sulfonamides in Dermatology. *Congress. Int. M. Soc. to be published.* Sams and Capland. Miller. Keeney. Pembroke. Chas. and Zeigler. The Robin on.

2. Sam W. M. and Capland J. E. Local Treatment with Sulfathiazole. *Arch. Dermat. & Syph.* 44: 257-258 (Aug.) 1941. Miller J. L. The Use of Sulfanilamide and Its Derivatives in Ointment Form. *Local Treatment of Cutaneous Diseases.* H. A. M. J. 10: 100-101 (Sept.) 1941. Robinson H. M. and Livingston H. M. The Local Use of Sulfathiazole in Dermatology. *South. M. J.* 34: 116-117 (Nov.) 1941.

but the result was negative. The other patient, two months later, was given 0.5 Gm (1 tablet) of sulfathiazole. A generalized eruption again appeared, but it began and was most severe at the site of the original application of the drug. Two other patients using 10 per cent sulfathiazole ointment suffered mild local dermatitis and another patient experienced a generalized scarlatiniform eruption without a local manifestation. All these cases were proved by a recurrence of the eruption when the sulfathiazole application was repeated.

The Robinsons<sup>2</sup> mentioned 2 cases of contact dermatitis following the local application of sulfathiazole but gave no details.

Livingood and Pillsbury<sup>3</sup> collected an interesting group of 12 cases all of which featured a widely disseminated eruption rapidly precipitated by the oral administration of small doses of sulfathiazole. This eruption began and was most severe at the sites of a preceding "sensitizing" application of sulfathiazole ointment. All these patients were treated originally for various types of dermatitis which were basically, in the opinion of the authors, allergic manifestations to various types of contactants but in which pyogenic infection played a secondary or subsidiary role.

Two cases of a nature similar to those of the aforementioned paper<sup>3</sup> were described by Cohen, Thomas and Kalisch.<sup>4</sup> In 1 of the cases there was a negative result to a patch test.

Weiner<sup>5</sup> described 4 cases of simple contact dermatitis due to sulfathiazole, all of which, however, were proved by patch testing.

Efforts to elucidate the allergic mechanisms in sulfonamide eruptions of the toxic or systemic variety, such as those which follow the usual oral administration of these drugs, have met with failure.<sup>6</sup> One would naturally expect this result, since similar attempts in cases of dermatitis medicamentosa due to other drugs have almost always been unsuccessful.<sup>7</sup>

These tests, in the case of the sulfonamides, have included the usual patch tests, scratch and intradermal tests, as well as passive transfer tests of the Prausnitz-Kustner type. Attempts to demonstrate specific sensitivity in human beings using sulfonamide azoprotein compounds have also failed,<sup>8</sup> although Wedum,<sup>9</sup> using antigenic groups of this nature, was able to transfer to and demonstrate sensitivity in guinea pigs. The latter apparently is similar to the experimental work of Rosenthal<sup>10</sup> with analogous types of phenolphthalein compounds.

Although the etiologic agent in most cases of allergic contact dermatitis is readily demonstrated by appropriate patch testing, this does not appear to be the case in

the majority of reports mentioned of "contact dermatitis" due to sulfathiazole.

Most authors were not able to demonstrate the presence of sulfathiazole in the blood following local application. Keeney and his associates<sup>11</sup> were able to find small amounts of this drug in the blood stream in only a small number of cases of infantile eczema in which large portions of the cutaneous surface were treated.

#### REPORT OF CASES

CASE 1—E. H., a housewife aged 28, white, on Nov 5, 1941 presented on the right hand a chronic, scaling, fissured and patchy dermatitis localized to the palm and thenar eminence, and also an acute vesiculopapular dermatitis on the paronychia regions of several fingers. This condition had been present recurrently since an attack of "athlete's foot" four and one-half years before.

Appropriate clinical, laboratory, allergic and roentgenologic studies revealed no abnormalities or evidence of foci of infection. Scrapings and cultures for fungi were negative. Several bacteriologic studies of the skin showed consistently pure cultures of hemolytic *Staphylococcus aureus*.

For three weekly intervals the patient was treated with x-rays (63 roentgens), sulfathiazole 5 per cent in cholesterinated petrolatum and *Staphylococcus ambotvroid*.<sup>12</sup> The latter was injected intracutaneously in a dosage of 0.1 cc of a 1:10 dilution. This resulted in tuberculin type reactions averaging 5 by 5 cm.

On the second week the eruption was a little worse, but when observed after the third week the process had become very acute and involved the left hand as well as the wrist on the right side.

All active treatment was stopped. The eruption showed gradual improvement, so that after two months (Jan 27, 1942) it finally subsided to its original degree of activity.

Subsequent attempts to desensitize the patient to *ambotvroid* in dilutions of 1:1,000 and later of 1:10,000 were each followed by increased activity of the process. After it was determined finally that a dilution of 1:20,000 could be well tolerated, increasing concentrations were injected. When the dilution of



Fig 1 (case 1)—Acute dermatitis precipitated by the ingestion of sulfathiazole, primary sensitization appeared as an exacerbation of the patient's original eruption due to sulfathiazole.

1:2,500 was reached, however, a flare-up in the eruption appeared, so that after two such attempts *ambotvroid* therapy was stopped permanently.

One week later sulfathiazole was prescribed for oral administration in a dosage of 1 Gm every six hours. After the first dose the patient noticed stinging, burning, increased redness, tenseness and swelling of both hands. Following a second dose the condition became greatly aggravated (fig 1). At the end

11 Keeney, E. L., Pembroke, R. H., Chatard, F. F., and Zeisler, J. M. Sulfathiazole Ointment in the Treatment of Cutaneous Infections. *J. A. M. A.* 117:1415-1417 (Oct 25) 1941.

12 The proprietary name of this preparation is *Staphylococcus Toxin* and Bacterial Antigen made from *Staphylococci* Combined (Squibb).

3 Livingood, C. S. and Pillsbury, D. M. Sulfathiazole in Eczematous Pyoderma: Sensitization Reaction to Successive Local and Oral Therapy, Report of Twelve Cases, *J. A. M. A.* 121:406-408 (Feb 6) 1943.

4 Cohen, M. H., Thomas, H. B., and Kalisch, A. C. Hypersensitivity Produced by the Topical Application of Sulfathiazole, *J. A. M. A.* 121:408-411 (Feb 6) 1943.

5 Weiner, A. L. Cutaneous Hypersensitivity to Topical Application of Sulfathiazole, *J. A. M. A.* 121:411-413 (Feb 6) 1943.

6 Goodman, M. H., and Levy, C. S. The Development of a Cutaneous Eruption (Toxicodermatosis), *J. A. M. A.* 109:1009-1011 (Sept 25) 1937. Loveman, A. B. and Simon, F. A. Fixed Eruption and Stomatitis Due to Sulfanilamide, *Arch. Dermat. & Syph.* 40:29-34 (July) 1939. Hageman and Blake.<sup>8</sup>

7 Abramowitz, E. W. Cardinal Points in the Diagnosis of Drug Eruptions, *M. Clin. North America* 22:1323-1331 (Sept) 1938. Shaffer, Bertram. Pemphigoid Eruption Associated with Hemorrhagic Nephritis Following Bismuth Therapy, *Arch. Dermat. & Syph.* to be published.

8 Hageman, P. O. and Blake, F. G. A Specific Febrile Reaction to Sulfanilamide Drug Fever, *J. A. M. A.* 109:642-646 (Aug 28) 1937.

9 Wedum, A. G. Immunologic Specificity of Sulfonamide Azoproteins, *J. Infect. Dis.* 70:173-179 (March-April) 1942.

10 Rosenthal, S. R. The Conjugation of Haptens in Vivo, Phenolphthalein, *J. Immunol.* 24:251-267 (March) 1938.

of twelve hours an intensely pruritic and widespread papular and urticarial eruption had appeared on the face, neck and upper extremities. Three days later the disseminate eruption had disappeared but it took six weeks (May 5) for the local process on the hands to subside. Mistaking the sulfathiazole ointment

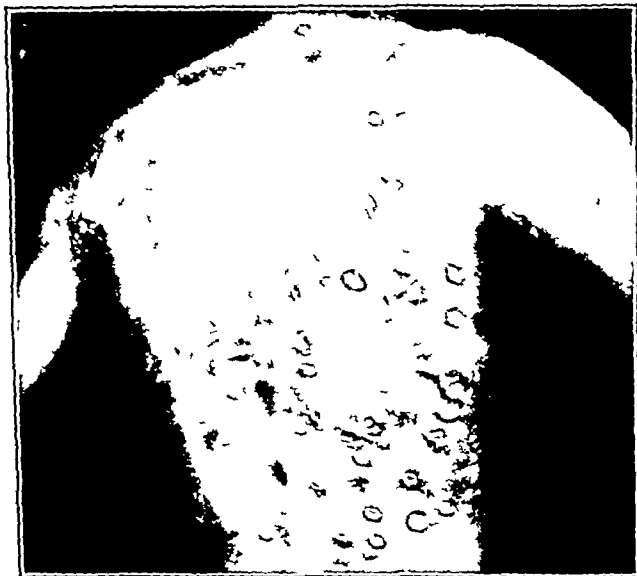


Fig 2 (case 2)—Pemphigoid eruption following the oral administration of a single tablet (0.5 Gm.) of sulfathiazole. The patient's original allergic response to the drug followed its local application.

for another preparation, the patient applied this salve to her hands on May 5. Within twenty-four hours an explosive generalized eruption developed resembling, but much more severe than the condition following the oral sulfathiazole. Approximately 40 per cent of the scalp hair was lost and vesicular and bullous lesions were present on the hands and feet. The eruption subsided only after four months of palliative treatment.

CASE 2—W. W., a Negro youth aged 21, was treated recurrently from Aug 2, 1938 to Sept 3, 1940 for a relapsing crusted, oozing, purulent eruption involving the scalp and ears. This condition was diagnosed as staphylococcal dermatitis and repeated studies showed pure cultures of hemolytic *Staphylococcus aureus*.

On Sept 14, 1940 he was admitted to the University Hospital because a widespread vesiculopurulent eruption had developed. One week later he was given sulfanilamide orally (2 Gm a day for six days). Because of inadequate response, sulfathiazole was then administered. After eight days on a dosage of 3 Gm a day the eruption disappeared completely.

On October 24, three days after an initial injection of staphylococcus ambotoxoid, a violent vesiculopustular eruption appeared on the bearded region, scalp and ears. With high dilutions of the ambotoxoid attempts were made to desensitize the patient but with no beneficial effect.

On December 13 he was given an ointment containing 1 per cent sulfathiazole. The eruption became aggravated almost immediately, and within three days a generalized vesiculopustular and bullous eruption was present. As the basis of this eruption was not recognized and also because of his satisfactory response to sulfathiazole orally on his previous admission, this drug was again administered on Jan 6, 1941 in a dosage of 0.5 Gm every six hours. That day his temperature rose to 102.6 F. Four days later he complained of acute colicky pains in the upper part of the abdomen and nausea. Sulfathiazole was stopped. The symptoms disappeared within twenty-four hours and the temperature fell to normal the next day. The eruption slowly over a period of three weeks disappeared (February 3).

Because some activity was noted on the scalp a few days later he was given an ointment containing 5 per cent sulfathiazole. Again the process flared up and became more extensive.

On September 14 the patient visited a private physician who gave him some sulfathiazole tablets. The abdominal symptoms, the rise of temperature and the generalized bullous eruption recurred within twenty-four hours. For a period of three months he was treated at another hospital before recovery ensued.

On Aug 7, 1942 he was admitted to the University Hospital because a fairly widespread vesiculopurulent eruption had again developed.

The next day he was given a single tablet (0.5 Gm.) of sulfathiazole orally. Within one-half hour his temperature rose to 103 F, the abdominal pains appeared and a generalized papular and urticarial eruption was present. Twenty-four hours later many of these lesions had become bullous and hemorrhagic (fig 2) and conjunctivitis, erosive stomatitis, gingivitis and pharyngitis were present. After one week improvement began. Four months later the eruption had disappeared and the patient was discharged. Repeated cultures of the lesions with rare exceptions were reported as pure growths of hemolytic *Staphylococcus aureus*.

CASE 3—J. D., a white man aged 27, had an eruption on the hands in September 1927. This recurred in 1939. He presented himself to the clinic of the department of dermatology and syphilology on May 18, 1942 because two weeks previously the process had flared up once more this time involving also the forearms.

Examination revealed an acute, diffuse weeping dermatitis on the sites mentioned. This was diagnosed as contact dermatitis with secondary pyogenic infection. Treatment was started with an ointment consisting of sulfathiazole 6 per cent, ichthammol 3 per cent in zinc oxide ointment.

No improvement was noted two days later. Sulfathiazole orally, 1 Gm every six hours, was prescribed and he was given an intracutaneous injection of staphylococcus ambotoxoid 0.1 cc.

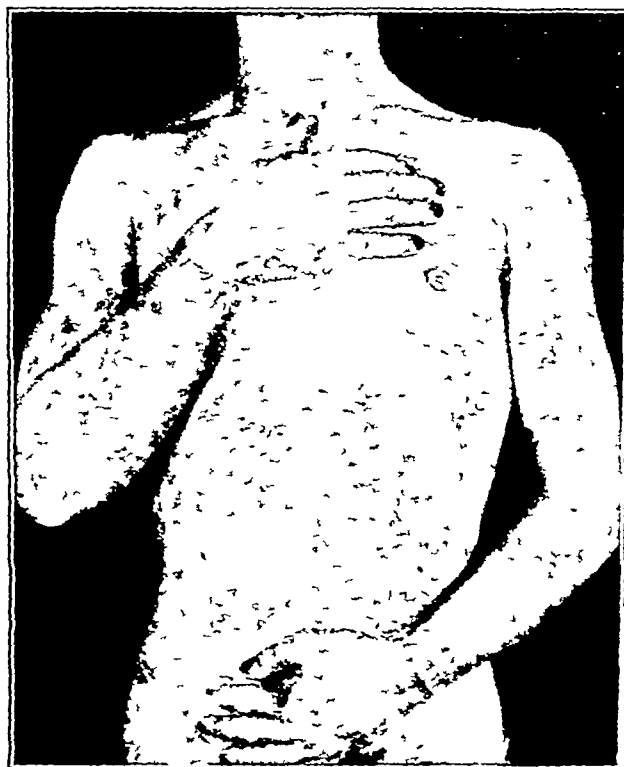


Fig 3 (case 3)—Widely disseminate eruption evoked by oral sulfathiazole medication. This eruption appeared five days after the original contact with sulfathiazole in the form of an ointment.

of a 1:1000 dilution. A few hours after the first dose of sulfathiazole the eruption became somewhat more active. After three days of this medication it had become generally disseminated (fig 3) and was associated with conjunctivitis and a temperature of 101.4 F.

Sulfathiazole was stopped. Two days later improvement began and within two weeks he was well (June 10).

CASE 4—C G, a white boy aged 16, on April 30, 1942 complained of a pustular type of acne vulgaris involving the face, back and upper part of the chest. He was treated over these regions by means of x-rays (50 roentgens, unfiltered,



Fig 4 (case 4)—Pustular exacerbation of acne vulgaris following oral sulfathiazole medication. The acneiform flare up appeared only at the sites at which a sulfathiazole lotion had been applied previously.

85 kilovolt peak, 5 milliamperes, anode-skin distance 12 inches) at intervals of seven to fourteen days. By September 30 he had received a total of 750 roentgens and the eruption had disappeared almost entirely. Local medication had consisted only of a lotion containing sulfathiazole 3 per cent, and sulfur 3 per cent which he applied to his face, but not to the remainder of the eruption, by means of a moistened piece of cotton held in either hand.

Six weeks after the use of the lotion was begun a dermatitis appeared on the face and hands. He stopped using the lotion, and the eruption disappeared within one week. Several days later he again applied the preparation, and a prompt recurrence of the dermatitis followed. Following subsidence of this con-

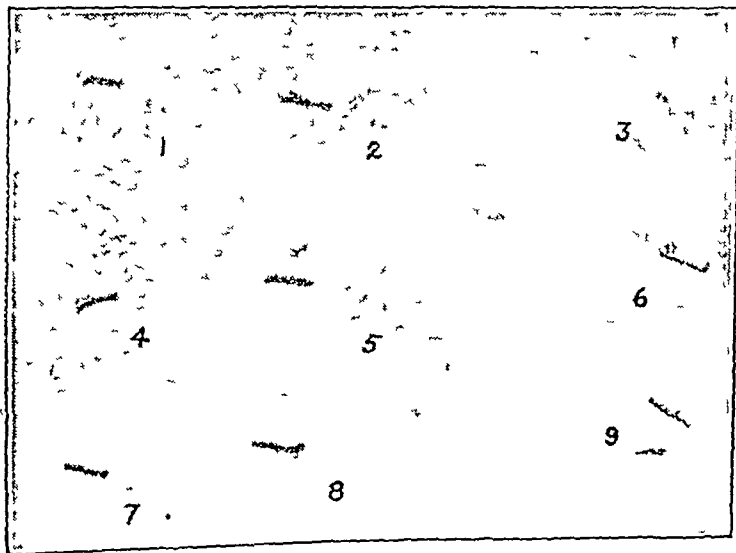


Fig 5 (case 2)—Passive transfer tests of Prausnitz-Kustner type. Immediate wheal reactions to sulfathiazole on sites injected with both blood and blister serums. Controls are negative or show only minimal reactions. 1 Sulfathiazole 0.1 per cent solution alone. 2 Sulfathiazole 0.1 per cent solution injected at a site sensitized with patient's blood serum. 3 Sulfathiazole 0.1 per cent solution injected at a site sensitized with patient's blister serum. 4 Sulfathiazole 0.02 per cent solution alone. 5 Sulfathiazole 0.02 per cent solution injected at a site sensitized with patient's blood serum. 6 Sulfathiazole 0.02 per cent solution injected at a site sensitized with patient's blister serum. 7 Ambotoxoid (1:10) alone. 8 Ambotoxoid (1:10) injected at a site previously sensitized with patient's blood serum. 9 Ambotoxoid (1:10) injected at a site previously sensitized with patient's blister serum.

dition the same lotion was prescribed but with the omission of the sulfathiazole. He was able to use this preparation without ill effect.

On October 7 the patient's home physician prescribed sulfathiazole tablets for oral administration because the patient complained of a sore throat. Within twenty-four hours, after he had taken 4 tablets, acute redness and swelling of the face developed. This was accompanied by a prompt and pronounced pustular exacerbation of the acne on the face only. The other sites of the preexisting acne were not affected. The temperature rose to 101 F but dropped to normal the next day after the drug had been discontinued. Five days later the dermatitis was about 50 per cent better and the acneiform flare-up had begun to subside (fig 4).

#### ALLERGIC STUDIES

Allergic studies were performed on patients 1, 2 and 3. The results of these are shown in the accompanying table. All experiments were in the nature of passive transfer tests. Blood serums and blister serums were obtained from the patients. At a number of sites 0.1 cc of each of these fluids was injected intracutaneously on a control subject not sensitive to sulfathiazole. The next day these sites were injected intracutaneously with 0.1 cc of the test solutions (sulfathiazole or control preparations) (Prausnitz-Kustner

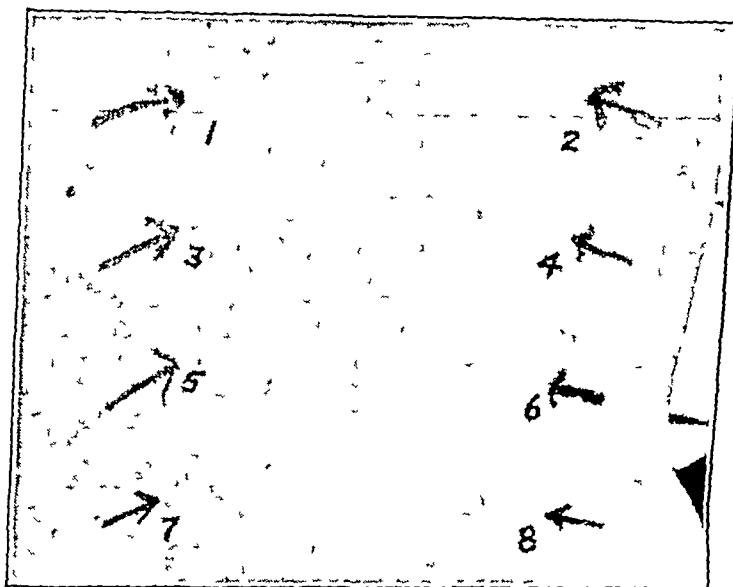


Fig 6 (case 1)—Passive transfer tests of the Prausnitz-Kustner type. Delayed tuberculin type reactions to sulfathiazole with both blood and blister serums. 1 Sulfathiazole 0.1 per cent solution injected at a site sensitized with patient's blood serum. 2 Sulfathiazole 0.1 per cent solution injected at a site sensitized with patient's blister serum. 3 Isotonic solution of sodium chloride injected at a site sensitized with patient's blood serum. 4 Isotonic solution of sodium chloride injected at a site sensitized with patient's blister serum. 5 Isotonic solution of sodium chloride alone. 6 Sulfathiazole 0.1 per cent solution alone. 7 Patch test with 5 per cent sulfathiazole ointment. 8 Patch test with 20 per cent sulfathiazole ointment.

technic) or patch tests were applied with sulfathiazole ointment and appropriate controls (Urbach-Koenigstein technic<sup>13</sup>).

The blister fluid was obtained by applying on the patient's skin a cantharides plaster 1.5 by 1.5 cm to a normal skin site. The application was inspected every two hours. When a blister had formed, the plaster was removed and the fluid was aspirated with a tuberculin syringe.

**The Prausnitz-Kustner Tests**—In the 3 cases tested passive transfer of sensitivity to sulfathiazole was demonstrated with both blood and blister serums. In addition to the usual positive wheal reactions appearing within thirty minutes of the injection of the suspected antigen, there occurred also delayed tuberculin type reactions at the sulfathiazole injected sites which were observed at forty-eight hours. Control injections



consisting of serum alone and sulfathiazole solution alone were used. In case 1 isotonic solution of sodium chloride and in case 2 staphylococcus ambotoxoid (Squibb) in a dilution of 1:10 were used alone and were also injected at sites previously prepared by the injection of sensitized blood and blister serum. As a further control in case 2 blood and blister serum from a nonsensitive person and in case 3 blood serum also from a normal subject were injected synchronously and in a parallel fashion with the sensitized serum.

With a single exception all control sites gave negative or minimal 1 plus reactions. At the sites at which the normal blister fluid was injected (case 2) 2 plus reactions were present at the thirty minute readings, but the forty-eight hour reaction was read as 1 plus. The former reading was possibly due to a small amount of cantharides which contaminated the fluid.

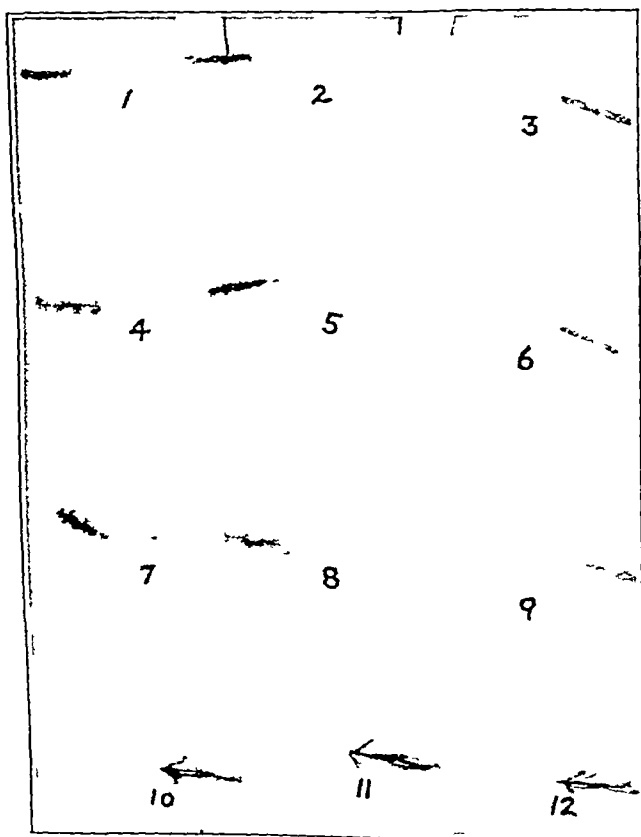


Fig. 7 (cases 2 and 3).—Passive transfer tests of the Prausnitz-Kustner type. Delayed tuberculin type reactions to sulfathiazole with blood serum. 1 Sulfathiazole 0.1 per cent at a site injected with control blood serum. 2 Sulfathiazole 0.1 per cent at a site injected with blood serum of patient 2. 3 Sulfathiazole 0.1 per cent at a site injected with blood serum of patient 3. 4 Sulfathiazole 0.02 per cent at a site injected with control blood serum. 5 Sulfathiazole 0.02 per cent at a site injected with blood serum of patient 2. 6 Sulfathiazole 0.02 per cent at a site injected with blood serum of patient 3. 7 Sulfathiazole 0.01 per cent at a site injected with control blood serum. 8 Sulfathiazole 0.01 per cent at a site injected with blood serum of patient 2. 9 Sulfathiazole 0.01 per cent at a site injected with blood serum of patient 3. 10 Sulfathiazole 0.02 per cent alone. 11 Blood serum of patient 2 alone. 12 Blood serum of patient 3 alone.

All sensitized sites in which sulfathiazole solution was injected showed definitely positive reactions (3 plus or 4 plus) indicating of course the presence of circulating antibodies to sulfathiazole in both blood and blister serum.

Photographs are reproduced to illustrate some of these reactions. Figure 5 shows early wheal reactions to blood and blister serum in case 2. Figure 6 pictures the delayed type reactions in case 1, while similar reactions in case 3 are shown in figure 8. Figure 7 is

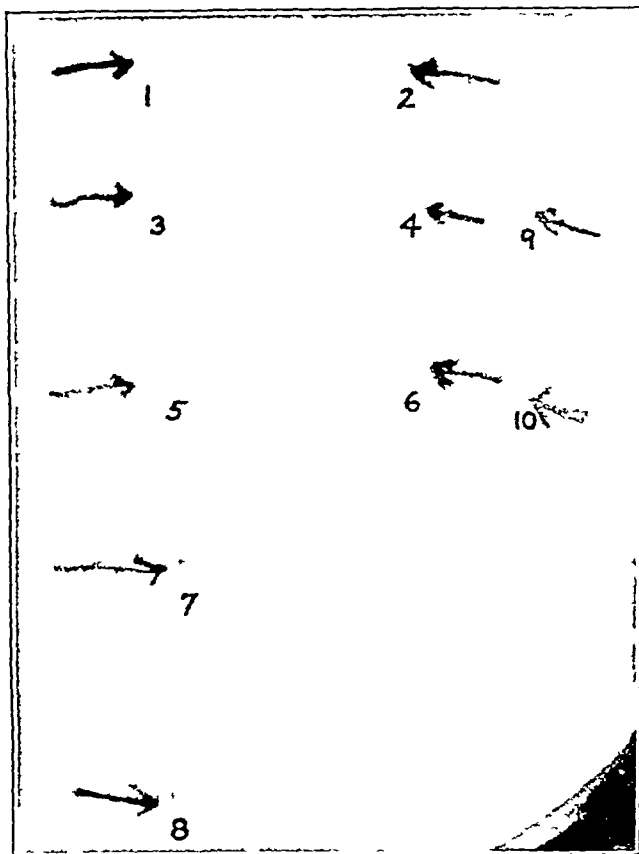


Fig. 8 (case 3).—Passive transfer tests of the Prausnitz-Kustner type. Delayed tuberculin type reactions to sulfathiazole with both blood and blister serum. 1 Patient's blood serum alone. 2 Patient's blister serum alone. 3 Sulfathiazole 0.1 per cent solution on skin sensitized with patient's blood serum. 4 Sulfathiazole 0.1 per cent solution on skin sensitized with patient's blister serum. 5 Sulfathiazole 0.02 per cent solution on skin sensitized with patient's blood serum. 6 Sulfathiazole 0.02 per cent solution on skin sensitized with patient's blister serum. 7 Sulfathiazole 0.1 per cent solution alone. 8 Sulfathiazole 0.02 per cent solution alone. 9 Sulfathiazole 0.02 per cent solution plus control (normal) blood serum.

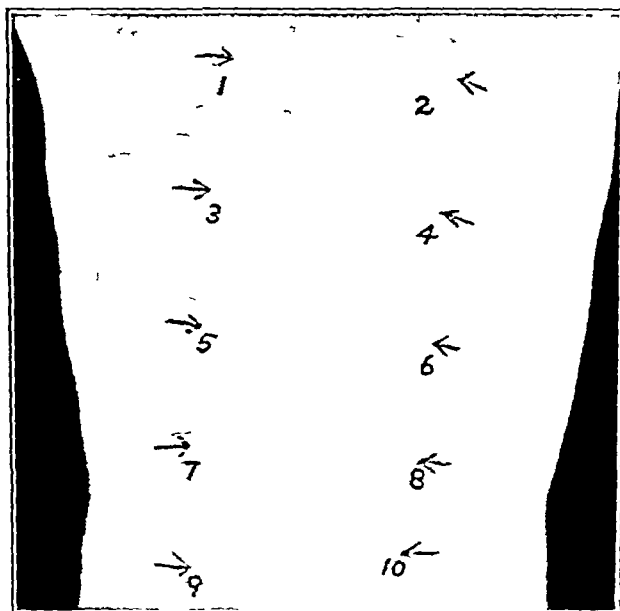


Fig. 9 (case 2).—Passive transfer tests of the Urback-Koenigs type. Erythematous reaction to sulfathiazole patch test on blister fluid injected site. Sulfathiazole ointment 20 per cent on site injected with (1) patient's blood serum. (2) patient's blister serum. (3) Ointment base on the site injected with patient's blood serum. (4) Ointment base on site injected with patient's blister serum. (5) Sulfathiazole ointment 20 per cent on site injected with control blood serum. (6) Ointment base on site injected with patient's blood serum. (7) Isotonic solution of sodium chloride on site injected with patient's blister serum. (8) Isotonic solution of sodium chloride on site injected with patient's blood serum. (9) Patient's blood serum alone. (10) Patient's blister serum alone.

of interest because delayed type reactions in both cases 2 and 3 are seen on the same test subject

*The Urbach-Koenigstein Passive Transfer Test*—The reactions to this test were not striking but highly suggestive. Reactions occurred only at the sites sensitized by the blister fluid when sulfathiazole in an ointment base was applied for forty-eight hours as a patch test. Cases 1 and 2 showed 1 plus reactions, as indicated by definite erythema and subsequent scaling at the site of the test. In case 3 the reaction was negative. In all 3 cases all control test sites with ointment base

contact type dermatitis<sup>14</sup>. A peculiar feature of the eruption in the experience of Pillsbury<sup>15</sup> and ourselves is that the dermatitis, instead of presenting the usual appearance of dermatitis venenata, tends to manifest itself as an exacerbation of the eruption for which the patient is being treated. In cases 1 and 3 the sulfathiazole seemed to produce a flare-up of the original process locally with an "id"-like generalization. The eruption in case 2 was basically a vesicular and pustular dermatitis. With sulfathiazole sensitization the activity of the process increased, and subsequently bullous lesions

Passive Transfer Tests

Tests Made on Second Day	Tests Made on First Day																			
	Intracutaneous Injections														Patch Tests					
	Patient's Blood Serum		Patient's Blister Serum		Control Blood Serum		Control Blister Serum		Sulfathiazole				Isotonic Solution of Sodium Chloride		Ambotoxoid Dilution 1:10		Isotonic Sol of Sodium Chloride		Sulfathiazole	
									0.1 %		0.02 %								5%	20%
Case 1																				
Control	1+	0	1+	0					1+	1+			1+	1+				0	0	
Patch test																				
Isotonic solution of sodium chloride		0		0																
Emulsion base		0		0																
Sulfathiazole 20% in emulsion base		0		1+																
Injection																				
Sulfathiazole solution 0.1%	3+	3+	4+	4+																
Isotonic solution of sodium chloride	1+	0	1+	0																
Case 2																				
Control	1+	0	1+	0	1+	0	2+	1+	1+	1+	1+	0	1+	0	1+	0	0	0	0	
Patch test																				
Isotonic solution of sodium chloride		0		0																
Emulsion base		0		0																
Sulfathiazole 20% in emulsion base		0		1+																
Injection																				
Sulfathiazole solution 0.1%	3+	4+	+	4+	1+	1+	2+	1+												
Sulfathiazole solution 0.02%	3+	4+	+	4+	1+	0	2+	0												
Ambotoxoid dilution 1:10	1+	0	1+	0	1+	0	2+	0												
Case 3																				
Control	1+	0	1+	0	1+	0			1+	1+	1+	0								
Patch test																				
Emulsion base		0		0																
Sulfathiazole 20% in emulsion base		0		0																
Injection																				
Sulfathiazole solution 0.1%	3+	3+	3+	4+	1+	1+														
Sulfathiazole solution 0.02%	3+	3+	3+	4+	1+	0														

Reactions estimated as 1+ 2+ 3+ and 4+  
Figures on the left side of each column represent immediate reactions, while those on the right side represent delayed reactions

and isotonic solution of sodium chloride were completely negative. Figure 9 shows the results of these experiments in case 2. A simple direct patch test was performed in case 3 which gave a negative reading. It was thought unwise to perform direct patch tests in the other 2 cases because of the fulminating nature of the eruptions. Direct intracutaneous testing was not done for the same reason.

COMMENT

A number of features about these eruptions are worthy of emphasis. It is obvious that sulfathiazole used as a local cutaneous application can cause a local dermatitis with or without a generalized disseminate eruption. In the literature summarized here and also in case 3 reported here direct patch tests were negative in spite of the fact that the eruption appears to be a

appeared. Eventually with increasing sensitization the process became pemphigoid.

Another feature of this group of cases is the fact that local application of sulfathiazole gives rise to generalized sensitization in the sense that subsequent oral administration of the drug may precipitate a sulfathiazole dermatitis. Again this eruption tends to mimic the condition for which the patient was originally treated, and also it begins and is more pronounced at the sites at which sulfathiazole was applied locally.

Case 4 illustrates the pustular exacerbation precipitated by sulfathiazole following the "cure" of a case of pustular acne vulgaris. Although the patient suffered from acne of the face, chest and back, he applied the

14 As noted previously, Weiner's report is an exception to this statement.  
15 Pillsbury, D. M. Personal communication to the authors.



lotion to the face only with his fingers. The contact type dermatitis appeared on the face and hands while the acniform flare-up was localized to the face.

It is possible that the primary dermatitis sets the reaction type or pattern for the sulfathiazole eruption or that sulfathiazole sensitization manifests itself as a Herxheimer-like exacerbation of the original eruption. Manifestations of this type have been noted by a number of authors in the treatment of lupus erythematosus with various sulfonamide compounds.<sup>16</sup>

It is to be noted that at the time of primary sensitization with sulfathiazole by local cutaneous application of the type discussed local manifestations of this sensitivity may or may not be present.

It is our impression that pyogenic sensitivity, especially to the staphylococcus, such as is frequently seen in certain examples of the syndromes described as acrodermatitis perstans, staphylo-dermia, acute seborrheic dermatitis, infectious eczematoid dermatitis, infantile eczema and nummular eczema plays a major role as an underlying factor in inducing sensitizations of this type. In cases 1, 2 and 3 there was pronounced sensitization to staphylococcus ambotoxoid. It is possible that the reaction produced by the injections of the ambotoxoid acted synergistically with the sulfathiazole in enhancing its sensitizing potentialities. On the other hand the Herxheimer-like effect of the sulfathiazole discussed may be mediated by way of the liberation of bacterial toxins to which the patient is sensitive, thus causing an effect similar to the injection of staphylococcus ambotoxoid itself. Livingood and Pillsbury<sup>3</sup> also mention the importance of pyogenic activity in their group of cases. Milian<sup>17</sup> in his concept of "biotropism" has emphasized the role that drugs may play in activating latent infectious processes.

In spite of the fact that all reported allergic studies in cases of sulfathiazole eruptions of the 'toxic' type have been generally negative, in cases 1, 2 and 3 of this group the passive transfer tests performed with the Prausnitz-Kustner technic were all positive. Not only did the positive tests include the usual early or wheal-like reactions but also delayed or tuberculin type reactions were noted. This is not part of the usual Prausnitz-Kustner phenomenon and we are unable to explain its significance at present.

In cases 1 and 2 passive transfer of antibodies with the Urbach-Koenigstein technic was probably demonstrated. According to Urbach, this indicates the presence of antibodies in the epidermis and the absence of similar antibodies in the blood stream.

#### CONCLUSIONS

1 Sulfathiazole as a local cutaneous application is capable of causing cutaneous sensitization.

2 This sensitization may manifest itself as a local contact type dermatitis with or without a disseminate eruption or it may appear as a local or generalized exacerbation of the dermatitis for which that patient is being treated.

3 Sulfathiazole sensitization induced by local cutaneous application may at times be elicited by oral administration of the drug. The original local sensitizing exposure to the sulfathiazole may or may not have resulted in local dermatitis. The eruption precipitated

by the ingestion of sulfathiazole tends to begin and to be most severe at the sites where the sulfathiazole is applied locally, although it may later disseminate widely. Here again it may mimic the eruption for which the patient is being treated.

4 Simple direct patch tests appear to be negative in the disseminate eruptions but passive transfer tests performed with the Prausnitz-Kustner technic are positive to sulfathiazole and give positive delayed tuberculin type reactions, as well as the usual early wheal reactions. It seems probable that the Urbach-Koenigstein type of passive transfer test may also be positive in some of these cases.

5 It seems likely that pronounced pyogenic sensitivity, especially to the Staphylococcus, is important as a predisposing factor in many of these eruptions.

## DHOBIE MARK DERMATITIS

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AND

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When the personnel of the 20th General Hospital was first exposed to dhobie laundered clothes soon after arrival in the C B I theater, a small epidemic of patchy dermatitis made its appearance which in all instances was distressing and in a few was temporarily incapacitating. The exact localization of the circumscribed patches of dermatitis on that part of the skin in contact with the dhobie mark and the course of the lesions made it quite obvious that this represented a contact dermatitis induced by the marking fluid which the native dhobies or washermen used in making their characteristic laundry marks (fig. 1).

Having now completed identification of the causative agent, we make this report with a view of recording 'dhobie mark dermatitis' as an entity which to the best of our knowledge has not been reported previously. We believe that our observations suggest a possible derivation of the term 'dhobie itch' and that this term used in the classic sense as a synonym for cutaneous mycoses (particularly tinea cruris) in the tropics is misleading and erroneous and should be discarded for reasons which will be discussed.

#### CLINICAL DATA AND INCIDENCE

Of 55 officers exposed there were 11 cases (20 per cent incidence), of 344 men exposed there were 41 cases (11.9 per cent incidence). The manifestations were similar in all cases and the only variation was in the severity of involvement. Susceptible individuals invariably noted localized pruritus at the site of contact with the mark sometimes within a few hours after the first exposure but more frequently after one or two exposures extending over a total period of time varying from eight to twenty-four hours. This was followed by localized lesions varying in severity from moderate erythema and edema to definite vesiculation, oozing and crusting (figs. 2 and 3). One or more of the following sites were always involved: nape of the neck and upper back, waist line (anterior, posterior or on one side).

16. Barber, H. W. Effects of Sulfonamide Compounds on Lupus Erythematosus. *Brit. J. Dermat.* 53: 118 (Jan.) 55-62 (Feb.) 19-21 (Mar.) 1951.  
17. Milian, G. *Revue de dermat. et de venerol.* 6: 1-9 (1900).

Illustrations by First Lieutenant, Medical and Medical Arts Service, First Lieutenant, C. Graham, E.D., S. C. in charge.  
From the Section of Dermatology and Syphilis (Major, Livingood), Receiving and Evaluation Section (Lieutenant, Rogers), and Medical Service (Lieutenant Colonel Fitz-Hugh) of the 20th General Hospital, A. I. O. 69.

sides of the ankles, dorsal surface and sides of feet and lower one third of the legs. In every case the sites of the lesions correspond exactly with one or more of the dhobie marks on the recently laundered clothes worn by the individual (fig 4). In more sensitive persons the dermatitis extended beyond these sites and in a few very sensitive ones a generalized "id" eruption occurred. The pruritus was intense in all cases and in some instances almost intolerable, it increased in severity as exposure to the mark was prolonged and in some cases recurred within thirty minutes after the marked clothes were worn. The itching disappeared and the lesions began to heal as soon as dhobie marked clothing was discarded. A few severe cases, however, required as long as two weeks for complete recovery. Recurrence of lesions was noted promptly if "marked" clothes were again worn.

#### THE DHOBI MARK

The marking fluid used by dhobies throughout India is obtained from the nut (fig 5) of the *lal or bella gutti*<sup>1</sup> tree, which is said to be common in this country. A straight pin is pushed through the hard capsule of the nut and enough dark brown or black fluid adheres to the pin to make possible the marking of clothes with

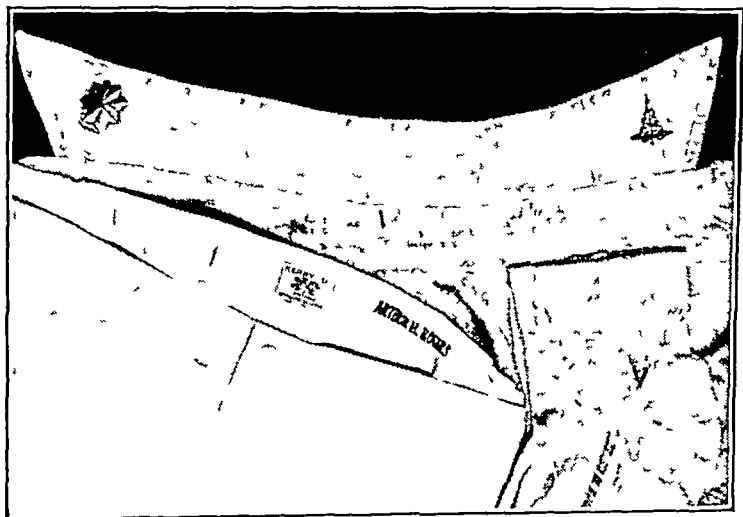


Fig 1—Dhobie laundry marks on collar of shirts (I), waist band of shorts (I) and ankle of socks (V)

small crosses, dots or lines in various combinations sufficient to identify the clothing (fig 1). The marks are fairly permanent and withstand repeated washings. Khaki shirts and cotton undershirts are usually marked inside the back of the collar, cotton shorts and khaki trousers inside the waist band and socks near the top or sides and occasionally above the heel (fig 1). There is a common superstition among the natives of this country that the *lal or bella gutti* tree has strong "likes" and "dislikes" for certain individuals, expressing its dislikes by "poisoning" its enemies when they approach the tree. On close questioning of several intelligent natives, we have learned that the poisoning referred to is manifested by itching, edema, erythema and vesiculation on exposed parts. It would seem that the foliage of this tree causes an acute contact dermatitis when sensitive persons are exposed.

#### PATCH TESTS

It is obvious that a patch test is applied to a person every time he wears a piece of dhobie marked clothing, variations occurring because of the site involved. For

<sup>1</sup> Situated as we are with no suitable library facilities we are unable to verify the accuracy of the designation of this tree furnished us by a line officer of the Indian army, who was interested in our researches.

example the contact with the skin at the collar line is more intimate if the person wears a necktie, it makes a great difference in incidence of involvement at the waist line if the cotton undershirt separates the mark from



Fig 2—Typical patch of dhobie mark dermatitis due to dhobie mark on collar of khaki shirt



Fig 3—Subsiding patch of dhobie mark dermatitis on right lower back at waist line due to dhobie mark on shorts

actual contact with the skin, there is more maceration and closer contact with the skin when high shoes cover the mark on socks. A large series of patch tests was done not only to prove the causation but also to establish constant factors so that the true incidence of sen-

tivity could be determined. They were prepared by marking small strips of white cotton cloth with the fluid of the rat nut in exactly the same manner as the dhobie marks are applied to clothing. Such patches were fixed to the flexor surface of the forearm with the conventional cellophane covering and adhesive. They were removed after forty-eight hours and readings made then and again at the end of one week.

The 41 soldiers who had exhibited this form of dermatitis and 52 control subjects (soldiers exposed to prior contact with dhobie marked clothes who had not developed dermatitis) were thus tested and the results are recorded in the table.

Following this preliminary series of patch tests an additional 332 patch tests with various modifications were carried out on voluntary subjects<sup>2</sup> both "sensitives" and "controls." The results of these tests may be summarized as follows:

1 The juice from older (dried) nuts causes a lower percentage of positive patch tests and uniformly the reaction is less pronounced than that from green nuts.

2 Boiling the marked patches for from five to thirty minutes does not destroy the sensitizing effect. Indeed, in some sensitive persons the boiled patches produce more violent reactions than the unboiled.

Results of Patch Tests

	Results						Total
	Negative	Plus 1	Plus 2	Plus 3	Plus 4	Total Positives	
Previously affected persons	8	14	15	3	1	33 (80.5%)	41
Previously exposed non affected controls	40	7	0	0	0	7 (13.4%)	52

\* Later found positive to fluid from green nuts possessing greater sensitizing properties.

† It is noteworthy that even though 7 controls exhibited reactions these were all minimal.

3 A lapse of twenty days between preparation of the patches and testing does not alter the reaction producing qualities.

4 Exposure of marked patches to sunlight for four hours does not alter the reactivity of the substance.

5 The following solvents applied to prepared patches for five minutes fails to decrease the sensitizing property of the marking fluid significantly: white gasoline, 95 per cent alcohol, ether and acetone.

6 One washing of the marked patches in soap and water fails to affect the reaction.

#### COMMENT

It has been accepted as a fact that dhobie laundered clothes are responsible for the transmission of fungous infections, particularly tinea cruris. Physicians and laymen alike use the term "dhobie itch" and "tinea cruris" interchangeably, and some extend the use of the term to include epidermophytosis and tinea of the glabrous skin.

The Suttons<sup>3</sup> in their authoritative book define the term "dhobie itch" as follows: "Dhobie itch (washer-man's itch) is tropical epidermophytosis, the eczema

marginatum of other climates. Owing to warmth and perspiration the symptoms are greatly exaggerated, and violent scratching and secondary pyogenic infection soon render the parts raw and inflamed, often with resultant impetigo, infectious eczematoid dermatitis and even furunculosis."

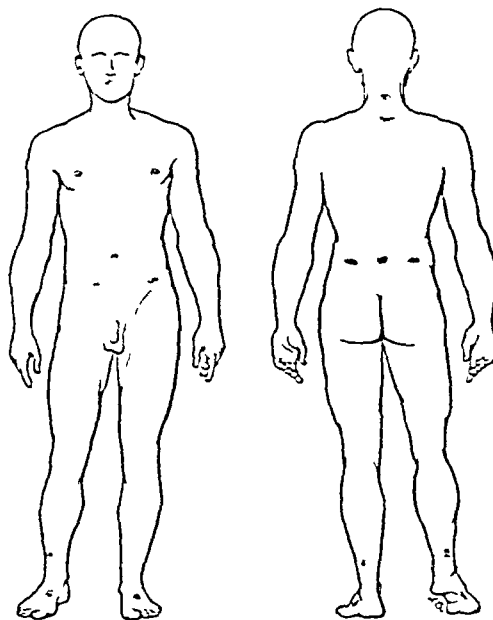


Fig. 4—The stippled areas indicate the usual primary site of involvement in dhobie mark dermatitis.

Strong<sup>4</sup> similarly states: "Tinea cruris. Under the name 'dhobie itch' this fungous affection is probably better known to Europeans than any tropical skin disease. The name 'dhobie' or 'washer-man's itch' has been given on account of associating it with the infection of the underclothing while being washed with the garments of those who have the affection. This view probably has some foundation but it has been difficult to verify it."

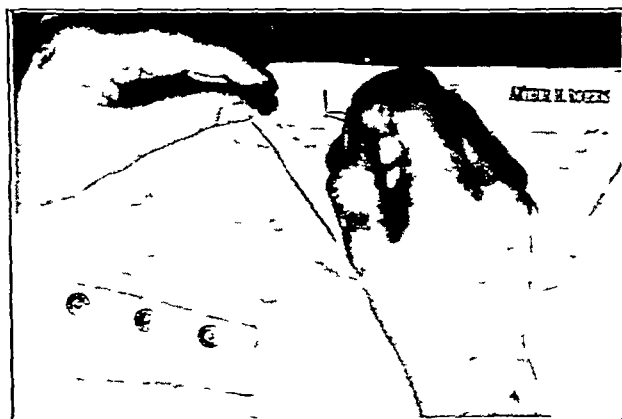


Fig. 5—Method used by dhobies in marking clothes. The nubbed between left thumb and index finger is about 20 mm. long, 12 mm. wide and 5 to 12 mm. thick.

We believe that it is erroneous and misleading to use the term 'dhobie itch' as a synonym for cutaneous fungous infections of any type for the reasons given in the following three paragraphs:

<sup>2</sup> The eleven, especially Staff Sergeant Robert DeSilver and Staff Sergeant George Heston, gave patient cooperation.

<sup>3</sup> Sutton, R. L. and Sutton, R. L., Jr. Diseases of the Skin, ed. 10. St. Louis: C. V. Mosby Company, 1939, p. 1045.

<sup>4</sup> Strong, Richard P. Skin's Diagnosis, Prevention and Treatment of Tropical Diseases, ed. 6. Philadelphia: Balaban Company, 1932, v. 2, p. 1168.

1 As far as we know, there is no evidence to the effect that cutaneous fungous infections are transmitted by dhobie laundered clothes. We have followed for three months a large group of men who have worn dhobie washed clothes and have been able to compare the incidence of cutaneous fungous infections in them with that previously observed in the same group under quite similar climatic conditions before exposure to dhobie washed clothes. We are able to state that as far as this group is concerned there has been no increase in incidence of fungous infections. Furthermore, there are no isolated examples in which the origin of a cutaneous fungous infection of any type could be traced to dhobie laundered clothes.

2 There is no reason to believe that the causative agent of cutaneous mycoses of any type is superimposed in the clothes during the laundering procedure. Usually the clothes are washed in streams either by beating them against rocks or by repeated rinsing and scrubbing.<sup>5</sup> The more "conscientious" dhobies boil the clothes and use a high alkali native soap to remove most of the dirt. For the most part individual pieces are exposed to the sun on clothes lines or spread over the ground and on bushes of convenient height.<sup>6</sup> It would seem that this process should remove most pathogenic fungi and, if tinea cruris is transmitted by dhobie washed clothing, it is contrary to what is known about the epidemiology of the disease.

3 The fact that we have discovered one source of cutaneous disease as the result of wearing dhobie laundered clothes, the possibility of impregnating clothes with allergenic weeds, grasses and leaves by contact during the drying process and similar impregnation with high alkali soap make it very probable that the only cutaneous disease which results from wearing dhobie laundered clothes is contact dermatitis.

We believe that the course of events in the origin and subsequent misuse of the term dhobie itch is as follows. It was recognized that some individuals acquire skin diseases after wearing dhobie laundered clothes, tinea cruris is very common in tropical climates, dhobies wash clothes in many tropical countries, hence the association of cause and effect and the erroneous adoption of the term as a synonym for tinea cruris.

We learned from our patch tests that the fluids from different nuts vary tremendously in sensitizing properties. This of course explains the unequal incidence in groups of persons who employ different dhobies. We have seen many individual officers and soldiers with dhobie mark dermatitis from other organizations, which were not included in our series because statistical analysis was not possible. In general it would seem that the incidence in a particular organization depends directly on the number of men who employ dhobies to launder their clothes and the type of nut which the dhobie happens to use.

We did not make patch tests on Negro soldiers. Our experience with them in this area indicates that they are much less sensitive to the dhobie mark than white persons.

Although one soap and water washing of the patch test fails to affect the reaction, we have clinical evidence which indicates that repeated washings minimize

and eventually may even eradicate the dhobie marks to such an extent that most susceptible persons may wear the marked clothes without incurring dermatitis. Some persons, however, have had recurrence of dermatitis from marked clothes which had been washed as many as seven times. The sensitization is obviously a relative one, it depends on personal sensitivity, on the qualities of the nut employed and perhaps on other factors as yet undetermined.

Investigations are being continued in an effort to determine a practical method of removing the dhobie mark from clothing. At the present time we advise, for sensitive persons

- 1 Repeated washings of marked clothes
- 2 Removal of marked parts of clothing by cutting with scissors
- 3 Furnishing commercial indelible ink to dhobies
- 4 Covering the marks with adhesive tape or similar material
- 5 Personal dhobies or self service without marking. Although unsatisfactory, this is the safest procedure for highly susceptible persons.

#### SUMMARY AND CONCLUSIONS

1 Fifty-two cases of localized contact dermatitis occurred in one organization (20th General Hospital) following the wearing of clothes marked by native dhobies. This represented an incidence of 14 per cent of exposed persons. It varied in severity from slight erythema and itching to an acute vesicular and bullous patch of dermatitis with extension to other parts and "id" manifestations which were incapacitating.

2 The brown or black liquid contents or "juice" obtained from the nut of the ral or bella gutti tree, used by the dhobies in marking clothes, has been identified as the causative agent.

3 Of previously affected persons, 80.5 per cent were positive to patch tests (1 to 4 plus) which duplicated under standard controlled conditions the exposure to marking fluid. The remaining 19.5 per cent were positive only when tested with marking fluid obtained from green nuts. Only 13.4 per cent of previously exposed but unaffected persons were positive to patch test (1 plus) and in this group all of the reactions were minimal. Marking fluid obtained from green nuts caused a higher percentage of positive patch tests and more pronounced reaction than fluid obtained from older (dried) nuts.

4 We are of the opinion that the dhobie mark is the probable cause of most cutaneous disease acquired from wearing dhobie laundered clothes.

5 We believe it most unlikely that cutaneous fungous infections are transmitted by clothing washed by dhobies and therefore urge that the use of the term "dhobie itch" as a synonym for tinea cruris and epidermophytosis be discontinued. The term represents an erroneous concept and leads to error in diagnosis and treatment of certain cutaneous diseases seen in the "land of the dhobie." We have not seen an increase of cutaneous mycoses in a large group of men who have worn dhobie laundered clothes continuously during a three months observation period.

6 The importance of "dhobie mark dermatitis" as a cause of disability in American officers and men in this theater is obvious.

7 We have designated this cutaneous disease "dhobie mark dermatitis."

<sup>5</sup> Buttons are broken with disturbing regularity.

<sup>6</sup> During the monsoon or rainy season it is customary to dry the clothes indoors and exposure to sunlight is minimal.

## DERMATITIS FROM SEMECARPUS ANACARDIUM (BHILAWANOL OR THE MARKING NUT)

SPREAD BY CONTAMINATED MAIL

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Acting Assistant Surgeon U. S. Public Health Service

BETHESDA, MD

These cases are reported because of the novelty of the mode of spread of a contact dermatitis and to report a plant irritant uncommon to the Western Hemisphere.

Dermatitis affecting 16 persons developed among employees of one of the large government departments in Washington and the Dermatoses Investigations Section was requested to investigate.

A bottle in a sealed mailpouch shipped from India by air had become partially opened and its contents a thick black oil had contaminated various pieces of mail. The contaminating substance was labeled 'Bhilawanol Oil.'

## REPORT OF CASES

Three workers who were unpacking the pouch wiped the oil off the mail as well as they could. It was then distributed by a force of carriers and clerks numbering approximately 50. By evening a number of workers complained of itching and burning of their hands, arms and faces. Within twenty-four hours a vesicular eruption appeared on the exposed parts. Some of the workers did not touch the mail until as long as five days after it was unpacked but these also developed an eruption twenty-four to forty-eight hours after contact. Eventually 16 of approximately 50 exposed persons developed dermatitis of varying degrees of severity.

The eruption consisted of erythematous patches surmounted by vesicles of various sizes, many lesions being linear. The appearance was similar to that of typical dermatitis venenata from *Rhus toxicodendron*. Most of those affected had lesions on the flexor surfaces of their forearms, as in the illustration.

On 14 of those affected lesions healed quickly under wet dressings of boric acid or Burow's 1:20 solution. These patients were apparently completely well by the end of ten days. The other 2 did not recover for three weeks. Neither followed this treatment. One said that she had used Clorox and Fels-Naptha soap, which are not as bland as the solutions mentioned, while the other applied a proprietary ointment. There have been no sequelae in six months.

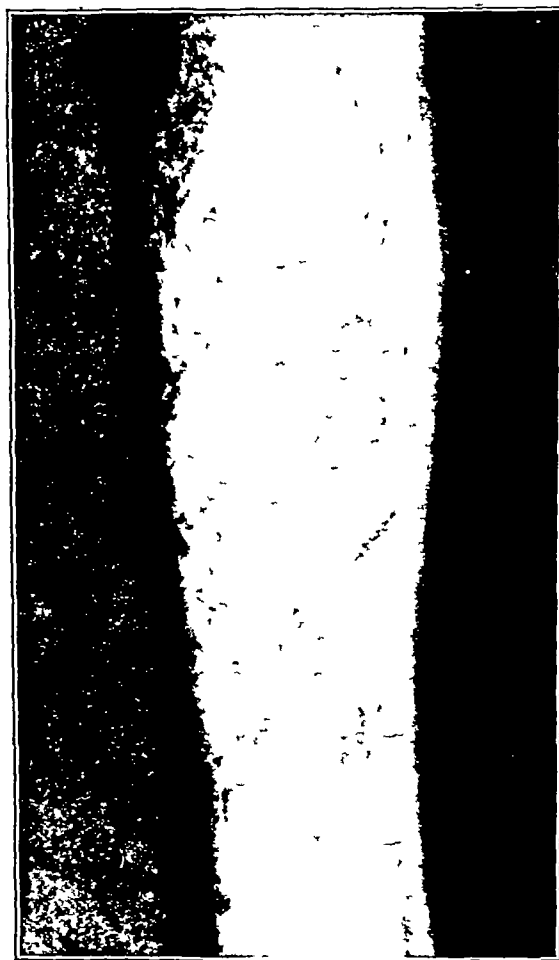
## PATCH TESTS

A  $\frac{1}{4}$  inch square of the contaminated paper, placed on a previously unexposed volunteer's forearm, resulted in severe burning in six hours and the development of a small bulla six hours later.

Patch tests, using  $\frac{1}{4}$  inch squares of cloth impregnated with the oil diluted 1:100 and 1:1,000 by weight in olive oil, were applied for twenty-four hours to the forearm of one of the affected men, four weeks after recovery. Strongly positive reactions resulted in forty-eight and seventy-two hours respectively to the two dilutions.

Bhilawanol oil is obtained from the juice of the marking nut tree (*Semecarpus anacardium*) which grows in the tropical outer Himalayas and the hotter parts

of India. It is a member of the same family *Anacardiaceae* as the several irritant *Rhus* plants of North America the cashew nut and the agent causing dermatitis in Japanese lacquer. The tree is 20 to 40 feet high 4 to 6 feet thick and deciduous. It bears an ovoid, plumlike fruit about 1 by  $\frac{3}{4}$  inches. The flesh is orange-red succulent sweet and edible when ripe. The pericarp is smooth and shining black and contains a dark brown or black corrosive resinous juice which is used for dyeing linen and other materials black, hence the name 'marking nut.' For centuries the juice has also been credited with medicinal qualities. It has been used by the natives and native physicians for the treatment of palsy, epilepsy, nervous conditions and various skin disorders. The oil has been given inter-



Typical lesions on the forearm of a girl clerk following exposure to mail contaminated by bhilawanol oil.

nally by European educated physicians with claimed benefits for asthma, rheumatism and various organic neuropathies.<sup>1</sup>

All agree that the tar or oil is highly irritant to the skin, possessing a distinct vesicant action. Three substances have been found in the black juice of the pericarp: "semecarpol, a monohydroxyphenol, bhilawanol, a dihydroxy compound  $C_{21}H_{22}O_2$  and a tarry corrosive residue from which no further chemical individual could be isolated. Neither anacardic acid, cardol, catechol nor anacardol is present."<sup>2</sup>

<sup>1</sup> *Semecarpus Anacardium* in *Indian Medicinal Plants* by K. R. Kirtikar and I. D. Basu, 1918, pp. 28-392.

<sup>2</sup> *Chemical Examination of the Marking Nut* by P. Parameswari Pillay and Salimuzzaman Siddiqui, *Indust. Chem. Soc. S. 17*, (Aug.) 1931.

# METABOLIC STUDIES OF PATIENTS WITH CANCER OF THE GASTRO- INTESTINAL TRACT

XVI THE TREATMENT OF HYPOCHLOREMIA REFRACTORY TO THE ADMINISTRATION OF SODIUM CHLORIDE, ESPECIALLY IN PATIENTS WITH GASTROINTESTINAL CANCER

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Immediate postoperative disturbances of water and electrolyte balance usually are corrected promptly by the adequate administration of isotonic solution of sodium chloride. Some instances of postoperative hypochloremia, however, are refractory to that procedure. This was noted first by Maddock as particularly common among patients with cancer of the gastrointestinal tract. He<sup>1</sup> observed, furthermore, that when patients with this disorder began to eat an adequate diet the hypochloremia abated but no explanation for this response was advanced. The existence of this type of hypochloremia now has been observed also in this hospital and appears to mark the postoperative course especially of patients with gastrointestinal disease.

Attention first is directed to these patients usually because of their lethargy, anorexia, nausea and increasing abdominal distention. Blood studies reveal hypochloremia, alkalosis and hypoproteinemia. The intestine gradually becomes inactive. Flat roentgenograms of the abdomen are consistent with the picture of intestinal obstruction, and at laparotomy edema of the intestine is found. The symptoms of fluid retention appear to be localized to the gastrointestinal tract and lungs, and only after the administration of considerable saline solution (in an attempt to counteract the hypochloremia) does peripheral edema appear.

Since the fluid and electrolyte balance of the organism is connected intimately with the concentrations of protein in the serum,<sup>2</sup> it was conceived that the hypoproteinemia rendered ineffectual attempts to treat the hypochloremia by isotonic saline solution. If this should be the case, treatment of the altered electrolyte equilibrium should include measures to raise protein levels. Accordingly, patients who manifested the syndrome described were given orally or parenterally large amounts of protein. The results of these measures form the subject of the present communication.

## METHODS

1 Serum proteins were determined by the technic of Weech and his associates<sup>3</sup> as well as by the Kjeldahl procedure.<sup>4</sup> The normal range of serum proteins found

here<sup>5</sup> and elsewhere<sup>6</sup> is from 6.6 to 7.5 Gm per hundred cubic centimeters.

2 Serum chlorides were measured by the method of Wilson and Ball.<sup>7</sup> Normally these vary from 95 to 108 milliequivalents per liter.

3 The carbon dioxide combining power of the serum was ascertained by the technic of Van Slyke and Cullen.<sup>8</sup> Normally this ranges from 23 to 31 milliequivalents per liter.

4 The Musser and Wintrobe<sup>9</sup> procedure was used to measure the whole blood hematocrit values.

## RESULTS

The course of each case is presented separately.

### CASE 1—Hypochloremia refractory to the administration of sodium chloride

I R, a woman aged 65, was subjected to an abdominoperineal resection of a rectal cancer. On the day of operation her serum protein level was 6 Gm and fell to 5.5 Gm per hundred cubic centimeters within the next few days (chart 1A). From the fourth postoperative day she appeared dehydrated and complained of anorexia, muscular pains and progressive abdominal distention. The symptoms became more severe during the next eighteen days. In this period she was given daily an average of 3,000 cc of fluid, 18 Gm of sodium chloride, 75 Gm of dextrose but no protein. At the end of this period the serum chloride concentration was only 80 milliequivalents per liter, the protein level was 5.3 Gm per hundred cubic centimeters and the carbon dioxide combining power was 43 milliequivalents per liter. Throughout the period of observation the fluid intake of the patient was always about 1.3 liters a day greater than the urine output.

On the twenty-third postoperative day the patient died of pulmonary embolism.

Throughout the course hypoproteinemia persisted. To test the possibility that the reduced serum protein concentration had limited the ability of the administered saline solution to raise the chloride level, the following cases were studied.

### CASE 2—Hypochloremia which subsided when the patient took an adequate diet

T Y, a woman aged 56, underwent a radical resection of a rectal cancer. For eight days before operation she was given a low protein diet, and in this time the protein level of her serum had fallen from 7.4 to 6.7 Gm per hundred cubic centimeters. The concentration of serum chloride remained between 102 and 105 milliequivalents per liter. By the third postoperative day she complained of nausea and anorexia. She appeared dehydrated and had considerable abdominal distention. The serum protein level had fallen to 5.7 Gm per hundred cubic centimeters. Despite the previous administration of about 15 Gm of sodium chloride a day the serum concentration of chloride was only 86 milliequivalents per liter and the carbon dioxide combining capacity 36 milliequivalents per liter. A comparison of the fluid intake to urine output suggested water retention (chart 1B).

Adequate amounts of protein first were given by mouth four days after operation, and within three days from that time

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Dr. Ariel is trainee in diagnosis and treatment, National Cancer Institute Fellow, Dr. Abels is Finney Howell Fellow.

1 Maddock, W. G. Maintenance of Fluid Balance, *Am J Surg* 46:426 (Dec) 1939.

2 Weech, A. A., Snelling, C. E. and Goettsch, Elvira. Relation Between Plasma Specific Gravity and Edema in Dogs Maintained on Protein Inadequate Diet and in Dogs Rendered Edematous by Plasma Pheresis, *J Clin Investigation* 12:193 (Jan) 1933.

3 Weech, A. A., Reeves, E. B., and Goettsch, Elvira. The Relation Between the Specific Gravity and Protein Content in Plasma Serum and Transudate from Dogs, *J Biol Chem* 113:167 (Feb) 1936.

4 Robinson, H. W., Price, J. W., and Hagden, C. G. The Estimation of Albumin and Globulin in Blood Serum, *J Biol Chem* 120:481 (Sept) 1937.

5 Abels, J. C., Rekers, P. E., Binkley, G. E., Pack, G. T. and Rhoads, C. P. Metabolic Studies in Patients with Cancer of the Gastrointestinal Tract. II. Hepatic Dysfunction, *Ann Int Med* 16:221 (Feb) 1942.

6 Hill, R. M., and Trevorrow, Virginia. Plasma Albumin Globulin and Fibrinogen in Healthy Individuals from Birth to Adult Life, *J Lab & Clin Med* 26:1838 (Aug) 1941.

7 Wilson, D. W., and Ball, F. G. A Study of the Estimation of Chloride in Blood and Serum, *J Biol Chem* 79:221 (Sept) 1923.

8 Van Slyke, D. D., and Cullen, G. E. Studies in Acidosis. I. The Bicarbonate Concentration of the Blood Plasma: Its Significance and Its Determination as a Measure of Acidosis, *J Biol Chem* 20:229 (June) 1917.

9 Musser, J. H., and Wintrobe, M. M. in *Tice, System of Medicine*, Hagerstown, Md. W. F. Prior Company, 1940, p. 795.

the daily diet contained 80 Gm of protein (casein) and 350 Gm of carbohydrate. On this regimen she improved considerably; the abdominal distention and other symptoms subsided; the urinary output approximated the volume of fluid intake and the hypochloremia and alkalosis disappeared (sodium chloride 95 milliequivalents and carbon dioxide combining capacity 26 milliequivalents per liter). Associated with these changes the serum protein level returned to normal. Throughout her course the hematocrit value was not altered significantly.

**CASE 3—Hypochloremia refractory to sodium chloride but successfully treated by parenteral plasma protein**

T. S., a woman aged 54 underwent a subtotal gastrectomy for the removal of gastric ulcer. Before operation the patient had a serum protein level of 6.8 Gm per hundred cubic centimeters and chloride concentration of 98 milliequivalents per liter (chart 2 A). For the first three postoperative days about 2500 cc of intravenous fluids, 166 Gm of sodium chloride and 75 Gm of dextrose were given daily. In addition on two occasions 250 cc of plasma (equivalent in all to about 35 Gm of plasma protein) was administered. In the next seven days

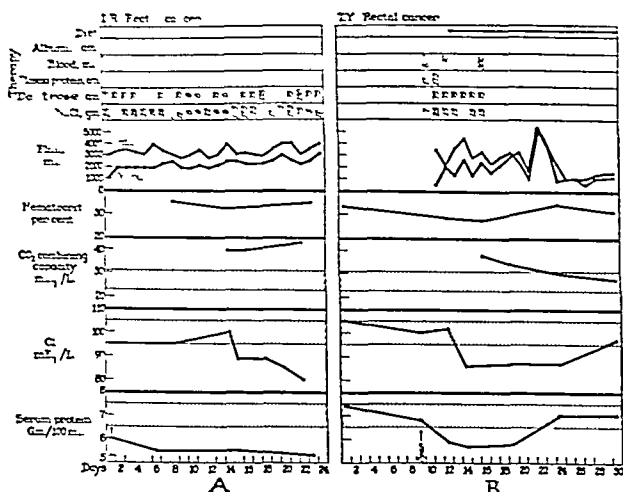


Chart 1—Laboratory readings (A) in case 1 and (B) in case 2

the patient gradually became apathetic, occasionally vomited and appeared dehydrated. Pulmonary edema then appeared followed by the clinical picture of intestinal obstruction.

During this period an average of 3000 cc of fluid, 18 Gm of sodium chloride and 100 Gm of dextrose were given daily and on one occasion 250 cc of plasma (17.5 Gm of protein). The urine volume remained from 1000 to 2500 cc less than her fluid intake; the serum chloride level fell from 105 to 85 milliequivalents per liter; the protein to 5.5 Gm per hundred cubic centimeters and the carbon dioxide combining capacity increased to 40 milliequivalents per liter.

For the next nine days the patient received daily an average of 78 Gm of plasma protein or 25 Gm of serum albumin and the daily supplement of about 18 Gm of sodium chloride in 3000 cc of fluid was continued. The serum protein level then increased by the seventeenth postoperative day to 6.7 Gm per hundred cubic centimeters; the chloride to 94 milliequivalents per liter and the carbon dioxide combining capacity decreased to 33 milliequivalents per liter. At the same time the anorexia, nausea, lethargy, pulmonary edema and abdominal distention subsided.

On the nineteenth day she began to eat a general diet and from that time on made an uneventful recovery.

These results were further evidence that the existence of hypoproteinemia might limit the effect of admin-

istered saline solution on the hypochloremia and alkalosis.

Case 4 provided an opportunity to study more carefully the relationship between hypoproteinemia and the lack of response of hypochloremia and alkalosis to the administration of saline solution alone.

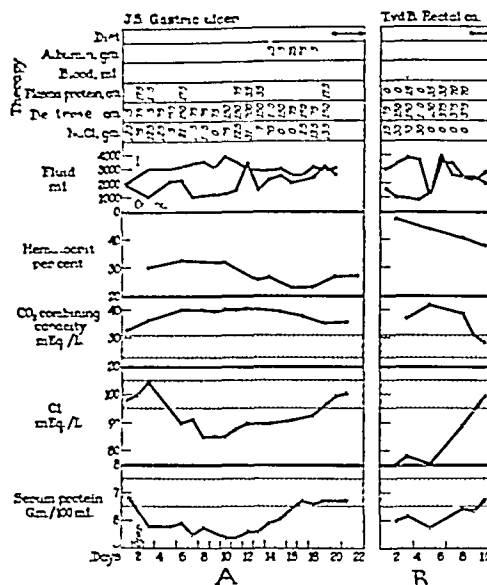


Chart 2—Laboratory readings (A) in case 3 and (B) in case 4

**CASES 4 AND 5—Hypochloremia refractory to sodium chloride but responding to plasma proteins alone**

T. V. D. B. (case 4), a man aged 46 three months previously had an abdominoperineal resection of a rectal carcinoma. For five days he had taken no food, had severe abdominal cramps and vomited about once each day. The abdomen was considerably distended and the physical findings with a roentgenogram of the abdomen suggested the presence of intestinal obstruction.

Because the patient appeared dehydrated and had a hematocrit level of 48 per cent it was reasonable to believe that the amount of circulating serum protein was considerably less than the figure of 6 Gm per hundred cubic centimeters would imply. The chloride level was 75 milliequivalents and the carbon dioxide combining capacity 38 milliequivalents per liter (chart 2 B). Although it was recognized that serum protein was probably required, nevertheless an attempt was made to restore the levels of serum chloride and carbon dioxide combining capacity to normal by administering intravenously to the patient each day for the next four days about 3000 cc of fluid, 30 Gm of sodium chloride and 150 Gm of dextrose.

The desired effect was not produced and the serum protein level fell to 5.7 Gm per hundred cubic centimeters.

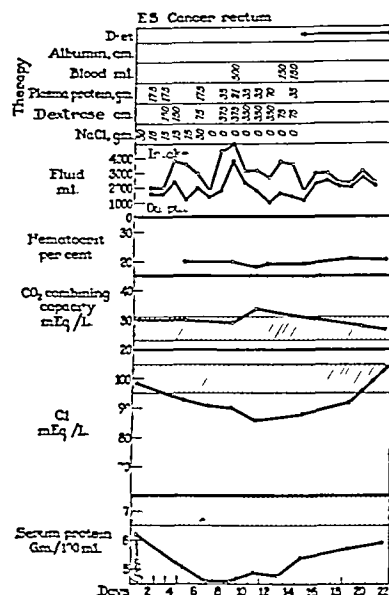


Chart 3—Laboratory readings in case 5



For the next four days the patient was given no further sodium chloride but received intravenously from 35 to 70 Gm of protein and about 375 Gm of carbohydrate a day. A considerable diuresis occurred, the serum chloride rose to 94 milliequivalents per liter, the carbon dioxide combining capacity fell to 32 milliequivalents per liter, the concentration of protein increased to 6.4 Gm per hundred cubic centimeters and the hematocrit value fell to 40 per cent. Simultaneously the patient's appetite improved, the colostomy again functioned and the abdominal distention subsided. After a normal diet was taken for only two days the serum concentration of protein further increased to 6.7 Gm per hundred cubic centimeters, that of chloride to 99 milliequivalents, and the carbon dioxide combining capacity returned to the normal value of 28 milliequivalents per liter.

In case 5 hypochloremia likewise was refractory to the administration of saline solution alone but was relieved by the subsequent administration of plasma proteins.

F. S., a woman aged 64, was admitted to the hospital for the radical excision of a rectal cancer. For six days after the operation she received daily from 15 to 30 Gm of sodium chloride, from 2 to 4 liters of fluid and on three occasions only 175 Gm of plasma protein (chart 3). During this interval her serum concentration of protein fell from 6.2 to 4.6 Gm per hundred cubic centimeters, the chloride from 99 to 89 milliequivalents per liter and the carbon dioxide combining power remained at 30 milliequivalents per liter. The patient became somnolent and continuously nauseated, appeared dehydrated and had considerable abdominal distention. Further administration of sodium chloride then was withheld, and during the next week she received from 21 to 70 Gm of plasma proteins a day (average 33 Gm a day). On this regimen the patient's appetite increased and her abdominal distention subsided. By the fourteenth postoperative day she was eating 80 Gm of protein and 250 Gm of carbohydrate daily, and five days later the serum protein was 5.7 Gm per hundred cubic centimeters, the chloride 105 milliequivalents, and the carbon dioxide combining power 26 milliequivalents per liter. No significant changes in the hematocrit value were noted, but a gradual increase in the urine output occurred.

#### COMMENT

From the data at hand it is unclear whether the chloride imbalance in the cases studied was due actually to loss of electrolyte and water in perspiration at the time of operation, to the occasional vomiting, to the loss of electrolyte in the urine or to some abnormality of the mechanisms concerned with the maintenance of electrolyte distribution. Irrespective of which of these factors was the initiating one, it appears that the hypoproteinemia limited definitely the ability to correct the hypochloremia by the administration of isotonic solution of sodium chloride alone.

There now is adequate proof that the retention of fluids and crystalloids in the circulation depends in large part on the concentration of protein in the plasma.<sup>10</sup> If hypoproteinemia exists, much of the water and sodium chloride administered intravenously may be deposited in the tissues,<sup>10</sup> with an increase of the intercellular fluid volume.

The alkalosis found in the studies here reported to be associated with the hypochloremia may aggravate the

fluid and electrolyte imbalance by increasing the intracellular retention of water. The infusion of large quantities of isotonic solution of sodium chloride containing 0.25 milliequivalents of sodium bicarbonate (to maintain the normal acid-base balance of the blood) has been demonstrated in animals to induce an edema which was exclusively extracellular. However, when an excess of sodium bicarbonate was added to the infused solution a far more severe type of edema was effected, for one third of the administered water was deposited intracellularly.<sup>11</sup>

Measurements of the intercellular fluid volume of the tissues were not possible in the present study because of the gravity of the patient's condition. If this had increased after the administration of saline solution because of a shift of crystalloids and fluid from the plasma to account for the hypochloremia noted, then it would be reasonable to expect that a return to a normal electrolyte equilibrium would be associated with a loss of water from the body. This actually was found to be the condition in those patients who were treated successfully by the administration of protein. Either a severe diuresis or a gradual decrease of fluid retention occurred.

Since the hematocrit values were not observed to rise significantly after protein therapy, the increased levels of serum chloride and protein evidently were true increases and not due to hemoconcentration consequent to the diuresis.

The malaise, anorexia, somnolence, lethargy and muscular pains of which the patients complained are all symptoms commonly associated with alkalosis. The progressive abdominal distention, pulmonary edema and in some instances peripheral edema were the result of the intracellular and extracellular fluid retention caused by the hypoproteinemia and alkalosis. It has been demonstrated<sup>12</sup> in dogs with an experimental hypoproteinemia that the consequent edema of their gastrointestinal tracts results in prolonged gastric emptying time and general hypomotility of the intestine. In 2 of the 5 cases the intestinal hypomotility and abdominal distention were so severe that a diagnosis of mechanical intestinal obstruction was made and measures for its relief were instituted.

#### CONCLUSIONS

1. Five patients had postoperatively hypochloremia which was resistant to the administration of large amounts of saline solution.

2. The hypochloremia of these patients was associated with hypoproteinemia. In those instances in which the level of serum protein was increased therapeutically, the disturbed electrolyte equilibrium was corrected.

3. The existence of hypoproteinemia may seriously prevent the correction of the chloride imbalance by the administration of saline solution alone.

4. Alkalosis was regularly associated with the syndrome and may have contributed to its severity.

York Avenue at Sixty-Eighth Street

<sup>10</sup> Beard, J. W., and Block, Alfred. Intravenous Injections. A Study of the Composition of the Blood During Continuous Trauma to the Intestine When No Fluid Is Injected and When Fluid Is Injected Continuously. *J. Clin. Investigation* 11: 249 (March) 1932. Jones, C. M., and Eaton, Frances B. Postoperative Nutritional Edema. *Arch. Surg.* 27: 159 (July) 1933. Lepore, M. J. Experimental Edema Produced by Plasma Protein Depletion. *Proc. Soc. Exper. Biol. & Med.* 29: 318 (Dec) 1931.

<sup>11</sup> Hastings, A. B., and Eichelberger, Lillian. The Exchange of Salt and Water Between Muscle and Blood. The Effect of an Increase of Total Body Water Produced by the Intravenous Injection of Isotonic Salt Solution. *J. Biol. Chem.* 117: 73 (Jan.) 1937.

<sup>12</sup> Meerny, P. M., Barden, R. P., and Ravdin, I. S. Nutritional Edema: Its Effect on the Gastric Emptying Time Before and After Gastric Operations. *Surgery* 1: 53 (Jan.) 1937.



## Clinical Notes, Suggestions and New Instruments

### THE DIAGNOSTIC VALUE OF SMEARS FROM PURPURIC LESIONS OF THE SKIN IN MENINGOCOCCIC DISEASE

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My purpose in this communication is to describe an aid in the diagnosis of meningococcic disease. This aid and the study of smears from purpuric skin lesions, while not new, is not widely used nor fully appreciated. It has particular application in outbreaks among military personnel in view of the high incidence of cutaneous lesions among them.

In January 1943 during an outbreak of meningococcic disease a patient was admitted to the infectious disease ward of this hospital in coma. She presented fever, leukocytosis, meningeal signs and a petechial type of cutaneous lesion over the extremities and axillary region. The cerebrospinal fluid was cloudy and contained neutrophils but no bacteria. Cultures of cerebrospinal fluid and blood were sterile. The patient was treated with sulfadiazine and made an uneventful recovery.

In reviewing her case we were surprised to find that the organism believed to be responsible for her illness—namely the meningococcus—had not been seen or cultured. Other cases had also shown negative blood cultures when every precaution was taken to insure optimal conditions. Many of these cases had presented purpuric or petechial skin lesions—a thing we had come to associate with meningococcemia. At that time the incidence of skin lesions in meningococcic disease in our series was very high, being present in about 75 per cent of the cases. A similar incidence of skin lesions was occurring in outbreaks among military personnel elsewhere. It was postulated that the skin lesions were seeded during an episode of transient bacteremia which had then subsided, leaving the bacteria isolated in the skin. That the organisms had been recovered by culture from petechiae was known from the work of Muir.<sup>1</sup> Therefore a series of petechial, purpuric and macular lesions occurring in patients with suspected meningococcic disease were studied by smear. McLean and Caffey,<sup>2</sup> working on children in whom skin lesions were also prone to occur during meningococcic infection, were able to demonstrate diplococci on smear in 80 per cent of their series of 18 cases. Our observations amply confirmed their results.

#### TECHNIC

After the site had been prepared with alcohol, a fold of skin was pinched between finger and thumb so as to blanch the surrounding tissue and to place the purpuric spot atop the fold. A superficial puncture was made in the lesion by inserting the point of a Hagedorn needle to the depth of the lesion and removing it with a picking motion. (A small hypodermic needle or a Bard-Parker 11 blade mounted in a cork served as well.) Then without release of the pinching pressure more pressure was applied to squeeze out some blood and tissue juice from the lesion. The small drop secured was picked up and smeared by placing a glass slide against it. The smears were 3 to 4 mm in diameter and several were taken from each of several lesions. Small contact smears were easier to scan and proved to be just as likely to contain organisms as larger ones. The pinching pressure was not released until the smear was taken lest peripheral blood well up in the puncture wound diluting the tissue juice of the lesion proper. (It must be remembered that the fluid obtained depends on the accuracy of the puncture, and quantity is not an object.) The smear was then stained with Giemsa's or Wright's stain or by Gram's method and was examined under the oil immersion

lens of a microscope. The neutrophils in the smear were scanned for intracytoplasmic diplococci. These were easily found if present and more than a single pair of organisms were usually found in the cell (as shown in the photomicrograph). We found that Gram stained preparations were tiring to study because the cells were stained pink and leukocytes were not readily identified. In preparations stained with Wright's or Giemsa's stain the leukocytes stood out and the organisms stained blue black. Dilute Giemsa stain (1 part of stock to 50 parts of buffer at pH 7.2) after methanol fixation of the smear was especially suitable since a ten minute staining period brought out leukocyte nuclei and bacteria without heavily staining the leukocyte cytoplasm or the erythrocytes. Both Wright's and Giemsa's stains had the disadvantage that they did not permit one to establish the Gram negativity of the organism. This was more than made up for by the ease of examination. When there was doubt the preparation could be speedily decolorized with methanol and restained by Gram's method. The characteristic biscuit shape of the organism was distinctive in most cases. It was found necessary to ignore as possible contaminants all extracellular organisms.



Intracytoplasmic diplococci in a neutrophil. From a smear of a purpuric skin lesion  $\times 400$ .

#### RESULTS

Positive cutaneous smears were obtained in 39 of 48 cases (about 80 per cent). If the skin smear showed intracytoplasmic diplococci in neutrophils the corresponding blood culture often grew meningococci. Several exceptions occurred in which the blood culture was negative when the skin smear was positive. In many of these cases the organism was seen or cultured from the cerebrospinal fluid; in others the presence of purulent cerebrospinal fluid made it probable that the cases were of meningococcus origin. In 4 cases the only evidence of the etiologic agent was found in the skin smears. In the entire clinical picture was that of typical meningococcic disease. The table illustrates the laboratory findings in this series of cases. It can be seen that 19 cases fell into the group of meningococcic disease without meningitis (about 40 per cent). This was a fortuitous sample yet it approximates the experience of this hospital's whole series. This larger series is to be the subject of a communication at a later date.

It became apparent that smears of skin lesions were a valuable diagnostic adjunct. They were reported within twenty minutes and were the means of obtaining provisional confirmation of clinical diagnosis in many cases long before cultures were reported. They were especially useful when the cerebrospinal fluid was normal.

5. Mayer O. B. and Selkovits S. (to be published).

From Station Hospital No. 1 Fort Jackson, S. C.  
Lieut. Col. O. B. Mayer and Capt. Sidney Selkovits gave access to patients under their care and Mrs. Ruth Austin furnished technical assistance.

1. Muir, R. J. Roy, Army Corps 33:404, 1919, cited in Topley, W. C. and Wilson, C. S., Principles of Bacteriology and Immunology, 2. Baltimore: Williams & Wilkins Company, 1936, p. 1133.

2. McLean, Stafford and Caffey, John. Endemic Purpuric Meningococcus Bacteremia in Early Life. The Diagnostic Value of Smears from the Purpuric Lesion. Am. J. Dis. Child. 42:1053-1074 (Nov.) 1911.

While positive skin smears were reliable, negative smears were of no significance, as shown in the table. Many negative skin smears were obtained on lesions suggestive of erythema multiforme, punctate hemangiomas, purpura simplex, acne and "chigger" bites. These were not included in this series. The limitations of skin smears were especially apparent in cases in which there were tiny petechial lesions or macules. In general, the larger the petechial and purpuric lesions the easier it was to find diplococci. The macular lesions were distributed over the chest and abdomen and were easily blanched by pressure. The petechial and purpuric lesions, in contrast, were found chiefly about the extremities and the axillary folds and were not blanchable. The macules were common in these cases either as pure forms or as occurring with other lesions. While they always were regarded with suspicion, smears taken from them failed repeatedly to show diplococci even when the blood cultures were positive for meningococci. If cases with macular lesions were excluded from our series the percentage of positive results by skin smears would exceed 90.

*Laboratory Findings in a Series of Forty-Eight Cases of Meningococcal Disease Presenting Skin Lesions*

	Number of Cases						
	10	15	4	10	4	4	1
Cerebrospinal fluid *	+	+	+	—	—	—	—
Blood culture	+	—	—	+	—	+	—
Skin lesion smear	+	+	—	+	+	—	—

\* Listed as negative when cell count was normal and culture was sterile as positive when either was abnormal.

Since these cases were collected, smears of skin lesions have continued to be of service to the clinicians and have proved to be a useful supplement to blood culture.

#### SUMMARY

Smears taken from purpuric and petechial skin lesions were found to offer a valuable rapid diagnostic adjunct in an outbreak of meningococcal disease among military personnel.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D. Secretary

#### POISON IVY EXTRACT (See New and Nonofficial Remedies, 1943, p. 48)

The following product has been accepted:

HOLLISTER-STIER LABORATORIES, SPOKANE, WASH.

**Poison Ivy Extract** Packages of five ampuls, each containing 0.2 cc of alcoholic extract, with five ampuls of sterile salt solution for dilution immediately before administration.

Ten Gm of mature leaves of *Rhus toxicodendron* are dried, pulverized and extracted seventy-two hours in 100 cc of absolute ethyl alcohol. The extract is decolorized and sterilized by filtration.

#### POISON OAK EXTRACT (See New and Nonofficial Remedies, 1943, p. 49)

The following product has been accepted:

HOLLISTER-STIER LABORATORIES, SPOKANE, WASH.

**Poison Oak Extract** Packages of five ampuls, each containing 0.2 cc of alcoholic extract, with five ampuls of sterile salt solution for dilution immediately before administration.

Ten Gm of mature leaves of *Rhus diversiloba* are dried, pulverized and extracted seventy-two hours in 100 cc of absolute ethyl alcohol. The extract is decolorized and sterilized by filtration.

#### DEHYDROCHOLIC ACID (See New and Nonofficial Remedies, 1943, p. 322)

The following dosage form has been accepted:

SMITH-DORSEY CO., LINCOLN, NEB.

Tablets Dehydrocholic Acid 0.25 Gm (3¾ grains)

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE

HOWARD A. CARTER, Secretary

### PHYSICAL THERAPY IN PSYCHIATRIC PRACTICE

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George Washington University School of Medicine

WASHINGTON, D. C.

The interest of psychiatrists in physical therapy perhaps antedates that of any other medical specialty. This is particularly true of that form of physical therapy known as hydrotherapy, in hippocratic times baths were used for treating mental patients and during the Renaissance the noyade, a rather drastic form of hydrotherapy, was frequently employed. There is probably no mental hospital in the country today which does not have some hydrotherapeutic installation, and the continuous tub and the wet sheet pack have long been standard procedures in such hospitals. Perhaps too the earliest therapeutic uses of electricity were those in connection with psychiatric practice, even though the effects of the static spark and more recently of the faradic current in connection with the treatment of the neuroses were largely suggestive rather than primarily physical.

Physical therapy and psychiatry have labored under rather similar difficulties in that they are both newly recognized specialties of medicine even though their practice is old. Both have developed rapidly, the former has learned much of the various modalities and their effects, the latter of mental mechanisms and their psychosomatic relationships. One point which has gained general recognition is that the patient is a unity, that the mind is not separate from the body, that what one calls mental is but another aspect of the functioning of the whole organism. The manner in which the integrated organism functions and in which its various organs operate affects the emotional state of the patient, the converse is equally true. As knowledge of the bodily factors in mental states has developed, the utilization of physical therapy in psychiatric practice has gained. In addition to the direct effect on various bodily organs and organ systems, however, an effect is exerted on the whole patient by anything which modifies his physical environment, whether this is within his body, on the surface of his body or in the world about him. It is these effects on the whole patient which are referred to as psychologic.

One of the forms of psychologic treatment is known as suggestion. The old fashioned family doctor, whose very entrance into the room breathed assurance and optimism and who made his patient feel better immediately, has long been a byword. Strangely enough, however, the textbooks and many articles which deal learnedly with the effects of the various forms of physical therapy on blood pressure, circulation, secretory activity and other functions of the organs fail almost totally to mention this important psychologic aspect of physical medicine. Just as in the time of Mesmer and his magnets, various phenomena were observed in

patients which are now recognized as having been due entirely to suggestion this fact has unfortunately been seized on occasionally by the less scrupulous. The imposing static machine and some of the more recent types of apparatus, particularly those designed by quacks to impress the unwary, are potent instruments of suggestion. Physical medicine has had to fight against the idea that it is quackery and it has had to set standards of apparatus and standards of education and practice tasks which have been extremely well carried out. The quack gives positive assurance and the more of a quack he is the more positive the assurance. This is precisely what some patients need. When assurance is combined not only with a strong personality but with imposing apparatus, whether that apparatus is soundly constructed or designed merely for appearances, a psychologic effect is readily produced. Under the control of the qualified practitioner this effect can be a powerful asset.

It should be emphasized that it is not a criticism of physical therapy or of any other reputable branch of medicine that it produces psychologic effects. The tangible effects of the various procedures employed by physical medicine are demonstrable and well known. The fact that there are positively suggestive effects at the same time simply reinforces the local effect of the modality and serves as an adjuvant if one recognizes those effects, by ethical and wise utilization of them the welfare of the patient is promoted and the desired therapeutic result is hastened.

First of all the patient perceives that something visible and tangible is being done to help him, this in itself is a powerful lever in securing his cooperation and help. He feels reassured and is grateful for the personal attention that is being given to him. Every psychosis or neurosis represents the presence of a conflict in which there is an attempt to satisfy emotional needs, many of them entirely unconscious. Here again the various procedures give an opportunity to gain a certain amount of satisfaction of these needs. Conversely there may be emotional conditionings which should be taken into account in dealing with the patient, conditionings which may cause him to be fearful of certain procedures. For example, a patient who has had a narrow escape from drowning may become fearful in the presence of a prolonged bath, whereas he might not have the same feeling toward a wet sheet pack. The attitude with which the patient approaches the treatment, therefore, and that with which the therapist approaches it will have much to do with the effect on the patient. This is true in general practice, it is even more important in a mental hospital.

In psychiatric practice two general classifications of physical therapy may be made. One includes the types which are prescribed primarily on account of the total behavior of the patient, that is, on account of his mental condition, such are, for example the continuous bath and the wet sheet pack for states involving tension, overactivity and restlessness, and the various forms of stimulative therapy, such as the contrast douche, the salt glow, the friction rub and ultraviolet therapy, which may be utilized in states of depression and decreased motor activity. In the other group are included numerous other forms of physical therapy which are useful even though they are directed toward systemic conditions or the conditions of particular organs. The latter

group of modalities likewise have a beneficial effect on the mental state of the patient although this effect may be referred to as in some ways a by-product.

#### SEDATIVE HYDROTHERAPY

*Continuous Bath*—Of the forms of physical therapy prescribed for primarily psychiatric reasons the form which is by far the most commonly used is the continuous neutral bath. For reasons of economy of personnel the continuous bath suite should contain several tubs rather than a single one. The walls should be of a neutral tint such as green or gray. The usual tub is large, usually about 33 by 78 inches and about 20 inches deep. It is equipped with four or more inlets in order that the flow of water may be assured with buttons for the attachment of a hammock and with a 4 inch outlet in order that the tub may be emptied rapidly in an emergency. A thermostatic mixing valve should be used but the attendant, who should always be present in the room should utilize a bath thermometer frequently and should occasionally test the temperature of the water with his hand as well. The use of a hammock adds somewhat to the comfort of the patient although it is not essential. Opinions differ on the value of a tub cover. A cover which is firmly fastened is likely to give a feeling of imprisonment to the patient and sometimes encourages active resistance rather than sedation. Ordinarily a sheet will serve the purposes of warmth and modesty. The room should preferably be not too light and it is better to have the tubs separated by movable screens. The temperature of the water is best held at about 94 to 96 F, and a moderate flow should be maintained. Every effort should be made to prevent the variations from being pronounced, and special care must be taken not to allow the temperature to go substantially either higher or lower. The bath may be continued for rather long periods if indicated and it is doubtful whether much effect is obtained in less than three or four hours. There is no objection to a patient's remaining in a continuous bath for several days without interruption. In a few patients a cutaneous eruption is noted after a period but this usually responds promptly to emollients. This form of treatment is essentially sedative and therefore is most frequently utilized in conditions of overactivity and restlessness such as may be found in delirium tremens or other deliriums, in dementia paralytica, involutional melancholia, the manic phase of manic-depressive psychosis, disturbed forms of schizophrenia and even in not too debilitated senile psychoses. As contraindications one may mention pulmonary tuberculosis and extreme debility.

One of the great advantages of this form of therapy is that it can be used without special equipment as in the general hospital or in the home. Important precautions to take are those against scalding or chilling and against attempted suicide by drowning. The value of being able to empty the tub quickly in any of these emergencies is obvious. The need of constant supervision in this form of therapy cannot be stressed too strongly.

The use of the warm bath to promote sleep need hardly be elaborated on here.

*The Wet Sheet Pack*—Next in point of frequency to the continuous bath is found the wet sheet pack. This is a valuable sedative measure but one which is

not without its dangers, both physiologic and psychologic. A considerable degree of technic is required for the proper application of the pack, and there is some danger of collapse or heat stroke if the patient is not properly supervised during the administration of the treatment or if the treatment is continued for too long a period. The pack combines the advantages of a vapor bath with enforced immobilization, both of these elements being essentially sedative in effect. Unfortunately in some institutions the indiscreet remarks of attendants have sometimes, by threatening the patient with a pack, given the impression that this procedure is punishment rather than treatment. Such a mental attitude on the part of the patient is likely to result in increased struggling thus nullifying the sedative value of the treatment. Usually however, when the therapeutic purpose of the pack is impressed on the patient there is not only no opposition but an eagerness to accept this form of help.

The amount of equipment required for the wet sheet pack is relatively slight. Preferably a pack table (about 30 inches high) rather than a bed is utilized and sheets and blankets with safety pins are essentially the only other material needed. The mattress should be firm and should be covered with a rubber sheet. For somewhat debilitated patients the pack may be preceded by a brief warm tub bath or a steam or electric cabinet treatment for the purpose of increasing the circulation in the skin and raising the general temperature of the body. The room should be warm, not less than 70 F, somewhat darkened and quiet, and the walls painted a neutral tint. The sedative effect is heightened if the patient is separated from other patients in the room by screens. The best effects are obtained if the sheets in which the patient is first enveloped are wrung out in water at a temperature of 60 to 70, that is cool. An extremely vigorous patient may react well to water even slightly below 50 F. A frail patient, on the other hand, requires water of a more nearly neutral temperature between 92 and 97 F. The secondary stimulation of surface circulation is heightened with the cooler water. Sheets should always be wet. The dry sheet pack is dangerous and should never be employed. Sheets wrung out in hot water, on the other hand, may scald the patient, and for this reason hot water should not be used.

The patient should be enveloped as rapidly as possible in the wet sheets and then wrapped in blankets to prevent radiation.<sup>1</sup> The proper technic is rather complicated and need not be described here. The successfully applied pack will remain in place with at least a moderate amount of motion of the patient. Suitable care must be exercised to prevent the patient from rolling off the table. In the initial stages of the pack it is desirable that cold be applied to the occiput and forehead, but as soon as the flushing has subsided this may be discontinued. The patient should show substantial sedation and may even go to sleep within about forty-five minutes. If he does not he should be removed and given a continuous bath instead.

A patient in a pack must be carefully supervised with particular regard to his pulse and to the presence of flushing. If heat stroke appears imminent, he should be removed from the pack immediately. In any event the pack should not be continued more than four hours, as heat exhaustion may take place if it is continued longer. After the patient is removed a brief neutral shower may be given, and he should then be placed in

bed and covered warmly for a period of rest. Liquids may be given while the pack is in progress, but the patient should not be fed. A considerable amount of perspiration takes place, one of the advantages of the pack is that it stimulates elimination through the skin. A cooperative patient may be placed in a pack by as few as two nurses, but in some instances the services of three or four are necessary.

This is a procedure which may be utilized in the home or in the general hospital, with adequate supervision of trained persons. It is extremely useful in states of disturbance and overactivity, such as those in which the continuous bath may be used. It is more actively sedative and therefore is applicable in some cases in which the continuous bath would not be considered as the first choice. The frequency of prescription, and indeed of prescription at all, will depend much on the general physical condition of the patient. Pulmonary tuberculosis is generally looked on as a contraindication, as is hyperthyroidism, or any other condition in which cerebral congestion should be avoided.

#### STIMULATIVE HYDROTHERAPY

Under the general heading of stimulative hydrotherapy one finds a number of procedures, all more or less related and somewhat similar in principle, involving the application of cool water which is under more or less pressure and of various temperatures, accompanied or not by friction. The particular varieties depend in part on the physical condition of the patient and on his general cooperativeness. They are particularly useful in mental conditions characterized by a tendency to inactivity as, for example, in the depressions and those types of schizophrenia in which catatonic features are rather prominent. Some of them in order to increase the contrast and reaction, may be preceded by a brief period under close observation in the electric bath cabinet or the vapor cabinet. In general, however, these particular forms of the application of heat are of doubtful value in psychiatric practice. Considerable hazard is involved in any event, and with a disturbed patient burns may be incurred.

*Douches*—The needle or circular type of douche is in common use. This has the advantage of stimulating the entire surface of the body by the impact of numerous fine jets of water, and the thermal effect may be varied according to the patient's ability to react. The same may be said of the fan and jet douches which involve somewhat more massive stimulation. One of the most stimulating forms of all is the so-called contrasting or Scotch douche in which two alternating streams of water, one 70 to 80 and the other about 110 F are applied by a hose under considerable pressure.

*Other Forms*—Saline baths are spoken of in the literature, but they are not used with any great generality. The same may be said of the effervescent or so-called Nauheim bath. The applications of the whirlpool bath, although it might be used for its general effect, are more often for localized conditions. Affusions and the drip sheet rub are other forms of stimulative hydrotherapy which may be mentioned.

*Salt Glow and Friction Rub*—Among other types of physical therapy involving water and friction may be mentioned the salt glow, which consists in rubbing the surface of the skin with damp coarse salt and cold mitten friction the operator using either fiber mitts or preferably knitted mittens on his hands. These pro-

<sup>1</sup> See page 185 of Handbook of Physical Therapy

cedures may be applicable in the postdelirious state and may be useful with some of the types of neurosis in which general supportive and stimulative therapy is called for.

*Irrigations*—Another form of the application of water is found in the irrigations such as the enema, the vaginal douche and the colonic irrigation. These procedures are discussed elsewhere in the Handbook.

#### THE FEVER CABINET

An important form of physical therapy in mental hospitals is found in the use of the fever cabinet. The original work of Wagner-Jauregg in Vienna in 1917 subsequently introduced into the United States at St. Elizabeths Hospital consisted in malarial inoculation of patients suffering from dementia paralytica. Certain drawbacks to malarial therapy have been mentioned two of the notable ones being that certain persons are immune to malaria and that the physical condition of others does not permit inoculation with malarial parasites for therapeutic purposes. Accordingly for a number of years a good deal of investigation has been carried on concerning the artificial induction of fever (diathermy, electric blankets and so on) and several satisfactory types of fever cabinet have rather recently been developed. A certain amount of cooperativeness is requisite on the part of the patient and close supervision must be exercised at all times by the nurse who should have special training in this form of therapy.

The patient without breakfast is placed in the cabinet and his temperature (taken continuously by an electric rectal thermometer) is gradually raised to approximately 106 F. It is maintained at this level for about six hours and then is gradually reduced. During the treatment fluids are forced and the treatment must be followed by prolonged rest. Heat prostration and even death from fever treatment are not entirely unknown and care must be exercised in the selection of the patient. A total of about fifty hours of fever is administered in conjunction with active chemotherapy. Any contraindication to a major surgical operation is a contraindication to fever therapy. In addition, organic lesions of the brain (other than dementia paralytica), arteriosclerosis, any extensive areas of anesthesia and hepatic disease are all contraindications.

#### ELECTRIC SHOCK THERAPY

Another form of physical therapy which is highly characteristic of mental hospitals and which indeed should not be employed outside of a hospital is the so-called electric shock therapy. By means of a special apparatus a current of low amperage (300 to 700 milliamperes) may be passed through the brain by means of electrodes applied to the temporal regions while the patient is lying supine in moderate hyperextension. This position is readily obtained through the use of sand bags or pillows or by means of a Gatch bed, the patient lying with his head at the foot of the bed. The current is applied for 0.1 to 0.7 second and immediately causes a convulsive seizure with loss of consciousness. The convulsion lasts approximately one minute followed by a period of confusion which may last five or ten minutes and by a period of anterograde amnesia. Sometimes impairment of memory is a persistent complaint. During the convulsion the motions of the extremities are best controlled by two or three suitably trained attendants. The treatment has been recommended particularly for the depressions and

in some cases remarkable improvement at least of a temporary nature has been reported. It has also been used occasionally for conditions of overactivity especially for the manic phase of the manic-depressive psychosis and with somewhat less success for the various manifestations of schizophrenia. The rationale of the procedure is a subject of speculation.

#### REFRIGERATION

Some investigation of the effects of low temperature has been carried on in a few psychiatric centers but with dubious results. By means of a specially constructed unit refrigerated brine is circulated through tubes in a rubber blanket the patient being thoroughly wrapped in woolen blankets. The general temperature of the body is lowered gradually to about 85 F. or even lower. Some of the hypothermic treatments have lasted forty-eight hours or more. One case of a minimal temperature of 74.6 F. (with survival) has been reported. The procedure is not recommended.

The local effects of cold for cruterization and for local surgical anesthesia are dealt with elsewhere.

#### OTHER MODALITIES

I have discussed so far the various forms of physical therapy which are prescribed primarily on account of the behavior of the patient and which have psychologic indications. The extent of physical therapy in psychiatric practice however is not limited to this recitation. In the course of psychiatric practice either inside or outside a hospital almost any sort of physical condition may become intercurrent or associated and call for physical therapy. For this reason any well equipped psychiatric hospital needs to have an active physical therapy department and to be prepared to administer such of the well known modalities as short wave and surgical (electrocoagulation) diathermy, infra-red and ultraviolet radiation and polisine.

The private practitioner in the field of psychiatry too will often have occasion to utilize the tools of physical therapy for both general and specific effects. Massage should be available for its local effects on disabled joints and muscles and for general relaxation as well. Reference to the other chapters in the Handbook will indicate the range of types of disability which the physical therapy department of a mental hospital is called on to treat. Patients in mental hospitals, in other words exhibit little difference from patients outside. They are perhaps more susceptible to what may be termed the intangibles—atmosphere, personality, attention to their needs and interest shown in them. This difference however is only one of degree. Occasionally they are somewhat less cooperative than the average patient in general practice and occasionally they are even resistive. Many of them however are highly cooperative and deeply appreciate all that is done for them. The effects of specific treatment on their general mental health are often startling.

Much can be done to make the physical therapy department attractive. Hangings, pictures, mirrors, plants and even birds and aquariums do much to dispel the formal institutional appearance of the average treatment room. The matter of emphasizing the attention being given to the patient is one which might well be borne in mind in general. Such details of atmosphere do much to promote relaxation, stimulate the cooperation of the patient and put him in a psychologic condition to receive the maximum benefit from his treatment.

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SATURDAY, SEPTEMBER 4, 1943

## WAGNER-MURRAY-DINGELL BILL

Hearings on the Wagner-Murray-Dingell bill which was fully analyzed by the Bureau of Legal Medicine and Legislation of the American Medical Association and commented on editorially in *THE JOURNAL*, June 26, will no doubt be held in the near future, probably after Congress has completed the new tax bill. According to the *United States News*,<sup>1</sup> advocates of the expansion program for social security assert that it has caught the popular fancy, that pressure for its adoption is increasing daily, that the plan is a big step toward one of the Four Freedoms of the Atlantic Charter—Freedom from Want—and that Congress would face a storm of public criticism if it failed to approve the main provisions of the plan. On the other hand, opponents assert that the program would constitute a capital levy of ruinous magnitude on United States business, that even with the 12 per cent payroll tax the plan would be underfinanced, and that, should Congress enact such a bill, a dominant bureaucracy would be created which would end free enterprise in the United States and alter the whole way of American life.

The editorial published in *THE JOURNAL* on June 26 emphasized that this bill is an evolution of the National Health Conference of 1937. It pointed out further that the measure was prepared without consultation with the medical profession, that it would make the Surgeon General of the United States Public Health Service a virtual "gauleiter" of American medicine and that it would be, in fact, the acme of bureaucratic control of medical service. In the two months that have passed there has been a mustering of medical and public opinion against this measure, indicating awareness by the medical profession and the public of the tremendous stake that they have in this legislation. The editor of the McKeesport (Pa.) *Daily News* states the case succinctly:

It would place the doctors under political control and provide for the mass of the people physicians who are politically amenable rather than those with superior abilities and skills.

And would deaden one of the most highly regarded professions the world has ever known. Success of bill 1161 and the destruction of the freedom of American medicine would be the come-on for other broader, more revolutionary schemes to circumscribe the American people.

The periodical *America*<sup>2</sup> says, in a statement by one of its editors:

Now, will public regimentation of health servants operate to preserve the profession and thus ultimately help to preserve the body politic? It seems that such action—as, for example, that contemplated in Senate bill 1161—would create a new class of political doctors. And in America political classes are commonly subject to the influence of political practice, in seeking emoluments and avoiding burdens, unless we take the rare case of the unusually elevated individual. The system as it works does not raise personal ideals. But doctors without high personal ideals are a menace, both to the patient and to the public.

An editorial in the Middletown (Ohio) *News Signal* says:

The Wagner bill will be considerably modified, but some of its worst features may become law unless it is seen in its true light. It is part of a program, now well advanced, to enslave the individual to the state. In this process he gradually loses his adult self reliance, lapses toward infancy and then degenerates into a willing slave of government.

The Charleston (S C) *News-Courier*, in a sarcastic editorial contribution, emphasizes the political aspects of this measure. It suggests that the medical administrators under the Wagner-Murray-Dingell bill be elected by popular ballot. The medical administrator would have the right to appoint the doctors and assign the cases. He could expect the support of the doctors that he appointed to help him get reelected, and the doctors would use their automobiles and C cards to help haul voters to the polls. They could also contribute to a fund to buy radio time for campaign speakers. Any doctor who worked against the medical director's reelection might find it difficult afterward to practice. Appointments in the medical colleges would, of course, be handled like other political patronages so that deserving party members could have their sons trained free of charge. Incidentally, it is pointed out, a lot of useful confidential information could be picked up by the doctors on their rounds that would help the party to stay in office.

And the Jackson (Tenn.) *Sun* comments metaphorically:

We are indeed a sick nation if we are willing to swallow such a pill. After swallowing it we would find that, instead of taking a progressive stimulant, we had taken a political opiate intended to dull our senses.

The editor of the Buffalo *News* suggests that the proposed measure provides for a setup "closely approaching that in the totalitarian nations." He urges, furthermore,

<sup>1</sup> United States News 15 46 (Aug 27) 1943

<sup>2</sup> America Aug 21, 1943, p 5-3



that the people if they have put upon them the full measure of social security proposed by the New York senator "soon would be in a condition to yield themselves up as wards of the state"

At its meeting held in Chicago on August 26 the American Bar Association gave its approval to a resolution opposing any legislation now before Congress which "seeks to establish Federal control of the medical profession and the regimentation of doctors and hospitals"

The periodical *Medical Care*<sup>3</sup> edited by Mr. Michael Davis suggests that the Wagner-Murray-Dingell bill was introduced on the demand of organized labor for the expansion of social security and that the timing may be accounted for by the probability that realists who are pushing this bill are more hopeful of dramatizing an issue for 1944 than of congressional action this year. The editorial indicates incidentally that the bill goes beyond the plans put forth by the President and the Social Security Board.

In his editorial Mr. Michael Davis suggests that American physicians can now be divided into three groups: those who support the policies of the American Medical Association; those who differ with them but who keep silent; and those who differ and say so publicly. Mr. Davis takes great encouragement from the statement recently released by Drs. John Peters, Channing Frothingham and others which apparently indicates to him a division in the medical profession and a gathering of strength against the policies of the American Medical Association.

Already an announcement has been made in the press that Senators Wagner and Murray propose to have early hearings on this measure. Certainly the Board of Trustees and the newly established Council on Medical Service and Public Relations will give early consideration to the manner in which the American Medical Association is to be efficiently represented in the proposed hearings.

Regardless of any other considerations on which there might be a difference of opinion among the vast majority of physicians of the United States, unity is demanded in the attack on the technic for rendering medical service proposed by the Wagner-Murray-Dingell bill. Senator Wagner in his public statement said "I do not claim this bill is in any sense a perfect instrument, it is offered simply as a basis for legislative study and consideration." Let us take the Senator at his word and prove to him and his colleagues by a complete and forceful presentation of the points of view of American medicine, how far from perfect is the measure that he has proposed.

## BLADDER TUMORS AND URINARY CARCINOGENS

The observations that epithelial tumors of the urinary bladder are often multiple and that they show a remarkable tendency to reappear after removal under circumstances that make it unlikely that the new tumors are either recurrences or local implantation metastases, have suggested to many the possibility that this epithelium in some persons is subjected to strong carcinogenic factors. It is uncertain what these factors are in the majority of patients with bladder tumors. In a few the cancers are due to chemicals, probably exogenous in nature, which are being excreted in the urine as has been known since Rehn<sup>1</sup> in 1895 described tumors of the bladder in workers with aniline dyes. Possibly a few are induced by arsenic.<sup>2</sup> The total number of aniline dye tumors of the bladder collected from the world's literature is over five hundred.<sup>3</sup> They therefore constitute a real therapeutic problem. But of greater importance is the principle which they illustrate, namely that bladder tumors can be induced by products excreted in the urine. Davis<sup>4</sup> has recently suggested that other chemicals commonly present in the environment might be additional causes of cancer of the bladder.

The possibility that endogenous chemicals formed in the body and excreted in the urine, also might cause bladder cancer must also be considered in view of the report by Steele, Koch and Steiner<sup>5</sup> claiming that carcinogenic activity has been demonstrated in extracts of human urine.

One argument sometimes advanced in attempts to minimize the importance of the aniline dyes as causes of bladder tumors is that they are not accompanied by an excessively great incidence of tumors higher in the urinary tract as might be expected if they were due to a substance being excreted by the kidney. This argument has lost its force since it has been shown by Hueper, Wiley and Wolfe<sup>6</sup> that dogs fed or injected with beta-naphthylamine develop tumors of the urinary bladder and not of the kidney, while Semproni and Morelli<sup>7</sup> produced kidney tumors and no bladder tumors by the injection of beta-anthraquinoline. Other dyes have also induced tumors of the bladder.<sup>8</sup> These experiments illustrate high biologic selectivity.

Why certain substances which are generalized in the body should select the mucosa of the urinary bladder

1 Rehn L. Blasengechwulste bei Fuchsin-Arbeitern. *Arch f. Klin. Chir.* 50: 388, 1895.

2 Goeckerman W. H. and Wilhelm L. F. V. Arsenic as the Cause of Cancer of Mucous Membrane. *Arch. Dermat. & Syph.* 42: 641 (Oct.) 1940.

3 Hueper W. C. Occupational Tumors and Allied Diseases. Springfield III: Charles C. Thomas, 1942, chapter 3.

4 Davis Edwin. Chemical Carcinogenesis. Drugs, Dyes, Remedies and Cosmetics with Particular Reference to Bladder Tumors. *J. Urol.* 49: 14 (Jan.) 1943.

5 Steele Robert, Koch F. C. and Steiner P. E. The Extraction of a Carcinogenic Fraction from Human Urine. *Cancer Research* 1: 614 (Aug.) 1941.

6 Hueper W. C., Wiley F. H. and Wolfe H. D. Experimental Production of Bladder Tumors in Dogs by Administration of Beta-Naphthylamine. *J. Indust. Hyg. & Toxicol.* 20: 46 (Jan.) 1937.

7 Semproni A. and Morelli E. Carcinoma of the Kidney in Rats Treated with Beta-Anthraquinoline. *Am. J. Cancer* 37: 303 (April) 1939.

and others the kidney for their carcinogenic action is no less, but probably no more, mysterious than why digitalis selects the heart, morphine the central nervous system or hormones their specific tissues for their actions.

The examples of chemically induced bladder tumors taken together with the older knowledge of bilharzia induced bladder tumors form an opening wedge in the solution of the causes of this type of cancer. A thorough investigation directed toward the discovery of additional possible chemical causes of bladder cancer, keeping in mind the possibility of both exogenous and endogenous carcinogens, appears highly desirable. It might become possible to prevent such tumors by prophylactic measures.

## Current Comment

### ADMINISTRATION VS. MINISTRATION IN MEDICAL CARE

Legislation transforming the methods of providing medical care has been proposed in Australia, Canada, New Zealand, South Africa and the United States. The discussion of the proposed plans divides into two sharply contrasting streams that may seem to be dealing with wholly different subjects. Politicians, civilian planners, social security officials and propagandists in behalf of collectivization speak and write almost exclusively about the machinery of administration. They are concerned about offices, jobs, the distribution of authority, financial arrangements, political pressure groups and lines of authority. Detailed reports in medical journals of recent discussions by medical associations in all of the countries concerned indicate that physicians are interested primarily in the effects of such plans on the quality of medical service to be rendered. A British physician characterizes this dichotomy of the discussion by saying that political writers and speakers are concerned primarily with "administration," while physicians are interested in "ministration," which, he points out, may be defined as "service."<sup>1</sup> The medical profession is worried about the preservation of the standards of medical education, diagnosis and treatment, maintenance of the type of patient-physician relation that centuries of experience have shown to be most helpful to the sick, and preservation of the initiative, independence and opportunity for research that have been responsible for the marvelous progress of medical science. These are the really important factors in any system of medical practice, certainly all of them will be harmed if placed under political control. To the degree that these essentials of medical practice have been made the responsibility of the medical profession and kept from the control of lay "administrators" have the "ministrations" of medicine grown continuously more effective in the treatment of disease and in the prolongation of human lives.

<sup>1</sup> Bourne, Geoffrey. *Medicine and Politics*, Brit. M. J. 1: 673 (May 29) 1943.

### RH ANTIBODY IN BREAST MILK

The possibility that Rh antibody is given off in breast milk in sufficiently high titer to cause additional blood destruction in Rh positive infants is suggested by data currently reported by Witebsky and his associates<sup>1</sup> of the University of Buffalo. Trace of Rh antibody in second week breast milk of an Rh negative mother who had given birth to an erythroblastotic child was first demonstrated about a year ago by the same authors.<sup>2</sup> Since then 2 additional cases have been studied in greater detail and at earlier stages after delivery. In the first case the mother, baby and putative father belonged to blood group A. The mother was Rh negative, while both the baby and the father were Rh positive. The mother's serum contained Rh antibody in sufficiently high titer to agglutinate the baby's Rh positive erythrocytes in dilutions as high as 1:256. On the fifth day after delivery (two days after the baby's death) the mother's milk agglutinated Rh positive erythrocytes in dilutions as high as 1:16. Still earlier tests were made with a second erythroblastotic child, in which case the titers of the Rh antibody in the maternal serum and colostrum were the same. This equality suggests that the Rh antibody content of breast milk is at a maximum during the first day after delivery, subsequently decreasing in titer. Assuming that ingested Rh antibodies pass unaltered through the intestinal mucosa to enter the circulation, Witebsky concludes that the colostrum and early breast milk of an Rh negative mother who had given birth to an erythroblastotic child might be a contributory factor in further blood destruction in the Rh positive infant.

### REHABILITATION OF THOSE REJECTED FOR MILITARY SERVICE

The selective service registrants who are rejected for military service, especially those who are rejected on neuropsychiatric grounds, constitute a special problem. The state of New Jersey<sup>1</sup> has developed a psychiatric screening plan under the auspices of the selective service system in cooperation with the Department of Institutions and Agencies and with social and health workers throughout the state. This mechanism is designed to collect all the available data bearing on the mental and nervous status and personality of the registrant. Social and health counselors are attached to the local draft boards. A rehabilitation program has been established in cooperation with private as well as public agencies. Following physical and psychologic restoration, young men will be enabled to take their full place in society as citizens and producers. The development of this program together with others of a similar nature will be of help in planning the postwar rehabilitation of many additional men in other areas who will require such assistance.

<sup>1</sup> Witebsky, Ernest, and Heide, Anne. *Proc. Soc. Exper. Biol. & Med.* 52: 280 (April) 1943.

<sup>2</sup> Witebsky, Ernest, Anderson, G. W., and Heide, Anne. *Proc. Soc. Exper. Biol. & Med.* 49: 179 (Feb.) 1942.

<sup>1</sup> Frankel, Emil. *Selective Service and the Public Welfare*. State of New Jersey, Department of Institutions and Agencies, Trenton, May 1943.



# MEDICINE AND THE WAR

In this section of *The Journal* each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

## ARMY

### DEDICATION OF THE ASHBURN GENERAL HOSPITAL

The U S Army Ashburn General Hospital at McKinney Texas was formally dedicated on August 12. Among other speakers on the program were Major Gen Norman T Kirk Surgeon General of the Army, Major Gen Richard Donovan commanding general of the Eighth Service Command, Hon J H Snapp mayor of McKinney, Mr Hanstord Ray president of the local chamber of commerce and Hon Sam Rayburn of Texas speaker of the U S House of Representatives.

The 1,530 bed hospital comprises 110 buildings which occupy a total of 270 acres of land and which are constructed in two parallel rows opening onto a common walkway. The buildings are of tile construction. The hospital was completed at a cost of more than \$3,000,000.

Col James B Anderson M C is the commanding officer and Col Clifford A Gray M C the executive officer. The professional staff as of August 19 was as follows:

#### MEDICAL SERVICE

Major John Harvey M C chief of the medical service  
Major Theodore L Blum M C assistant chief medical service  
Capt David M Kydd M C ward officer  
Capt Max M Montgomery M C ward officer  
Capt Samuel A Radbill M C ward officer  
1st Lieut William E Bloomer M C ward officer  
1st Lieut Robert A Major M C ward officer  
1st Lieut Norman Shaffel M C ward officer

#### SURGICAL SERVICE

Major Mordecai D Tyson M C chief surgical service  
Capt Stirling E Russ M C assistant chief surgical service  
Major Samuel L Schenfeld M C ward officer  
Major Sidney I Silbar M C chief urology section  
Capt Caesar Demko M C ward officer  
Capt William C Goodlett M C chief orthopedic section  
Capt John M McGowan M C ward officer  
Capt Herschal H Pevaroff M C ward officer  
Lieut John S Gaylor M C ward officer  
Lieut Woodrow W Lovell M C ward officer

#### EYE EAR NOSE AND THROAT

Major Warren M Dodge M C chief E E N T section  
Capt Gerson Lowenthal M C assistant chief E E N T section  
Capt Fay M Whitsell M C assistant chief E E N T section

#### LABORATORY

Capt Glenn R Backus M C chief laboratory section  
1st Lieut Joseph H Merovick Sn C assistant chief laboratory section  
1st Lieut Matthew A Bucca Sn C assistant chief laboratory section

#### X-RAY SECTION

Capt Robert J Ruby M C chief x-ray section

#### OUTPATIENT SERVICE

Capt Donald C Merhion M C chief outpatient service

#### NEUROPSYCHIATRIC SECTION

Major Arthur J Gavigan M C chief neuropsychiatric section

#### PHYSICAL THERAPY SECTION

1st Lieut Paul M Kistler M C chief physical therapy section

### PRISONER OF THE JAPANESE

According to the *Detroit Free Press*, Capt Edward R Nell of the Army Medical Department formerly of Kalamazoo Mich is a prisoner of the Japanese. A card received by his parents in August stating that he was well was the first word from him since the fall of Bataan about seventeen months ago.

### LIEUTENANT COLONEL PRATT COM- MANDS NEW HOSPITAL IN ENGLAND

A new general hospital in London has been acquired by the United States Army from the British government under reverse lend lease procedure. The building, which was formerly an infants hospital, was redesigned by United States engineers and rebuilt by the British Ministry of Works. It is used mainly for the treatment of emergency cases and minor illnesses and is open to members of the Army and Navy merchant seamen, U S Embassy personnel, Wacs and American Red Cross workers.

The commanding officer is Lieut Col Henry N Pratt of Boston a Harvard graduate and allergy specialist. The executive officer is Major Maurice J Abrams of Brewton Ala a graduate of Johns Hopkins. Major Abrams, formerly an internist on the staff of the University of Maryland, is also chief of medical services. Other department heads are Major Sherwood Russell University of Maine graduate and former surgeon at St John's Mich who is chief of surgical service and Chief Nurse Juanita Bronson, a native of Bucyrus, Ohio and graduate of Grant Hospital Columbus, Ohio.

The hospital is equipped with the latest technical apparatus mostly of American design, the general hospital equipment, however, is British. There is a dental clinic and an x-ray department, which is in charge of Capt Thomas C Worth of Raleigh, N C. Capt Miles Gullingsrud of Three River Falls Minn sees that army cooks provide a healthful American hospital diet in food rationed England. Eggs, cereal, fresh milk and vegetables are given by the British under reverse lend-lease, and extra eggs and milk are obtainable for special cases. Patients even get ice cream made from evaporated milk and powdered eggs. Cheerful wards are furnished with American adjustable beds and with large leather chairs provided by Britons. Ice boxes taken from blitzed London apartments serve the post exchange.

### WACS TO BE ENROLLED IN ARMY-NAVY HOSPITAL SCHOOL

The War Department announced on August 19 that new opportunities have been opened to members of the Women's Army Corps for training and service in the Army Medical Department. Beginning September 10 the first of more than a thousand members of the WAC will be enrolled in the Army-Navy Hospital School Hot Springs Ark., in military hospital training courses. Graduates will be assigned to duty at general and station hospitals. This action is indicative of the opportunities that will present themselves to members of the Women's Army Corps. Each Wac selected to attend the school will be given training in one of five courses. New classes will be started on the tenth day of each month. Three of the courses—those for training x-ray technicians—are of three months duration. For each of these forty-five women will be selected initially. Courses for training medical and surgical technicians are of two months duration for each of which a hundred Wacs will be selected initially. The new field of training now opened to members of the WAC has heretofore been restricted to male military personnel.

## AVIATION MEDICAL EXAMINERS

Graduation exercises were held at the School of Aviation Medicine, Randolph Field, Texas, on July 15, following completion of the course for aviation medical examiners. The didactic portion of the course was conducted at Randolph Field, Texas, and the practical portion of the course at the three army air forces classification centers. The list of students graduating follows:

## ALABAMA

Charles A. Brumhauer, Captain  
Whistler  
Joe H. Little, Major, Mobile  
Keith W. McPartridge, Major, Tuscaloosa

## ARIZONA

Donald Marcus, 1st Lieut., Phoenix  
Harry T. Southworth, Captain, Prescott

## ARKANSAS

Maurice W. Chastain, 1st Lieut., Bentonville

## CALIFORNIA

Dudley Philip Bell, 1st Lieut., Oakland  
Samuel C. Benardom, 1st Lieut., Beverly Hills  
Robert Vernon Carter, 1st Lieut., Torrance  
John G. Clegg, 1st Lieut., Los Angeles  
Ralph C. Clevinger, 1st Lieut., Los Angeles  
Robert J. Douds, 1st Lieut., Bakersfield  
George J. Ferris, 1st Lieut., San Francisco  
Lynn Force, Captain, Oakland  
David Frost, 1st Lieut., Woodland  
William L. Gilmore, 1st Lieut., San Francisco  
Edward I. Healey, 1st Lieut., San Francisco  
Lloyd B. James, 1st Lieut., Fresno  
Harold R. Osander, Captain, Los Angeles (San Marino)  
David P. Winkler, Captain, Los Angeles

## COLORADO

Gaylor R. Chase, Captain, Denver  
Arthur B. Hardy, Captain, Denver  
John W. Hewatt Jr., Major, Denver  
Joseph H. Lyday, Captain, Denver  
Nicholas S. Saliba, Major, Walsenburg  
Henry C. Willumsen, Captain, Colorado Springs

## CONNECTICUT

Stephen P. Cortes, Captain, Suffield  
Harold Ira Harvey, 1st Lieut., New Britain  
Edward Martin, 1st Lieut., Rockville  
Henry T. Posey, 1st Lieut., New Haven  
James S. Walsh, Captain, Bridgeport

## DISTRICT OF COLUMBIA

Alexander Halperin, Captain, Washington  
Francisco L. Sureda, Lieut. Col. (Uruguayan Officer) Embassy of Uruguay, Washington  
Sherman A. Thomas, 1st Lieut., Washington  
Redmond B. Walsh, 1st Lieut., Washington

## FLORIDA

Charles R. Burbacher, Captain, Coral Gables  
William Arnold Christian, Captain, Miami Beach  
George H. McSwain, Captain, Arcadia  
Efton J. Thoms, 1st Lieut., Miami Beach  
Sol C. Werblow, 1st Lieut., Miami Beach  
Fred E. Whaley, 1st Lieut., St. Petersburg  
Kenneth S. Whitmer, Captain, Miami

## IDAHO

John W. Davis, Captain, Glenns Ferry

## ILLINOIS

Edward M. Baskerville, Captain, Joliet  
Thomas J. Bonick, 1st Lieut., Chicago Heights  
Sheldon S. Brown, Lieut. Col., Rantoul  
William H. Delicate, Captain, Edwardsville  
Willis G. Dissenbrugh, Captain, Chicago  
Allan Michel Goldman, Captain, Chicago  
Kendall Decatur Gregory, Captain, Decatur  
Stanley R. Grudzien, 1st Lieut., Chicago  
Joseph H. Kaplan, 1st Lieut., Rialford  
Clayton J. Lundy, Major, Chicago  
Foster L. McMillan, Major, Chicago  
Kenneth J. Malmberg, 1st Lieut., Auburn  
Hosmer T. Merrell, 1st Lieut., Chicago  
John E. Miller, Captain, Quincy  
Joseph M. Mitrick, Captain, Chicago  
Milton M. Mosko, Captain, Chicago  
William H. Orcutt, Captain, Chicago  
Henry J. Parler, 1st Lieut., Chicago  
Charles E. Pugh Jr., 1st Lieut., Chicago  
Peter A. Reiersen, Captain, Menomono  
Louis P. River, Major, Oak Park  
Frank J. Suletta, 1st Lieut., Chicago  
Albert Frank Stein, Major, Chicago  
Joseph G. Stone, 1st Lieut., Cicero  
Henry S. Swiontek, 1st Lieut., Berwyn  
Max T. Van Orden, 1st Lieut., Chicago  
LeRoy E. Walter, 1st Lieut., Chicago  
Harold H. Was, 1st Lieut., Chicago  
Charles L. Watters, 1st Lieut., Geneseo  
Tom L. Weber, 1st Lieut., Olney

## INDIANA

Henry Fisher, 1st Lieut., Marion  
Arthur F. Hoffman, 1st Lieut., Fort Wayne  
Robert B. Miller, 1st Lieut., Napanee  
Bernard J. Mulcahy, Captain, Muncie  
David Leslie Smith, Major, Indianapolis  
Russell J. Spivey, Major, Indianapolis

## IOWA

James W. Bookhamer, 1st Lieut., Iowa City  
Bertram H. Dessel, 1st Lieut., Ossian  
Dean Harold King, Captain, Spencer  
William T. McElhinney, Captain, Iowa City  
Eugene C. Penn, 1st Lieut., West Des Moines  
Howard H. Smerd, Captain, Newton  
Ernest M. Van Patten, 1st Lieut., Fort Dodge

## KANSAS

Clovis W. Bowen, 1st Lieut., Valley Falls  
Donald E. Bux, 1st Lieut., Manhattan  
Arnold F. Nothnagel, Captain, Kansas City  
Edward H. Stratemeier Jr., 1st Lieut., Wichita  
Ronald C. Vetter, 1st Lieut., Lawrence  
Paul B. Young, 1st Lieut., Wichita

## KENTUCKY

David W. Barrow, Major, Lexington  
Forrest Lloyd Blair, 1st Lieut., Louisville  
Chester C. Brummett, 1st Lieut., Middlesboro  
Roy A. Hulse, 1st Lieut., Louisville  
Harmon T. Smiser, Captain, Cynthiana

## LOUISIANA

Edmond Preston Ferguson, Captain, Shreveport  
John H. Pison Jr., 1st Lieut., Shreveport  
Otis D. Swan, 1st Lieut., New Orleans

## MAINE

Thomas E. Proctor, Captain, Boothbay Harbor  
John E. Smith, 1st Lieut., Bangor  
Charles A. Worthen Jr., 1st Lieut., Bangor

## MARYLAND

James H. Walker, 1st Lieut., Baltimore

## MASSACHUSETTS

Samuel Bachrach, Major, Worcester  
Richard Francis Connolly, 1st Lieut., Danvers  
Edward B. Farren, 1st Lieut., Brockton  
Harold Henry Hamilton, Major, Plymouth  
Edward C. Harrington, 1st Lieut., Holyoke  
Louis S. Irwin, 1st Lieut., Boston  
John J. O'Neill, 1st Lieut., Salem  
Emerson A. Read, 1st Lieut., Quincy  
Max A. Sherman, 1st Lieut., Worcester  
Raoul E. Vezina, Captain, Springfield

## MICHIGAN

Dean Regis Asselin, 1st Lieut., Detroit  
Louis Beresh, Captain, Detroit  
Herbert Milton Blair, 1st Lieut., Sault Ste. Marie  
Wilbur G. Braham, 1st Lieut., Battle Creek  
Charles W. Brooks II, 1st Lieut., Detroit  
Ralph F. Helzer, 1st Lieut., Tecumseh  
John William James, Captain, Saginaw  
Frank D. Johnson, Major, Flint  
George T. Kelleher, Captain, Battle Creek  
Clarence W. Reuter, Major, Bay City  
Robert R. Wright, 1st Lieut., Detroit

## MINNESOTA

Ralph Theodore Anderson, 1st Lieut., St. Paul  
Carl L. Eckhardt, 1st Lieut., Austin  
Allen Gray Johnson, Captain, Brainerd  
Peter J. Pinkratz, 1st Lieut., Mountain Lake  
Karl W. Pleissner, 1st Lieut., Sauk Center  
Henry J. Reif, 1st Lieut., St. Paul  
Howard A. Shaw, 1st Lieut., Lake Park  
Raphael J. Weisberg, Captain, Excelsior

## MISSISSIPPI

John W. Long, 1st Lieut., Sallis

## MISSOURI

James William Allee, 1st Lieut., Eldon  
George Burton Appleford, 1st Lieut., Lewiston  
Charles Cobene Crites Jr., 1st Lieut., Caruthersville  
David P. Edmundson, 1st Lieut., New Madrid  
Paul F. Fletcher, Major, St. Louis  
John R. Franck Jr., 1st Lieut., St. Louis  
James A. Kinder Jr., 1st Lieut., St. Louis  
Gerald L. Miller, Captain, Kansas City  
Carl A. Schuck, Lieut. Col., St. Louis  
Emil A. Stricker, Captain, St. James

Edward L. Taylor, 1st Lieut., Steele  
Paul B. Vatterott, 1st Lieut., Clayton  
Samuel R. Warson, Captain, St. Louis

## MONTANA

Horace H. Koessler, 1st Lieut., Seeley Lake  
Francis W. Paul, 1st Lieut., Big Timber

## NEBRASKA

Ernest L. Blackmun Jr., 1st Lieut., Omaha

## NEVADA

Irvin Morgenroth, 1st Lieut., Ruth

## NEW HAMPSHIRE

Philippe J. Cote, 1st Lieut., Manchester

## NEW JERSEY

Maurice A. Chodosh, 1st Lieut., Carteret  
William Thomas Richard Cox, Captain, Elizabeth  
Frederick C. DeTroia, Captain, Newark  
David H. Dreizin, Captain, Passaic  
Winslow S. Edgerly, Major, New Rochelle  
Joseph D. Gatti, 1st Lieut., Hackensack  
John H. Harrington, Captain, Rockaway  
Meyer Leonard Kimmel, 1st Lieut., Jersey City  
Montague A. Roberts, Captain, Englewood  
Bertram Hartzell Smith, 1st Lieut., Haddon Heights  
Gordon V. Stoddard, Captain, East Orange  
Martin E. Swiecicki, 1st Lieut., Barrington  
Belford A. Weeks, 1st Lieut., Absecon

## NEW MEXICO

Vincent Marchese, Captain, Toluca

## NEW YORK

Hugh Gordon Anderson, 1st Lieut., Troy  
Clarence R. Becker, Captain, Troy  
Michael Stephen Brody, Captain, Brooklyn  
Walter Ambrose Carey, 1st Lieut., Yonkers  
Joseph Thomas Coviello, 1st Lieut., Brooklyn  
Anthony L. Cimildora, Captain, Auburn  
Louis Copulsky, 1st Lieut., Brooklyn  
Edwin Brown Davis Jr., 1st Lieut., New York  
Maxwell David Flank, 1st Lieut., Brooklyn  
Irving Graber, Captain, Brooklyn  
Milton Greenberg, Captain, New York  
Ernest T. Heffer, Captain, Brooklyn  
Edward G. Jeruss, Captain, Jamaica  
Joseph Kriegler, Major, Lackawanna  
Gerard C. Maglio, Captain, White Plains  
Roger S. Mitchell, Captain, Glen Falls  
Robert Clinton Page, Major, Mount Vernon  
Herman Selinski, Major, New York  
William F. Sharkey, Captain, Whitestone  
Patrick G. Sickenberger, 1st Lieut., Brooklyn  
Anthony V. Sisco, 1st Lieut., Rye  
Douglas G. Smiley, 1st Lieut., New York  
Wilbur Anderson Smith, Captain, Oaklyn N. J. (New York)  
Arnold F. Snyder, 1st Lieut., New York  
Harry A. Taylor, 1st Lieut., Kenmore  
Louis Testel, Captain, New York  
Nester John Totero, Captain, New York  
Donald C. Tulloch, Captain, Ogdensburg  
Irving Wecksell, 1st Lieut., New York  
James R. West, 1st Lieut., Port Jervis  
Daniel A. Wilcox, Captain, Mount Kisco

## NORTH CAROLINA

Alon C Kay Major  
Greenboro  
Brockett K Lyon Major Greensboro

## NORTH DAKOTA

Verrill I Fischer 1st Lieut  
Towner

## OHIO

Frank William Ammer 1st Lieut Springfield  
Joseph John Bell 1st Lieut Cincinnati  
Robert I Doernberg 1st Lieut Spencerville  
Deane C Epler Captain Columbus  
Ferdinand A Geis Captain Cleveland  
Arvine W Harrold 1st Lieut Tiffin  
James R Hart 1st Lieut Cleveland  
Martin M Horowitz Captain Columbus  
Henri A Kern 1st Lieut Kenton  
Harry Edward King Captain Dayton  
Bernard B Larsen Major Cleveland (Shaker Heights)  
Henry Luiders Captain Cleveland  
Adelbert M Mills Captain Ashland  
James F Mills 1st Lieut Cincinnati  
William E Molle 1st Lieut Cincinnati  
Robert E Odom Major Youngstown  
Owen F Patterson Captain Hiram  
Frank I Pickett 1st Lieut Cleveland  
Carl W Roth Captain Columbus  
Leonard G Steuer Major Cleveland  
John M Wilcox III 1st Lieut, Cleveland (Lakewood)  
Carl E Zeithaml Major Chagrin Falls

Robert F Ziff 1st Lieut Dayton

## OKLAHOMA

William H Cantrell 1st Lieut, Edmond  
Bryan I Cordenier Major Edmond  
Jadore Dyer Captain Tahlequah  
Claude Williams 1st Lieut Anadarko

## OKIGON

Earl W Douglas 1st Lieut Fort Lind  
Alfred J French 1st Lieut, Marshfield  
William Joseph Moore 1st Lieut Grants Pass  
George L Kay 1st Lieut Fort Lind

## PENNSYLVANIA

Albert M Biele 1st Lieut Norristown  
James A Biggins 1st Lieut Sharpville  
Charles K Brauer Captain Philadelphia  
Alfred S Damiani 1st Lieut Philadelphia  
Andrew A Deering 1st Lieut Huntingdon Valley  
Edgar J Douglas 1st Lieut Oakmont  
John M Hollingsworth 1st Lieut Girard  
Henry J Kohler Captain Philadelphia  
Harold B Lang 1st Lieut Fox Chapel  
Leo A Levine 1st Lieut Oil City  
David R Patrick 1st Lieut Monaca  
Ephraim M Roset 1st Lieut Philadelphia  
Cyrus B Skuse 1st Lieut Elderton  
Robert R Smith 1st Lieut Philadelphia  
Nathaniel R Thomas Captain Scranton

Sydney Waldman 1st Lieut Philadelphia  
Harley I Warner 1st Lieut, Philadelphia  
Neil K White 1st Lieut Philadelphia

## SOUTH CAROLINA

James W Harter Captain Orangeburg

## TENNESSEE

John Dorritte Evans Major, Memphis  
James O Fields 1st Lieut Milan  
James I Goldberry Captain Nashville  
Thomas P Manigan Major Memphis  
Francis Marcus Captain Mountain Home  
Paul W Wilson Captain Dresden

## TEXAS

Frank Joseph Altick 1st Lieut Dallas  
Ervin F Biden Captain Raymondville  
George K Branch Jr 1st Lieut Dallas  
Dun Hines Clark Captain Crowell  
Jack K Hild Captain Houston  
Jere Becker Johnson 1st Lieut Pampa  
Clenn E Kahler Captain Galveston  
Maurice Kaufmann Captain Dallas  
Cuvier P Lipcomb 1st Lieut Denison  
Weldon W Stephen Captain Calveston  
Charles W Yates Captain Rosenberg

## VIRGINIA

John E Fiesel Jr 1st Lieut Newport News  
Norman Solled 1st Lieut Highland Springs  
Harry I Warthen Jr Major Richmond

## WASHINGTON

Walter Scott Brown 1st Lieut, Seattle  
Harold C Hines 1st Lieut Toppenish  
John I McDermott 1st Lieut Chehalis  
Leonard G Morley 1st Lieut Tacoma  
Ervin Edson Nichols 1st Lieut, Port Angeles  
Elmer A Reisinger Captain Seattle  
John W Wichman 1st Lieut, Seattle  
Ernest J Wollenweber 1st Lieut Seattle  
Quentin L Wood 1st Lieut Seattle

## WEST VIRGINIA

James Howard Gray Captain Clendinning

## WISCONSIN

Edward Anthony Backus 1st Lieut Milwaukee  
Robert Moffat Moore 1st Lieut Sparta  
Harry Prudowky 1st Lieut Milwaukee  
Phil I Salkeld 1st Lieut Milwaukee

## WYOMING

Nathaniel Olds Williams 1st Lieut Cody

## BIRMINGHAM

Bertram H Seiffer 1st Lieut Kings Point

## CANAL ZONE

Peter J Guokas 1st Lieut Balboa

## HAWAII

Francis P Meyer Jr 1st Lieut Pahala

## MISCELLANEOUS

REHABILITATION SERVICES TO THE  
BLIND AND DEAF

Walter E Barton, MD

Major Neuropsychiatry Branch Surgeon General's Office  
WASHINGTON D C

Deafness and blindness are deprivations of an essential means of orientation of the normal person. The particular emotional problems of the newly blinded and deafened and their need for assistance in learning how to live without sight and hearing create a need for specialized rehabilitation.

It has been established that it is essential to make an early contact with the handicapped soldier by trained personnel who can encourage him and help him to look forward hopefully to the future. Oftentimes the onset of blindness or deafness is coincident with convalescence from severe medical illness or complicating wounds which will confine a patient in the hospital for a long period of time. Early treatment which restores some of the patient's confidence and optimism will do much to shorten the rehabilitation period. It is the intention of the Medical Department to make available during the period of Army hospitalization a rehabilitation service to all who lose their eyesight or their hearing either here or abroad. The Army does not intend to take over the entire rehabilitation program that is the province of the Veterans Administration for pensionable disabilities or in cases not eligible for veterans benefits of the state vocational rehabilitation services.

The Surgeon General of the Army has designated certain Army hospitals for the care of the blind and the deaf. Valley Forge General Hospital in Phoenixville, Pa and the Letterman General Hospital San Francisco have been designated for the care of the blind. Walter Reed General Hospital Washington D C, Hoff General Hospital Santa Barbara Calif and the Borden General Hospital Chickasha, Okla, have been designated for the care of the deaf.

Well qualified specialists in diseases of the eye and ear and related specialties have been assigned to the designated special

hospitals. In hospitals for the blind, teachers instruct the patient in self care, social adjustment, the use of the talking book, braille reading and writing, the use of braille watches and other techniques used by the blind to compensate for the loss of sight. Occupational therapists teach motor coordination to the blind and the principles of work activity without the aid of sight.

In the hospitals for the deaf lip reading teachers and speech teachers instruct the person how to read lips and to carry on normal social relationships without the aid of hearing. Many of the hard of hearing are helped by hearing aids.

The American Red Cross social worker assists in the transition between the hospital and the home and prepares the family for the reception of the handicapped person. An emotionally upset and overly sympathetic family may through its pity, destroy much of the self confidence and self reliance that the patient will learn unless it is prepared to meet the situation wisely.

It is to be hoped that, if instead of dreary endless days or self pity during convalescence in Army hospitals there are substituted full and busy days of retraining and hopeful anticipation of an interesting future, many soldiers will overcome the handicap of blindness and deafness.

REGISTRANTS WITH POSITIVE  
SEROLOGIC REACTIONS

The U S Public Health Service working with state and local health officers, will present to each local board of the Selective Service System through its state director or Selective Service a form (VM 1220) containing the initials of registrants who have been found to have a positive serologic reaction. The local board will fill in certain data on this form and return it through the state director of Selective Service to the local health officer indicated thereon. In due time after the form has been delivered to the local health officer the local board will receive through its state director or Selective Service

another U S Public Health Service form (VM 1222) which again lists the order numbers and initials of registrants having a positive serologic reaction and indicates opposite the order new pertinent data with reference to treatment received by the registrant or his physical fitness for service. The director of the Selective Service System, Lewis B. Heisley, in Local Board Memorandum No 184, issued on July 8, calls special attention to certain columns in form VM 1222 which should be acted on by the local board: (1) needs treatment, (2) now available, (3) probably never available. Director Heisley in this memorandum sets forth the procedure to be used in cooperating with the Public Health Service in making a checkup on registrants with a positive serologic reaction.

### HOW HOSPITALS CAN EASE THE NURSING SHORTAGE

According to the American Red Cross, Army nurses are now on duty in 537 stations in the United States and in 28 countries outside the United States: Africa, Alaska, Aruba, Australia, Bermuda, Canada, Egypt, England, the Fiji Islands, Greenland, Hawaii, Iceland, India, Iran, Ireland, Jamaica, Newfoundland, New Caledonia, New Guinea, New Zealand, Pantelleria, Palestine, Panama, Puerto Rico, Philippine Islands, South America (Brazil), Sicily, Trinidad.

Navy nurses are on duty in 212 stations in the United States, including all naval air stations in the interior. They are assigned also to 27 countries outside the continental United States, including Alaska, Hawaii, Puerto Rico, Cuba, the Panama Canal Zone, Australia, Trinidad, the Virgin Islands and many of the islands of the South Pacific. They are at work on the two navy hospital ships *Solace* and *Relief* and will go on duty on the two new hospital ships after they are commissioned.

Nurses of the Army and Navy are flying to distant outposts to bring back wounded soldiers to general hospitals to the rear of the battle fronts or in this country, they are serving on troop transports which fly through enemy infested waters in every part of the globe, they are working in tent hospitals so close to the fighting that a helmet is an essential part of their uniform, they are helping pick up the wounded in the South Pacific who without their ministrations on hospital ships might have died. Courageous and devoted to duty, they are hailed as "good soldiers" in hundreds of hospitals in this global war.

Definite ways in which hospitals can make adjustments so as to ease the nursing shortage and make it possible for more nurses to be released for military duty without endangering life and health of their patients are:

- 1 Increased use of Red Cross Volunteer Nurse's Aides
- 2 Increased use of part time graduate nurses who are not able to give full time, this will mean adjustment to time honored schedules so as to suit the convenience of married women with home responsibilities
- 3 Use of special nurses for critically ill patients only
- 4 Increased use of group nursing so as to allow one special nurse to care for 2 or more patients
- 5 Elimination of all luxury nursing, regardless of the financial status of the patient
- 6 Careful study of nursing practice, so as to limit nurses to the carrying on of professional duties only, thus turning over more duties to nonprofessional aides
- 7 Careful screening of surgical operations so as to include only urgent cases
- 8 Better understanding on the part of hospital management, including board members, that it is their patriotic duty to allow nurses to join the Army or Navy and to put no obstacle in their path
- 9 Adherence to regulations about visiting hours
- 10 Prescribing of certain hours for the delivery of flowers for patients

### ANNUAL MEETING OF ASSOCIATION OF MILITARY SURGEONS

The fifty-first annual meeting of the Association of Military Surgeons of the United States will be held at the Bellevue-Stratford Hotel, Philadelphia, October 21-23, under the presidency of Rear Admiral William L. Mann (MC), U S Navy. The program will comprise lectures by officers on active duty, some of whom recently returned from the battle fronts, a practically continuous schedule of motion pictures, scientific and technical exhibits, teaching panels, and entertainment.

Hon. Edward Martin, governor of Pennsylvania, Bernard Samuel, mayor of Philadelphia, and Dr. Eugene Pondergrass, president of the Philadelphia County Medical Association, will give addresses of welcome. Major Gen. Norman T. Kirk, Surgeon General, U S Army, Rear Admiral Ross T. McIntire, Surgeon General, U S Navy, and Dr. Thomas Parran, Surgeon General, U S Public Health Service, will speak. General Kirk will preside at Army Night on Thursday, on which occasion President Roosevelt will greet the assembly by radio and the Chinese ambassador, Dr. Wei Tao-Ming, will give a nationwide radio address. At Navy Night on Friday Rear Admiral McIntire will preside and the Secretary of the Navy, Hon. Frank Knox, will give an address (*THE JOURNAL*, June 12, p 446).

### WARTIME GRADUATE MEDICAL MEETINGS

A number of tentative programs of Wartime Graduate Medical Meetings have been previously listed in *THE JOURNAL* (June 5, p 382, July 3, p 683). Two additional tentative programs have now been prepared.

Dr. Frederick A. Collier is national consultant for the six hour schedule on the subject of trauma to the abdomen. This is to include discussions of the pertinent anatomy and physiology, classification of abdominal wounds, treatment of wounds and postoperative treatment including the management of complications.

Urology, with Dr. Herman L. Kretschmer, President-Elect of the American Medical Association, as national consultant, has a tentative program involving four days, each with a six hour teaching schedule. The first day is to include injuries of the genitourinary tract and inflammatory lesions of the genitourinary tract. The second day is to be devoted to the bladder, including stones and tumors. On the third day disorders of the prostate, urethra, scrotum, epididymis and penis are to be discussed. The final six hour teaching schedule, on the fourth day, is to be devoted to the acute retention of urine, the technique of catheterization anuria, and spinal cord bladder following cerebrospinal injuries.

### BRAZILIAN OFFICERS OBSERVE METHODS AT FIELD SERVICE SCHOOL

Two Brazilian army medical officers are students in the 34th Officers Training Battalion at Carlisle Barracks, Pennsylvania, observing the methods taught at the Medical Field Service School. They are members of a group of Brazilian officers who are noting army methods in various camps of this country. After this six weeks course is completed they expect to tour another army camp before returning to Brazil.

Capt. Alvaro Menezes Paes graduated from the University of Rio de Janeiro in 1929, then entering private practice until 1935. Capt. Americo Doyle Ferreira also attended the University of Rio de Janeiro, where he received his M.D. degree and engaged in private practice in Recife for a year. Both officers served internships in Rio de Janeiro hospitals.

### ARMY-NAVY E

The employees of the W. A. Baum Company, New York, makers of blood pressure apparatus, were awarded the Army-Navy E for achievement in producing necessary war equipment at a ceremony in New York on August 20. Lieut. Col. R. R. Patch of the Sanitary Corps of the Army presented the flag to Mr. W. A. Baum, president of the company, and Capt. Ernest R. Eaton (MC), USNR, presented the E pins to the oldest employee of the company, Mr. H. C. Rasmussen.

# ORGANIZATION SECTION

## OFFICIAL NOTES

### MEDICAL MOTION PICTURES

Medical motion pictures are available on a loan basis from the American Medical Association to medical societies, medical schools, hospitals and other scientific groups. Requests should be instituted as far in advance as possible so that the proper reservations can be made. The exact shipping addresses and dates should be given at the time of the request, also the type of apparatus in which the film is to be run. Responsibility for the projection and care of the film must be borne by the individual or organization which is borrowing it. The American Medical Association does not have projectors available for loan.

The only expense incurred is that of transportation both ways. However, careless handling resulting in serious damage may be charged to the borrower.

Requests should be sent to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago 10.

### ANESTHESIA

#### *Dynamics of Respiration*

Silent, Colored 16 mm, 2 reels, 400 feet each  
Running time about 2 minutes  
Dynamics of respiration showing normal respiration, respiration in various stages of anesthesia and in different pathologic conditions.  
Prepared by the Departments of Anesthesia, Radiology and Photography, University of Wisconsin Medical School, Madison for the Special Exhibit on Anesthesia of the American Medical Association.

#### *Regional Anesthesia for Operations on the Neck*

Silent 16 mm, 1 reel, 400 feet  
Running time about 16 minutes  
Film shows detail of technique of anesthesia for operations on the neck.  
Prepared by Dr. Ralph M. Towell, Section on Anesthesia, the Mayo Clinic, Rochester, Minn., for the Special Exhibit on Anesthesia of the American Medical Association.

#### *Signs of Inhalation Anesthesia*

Silent 16 mm, 2 reels, 300 feet each  
Running time about 25 minutes  
Details of signs of inhalation anesthesia with charts presented by Dr. Arthur E. Guedel, Los Angeles.  
Prepared by Dr. Henry S. Ruth and Dr. J. Harvey Sigafos, Department of Anesthesia, Hahnemann Hospital, Philadelphia, for the Special Exhibit on Anesthesia of the American Medical Association.

#### *Technic of Blocking Sacral Nerve*

Silent 16 mm, 1 reel, 400 feet  
Running time about 15 minutes  
Film shows details of technique for blocking sacral nerve.  
Prepared by the Section on Anesthesia, the Mayo Clinic, Rochester, Minn., for the Special Exhibit on Anesthesia of the American Medical Association.

#### *The Technic of Carbon Dioxide Absorption in Anesthetic Atmospheres*

Silent 16 mm, 2 reels, 400 feet each  
Running time about 30 minutes  
Details of technique for absorbing carbon dioxide in anesthetic atmospheres.  
Prepared by Departments of Anesthesia and Photography, University of Wisconsin Medical School, Madison, for the Special Exhibit on Anesthesia of the American Medical Association.

#### *The Role of Carbon Dioxide in Convulsions During Anesthesia*

Silent 16 mm, 1 reel, about 200 feet.  
Running time about 7 minutes  
The picture shows convulsions during anesthesia and their control.  
Prepared by Departments of Anesthesia, Radiology and Photography, University of Wisconsin Medical School, Madison.

### PHYSICAL THERAPY

#### *Aids in Muscle Training*

Silent 16 mm, 1 reel, 300 feet  
Running time about 12 minutes  
Demonstration of ling suspension exercises for the upper and lower extremities, graded exercises on a powdered board for the lower extremities and three kinds of walkers for reeducation exercises.  
Prepared by the Council on Physical Therapy, American Medical Association, 535 North Dearborn Street, Chicago.

#### *Contraction of Arteries and Arterioles Under Stress*

Silent 16 mm, 1 reel, 250 feet  
Running time 10 minutes  
This film visualizes the contraction of arteries and arterioles under stress as seen through a glass chamber installed in a rabbit's ear.  
Prepared by Dr. F. K. Clark, University of Pennsylvania School of Medicine, Philadelphia.

#### *Effects of Heat and Cold on the Circulation of the Blood*

Silent 16 mm, 1 reel, 300 feet  
Running time 12 minutes  
Demonstration of the effect of heat and cold on circulation as seen through a glass chamber installed in a rabbit's ear.  
Prepared by Dr. F. K. Clark, University of Pennsylvania School of Medicine, Philadelphia.

#### *Effects of Massage on the Circulation of the Blood*

Silent 16 mm, 1 reel, 200 feet  
Running time 8 minutes  
Demonstration of the effect of massage on circulation as seen through a glass chamber installed in a rabbit's ear.  
Prepared by Dr. E. R. Clark, University of Pennsylvania School of Medicine, Philadelphia.

#### *Massage*

Silent 16 mm, 1 reel, 100 feet  
Running time 4 minutes  
Demonstration of technique of massage describing the various movements and why they are performed in a given way.  
Prepared by the Council on Physical Therapy, American Medical Association, 535 North Dearborn Street, Chicago.

#### *Occupational Therapy*

Silent 16 mm, 1 reel, 300 feet  
Running time 12 minutes  
This film demonstrates occupations that may be prescribed by physicians to motivate and control the desired physical or mental activity of the patient and assist in his adjustment to long hospitalization. A section on cerebral palsy is included, picturing indirect muscle training through prescribed activity and stressing the importance of early treatment to prevent growth of faulty habit patterns.  
Prepared by the Council on Physical Therapy, American Medical Association, 535 North Dearborn Street, Chicago.

#### *Underwater Therapy*

Silent 16 mm, 1 reel, 400 feet  
Running time about 16 minutes  
Presentation of therapeutic use of large and small exercise pools, Hubbard tanks and home made tanks and demonstration of types of exercises given in cases such as infantile paralysis, cerebral palsy and postoperative congenital dislocation of the hip.  
Prepared by the Council on Physical Therapy, American Medical Association, 535 North Dearborn Street, Chicago.

### SYPHILIS

#### *Syphilis—A Motion Picture Clinic (1927)*

Sound 16 mm, 4 reels  
The four parts may be scheduled separately for successive meetings or all shown at one meeting. The picture provides a complete summary of the present day knowledge of syphilis in all its forms.  
Part 1: Diagnosis of Early Syphilis by Dr. John H. Stokes, 15 minutes  
Part 2: Treatment of Syphilis by Dr. Harold N. Cole, 17 minutes  
Part 3: Latent and Late Syphilis by Dr. Paul A. O'Leary and Dr. Joseph Earle Moore, 21 minutes  
Part 4: Syphilis in Pregnancy and Congenital Syphilis by Dr. James R. McCord and Dr. Philip C. Jeans, 15 minutes  
Sponsored jointly by the American Medical Association and the United States Public Health Service.  
Produced by Burton Holmes Films, Inc., 7510 North Highland Avenue, Chicago.

#### *Syphilis—A Teaching Film (1942)*

Sound 16 mm, 3 reels  
The three parts can be scheduled separately for successive meetings. The picture is an effective presentation of the essentials of the diagnosis and treatment of syphilis from the professional point of view.  
Part A: Diagnosis of Early Syphilis, 18 minutes

Part B Diagnosis of Latent Syphilis, 14 minutes  
Part C Management of Syphilis, 29 minutes  
Prepared by United States Public Health Service

## OTHER SUBJECTS

*Blood Transfusion*

Silent 16 mm, 1 large reel, 1,200 feet  
Running time about 45 minutes  
Three methods of blood transfusion illustrated in detail  
Sponsored by the Blood Transfusion Betterment Association, 39 East 78th Street, New York  
Produced by Mr Joseph P Hachel, New York

*Comparative Physiology of Labor*

Silent 16 mm, 4 reels, total about 1,400 feet  
Running time about one hour  
Demonstration of normal labor in the human being, the horse, the cow, the sheep, the dog, the pig and the rabbit  
Produced by Prof K de Snoo Obstetric and Veterinary Clinics, University of Utrecht, Netherlands

*The Hygiene of Swimming*

Silent 16 mm, 1 reel, 400 feet  
Running time 15 minutes  
This picture shows that man is not adapted to aquatic life and illustrates the danger of infection to the ear, nose and throat, the danger of diving in shallow water and the danger of chilling from cold water  
Prepared by Dr H Marshall Taylor, Jacksonville, Fla, for the Section on Laryngology, Otology and Rhinology of the American Medical Association

*Medical History in Clinical Teaching*

Silent 16 mm, 2 reels, about 300 feet each  
Running time about 25 minutes  
History of physical diagnosis with scenes from the lives of Hippocrates, William Harvey, Rev Stephen Hales, Leopold Auenbrugger von Auenbrug, Rene Theophile, Hyacinthe Laennec and Wilhelm Konrad Roentgen  
Prepared by Department of Cardiology, Woman's Medical College of Pennsylvania, Philadelphia

## MEDICAL ECONOMIC ABSTRACTS

## DELAWARE MEDICAL CARE PLAN

The Newcastle County Medical Society of Delaware, after a study of various prepayment plans throughout the country, submitted a report outlining a plan to inaugurate a voluntary limited health insurance program. The report was accepted and the plan has now been in operation for about three months. A report of progress by Harold V Maybee is given in the July issue of the *Delaware State Medical Journal*.

The plan is to cover surgical care only, at least in the beginning. It is operated by the board of trustees of the Group Hospital Service, Inc. Individuals who are also members of the hospitalization plan pay 60 cents a month for the surgical coverage, a family pays \$1.65. At the present time approximately 6,500 are covered by the medical care plan.

The plan operates on the indemnity principle. The physician is to charge the patient the same fee which he would have charged if the patient had not been a member of the Group Hospital Medical Plan. The difference between the total fee charged by the physician and the amount payable under the schedule of indemnification is to be collected by the physician directly from the patient. Participating physicians receive 100 per cent of the schedule of indemnification and nonparticipating physicians receive 50 per cent.

HOSPITAL TO BE OPERATED BY  
PREPAYMENT PLAN

The King County (Seattle) Medical Service Corporation has met a hospital emergency by undertaking to cooperate in the construction and operation of a hospital financed largely by the Federal Works Agency.<sup>1</sup> The agency first offered a grant of \$600,000 to construct a wing to the King County Hospital on condition that the county commissioners provide an additional \$200,000. A referendum at the fall election failed to receive the two-thirds majority required for the county expenditures. King County Medical Service Bureau then proposed that the FWA make the grant to the bureau for the purpose of providing for hospital needs.

The King County Medical Service Bureau, organized for the purpose of providing medical service on a monthly prepaid basis for low wage earners, is composed of 480 physicians included in the 665 members of the King County Medical Society. The bureau is operated by the corporate body, the King County Medical Service Corporation, composed of ten members elected by the bureau. Negotiations with the federal officials were conducted by this corporation. The Federal Works Agency made a thorough examination of the bureau and its corporation and became satisfied with its ability to meet requirements for hospital construction.

The Medical Service Bureau has been operated during the past ten years. Its subscribers number about 75,000 employees. It has a daily average of about 80 hospital patients. In addition to caring for this class of patients the hospital will be available for reception of patients of all members of King County Medical Society. It will be operated on a nonprofit basis, any surplus will be devoted to the welfare of its patients.

A 200 bed hospital will be constructed, furnished and equipped, the FWA granting \$600,000 and the Medical Service Corporation supplying the additional \$200,000. The exclusive ownership and operation of the hospital will be vested in the Medical Service Corporation. Dr K H Van Norman, who has served as superintendent for the King County Hospital for the past eleven years, will also serve as manager of the new hospital.

MEDICAL SERVICE PLANS IN  
NEW YORK CITY

To secure unity in the handling of medical problems in greater New York an economic council has been formed consisting of the chairman and two members of each of the economic committees of the five county medical societies within greater New York. Dr William Bryant Rawls, chairman, outlines the work of this committee.<sup>1</sup> "Some of the more important subjects studied" he says "were (1) the care of the medically indigent, (2) existing voluntary health insurance plans, (3) changing present hospital rules so that physicians may be paid for their services from those ward patients who have medical insurance, and (4) increasing the present compensation rates."

The study of the various voluntary health insurance plans showed that these have not made the expected progress. Out of several plans launched only three were functioning, and these had issued far fewer policies than had been expected. The committee recommended an amalgamation into one plan with a single selling organization. Meetings have been held with all the plans and with the Associated Hospital Service and there are good prospects of a unified plan for greater New York.

The committee has also endeavored to find a means whereby physicians can collect for their services from the ward patients who have medical insurance. Several such patients have entered ward service of the voluntary hospitals and less frequently of the city hospitals. Many of these hospitals have rules that prevent physicians from collecting fees from ward patients even though they have insurance covering medical service. A committee consisting of members of the five county medical societies has been appointed to consult with representatives of the various hospital groups to discuss the possibility of permitting physicians to collect a fee in such cases.

<sup>1</sup> Northwest Med 42 179 (July) 1943

<sup>1</sup> J M Soc County of New York 2 5 (July 31) 1943

## Medical News

(PHYSICIANS WILL CONFERR A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### COLORADO

**New Director of Laboratories**—William H. Gaub, CPH, U. S. Public Health Service, has been lent to the Colorado State Board of Health to serve as director of the division of laboratories following the resignation of Dr. Frances M. McConnell-Mills, Denver.

**Plague in Rodents in Eastern Colorado**—On July 5 fleas obtained from black tailed prairie dogs (*Cynomys ludovicianus*) secured in Larimer County 5 miles northwest of Wellington were proved by animal and microscopic examination to be infected with plague. This is said to be the first indication of plague infection in eastern Colorado. According to the state board of health this is the second instance in which plague has been found in Colorado fleas obtained from rodents the other instance being on the western slope. The state board reports no cases of plague in human beings have thus far been recorded in Colorado.

### GEORGIA

**Personal**—Dr. James F. Hackney has been made director of the health department of Atlanta.—J. Allen Scott, associate director of the division of malaria and hookworm service Georgia Department of Public Health, has resigned to become senior statistician of the division of vital statistics of the U. S. Bureau of Census, Washington, D. C.—Dr. Jacob D. Harris, formerly college physician at Eastern Kentucky State Teachers College, Richmond, now occupies a similar position at Emory University, Atlanta.

**Municipal Quarantine Hospital for Venereal Diseases**—Federal funds totaling \$250,000 have been allocated to Georgia to finance a new municipal quarantine hospital in Augusta which is expected to be the first community hospital for the treatment of venereal diseases in the nation. Other quarantine hospitals draw their patients from the entire state according to the *Augusta Herald*. Augusta and Richmond County will contribute about \$25,000 to the project. Vocational help will be given to patients while they are receiving treatment for syphilis and gonorrhea. The patients will also be given about \$30 a month so that they will have a fund when a cure has been effected obviating the need to return to vice for a living. The project will take over the NYA buildings at Lake Olmsted, including dormitories, mess hall, recreation rooms and work shops. Forest C. Hunter, P. A. Surg., U. S. P. H. S. (R), has been named in charge of the hospital which was to receive its first patients August 4.

### ILLINOIS

**License Revoked**—The Illinois State Board of Registration in Medicine on June 22 revoked the license to practice medicine of Dr. Delbert R. Blender, Chicago. Dr. Blender was found to be guilty of fraudulent and feloniously carrying on the business of dealing in dispensing and distributing opium and its derivatives without having paid the special tax imposed and without having registered with the collector of internal revenue. The Michigan license of Dr. Blender had been revoked on June 8.

### Chicago

**City Receives Plaque for Noise Abatement Work**—To mark Chicago as winner of the 1943 Achievement Awards of the National Noise Abatement Council, the presentation of a plaque to Mayor Kelly will take place at a special ceremony on September 15. The selection of Chicago as the winner in cities with a population over 500,000 is attributed to the work of the Noise Reduction Council of Greater Chicago of which Mayor Kelly is honorary chairman and Mr. Fred M. Echhoff is president. Memphis was winner in the group of cities with from 250,000 to 500,000. Salt Lake City, 100,000 to 250,000 and Charleston, W. Va., less than 100,000. The awards are given in recognition of outstanding civic accomplishment in the abatement of unnecessary noise and in the observance of national noise abatement week. In Chicago special emphasis was placed on manpower conservation and programs to aid war production. To consolidate this interest in the health of war workers a special Noise Abatement Commission was created by Mayor Kelly on June 23 with Mr. Echhoff as chairman. Other members of the commission include Dr. Herman N. Bundesen,

Britton I. Budd, Paul Drimalski, Karl Etel, Alderman Joseph S. Gillespie, Alderman William H. Harvey, Patrick H. Joyce, Alderman George D. Kelle, Oscar G. Mayer, Alderman Bertram B. Moss, Alderman Robert C. Quirk, Thomas L. Slater and Philip K. Wrigley. Offices of the new commission are at 134 North LaSalle Street, room 1506. Mr. Philip S. English is operating manager. Mr. R. Allen Wilson is secretary of the Noise Reduction Council which was organized in 1941. The two groups will function independently.

### INDIANA

**Physician Observes Ninety-Ninth Birthday**—On August 16 Dr. Henry C. Rogers, Rockville Civil War veteran, observed his ninety-ninth birthday. Dr. Rogers received his degree at the Indiana Medical College, Indianapolis, in 1876.

### KANSAS

**Physician Acts as College President and Practicing Physician**—Dr. Orville S. Walters is president of Central College, McPherson, serving in this capacity on week ends, newspapers reported August 4. During the week he serves as house physician at Wesley Hospital, Wichita.

**Attorney General Renders Opinion on Hospitals and Narcotics**—Applications for registration of hospitals in Kansas may be approved provided the application is executed by a duly qualified physician who will have complete control of and assume responsibility for all narcotic drugs in the hospital according to the Bureau of Narcotics in Washington after an opinion had been handed down by A. B. Mitchell, attorney general of Kansas. The bureau of narcotics points out that applications executed by osteopaths should not be approved as osteopaths in Kansas are not entitled to dispense narcotic drugs.

### KENTUCKY

**Memorial to the Late Dr. Turner**—A public memorial meeting was given by the staff of the T. J. Samson Community Hospital, Glasgow, on July 20 in honor of the late Dr. Caswell C. Turner who at the time of his death on February 28 was president-elect of the Kentucky State Medical Association.

**Dr. Blackerby Named State Health Officer**—Dr. Philip E. Blackerby, Louisville, assistant commissioner of the state department of health, has been appointed state health commissioner to complete the unexpired term of the late Dr. Arthur T. McCormack. Dr. Blackerby will serve until the next regular election in 1946.

**Changes in Health Officers**—Dr. Agnes L. Brown, Hardinsburg, has been named health officer of Muhlenberg County.—Dr. James O. Vall, Marion, has resigned as district health officer of Crittenden, Lyon and Caldwell counties to devote his time to private practice.—Dr. William G. Morgan, Owensboro, recently resigned as director of the Daviess County Health Department, to accept a similar position in Montgomery County.—Dr. Chester R. Markwood, Glasgow, has resigned as health officer of Allen, Barren and Monroe counties to engage in private practice at Cave City.

### MASSACHUSETTS

**New Chairman of Medical Board**—Dr. Edward A. Knowlton, Holyoke, was recently elected chairman of the state board of registration in medicine. Dr. Knowlton is now serving his third term as a member of the board. The late Dr. Francis R. Mahony was chairman of the board at the time of his death.

**Dr. Cannon Honored**—Dr. Walter B. Cannon, Cambridge, president of the recently formed American-Soviet Medical Society, was formally inducted as a member of the Academy of Sciences of the Union of Soviet Socialist Republics at a reception given in his honor by the Soviet embassy on August 12. Dr. Cannon who is professor emeritus of physiology at Harvard Medical School is the first American to be a member of both the Academy of Sciences of the United States and that of the Soviet Union according to the release announcing the honor. The American-Soviet Medical Society was recently organized to stimulate the exchange of medical information between this country and the Soviet Union.

**Dr. Clarke Appointed Clinical Professor at Harvard**—Dr. Charles Walter Clarke, executive director of the American Social Hygiene Association, New York, has been appointed clinical professor of public health practice at Harvard University. For the past three years Dr. Clarke has served as a lecturer in the Harvard School of Public Health, Boston, on public health administration practice as applied to the control



of syphilis and gonorrhea, giving ten lectures on the subject each year. In the new appointment Dr. Clarke, in addition to teaching, will supervise the field training of the students of public health specializing in venereal disease control. He will continue as executive director of the social hygiene association.

### MICHIGAN

**State Medical Meeting**—The Michigan State Medical Society will hold its seventy-eighth annual session in Detroit at the Statler Hotel, September 22-24, under the presidency of Dr. Howard H. Cummings, Ann Arbor. Out of state speakers will include

- Dr. James E. Paulin, Atlanta, Ga., The Responsibility of the Medical Profession in Postwar Planning
- Dr. Frank H. Lakey, Boston, Biliary Tract Disease
- Dr. Oliver S. Ormsby, Chicago, Avitaminosis in Dermatology and the Value and Limitations of the Sulfur Group in Skin Diseases
- Dr. Edward L. Jenkinson, Chicago, Deformities of the Pyloric Antrum Due to Perigastric Adhesions and Bands Simulating Intrinsic Gastric Lesions
- Dr. Paul R. Cannon, Chicago, Protein Metabolism and Resistance to Infection
- Dr. Edward A. Schumann, Philadelphia, Postpartum Sterilization as an Indefensible Procedure
- Dr. Irvine McQuarrie, Minneapolis, Causes and Treatment of Edema in Childhood
- Dr. Kellogg Speed, Chicago, Treatment of Open Fractures
- Dr. Harold I. Lillie, Rochester, Minn., Certain Observations on Headaches of Intracranial Origin
- Dr. Everett D. Plass, Iowa City, Wartime Obstetrics
- Col. Leonard G. Rowntree, M. C., A. U. S., Washington, D. C., subject to be announced
- Dr. A. Ashley Weech, Cincinnati, The Challenge of Postwar Pediatrics
- Dr. John C. Whitehorn, Baltimore, Methods of Personality Study in Relation to Medical Problems
- Dr. Hobart A. Reimann, Philadelphia, The Viral Pneumonias
- Dr. William S. Sandler, Chicago, Psychiatric Aspects of the Warring Nations
- Dr. Peter C. Kronfeld, Chicago, Preventable Blindness
- Dr. Harry R. Goerster, Milwaukee, Dermatitis of War Industries in General Practice
- Dr. Walter C. Alvarez, Rochester, Minn., Small Unrecognized Strokes, a Common Cause of Illness in Older Persons
- Drs. Robert D. Mussey, Rochester, and Thomas R. Wilson, co-authors, Abnormal Uterine Bleeding Past Middle Age and Its Management

Wednesday, September 22, designated President's Night, will be a public meeting at which Dr. Schumann, Philadelphia, will present the Andrew P. Biddle Oration on "Medical Education and Present Day Philosophies of Government." On September 24 a special meeting will be held for the public at which Sister Elizabeth Kenny, Minneapolis, will speak. In the afternoon Sister Kenny will discuss "Polomyelitis: Contrast Between the Kenny and Orthodox Concepts, with Results of Treatment." The program will also include sixteen discussion conferences on the specialties. The woman's auxiliary will meet September 20-22.

### MINNESOTA

**Grants to the University**—The University of Minnesota Medical School, Minneapolis, announces a new annual appropriation by the state legislature of \$15,000 to the medical school for special research in the field of cancer. Announcement is also made of the continuation of the grant of \$10,000 a year by the Citizens Aid Society to the medical school in support of cancer research and the program of cancer education and a continuation of the annual gift of \$5,500 by the society to support the George Chase Christian professorship in cancer research. A grant of \$5,000 from the Jane Coffin Childs Memorial Fund for medical research has been made for the support of the work of John J. Bittner, Ph.D., and Dr. Robert G. Green and his associates in the departments of physiology and bacteriology on the nature and mode of action of the milk influence in mammary cancer. A grant of \$3,500 a year for a two year period has been made by the Commonwealth Fund of New York toward the support of the Psychiatric Clinic for Children. Toward the support of this clinic the Stevens Avenue Home of Minneapolis will continue its grant of \$10,000 for the year beginning July 1, 1943. The medical school has accepted a grant of \$3,000 from Parke, Davis & Company to establish a fellowship in clinical hematology in the department of anatomy under the supervision of Hal Downey, Ph.D.

### NEW YORK

**Lecture on Traumatic Surgery**—"Traumatic Surgery with Emphasis on the Treatment of Wounds and Shock" was the title of a lecture by Dr. Walter D. Ludlum Jr., New York, given before the Medical Society of the County of Greene in Catskill, August 27. The lecture was sponsored by the state medical society and the state department of health.

**Salary Changes for Mental Hygiene Employees**—On October 1 a plan will be made effective in salaries of all mental hygiene employees under provisions of the salary standardization law. Classification of positions for 21,000 employees of

the state department of mental hygiene providing salary increases for many will go far toward providing administration of mental hospitals, the New York Times reported, August 19. In a statement to the press Dr. Frederick MacCurdy, state commissioner of mental hygiene, said that "careful attention was given to gradation of positions so as to augment the possibility of promotion from grade to grade and to make as many career positions as possible in hospitals."

### New York City

**Changes at New York College of Medicine**—Dr. James Leroy Wilson, formerly of Detroit, has been appointed professor of pediatrics and chairman of the department at New York University College of Medicine. New appointments include the following departments of anatomy and psychiatry, Dr. Margaret A. Kennard, New Haven, Conn., assistant professor of anatomy and assistant professor of neuropsychiatry, department of dermatology and syphilology, Drs. Arthur Edward Goldfarb and John Cooper Graham, Brooklyn, assistant clinical professor, department of ophthalmology, Drs. Richard Townley Paton and David Henry Webster, clinical professors, department of psychiatry, Dr. David J. Impastato, assistant clinical professor. Dr. Bernhard Dattner has been promoted to associate clinical professor of neurology, Dr. Frank C. Keil, clinical professor of ophthalmology, Dr. Walter Guernsey Frey Jr., clinical professor of ophthalmology, and Dr. Ervin A. Tusak, clinical professor of ophthalmology.

**Physicians Barred in Compensation Cases**—Two physicians whose workmen compensation practices were said to be among the largest in the city lost their licenses to do that work on August 11 by order of the state labor department because of fee splitting and other misconduct, the New York Times reports. They are Drs. Emanuel A. Schluffmann and Leo S. Sacharoff. Two other physicians, guilty of similar charges but in lesser degree, had their licenses suspended for six months and three months respectively. Robert H. Feldman and William Philip Smale. The Times stated that 1,200 physicians are under or scheduled for investigation as a result of disclosures concerning "kickbacks" by the recent Moreland Act inquiry into workmen's compensation abuses. The recent 4 cases are the first decisions to be made after departmental trials. Previously Dr. Theodore R. Freedman, Brooklyn, lost his license without formal hearing when he sent a resignation instead of appearing when summoned (THE JOURNAL, July 10, p. 757).

**Illegal Practitioner Sentenced to Workhouse**—The state education department announces that Frederick Charles Quitzrean pleaded guilty, June 2, to holding himself out unlawfully as a practitioner of medicine and was sentenced on June 16 in the City Court of Special Sessions to serve six months in the workhouse. Quitzrean is said to have a long record of illegal representation. Although he claimed graduation at the Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin Prussia, in 1908, a letter from the school states that "Mr. Charles Quitzrean 'neither studied at this university nor did he receive a degree.'" Before his credentials in Germany were investigated, he was admitted to the medical examinations in Saskatchewan, Canada, Illinois and Maine but failed in all of them, but he is reported to have practiced medicine in these places. In 1922 it was stated that he had been convicted while a member of the Anna (Ill.) State Hospital on a charge of practicing medicine without a license and was fined \$100 and costs. Quitzrean is reported to have been a resident physician in Philadelphia and in Verona, N. J. He was said to represent himself as a physician in Potsdam, N. Y., although one report stated that "he is doing nothing in the way of work." He has applied for staff positions at hospitals and sanatoriums in different sections of the country.

### NORTH DAKOTA

**Observes Ninety-Third Birthday**—Dr. James Grassick, Grand Forks, observed his ninety-third birthday on June 30. Dr. Grassick, who received degrees at Rush Medical College in 1885 and at the University of Michigan Department of Medicine and Surgery, Ann Arbor, in 1888, started practice in Burton in 1885.

### OHIO

**Yellow Fever Volunteer Dies**—Lieut. Col. Thomas M. England, for twenty-four years executive officer of the Fifth Service Command Medical Branch, Fort Hayes, Columbus, died on July 23, aged 67. Colonel England was exposed to fomites during the famous Yellow Fever Experiments conducted in Cuba in 1901 by the U. S. Army Commission of which Major Walter Reed was chairman.

**Promotions at Western Reserve**—Included among recent promotions at Western Reserve University School of Medicine, Cleveland, are

Dr Raymond C. McKay to associate clinical professor of medicine  
Dr William Matthew Champion to assistant clinical professor of pediatrics

Dr Clarence W. Engler to assistant clinical professor of otolaryngology  
Alfred H. Tree, Ph.D. to assistant professor of biochemistry  
Dr Simon Koletsky to assistant professor of pathology  
Dr Frederick Robert Mautz to assistant professor of surgery

**Personal**—Dr Charles A. Dorn, professor of medicine and director of medical research at Ohio State University College of Medicine, Columbus, was recently chosen president of the Ohio Public Health Association.—Dr Lena M. English, resident physician at the Kent State University, Kent, has been appointed associate professor of health and physical education, succeeding Dr Elizabeth A. Lengett who resigned to go to Chicago. The latter had held the position since January 1935.—Dr Charles T. Dolezal has been appointed superintendent of the City Hospital, Cleveland, succeeding Mr George P. Bugbee. Dr Dolezal has been city health director since 1942.—Dr Ward D. Coffman, Zanesville, has been appointed chairman of the Ohio State Board of Health, succeeding Mrs. C. T. LaCoste, Toledo.—Dr Sidney J. Heeley, Barton, has been appointed health commissioner of Jefferson County.

### SOUTH CAROLINA

**Medical Students Campaign Against Wagner Bill**—Students at the Medical College of the State of South Carolina, Charleston, adopted a resolution at a meeting August 12 registering their opposition to the Wagner-Murray-Dingell Bill (S 1161). At the meeting the students unanimously backed the stand of the Charleston County Medical Society, which also recently indicated its opposition to the bill. Students at South Carolina proposed to enlist the support of students in the accredited medical colleges of the United States to protest and prevent the passage of the bill, newspapers report.

**Changes in Health Officers**—Dr Charles E. Billard, Allendale, former health officer for Oconee and Pickens counties, has been appointed health officer for Beaufort County. Dr Edmond J. Bryson, Liberty, former health officer of Greenwood County, will now serve in this capacity in Oconee and Pickens counties, and Dr Mauldin J. Boggs, Jr., Abbeville, health officer of Abbeville and McCormick counties, will also direct the Greenwood county health department until a successor to Dr Bryson is named.—The Sumter County Board of Health is the result of the consolidation of the city of Sumter and Sumter County under the direction of Dr Edward Alex. Heise.—The health departments of Colleton and Hampton counties have been combined into one unit under the direction of Dr Lloyd W. Luttrell, Walterboro.—Dr Charles P. Pope, Jr., health officer of Chesterfield-Marlboro Health District, has been appointed to a similar position in Aiken County.

### TEXAS

**McReynolds Library Given to Texas University**—The medical library of the late Dr John O. McReynolds, Dallas, was donated recently to the University of Texas Medical Branch, Galveston, by Mrs. F. W. Wozencraft, Washington, D. C., daughter of Dr McReynolds. In addition to a large collection of medical books, the gift contains lantern slides, motion picture films and a group of specimens.

**Appointments to the Faculty at Baylor**—Recent appointments to the faculty of Baylor University College of Medicine, Houston, include the following:

Dr James A. Greene, professor of medicine and chairman of the department and dean of the clinical faculty.

Dr Judon L. Taylor, professor and chairman of the department of surgery.

Dr Herman W. Johnson, professor of obstetrics and chairman of the department.

Dr James H. Park, Jr., professor of pediatrics and chairman of the department.

Dr Ernst W. Bertner, professor of gynecology and chairman of the department.

Dr James Greenwood, professor and chairman of the department of neuropsychiatry.

Dr Culver M. Griswold, professor and chairman of the department of dermatology and syphilology.

Dr Everett L. Bohr, professor and chairman of the department of ophthalmology.

Dr Claude C. Cody, Jr., chairman of the department of otolaryngology.

Dr Joseph B. Foster, professor of orthopedic surgery and chairman of the department.

Dr Herbert T. Hayes, professor of proctology and chairman of the department.

Dr John M. Tribble, professor of urology and chairman of the department.

Dr Stuart Anderson Peoples of the University of Alabama School of Medicine, University, professor of pharmacology.

### VERMONT

**Rehabilitation Program for Tuberculous**—The trustees of the Vermont Tuberculosis Association have appropriated \$3,000 which will be matched by federal funds to establish a special rehabilitation program for the tuberculous in the state. The money will be expended under the supervision of the committee on rehabilitation of the association in consultation with the rehabilitation division of the state department of education and physicians in the state sanatoriums.

### GENERAL

**Bar Association Opposes Medical Control by Government**—The American Bar Association at its sixty-sixth annual meeting at the Drake Hotel, Chicago, August 26, approved a resolution opposing any legislation now before Congress which seeks to establish federal control of the medical profession and the regimentation of doctors and hospitals' newspapers report.

**New Medical Director of Nursing Service**—Dr James M. Fraser, formerly of Lawton, Okla., has been appointed medical director of the Frontier Nursing Service, effective August 21. He succeeds Dr John H. Geoser, Hyden, Ky., who has joined the armed services. Dr Fraser graduated at George Washington University School of Medicine, Washington, D. C., in 1939.

**American Home Products Acquires Gilliland Laboratories**—The American Home Products Corporation announces the acquisition of Gilliland Laboratories, Inc., of Marietta, Pa., producer and distributor of serums, vaccines and antitoxins. The management of the laboratories will remain unchanged but its production and sales will round out the lines of pharmaceuticals and biologic products now marketed by John W. Wetli and Brother, Inc., Reichel Laboratories, Inc. and Averst, McKenna & Harrison.

**Annual Mississippi Valley Meeting**—The ninth annual session of the Mississippi Valley Medical Society will be held at the Hotel Lincoln-Douglas, Quincy, Ill., September 29-30. Among the speakers will be

Dr Warren H. Cole, Chicago, Treatment of Toxic Gaster

Capt. Henry L. Dollard (MC), U. S. Navy, Tasks of the Medical Department of the U. S. Navy in Global War

Dr Norris J. Heckel, Chicago, Cystitis: Causes and Treatment

Dr Robert W. Keeton, Chicago, Treatment of Patients with Toxic Hepatitis

Dr Paul B. Magnuson, Chicago, The Misused and Misinterpreted Intervertebral Disk

Dr Raymond W. McNeal, Chicago, Cancer of the Large Bowel

Dr Carl M. Peterson, Secretary of the Council on Industrial Health of the American Medical Association, Industry Needs the Physician

Dr Charles H. Pfister, Chicago, Accomplishments and Difficulties Encountered by Procurement and Assignment Service

Dr Malcolm M. Cook, St. Louis, Rabies from the Practitioner's Point of View

Dr Willis M. Fowler, Iowa City, Diagnosis and Treatment of the Common Anemias

Dr Rutherford B. H. Gradwohl, St. Louis, Facts About Rh Agglutination

Lieut. Comdr. Paul W. Greeley (MC), U. S. Naval Reserve, Some Personal Experiences in Current Military Plastic Surgery

Dr Samuel F. Haines, Rochester, Minn., Treatment of Parathyroid Insufficiency

Dr Joseph V. Herzog, Milwaukee, Office Procedures in Minor Rectal Pathology

Dr Archibald L. Hovne, Chicago, Improved Methods in Treatment of Meningitis

Dr Julius Jensen, St. Louis, Cardiology

Dr John de J. Pemberton, Rochester, Some Problems in the Surgical Management of Carcinoma of the Colon and Rectum

Dr George J. Rukstnat, Chicago, Clinicopathologic Conference

Dr Leroy Hendrick Sloan, Chicago, Vertigo and Common Associations

Dr Thomas Bell, William, Mount Vernon, Ill., Importance of Good Prenatal Care in Obstetrics

On Thursday evening, September 30, the speakers will be Brig. Gen. Fred W. Rankin, M. C. U. S. Army; Dr George W. Post, Chicago; Dr Andrew W. McAlester, Kansas City, Mo.; and Dr Edward M. Myers, Woodward, Iowa. Additional information may be obtained from the secretary, Dr Harold Swanberg, Quincy.

**Leprosy Study for Latin American Physicians**—In cooperation with the Office of the Coordinator of Inter-American Affairs and the U. S. Public Health Service, the Leonard Wood Memorial has undertaken a program of study for eight Latin American physicians who are especially interested in leprosy. The program which opened on June 1 for a period of one year, will be divided as follows: the National Leprosarium, the U. S. Marine Hospital at Carville, La., for instruction by the regular staff and special consultant in various phases of leprosy; Western Reserve University for epidemiology, pathology and dermatology; the University of Michigan for bacteriology; Tulane University of Louisiana School of Medicine and Louisiana State University School of Medicine, New Orleans, for parasitology, hematology and

physical diagnosis and epidemiology. Before returning to their respective countries the physicians will visit various American cities to observe methods of medical, hospital and public health services. The physicians were guests of Perry Burgess, president of the Leonard Wood Memorial, at his home at Erie Vista, Geneva on the Lake, Ohio, from August 6 to 15, during which time several conferences on leprosy were held. The visitors are:

Dr. Alberto Caballero Villaveces, Colombia, assistant doctor of the National Hospital of Azuero de Dios.

Dr. Luis Rendon Ch, Ecuador, director del Leprosario Nacional de "Veideruz".

Dr. Augusto Rodolfo Merera, Argentina, head of clinic of leprosy service, assistant physician in chair of dermatology.

Dr. Rafael Cepeda R, Colombia, medical director of the "Hospital of Loro".

Dr. Eduardo Carhom, Argentina, head of dependents section of the leprosy service, Hospital Carrasco, Rosario, assistant physician to the chair of dermatology, physician of department of prophylaxis and anti-venereal diseases, head of dermatology service to primary schools of Rosario, consulting physician of "Hospital de Leprosos," Rosario.

Dr. Artur Porto Marques, Brazil, assistant of the Instituto Evandro Chagas, Belém, Pará, Brazil.

Dr. Glynne Leite Rocha, Brazil, physician under contract in the National Service of Leprosy, Public Health Department, assistant at the dermatologic clinic of the University of Brazil.

Dr. Roberto Nunez Andrade, Mexico, medical officer in the Office of Prophylaxis of Leprosy in the federal department of health, dermatologist, department of welfare, professor of dermatology, National School of Biological Sciences of the National Polytechnic Institute, chief of dermatology clinic in the National School of Medicine.

Mr. Burgess was to be appointed consultant to the Secretary of War on epidemic diseases in a new project of assistance of the memorial to the Surgeon General of the U. S. Army. Dr. Norman C. Kieffer, Geneva, has been appointed medical assistant to Mr. Burgess in his capacity as president of the memorial. He is engaged in research on leprosy. He graduated at the University of Michigan School of Medicine, Ann Arbor, in 1930 and is director of internal medicine and diagnostic laboratories of the A. S. Hickok Memorial Hospital, Geneva.

## HAWAII

**Epidemic of Dengue Fever**—An epidemic of dengue fever in Honolulu, originating in the Waikiki Beach area, has become citywide with 39 cases reported, and on August 14 the Army barred military personnel from six more residential districts, newspapers announce. The Army Chemical Warfare Service is spraying insecticide in homes where cases are reported. The city's seven thousand air raid wardens are conducting a house to house check to eradicate breeding places of dengue carrying mosquitoes.

## LATIN AMERICA

**New Medical School Building**—The Faculty of Medical Sciences of Buenos Aires recently opened its new building, occupying one whole block on Paraguay, Junin, Charcas and J. E. Uriburu streets. It consists of twenty floors and will house the faculties of medicine, biochemistry, pharmacology, odontology, the Institute of Pathologic Anatomy, the Pardo Maternity and the Pavilion for tabetic patients.

**Health Activities in Latin America**—The increasing development of Latin American health activities is reflected in the brief accounts in the Newsletter of the Health and Sanitation Division of the Coordinator of Inter-American Affairs.

**Construction**—New building projects constitute a major development in practically all of the republics. In Colombia this includes new hospitals in Antioquia, Zaragosa and Remedios and health centers in Magdalena, the Choco, La Guajira, Buenaventura. In El Salvador health centers are being planned for Santa Ana, San Salvador and Santa Tecla. The construction and equipment of a diet kitchen at the Public Health Nursing School was completed at Port-au-Prince, Haiti.

**Veneral Disease**—A clinic is to be established at Comito, Nicaragua, a naval base, to carry out a program of registration and periodic examination of prostitutes. Women found infected are to be placed in the venereal disease hospital at Managua until rendered noninfectious.

**Health Education**—Four physicians from El Salvador left for the United States in June for special work. Dr. Jose Francisco Valiente for tuberculosis control study, first at Saranac Lake Sanatorium and then at other sanatoriums, Dr. Alberto Aguilar Rivas, to work for a degree of master of public health at the Johns Hopkins School of Hygiene and Public Health, Baltimore, and Drs. Victor Manuel Posada and Roberto Masferrer Pineda for study at the Johns Hopkins University School of Medicine for training as instructors in the National Medical School at El Salvador. In Guatemala,

where the largest cinchona plantation in the Western Hemisphere is being developed (THE JOURNAL, June 12, p. 457) on a plantation known as "El Porvenir," the Servicio is working out a medical care program for the 3,000 laborers to be employed there. The work will include personal instruction, the furnishing of facilities for water supply, sewerage and other sanitary needs, new construction for living quarters and the installation of sanitary facilities for both new and old buildings.

**Malaria**—Particular attention has been directed to malaria, an outbreak of which occurred in May in Buenavista, Colombia, involving more than 182 cases. In El Salvador, after a survey, laborers found with malaria parasites were treated by the National Department of Health. Special control measures have been instituted in San Miguel, Sonsonate and Acajutla, in Puerto Barrios, Guatemala, plans have been drawn to eliminate mosquito breeding places permanently in the El Confral and La Montanita swamps. At Port-au-Prince, the Pan American Airways has contributed \$4,000 to defray partly the cost of installing a concrete masonry sewer. In Nicaragua Drs. Leonard S. Rosenfeld, M. A. Sanchez-Vigil and Mr. Ramiro Sanchez of the National Institute of Hygiene visited Esteli to study the sources of anopheline malaria vectors in the city and in the nearby road camp of Pan American Highway contractors.

## FOREIGN

**New Scientific Films**—"War Medicine on the Western Front," the latest film produced by Vladimir Karin and Nikolai Bodanov, shows the modern Russian science of war medicine, the problems confronting the medical service at the front, and methods of treatment and evacuation of wounded. According to the *Information Bulletin*, Embassy of U. S. S. R., four studios in the Soviet Union "are producing scientific and technical films and popular science subjects, with a total of 120 releases annually." Among these is a series "Ready for Air and Chemical Defense."

**Research in Industrial Medicine**—The British Medical Research Council has arranged with the London Hospital for the establishment there of a department for research in industrial medicine, *Science* reports. Dr. Donald Hunter, physician to the hospital, has accepted a part time appointment to the staff of the council as physician in charge of the department, the council has appointed Drs. Kenneth Perry and Norman Spoor as research assistants. The hospital will be responsible for the treatment of cases under investigation. The department will undertake clinical research into disorders affecting industrial workers. The staff will also study such problems in other parts of the country. The department will also be responsible for teaching in the subject. The new arrangement supersedes one made last year for the appointment of a full time director of research in industrial medicine attached to the council's headquarters. The position had become vacant through the appointment of Dr. A. W. M. Ellis to the regius chair of medicine at the University of Oxford.

## CORRECTION

**"Hemolytic Syndromes"**—In the review of this book (by Dr. William Dameshek and others, published by H. Jackson Company, P. O. Box 122, Essex Station, Boston), published in THE JOURNAL, July 31, the price was quoted at \$1.50. Owing to increased printing costs for the second edition the present price is \$2.25 per copy prepaid.

## Government Services

### Physicians Needed at St. Elizabeths Hospital

The U. S. Civil Service Commission announces that a number of junior medical officers are needed at St. Elizabeths Hospital, Washington. It is possible that women may be utilized in these positions, the appointments to be made as vacancies arise. The positions pay \$2,000 a year plus \$433 overtime pay. There is no age limit. According to the announcement there are fine opportunities for psychiatric residencies, and rotating internships are open to recent graduates of medical schools. Additional information may be obtained from the U. S. Civil Service Commission at Washington, first or second class offices and civil service regional offices.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

July 10 1943

#### The Detection of Pulmonary Tuberculosis in Women

Mass radiography is being used on a large scale for the early detection of pulmonary tuberculosis. F Temple Clive has given in *Tubercle* a review of the radiography of 30,000 women recruits for the Women's Auxiliary Air Force. The cases are to some extent selective, as every woman had previously been examined at a national service medical board. The youngest was 17½ years of age and the oldest 45. All were practically symptomless and those noted as having any symptoms admitted to their presence only after detailed history taking. All the women were on full duty, which included marching and physical training yet this strenuous exercise did not give any patient cause to suspect that she was not perfectly well. The value of this new method of examination is shown by the fact that 102 cases of active tuberculosis were found. Calcified nodules and/or glands were seen in 286 cases. The absence of admitted symptoms was remarkable. After close questioning only 29 of the acutely involved admitted symptoms, chiefly lassitude, loss of weight and cough, in that order. Even 4 women with advanced tuberculosis were unaware of any symptoms although the prognosis was only a matter of weeks. In no less than 64 cases no significant history of any kind was obtained. In spite of the complete absence of symptoms almost half the cases had already passed beyond the early (or group 1) stage. Cavitation was present in 16 unilateral and 4 bilateral cases. Thus 20 patients required urgently admission to an institution for collapse therapy. Abnormal physical signs were found in the chest in 66 cases. This figure includes only cases in which signs were so definite that they should be discovered by physicians not specially trained in chest work and without x-ray aid. The sputum was positive in 18 cases, negative in 33 and entirely absent in no fewer than 51 (exactly half the active cases). These figures may be to some extent fallacious as women tend to conceal that they have any sputum and in spite of advice are averse to expectoration. Clubbing of the fingers occurred in 12 cases in 3 of which it was the only abnormal sign. In 136 cases inactive pulmonary tuberculosis was found. This is a percentage of 0.45. The 102 active cases give a percentage of 0.34. These percentages may be compared with those for male recruits to the Air Force which were 0.22 and 0.36 respectively. Thus the total percentage for the women was 0.79 and for the men 0.58. Below the age of 20, active tuberculosis was found twice as common in women as in men and inactive tuberculosis thrice as common.

#### The Lessons of Wartime Feeding

Lord Horder, the president in addressing the Food Education Society on the subject *Lessons Taught by Wartime Feeding*, said that the war had found science just ready for a great acceleration in the study of nutrition. Science had gained much from being given a definite brief, particularly through the amount of field work provided by wartime conditions. The two most essential foods—bread and milk—were the chief subjects of controversy. The bread situation had settled down with a compromise between extremists—those who pressed for wholemeal and those who hankered after white bread. It was

the policy of the society to teach the virtues of wholemeal bread and it would press the government to encourage in every way its nationwide adoption. It would take possibly a decade to get absolutely clean milk, and steps toward that aim must be regarded as a long term policy. Pasteurization was the short term policy, for it destroyed the germs and left the food value untouched. Yet the government still hesitated to enforce pasteurization. If the machinery was not available, could not some steel be released for the preservation of life?

#### New Fellows of the Royal Society Whose Work Is of Medical Importance

The fellowship of the Royal Society (F.R.S.) is the highest scientific honor attainable in the country. It is conferred only on those who have done important original scientific work. In the recent list of new fellows are the following whose work is medical or of medical interest.

Prof P. A. Buxton, director of the Department of Entomology, London School of Tropical Medicine. Distinguished for research in medical entomology with special reference to conditions under which insects responsible for the transmission of diseases multiply and the measures of control.

Ivan de Burgh Daly, professor of physiology in the University of Edinburgh. Distinguished as an originator of essential items of modern physiologic technique and for important contributions to the physiology of the circulation in the lungs and bronchial tubes.

Dr A. J. Evans, director of research at May & Baker (manufacturing chemists at whose works sulfapyridine and other drugs have been originated). He is distinguished for his chemical and biochemical research. His work in organizing an industrial research laboratory has led to some of the most important synthetic remedies in recent years.

Alexander Fleming, professor of bacteriology, St. Mary's Hospital. Distinguished for his contributions to bacteriology, immunology and chemotherapy.

G. A. R. Kon, research professor of chemistry at the Royal Cancer Hospital. Distinguished for researches in organic chemistry. His work on the polyterpenes has provided a basis for a number of important developments.

Prof Wilder Penfield, director of Montreal Neurological Institute. Distinguished for his researches in neurohistology and as a neurosurgeon.

#### Success of Immunization Against Diphtheria

The Ministry of Health reports remarkably good results from immunization of children against diphtheria, which is now performed on a large scale in this country. In the county districts of Northamptonshire over 36,250 children under the age of 15 have been immunized since 1941. During that period only 1 of these children contracted the disease, and the attack was not so severe as to prove fatal. On the other hand among over 19,400 children in the same county districts who had not been immunized there were 101 cases of diphtheria with 15 deaths. Among 8,000 children under the age of 5 years who had been immunized not a single case of diphtheria occurred while among 9,200 children under 5 who had not been immunized there were 36 cases with 11 deaths.

The Ministry of Health also states that 46 per cent of children under the age of 5 have now been immunized in county districts of Northants and 71 per cent of those between 5 and 15 years. The percentage for all ages up to 15 is 65. The ministry is carrying on a campaign to secure the immunization of at least 75 per cent of the child population of the country.

**Edward B Nelson** ☉ Spokane, Wash., Medical Department of Tulane University of Louisiana, New Orleans, 1895, past president of the Spokane County Medical Society, aged 73, on the staff of the Deaconess Hospital, where he died, June 18, of arteriosclerotic hypertensive heart disease

**William Payne Nichols**, Bloomfield, Ky., Hospital College of Medicine, Louisville, Ky., 1903, aged 62, died, June 26, of peptic ulcer

**Albert O'Bannon**, Okeechobee, Fla., American Medical College, St Louis, 1911, aged 69, died, June 13, of cerebral hemorrhage

**John Francis O'Brien**, Fall River, Mass., McGill University Faculty of Medicine, Montreal, Que., Canada, 1910, member of the Massachusetts Medical Society, police surgeon, on the staff of St Anne's Hospital, aged 57, died, June 11, of tumor of the kidney

**Amos Cameron Olmsted** ☉ Wells, Nev., Cooper Medical College, San Francisco, 1895, past president of the Nevada State Medical Association and the Nevada State Board of Medical Examiners, past president and secretary of the Elko County Medical Society, member of the board of education and county health officer, on the staff of the Elko General Hospital for ten years had been regent of the University of Nevada, Reno, aged 71, died, June 14, of uremia and nephrolithiasis

**Meade B Owens** ☉ Newport, Ark., Gate City Medical College, Texarkana, Ark., 1903, served as health officer of Jackson County, aged 70, died, June 20, of arthritis

**Alfonso Maria Padilla**, Youngstown, Ohio, Jefferson Medical College of Philadelphia, 1914, aged 53, died, June 16, of heart disease

**Carl Pangerl**, Muskegon Heights, Mich., Chicago College of Medicine and Surgery, 1917, member of the Michigan State Medical Society, aged 49, on the staffs of the Mercy Hospital and the Hackley Hospital, Muskegon, where he died, June 13, of lobar pneumonia

**Dorsey C Peck** ☉ Grafton, W Va., Louisville (Ky) Medical College, 1905, aged 65, died, June 15, of carcinoma

**William Marcus Petersen**, Chicago, Milwaukee Medical College, 1902, also a pharmacist, member of the staff of the Lutheran Deaconess Home and Hospital, aged 67, died, June 23, of cerebral hemorrhage, chronic nephritis, chronic myocarditis and coronary occlusion

**Sterling Blackwell Pierce**, Weldon, N C., Bellevue Hospital Medical College, New York, 1897, aged 69, died, June 23, in the Duke Hospital, Durham, of septicemia

**William Arthur Pike**, Ottawa, Ill., Rush Medical College, Chicago, 1896, formerly a member of the Illinois National Guard, veteran of the Spanish-American War, at one time city health officer, aged 69, died, June 25, in the Elgin (Ill) State Hospital of hypertension and arteriosclerosis

**Frank E Piner**, Denton, Texas, Medical Department of Tulane University of Louisiana, New Orleans, 1894, past president and secretary of the Denton County Medical Society, member of the State Medical Association of Texas, health officer of Denton, aged 73, died in the Denton Hospital and Clinic, June 30, of malignancy of the gastrointestinal tract

**Harry Thomas Prideaux** ☉ Cresson, Pa. Medico-Chirurgical College of Philadelphia, 1908, member of the staff of the Mercy Hospital, Altoona, physician for the Pennsylvania Railroad Company and the Pennsylvania Coal and Coke Corporation, medical member of the civilian defense council of Cresson, aged 64, died, June 12, of coronary thrombosis

**James R Rankin**, Muncy, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1883, member of the Medical Society of the State of Pennsylvania, a member and president of the board of health of Muncy, served during World War I, aged 82, died, June 21, in the Williamsport (Pa) Hospital of aneurysm

**Hyman Rapaport** ☉ Los Angeles, University of Pittsburgh School of Medicine, 1919, assistant clinical professor of medicine at the University of Southern California School of Medicine, specialist certified by the American Board of Internal Medicine, on the staffs of the Cedars of Lebanon and the Los Angeles County General hospitals, aged 50, died, June 16, of coronary thrombosis

**Frederick Edward Rehfeldt** ☉ Jackson, Miss., University of Nashville (Tenn) Medical Department, 1904, member of the Southeastern Surgical Congress, member of the Selective Service System, for many years physician for the fire department, member of the staffs of the Mississippi Baptist Hospital and the Jackson Infirmary, where he died, June 8, of leukemia, aged 62

**Ellsworth Milton Tench** ☉ Buffalo, University of Buffalo School of Medicine, 1917, consulting proctologist to the J N Adam Memorial Hospital, Perrysburg, aged 54, died, June 1, of cerebral thrombosis, hemiplegia, arteriosclerosis and hypertension

**Charles Wesley Thomas**, Warren, Ohio, Western Reserve University Medical Department, Cleveland, 1903, member of the Ohio Medical Association, for many years chief surgeon for the Republic Steel Corporation, aged 66, died, May 17, in the University Hospital, Cleveland, of postoperative hemorrhage and benign enlargement of the prostate gland

**Frank Colfax Thornburgh**, Alma, Mich., Homeopathic Medical College of Missouri, St Louis, 1904, on the staff of the R B Smith Memorial Hospital, aged 74, died, June 13, in the Saginaw (Mich) General Hospital of chronic uremia and hypertrophy of the prostate

**Frank L Thornburgh**, Middletown, Ind., Medical College of Ohio, Cincinnati, 1878, aged 86, died, June 7, in Fort Wayne of cardiovascular renal disease

**William W Tindall** ☉ Shelbyville, Ind., Eclectic Medical Institute, Cincinnati, 1903, past president of the Shelby County Medical Society, examining physician for the county draft board during World War I and served in the same capacity recently, aged 66, died, June 18, of heart disease

**Andrew Jackson Turner**, Beeville, Texas, Memphis (Tenn) Hospital Medical College, 1901, member of the State Medical Association of Texas, for several terms president of the Bee-Live Oak-McMullen Counties Medical Society, for the past twenty-five years health officer of Beeville, served as a first lieutenant in the medical corps of the U S Army during World War I, on the staff of the Beeville Hospital, aged 71, died recently of coronary thrombosis

**Benjamin Franklin Underwood**, Louisville, Ky., Southwestern Homeopathic Medical College and Hospital, Louisville, 1910, member of the Kentucky State Medical Association, aged 57, died, June 7, in the Methodist Deaconess Hospital of cerebral hemorrhage

**Alan P Vaughan**, Arcade, N Y., University of Buffalo School of Medicine, 1896, member of the Medical Society of the State of New York, formerly health officer and school physician, aged 73, died, June 1, in the Buffalo General Hospital of carcinoma of the prostate, coronary heart disease and Laennec's cirrhosis

**William Henry Wilson**, Orlando, Fla., College of Physicians and Surgeons, Boston, 1903, at one time on the staff of the Worcester (Mass) City Hospital, aged 76, died, June 9, in the Florida State Hospital, Chattahoochee, of pneumonia

**James R Wolfenden**, Chicago, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1897, aged 70, died, June 11, of chronic myocarditis

**Allen Henry Wright** ☉ Northfield, Mass., University of Maryland School of Medicine, Baltimore, 1906, member of the New England Society of Psychiatry, served as president of the Franklin District Medical Society, on the staffs of the Farren Memorial Hospital, Montague, Brattleboro (Vt) Memorial Hospital and the Franklin County Public Hospital, Greenfield, aged 65, died, June 17, of cardiorenal disease

**George Wesley Younkin**, Mason City, Iowa, State University of Iowa College of Medicine, Iowa City, 1876, formerly a minister, aged 96, died, May 16, of myocardial insufficiency

#### KILLED WHILE IN MILITARY SERVICE

**Ralph Robert Nix** ☉ Passed Assistant Surgeon, U S Public Health Service, Springfield, Mass., Louisiana State University School of Medicine, New Orleans, 1941, commissioned assistant surgeon in the reserve corps, U S Public Health Service, June 10, 1942, assigned to U S Marine Hospital, Mobile Ala, commissioned assistant surgeon in the regular corps, July 20, 1942, assigned as medical officer aboard Coast Guard Cutter *Escanaba*, Dec 17, 1942, recommended for special commendation because of excellent services performed in rescue work of survivors of the S S *Dorchester*, promoted to grade of passed assistant surgeon, May 1, 1943, aged 26, killed at sea, June 14, when the *Escanaba* was destroyed following an 'explosion of undetermined cause'

## Correspondence

### PREDICTION OF POLIOMYELITIS CASES IN EPIDEMIC YEARS

*To the Editor*—Plotting the weekly trend of poliomyelitis in Chicago for the two highest years on record—1917 and 1937—revealed an interesting phenomenon common to the two years.

Histograms of the cases reported each week in these two years as well as that of 1943 are shown in chart 1. The cases in the first six months

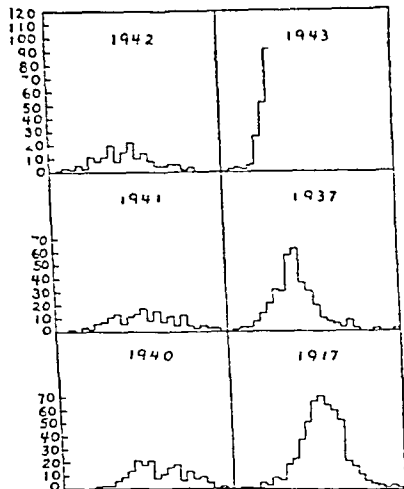


Chart 1—Poliomyelitis morbidity, Chicago. Cases reported weekly, July-December 1940-43, 1917 and 1917.

are not shown as they were negligible. The trend starts up slowly for the first few weeks then rapidly gathers momentum as the slope changes from a horizontal to a vertical position. On the way down from the peak the picture is almost duplicated. Since case reports are likely to come in irregularly a curve smoothed by three week moving averages was used in chart 2. The symmetry of the 1917 and 1937 curves is immediately apparent. The resemblance to a normal curve even to the asymptotic tails on both ends is remarkable. Also included in the chart are three recent years that did not stand out as epidemic years. Even with three week moving averages the values although suggestive of a normal curve, were irregular. However the probable explanation is that in high years when the public is conscious of the disease there is a likelihood of an almost complete reporting of the cases whereas in off years mild forms are not so apt to be reported.

The tendency for the disease course to approximate the normal curve in its entirety offers the possibility of predicting in the early part of the season the complete picture for the year with a foreknowledge of weekly estimates the peak week and a good estimate of the total cases.

According to the curve the peak this year should occur the week of September 4. This can be done by noting from chart 2 that whenever the slope rises sharply it will continue so for five or six weeks and then repeat the same values on the way down. When the slope does not change rapidly as is seen for 1940, 1941 and 1942 the peak week has a low total and the total cases for the year is correspondingly low.

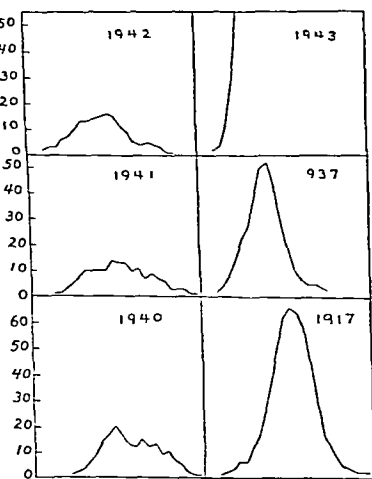


Chart 2—Poliomyelitis morbidity, Chicago. Three week moving average, July to December 1917, 1937 and 1940-43.

Is there a hint from this evidence as to the nature of the disease itself? If a constant force should be exerted on a group and at a certain time of the year for some reason that group lost some of its power to resist that force a graph of the number of individuals bending under it would describe a normal curve.

Another method of approach which may be more fruitful in predictive possibilities is the plotting of the cumulative weekly data on a logistic curve. This is being given study.

HERMAN N. BUNDESEN, M.D., Sc.D.

President, Chicago Department of Health

WILLIAM I. FISHPHIN, M.D.

Epidemiologist, Chicago Department of Health

M. C. GORTON

### REVIEW OF DISEASES OF THE BREAST BY CHARLES GESCHICKTER

*To the Editor*—In your issue of July 17 you printed a book review of *Diseases of the Breast* published by the J. B. Lippincott Company.

The review is a departure from acceptable standards of printed comments of this nature in many respects. In the first place, being published in the official journal of the American Medical Association which serves both specialists and practitioners, the review confines itself almost entirely to the controversial aspects of breast pathology and in no way gives the practitioner an adequate basis for judging the contents of the book or the merits of its presentation of the major facts concerning the diagnosis and treatment of mammary diseases.

Secondly while the tone of the review is hypercritical, the reviewer does not quote directly the statements of the author criticized but confines himself to generalities which in most instances proceed not from the book but from the opinion of the reviewer. Thus the main part of the review concerns the author's conclusions regarding the relation of chronic cystic mastitis to cancer, discussed in chapter 12. The reviewer states:

The author arrives at the important conclusion that no etiologic relationship exists between chronic cystic mastitis and carcinoma and thus places himself in direct contradiction with an increasing body of opinion (Ewing, McCarthy, Konjetzny, Semb, Cheate, Cutler and others). Warren's recent statistical studies also are opposed to the author's conclusions.

It is noted that this is not a direct quotation by the reviewer and nowhere in the book to the author's knowledge can any such statement be either found nor can it be implied. As a matter of fact the exact opposite is stated repeatedly in chapter 12. Thus on page 265, in discussing the clinical data concerning the relation of these two diseases, the author concludes:

The number of observed cases (in which chronic cystic mastitis and cancer coexist in the same patient) is twice as great as the expected figure and is of etiologic significance although the figure is not high.

In discussing the microscopic data it is stated again on page 269:

However in 6 cases (66 per cent) the histologic appearance suggested origin (of cancer) in an area of mammary dysplasia (fig. 229, 232).

and again on page 272 in discussing experimental data:

To determine if the rat's breast under these conditions is more susceptible to cancer. After one and two years rats with such advanced adenois were given extremely high doses of estrogen for a period of one to two months thus simulating that which may occur at the menopause in women with long standing adenois (see chapter 34). Under these conditions cancer occurred rapidly in all of the animals (figs. 233-26). Hence long standing adenois in the human breast may predispose to cancer if this is followed by adequate estrogenic stimulation near the menopause or more rarely at other times in cyclic women.



The entire crux of the matter is then summarized in discussing the follow-up studies on page 276

On this basis, the incidence of mammary cancer in the 793 cases of chronic cystic mastitis is 0.88 per cent instead of the calculated 0.42 per cent. Among the cases of adenosis the cancer incidence is 2 per cent or five times the expected figure in cystic disease 0.79 per cent or twice the expected figure, and in cases of mastodynia, below the calculated number, or zero per cent.

The histories of the cases of mammary dysplasia in which carcinoma supervened follows

As a matter of fact, throughout the book the relationship of the two diseases is repeatedly emphasized, pages 208, 217, 255, 257, 275, 761 and 800

Not only does the reviewer misrepresent the conclusions of the author arrived at in chapter 12 but he also distorts the facts

The reviewer states that large numbers of cases, as high as 70 per cent in some categories (note the generality, some categories) have no microscopic proof. But, in truth, in the tabulated follow-up studies of cystic disease and adenosis (which are the only forms of mammary dysplasia in which any one has assumed or claimed a relationship to cancer) 80 per cent of the 579 cases have microscopic verification. In cystic disease 50 of 387 diseases are microscopically verified, and in adenosis 113 of 192 cases

The reviewer accepts unquestionably the studies made by Warren along similar lines, while attacking the studies of the author, claiming the two studies to be in opposition. He overlooks the fact that the two studies are in agreement. He is apparently unaware that the much maligned chapter 12 was submitted to Dr. Warren in proof form before publication and some of his suggestions were incorporated in it, to wit, as stated on page 280, in the paragraph beginning with

The incidence of mammary cancer in patients with chronic cystic mastitis is too low to warrant mastectomy. This is the opinion of Warren and also of the author

and ending with

In those cases where a definite nodule develops subsequent to the excision of a former nodule in adenosis, a simple mastectomy may be advisable

A further example of the way in which the reviewer has distorted the facts is illustrated in the statement

Studies of the breast by means of whole serial sections are opposed to the conclusions of Geschickter who did not examine his specimens by Cheate's method

This assumption is entirely false and unwarranted, since many of the author's cases were thus studied, and by merely thumbing through the book and looking at the pictures this fact can be verified, for instance, figures 163, 179, 202, 242, 275, 285, 288, 289, 367, 368, 402 and 410

A similar distortion of facts is found in the statement in regard to the author's classification of mammary carcinoma

Meaningless names are given to microscopic appearances of fragments of tissue from the breast

This statement neglects the fact that the author devotes an entire chapter to each of the forms of mammary cancer presented in his classification, describing and basing the classification not on microscopic fragments but on a careful analysis of both clinical and pathologic features of the disease as well as its response and behavior under treatment, as determined by follow-ups. Not a single new classification of cancer has been introduced. The only novel departure is the introduction of the word "neomammary" for a group of rare cancers previously classified as cancer cysts and sweat gland cancers

CHARLES GESCHICKTER,  
Lieutenant Commander, USNR

## SUBJECTIVE REACTION TO PROSTIGMINE IN TREATMENT OF POLIOMYELITIS

*To the Editor*—The use of prostigmine in the treatment of poliomyelitis would seem to merit encouragement. Through circumstances explained below it was necessary to deal with the patient's subjective reaction to the drug, as well as with the objective findings

A white girl aged 19 years, admitted to the Maine General Hospital in Portland, Maine, on Oct. 6, 1942 with the diagnosis of poliomyelitis, received the Kenny treatment there. On November 14, when she left the hospital, she was able to walk with difficulty on crutches through a small room. She continued taking exercises as advised in the hospital, though she improved slowly. In April 1943 she was started on prostigmine bromide and thiamine hydrochloride. The doses used were 15 mg. of prostigmine bromide and 5 mg. of thiamine hydrochloride given orally three times a day. Since she lived 15 miles away and it was impossible to observe the course of the convalescence closely, she was urged to keep a diary. The patient's diary reads as follows:

"The week before I started taking the pills I tired very easily, both while sitting and while standing and walking. I started taking the pills on a Monday and the following Wednesday I began to feel better generally, that is, I could walk and sit longer without tiring. Thursday I noticed an improvement in the muscle in the back of my leg while doing exercises (lying on stomach and lifting whole leg straight up). Friday I noticed an improvement in the muscle which takes my leg out to the side (lying on back, pushing leg out to right side). The second week of taking the pills I didn't seem to notice any definite improvement in any one muscle, it just seemed to be all over. I can walk much farther and longer than I could, but I still limp almost as much."

Before taking prostigmine she could walk through three rooms once a day. She could not abduct or flex the right thigh. After taking it for four days she could perform both exercises, abducting and flexing the right thigh. After taking it for a week she could walk through the same three rooms seven times a day. She also could sit up without aching. She retained all the improvement derived from the treatment.

It is felt that the earlier prostigmine is used in the course of any case of poliomyelitis the better the results will be. Victims of the disease should not be deprived of a trial of this drug, regardless of the time since the onset of the disease.

GEORGE GEYERHAHN, M.D., South Portland 7, Maine

## TOXIC ERUPTIONS DUE TO AMPHETAMINE SULFATE

*To the Editor*—In the treatment of over 2,000 cases of obesity, in which between one-third and one-half million 10 mg. tablets of amphetamine sulfate were used, there were only 2 cases of skin eruptions similar to those described by Kruvar, Henschel and Ravin in the August 14 issue of THE JOURNAL.

A careful history and time-taking checking on both patients revealed that each had had a similar eruption prior to taking amphetamine sulfate. Both admitted that when they ate too much tomatoes, veal, pineapple, strawberries and other acid foods these eruptions were sure to appear.

The patients were then instructed to omit these foods, take some milk of magnesia for a while, and to apply phenolated calamine lotion locally. These eruptions soon cleared, although amphetamine was not discontinued but even increased in dose for the following week.

JACK S. ERSNER, M.D., Philadelphia



## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Aug 14 page 11.

#### BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery June 20-21 Sec Dr B I Austin 519 Dexter Ave Montgomery  
ARIZONA Phoenix Oct 5-6 Sec Dr I H Lutter 1156 Security Bldg Phoenix  
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CALIFORNIA H. H. H. Sacramento Oct 18-21 Sec Dr Frederick N Scatena 1020 N Street Sacramento  
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CONNECTICUT Hartford Nov 9-10 *Indorsement* New Haven Nov 23 Sec to the Board Dr Creighton Barker 2 S Church St New Haven  
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WISCONSIN *Reciprocity* Milwaukee Sept 13-14 Sec Dr C A Dawson Tremont Bldg River Falls  
WYOMING Oct 4-5 Sec Dr M C Keith Capitol Bldg Cheyenne

\* Basic Science Certificate required.

#### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

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WISCONSIN Madison Sept 18 Sec Prof R N Bauer 152 W Wisconsin Ave Milwaukee

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Acts Revocation of License for Conviction of Crime Involving Moral Turpitude while Defendant Confined in Penitentiary**—Henry J Schireson who was licensed to practice medicine and surgery in New Jersey was convicted, after a plea of nolo contendere in a federal court of (1) unlawfully concealing assets from a trustee in bankruptcy (2) making a false oath in bankruptcy proceedings and (3) perjury and was sentenced to and confined in a federal penitentiary in Pennsylvania. Subsequently and while he was confined in the penitentiary a complaint was filed with the state board of medical examiners of New Jersey charging that he had been convicted of crimes involving moral turpitude which is one of the grounds enumerated in the New Jersey medical practice act for the suspension or revocation of a license to practice medicine and surgery. The board accordingly notified Schireson in writing that it would, in Trenton N J on Feb 18 1942 hold a hearing to consider whether or not it should suspend or revoke his license. On his request made through his attorney, the hearing was postponed to March 18 and again to April 15 but the board would grant no further postponements and proceeded on the date last mentioned without Schireson's presence with the hearing ultimately revoking his license to practice. The federal convict brought certiorari in the supreme court of New Jersey to review the order of revocation.

It was contended that the revocation of Schireson's license was illegal because (1) the New Jersey medical practice act was unconstitutional in that it served to deprive him of liberty and property without due process of law and that assuming the validity of the medical practice act, the course followed by the state board of medical examiners violated the constitutional safeguard referred to, (2) the order of revocation was not based on legal evidence and (3) the refusal of the board to grant further adjournment or continuance was capricious. The essence of Schireson's case, said the appellate court is that the possession of his license was a property right and that the refusal of the board of medical examiners to continue the hearing of the charge against him until he was released from the penitentiary deprived him of the opportunity to defend and therefore was not due process and ancillary to this is the contention that the record of criminal proceedings did not disclose an adjudication or a plea that he was guilty of the offenses for which he was indicted and that therefore he could not be subjected to the revocation of his license except on proof

of guilt produced before the state board on original charges of unlawful concealment of assets, false swearing, perjury, or whatever offense might be laid against him. It is not denied, continued the court, that the crimes for which he was sentenced by the federal court involved moral turpitude. The state board was authorized to proceed on proof, not that Schireson was guilty of the named crimes, but that he had been convicted of them, and it is not denied that the court record of the indictment, the pleas, the conviction and sentence, in fact the whole pertinent record, was put in evidence before the board.

Schireson, continued the court, had a legal claim to his license. We need not, however, determine whether his authority to practice in New Jersey was a privilege or a right or, if a right, whether just that or, more specifically, a property right. By whatever name, it was subject to the paramount right of government to protect the general health of the members of society—the police power. It was for the legislature to determine, within reasonable limits, what the tests of moral character in a physician should be. The circumstance that Schireson had already been licensed gave him no immunity against such legislation. *Lawrence v. Bruy*, 239 Mass. 424, 2 N. E. 174. He had no vested right to practice after he had been found to have qualities inconsistent with good moral character. Character, as well as knowledge and skill, should be resident in one who would practice the art of healing and thus have intimate responsibility for the health and lives of human beings, and it is a reasonable exercise of legislative power to determine that a person who has committed a crime of moral turpitude is not such a one as should be permitted to practice medicine or surgery. It may be said with respect to the practice of medicine, as Justice Cardozo said with respect to the practice of law in *McCormack v. Ross*, 221 N. Y. 81, 116 N. E. 782, 783, in part as follows:

Membership in the bar is a privilege burdened with conditions. A fair private and professional character is one of them. Compliance with that condition is essential at the moment of admission, but is equally essential afterwards.

The legislature of a state may enact that one who has been convicted of crime shall no longer practice medicine. *Hawker v. State*, 170 U. S. 189, 18 S. Ct. 573.

Schireson attempted to draw a technical distinction between a conviction and that congeries of events which began with his plea of *nolo contendere* and terminated in his being lawfully sentenced and in his submitting to the imprisonment which the sentence imposed. But, said the court, there can be no well grounded dissent from the proposition that so far as the state was concerned there was a conviction. True, there was no jury verdict of guilt and there was not a technical plea of "guilty," and if Schireson had been sued in a civil action he would have had the benefit in his defense of such rules as hinge on that distinction. But the proceeding before the board of medical examiners was not a civil action. In our opinion the proceedings in the federal court constituted a conviction within the meaning of the New Jersey medical practice act.

Schireson argued, however, that he was entitled, notwithstanding his conviction, to have his original guilt proved before the board of medical examiners by witnesses and exhibits as though there had been no conviction and as though the charge before the board was that he was guilty of the alleged offenses and not that he had been convicted of them. Clearly, said the court, that was not the requirement or the intent of the medical practice act and was not made necessary by any provision of the federal or of the New Jersey state constitution. It would be a strange eventuality for Schireson, after his guilt had been so plainly established with respect to the commission of the criminal offenses with respect to the practice of his profession, to be found not to have committed those crimes. This proceeding is merely one to give effect to a provision of the medical practice act relating to the practice of medicine and surgery which says that the board may revoke on the conviction of a crime of the designated class. As was said in *Hawker v. State*, 170 U. S. 189, 18 S. Ct. 577:

The thought which runs through these [viz., the cited] cases and others of similar import which might be cited is that such legislation is not to be regarded as a mere imposition of additional penalty, but as prescribing the qualifications for the duties to be discharged and the position to be filled, and naming what is deemed to be and what is in fact appropriate evidence of such qualifications.

The only issue before the board of medical examiners was whether Schireson had been convicted of a crime involving moral turpitude, he had been so convicted and that fact was proved from the court records—competent evidence for that purpose. The question of guilt or innocence, as such, was not in issue, Schireson had had his day in court on that.

Schireson next contended that the New Jersey medical practice act was unconstitutional in that it did not require that an accused physician be notified of the proceedings or be given an opportunity to be heard and that the board of medical examiners acted unconstitutionally because its proceedings found him in such predicament, because of his imprisonment, that he could not attend. Be it observed, however, answered the supreme court, that while the medical practice act does not, where the cause for suspension or revocation is the conviction of a crime, require the "hearing"—really a trial—which it directs shall be accorded where the cause is the commission of an offense for which there has been no prior conviction, nevertheless it does provide that notice shall be given of the purpose of the board to sit in disciplinary session, and as a matter of fact notice was given of the session, and given in such fashion that Schireson had full advance knowledge thereof and indeed appeared by counsel to the extent of obtaining two adjournments. It is not a condition of due process that the defendant shall be, or shall be able to be, physically present at the hearing. The board's refusal to grant further adjournment was not capricious. The order of revocation contained an ample statement of the evidence on which the revocation was based.

The court concluded that neither the medical practice act nor the procedure followed in revoking Schireson's license was unconstitutional in the respects complained of, that the finding of the board of medical examiners was grounded in legal evidence and that its refusal to grant further adjournment was neither capricious nor otherwise illegal. The order revoking Schireson's license to practice was therefore affirmed.—*Schireson v. State Board of Medical Examiners of New Jersey*, 28 A (2d) 879 (N. J., 1942).

## Society Proceedings

### COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology, Chicago, Oct 10-13. Dr. W. L. Benedict, 102 Second Ave. S. W., Rochester, Minn., Secretary.
- American Congress of Physical Therapy, Chicago, Sept. 8-11. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
- American Public Health Association, New York, Oct. 12-14. Dr. Reginald M. Atwater, 1790 Broadway, New York, Executive Secretary.
- Association of Military Surgeons of the United States, Philadelphia, Oct. 21-23. Colonel James M. Phalen, Army Medical Museum, Washington, D. C., Secretary.
- Delaware Medical Society of, Wilmington, Oct. 12-13. Dr. W. O. LeMotte, 601 Delaware Ave., Wilmington, Secretary.
- District of Columbia Medical Society of the, Washington, Sept. 30-Oct. 2. Mr. Theodore Wiprud, 1718 M St. N. W., Washington, Secretary.
- Indiana State Medical Association, Indianapolis, Sept. 26-30. Mr. T. A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Inter State Postgraduate Medical Association of North America, Chicago, Oct. 26-29. Dr. Arthur G. Sullivan, 16 North Carroll St., Madison, Wis., Managing Director.
- Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 4-6. Dr. William M. North, 1115 Grand Ave., Kansas City, Mo., Secretary.
- Kentucky State Medical Association, Louisville, Oct. 4-6. Dr. P. F. Blackerby, 620 South Third St., Louisville, Acting Secretary.
- Michigan State Medical Society, Detroit, Sept. 22-24. Dr. L. Fernald Foster, 2020 Olds Tower Lansing, Secretary.
- Mississippi Valley Conference on Tuberculosis, Chicago, Sept. 8-9. Mr. A. W. Jones, 613 Locust St., St. Louis, Secretary.
- Mississippi Valley Medical Society, Quincy, Ill., Sept. 29-30. Dr. Harold Swanberg, 510 Mine St., Quincy, Ill., Secretary.
- Oklahoma City Clinical Society, Oklahoma City, Oct. 14-21. Dr. Clark H. Hall, 117 North Broadway, Oklahoma City, Secretary.
- Omaha Mid West Clinical Society, Omaha, Oct. 25-29. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.
- Pennsylvania Medical Society of the State of Philadelphia, Oct. 5-7. Dr. Walter F. Donaldson, 500 Penn. Ave., Pittsburgh, Secretary.
- Virginia Medical Society of, Roanoke, Oct. 25-27. Miss Arnes V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Wisconsin State Medical Society of Milwaukee, Sept. 13-15. Mr. Charles H. Crownhart, 110 East Main St., Madison, Secretary.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1911 to date. Reprints for issues of earlier date cannot be filled. Reprints should be accompanied by stamps to cover postage (4 cents if one and 15 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be ordered for permanent use at only 1 cent each.

Title marked with an asterisk (\*) are abstracted below.

### American Journal of Public Health, New York

33 475-644 (May) 1943

- Comparative Speed of Lesion of Prevalently Immunized and Non-immunized Children to Fluid and Muri Irrecitinated Diphtheria Toxin. A. K. Vakk, W. I. Bunney and J. T. Trapp—p. 475  
Public Health Implications in City and Regional Planning. H. Bartholomew—p. 481  
Small Outbreak of Smallpox in Detroit. F. H. Top and Laura F. Peck—p. 490  
Integration of Medical Care into Health Program in Rural Missouri. J. W. Williams Jr.—p. 499  
Errors in Clinical Statements of Causes of Death. Second Report. K. Pohlen and H. Finneron—p. 500  
Simplified Procedures in Tuberculosis Control. H. R. Edwards and A. B. Robin—p. 517  
Accomplishments in Cerebral Fortification. R. C. Sherrill—p. 526  
Association of Other Malignant Tumors with Cancer of Skin. H. L. Lombard and S. Warren—p. 533  
Four Years Use of Kahn Presumptive Test as Screening Agency in Serology of Syphilis. E. L. Webb and T. F. Sellers—p. 541  
Postgraduate Education of Physicians for Industrial Health Service. C. M. Peterson—p. 541  
Undergraduate Training of Industrial Hygiene Personnel. M. H. Kronenberg—p. 553  
Comparative Study of Presumptive and Confirmative Media for Bacteria of Coliform Group and for Fecal Streptococci. A. A. Hayn and C. A. Perry—p. 559  
Practical Housekeeping Program for Industry. H. C. Diktor—p. 557  
Typhoid Vaccine Studies. VII. Typhoid Paratyphoid Vaccine. D. Longfellow and G. F. Lippold—p. 561

### American Review of Tuberculosis, New York

47 549-666 (June) 1943

- \*Twin Studies on Significance of Genetic Factors in Tuberculosis. F. J. Kallmann and D. Reischer—p. 549  
Artificial Pneumothorax in Negroes. Evaluation of Results. R. Hoffman—p. 575  
Laryngeal Tuberculosis in Negroes. D. F. Proctor—p. 582  
Surgical Relief of Pain in Tuberculous Laryngitis. O. C. Brantigan and R. Hoffman—p. 596  
Clinical Management of Intestinal Tuberculosis. W. M. Peck and Julia M. Jones—p. 598  
Control of Tuberculosis in Leprosarium. G. H. Faget—p. 603  
Practical Application of Bronchspirometry. J. D. Steele—p. 608  
Early Primary Tuberculous Pulmonary Focus. About 4 to 8 Weeks Old. W. Pagel and Dorothy Stopford Price—p. 614  
Promin in Experimental Tuberculosis in Guinea Pig. E. M. Medlar and K. T. Sasano—p. 618  
\*Demonstration of Tubercle Bacilli in Minimal Pulmonary Tuberculosis. W. P. Decker, W. H. Ordway and E. M. Medlar—p. 625  
Mass Method for Concentrating and Staining Tubercle Bacilli. F. W. La Cava and Mary E. Ketchum—p. 631  
Multiple Bacteriologic Etiology in Clinical Tuberculosis. Experimental Observations. H. A. Poundexter—p. 633  
Blood Phosphates and Acid Soluble Phosphorus in Experimental Tuberculosis. M. I. Smith and B. B. Westfall—p. 647  
Sensitive Longevity Immunity Test with Guinea Pigs. W. N. Berg—p. 651

### Genetic Factors in Tuberculosis. Studies on Twins—

Kallmann and Reischer investigated the possible significance of genetic factors in the development of tuberculosis by means of the twin family method. This method combines the technique of the original twin method that is the comparison of unselected groups of one egg and two egg twin pairs with the principles of a family study including the other sibship groups as well as the marriage partners of the twins. The main objective of this procedure was to obtain for comparison a sufficient number of genetically dissimilar relationship groups reared under comparable environmental conditions. The study was organized with the cooperation of the tuberculosis hospitals and clinics in the state and city of New York, which

reported a total number of 657 twin cases within a period of five years. The material used for analysis of the statistical data on manifest reinfection tuberculosis consists of 308 complete twin families with 616 twin partners, 930 full siblings, 74 half siblings, 648 parents and 226 marriage partners of twin patients. The random sampling of these 308 twin pairs is indicated by the proportion of 78 monozygotic to 230 dizygotic pairs representing a ratio of about 1:3. Comparison of the corrected morbidity rates reveals that the chance of developing tuberculosis increases in proportion to the degree of blood relationship to a tuberculous index case. The difference in morbidity between dizygotic and monozygotic twin partners amounts to a ratio of 1:35, their corrected concordance rates being respectively 25.6 and 87.3 per cent. The difference between the dizygotic and monozygotic co-twins increases to a ratio of 1:16 if the similarities in extent, course and eventual outcome of the disease are taken as additional criteria of comparison. The differences in tuberculosis morbidity among the various sibship groups of the twin index cases cannot be adequately explained on the basis of a simple correlation between closeness of blood relationship and increasing similarity in environment with correspondingly intensified opportunity for infection. The analysis of the morbidity distribution in the sibship groups indicates that resistance to tuberculosis is modified by a heredoconstitutional mechanism which seems to be multifactorial in its genetic nature.

**Demonstration of Tubercle Bacilli in Minimal Pulmonary Tuberculosis.**—Decker and his associates insist that demonstration of tubercle bacilli is required to clinch the clinical diagnosis in minimal pulmonary tuberculosis. They present the results obtained with the intensive use of the more thorough laboratory methods. Repeated examinations of sputum and of fasting gastric contents by culture and guinea pig inoculation resulted in the demonstration of tubercle bacilli in 67 out of 97 patients with clinically active minimal pulmonary tuberculosis over a period of five years. In a previous five year period when the more thorough laboratory methods were not in routine use tubercle bacilli were demonstrated in only 24 of 172 cases. Gastric lavage studies gave positive results in 41 of 56 no sputum cases. Sputum smears were positive in but 16 of 269 cases. A high percentage of patients with clinically active minimal tuberculosis discharge tubercle bacilli. It is difficult to determine when patients with minimal disease are entirely free from bacilli. It is just as difficult to evaluate the significance of the discharge of a few bacilli on rare occasions.

### Archives of Internal Medicine, Chicago

71 583-740 (May) 1943

- Peripheral Vascular Response to Acute Anoxia. D. I. Abramson, H. Landt and J. E. Benjamin—p. 583  
Hemorrhagic Lesions of Coronary Arteries. J. P. English and F. A. Willis—p. 594  
Fibrosis of Endocardium and Myocardium with Mural Thrombosis. Notes on Its Relation to Isolated (Fiedler's) Myocarditis and to Beriberi Heart. J. J. Smith and J. Furth—p. 602  
\*Streptococcal Bacteremia Cured with Sulfadiazine. Report of Case of Infection Caused by Hemolytic Streptococci of Lancefield Group C with Review of Literature and Presentation of Immunologic Data. W. M. Kirby and L. A. Rantz—p. 620  
Primary and Secondary Hyperparathyroidism. L. J. Soffer and C. Cohn—p. 630  
\*Spontaneous Interstitial Emphysema of Lung with Mediastinal Retroperitoneal and Subcutaneous Emphysema. J. D. Adcock—p. 640  
\*Blue Sclera, Brittle Bones and Deafness. Report of Afflicted Family. J. E. Farber and A. E. Margulis—p. 658  
Normal Cardiovascular Roentgen Silhouette Studied by Means of Roentgenograms of Chests of Cadavers After Opaque Solutions Had Been Injected into Large Vessels and Chambers of Heart. J. M. Hovos and J. J. Quesada—p. 666  
Serum Concentration and Renal Clearance of Potassium in Severe Renal Insufficiency in Man. W. M. Keith, H. E. King and A. E. Osterberg—p. 675  
\*Adrenal Cortex in Systemic Disease. Morphologic Study. E. L. Sara—p. 702  
Diseases of Heart. Review of Significant Contributions Made During 1942. A. Grunziel with editorial assistance of P. D. White—p. 715

**Streptococcal Bacteria Cured with Sulfadiazine.**—A man aged 65 for several months had been troubled with general fatigue, muscle aches and shortness of breath. He had suffered an attack of sharp, severe pain in the chest below the nipple on the left side. The pain radiated to both axillae and caused difficulty in breathing. He had one moderately severe chill

Chills sensations occurred at intervals. A superficial ulcer of the left thigh was noted on admission to the hospital. Small, pinkish red, maculopapular lesions were scattered over the entire body. There was a generalized reddening of the skin over parts of the trunk and extremities similar to a scarlet fever rash. Blood examination disclosed aplastic anemia, and the blood culture was positive for hemolytic streptococci, Lancefield group C. There was a rapid improvement following sulfadiazine therapy. The blood culture was negative for hemolytic streptococci on the third day of hospitalization. The cause of the aplastic anemia was not apparent but probably was not the streptococcal infection. The patient had had symptoms of the underlying disease for three months before chills and fever appeared, suggesting that the bacteremia was an intercurrent episode made possible by a lowering of the natural defense mechanism. The response to sulfadiazine was remarkable considering the age and the poor general state of the patient. The source of infection was probably the superficial ulcer on the left thigh. Group C organisms are occasionally isolated from human skin. The rash was of interest in view of the fact that scarlet fever has been known to have been caused by group C organisms. Immunologic studies in the reported case by Kirby and Rantz suggest that fibrinolysins and streptolysins O of groups A and C are similar if not identical. Since 95 per cent of infections with hemolytic streptococci in human beings are caused by organisms belonging to group A (Lancefield), the opinion has become generally accepted that members of the other groups are relatively avirulent. This point of view may have to be modified. Severe infections have been caused by members of groups other than A, chiefly by groups C and G, suggesting that the frequency of infections with organisms of the various groups may be partly a matter of distribution of the organisms rather than of virulence. Organisms belonging to groups A, C and G have certain characteristics in common which are different from those of members of the other groups. These three groups are the ones most commonly isolated in the order named in infections in human beings, and this may be in part due to their unique properties.

**Spontaneous Interstitial Emphysema of Lung**—Hamman was first to report this condition in healthy persons without antecedent trauma or disease. The condition is largely dependent on the collection of air in the mediastinum. The onset is abrupt. The first symptom is a severe pain in the side of the chest or substernally. It may radiate to the neck or down the left arm closely mimicking the pain of coronary occlusion. The pathognomonic sign described by Hamman is a peculiar crackling, crunching sound heard over the sternum which is synchronous with the heart beat. There may or may not be signs of pneumothorax. A small amount of subcutaneous emphysema in the neck or thorax is sometimes present. Roentgenograms may or may not demonstrate the mediastinal air. The process has been benign in all instances, complete recovery occurring in several days. Adcock describes a case of spontaneous interstitial emphysema of the lung with extension of air into the retroperitoneal and subcutaneous tissues. The absence of pain in this case may have been due to the ease of escape of the air from the mediastinum which prevented the development of high mediastinal pressures. A small area of transient atelectasis was apparently responsible for the development of the interstitial emphysema of the lung. It was possible to locate clinically the site of escape of air from the alveoli into the perivascular and interstitial tissue of the lung. The auscultatory signs produced by air within the mediastinum differ in type and mode of production from the so-called pericardial knock sounds occasionally heard in left sided pneumothorax, whether spontaneous or induced.

**Blue Scleras, Brittle Bones and Deafness**—Farber and Margulis observed a family of 52 members, 12 of whom presented the syndrome of blue scleras. Seven of these have brittle bones, 4 are deaf and 1 has only blue scleras. Eight are males and 4 females. The condition is transmitted and occurs equally in the two sexes. The physical attributes of small stature, hypermobility of the joints, relaxation of the ligaments and abnormal shape of the head were found in the involved mem-

bers. Three members of the group have been studied in detail. Roentgenograms of the skeleton revealed slender bones, generalized osteoporosis and deformities resulting from multiple fractures.

**Adrenal Cortex in Systemic Disease**—Sarason attempted to establish correlations between changes in the morphologic aspects of the adrenal cortex and various systemic diseases. Adrenal glands were obtained from one hundred and ten routine autopsies performed at the New Haven Hospital one to six hours after death. No glands from persons with Addison's disease or primary neoplasm of the adrenal gland are contained in the series. Cortical enlargement associated with depletion of lipid or reversal of lipid pattern was found associated with inflammatory diseases, cachexia, pemphigus and protracted emesis. Cortical enlargement with an increased amount of lipid was encountered in hypertension, the change was more striking when the hypertension was associated with primary vascular disease. The explanation of these changes is not at hand. No significant alterations were present in the series of cases of atherosclerosis. Extreme enlargement was found in 4 cases of erythroblastosis fetalis. This study emphasizes that enlargement of the adrenal cortex and depletion of lipid are reflections of the metabolic disturbances associated with certain systemic diseases and not the direct effect of the latter.

### Bulletin New York Academy of Medicine, New York

19 371-446 (June) 1943

- Surgical Methods for Relief of Pain F C Grant—p 373  
Effect of Vitamin E Therapy on Central Nervous System in Amyotrophic Lateral Sclerosis C Davison—p 386  
Treatment of Prostatic Carcinoma B S Barringer—p 417  
Public Health in New York City Retrospect C F Boldrum—p 423

### California and Western Medicine, San Francisco

58 261-312 (May) 1943

- Traumatic Shock and Hemorrhage L A Alesen—p 265  
Dermatoses Their Local Treatment with Sulfathiazole and Sulfadiazine A E Ingels—p 269  
Aneurysm of Right Pulmonary Artery with Rupture into Bronchus and Patent Ductus Arteriosus Report of Case A S Yuskis—p 272  
Nasal Allergy Otolaryngologist's Problem in Relation to Southern California Districts H D Smith, V Goodhill and M E Webb—p 275  
Chemical Injuries of Eye Their Treatment with Special Reference to War Gases H F Whilman—p 279

### Canadian Medical Association Journal, Montreal

48 477-556 (June) 1943

- \*Survival of Preserved Erythrocytes After Transfusion O F Denstedt, Dorothy E Osborne, H Stansfield and I Rochlin—p 477  
Vole Acid Fast Bacillus Vaccination in Experimental Tuberculosis D Irwin and D C O Connell—p 486  
The Diabetic E P Joslin—p 488  
Allergic Problems G Chown—p 498  
Management of Vesical Neck Obstruction N E Berry—p 501  
Retroperitoneal Tumors in Children F Pilcher—p 505  
Myasthenia Gravis R D McKenna—p 510  
What Significance Has Uterine Retroversion? E Shute—p 514  
Weather and the Patient's Skin N M Wrong—p 520  
Nonmalignant Disease of Gallbladder and Bile Ducts I G McCabe—p 522

**Preserved Erythrocytes After Transfusion**—The purpose of the studies reported by Denstedt and his collaborators was to determine the merits of two blood preservative mixtures, the one an unbuffered citrate-dextrose solution, the other buffered with phosphate at pH 7.4. Both mixtures were isotonic with normal plasma. Blood can be stored in these solutions up to six weeks or two months at 4°C with less than 1 per cent hemolysis. The buffered solution gives slightly better cell preservation during storage and favors less dense packing of cells on sedimentation. The survival of erythrocytes after transfusion was followed in 32 mental subjects by the MN method of Wiener. Specimens stored up to two months were used without any reaction. With regard to cell survival the buffered mixture did not exhibit special merit. The study indicates that cells stored up to eighteen days by either method survive as well as fresh cells after transfusion. Even with 25 or 30 day old blood cell survival after transfusion is sufficiently high during the first three weeks to warrant the use of such specimens in the treatment of severe blood loss when fresher blood is not available. There is evidence that with

of the transused cells may be stored instead of being destroyed and that they are released into the circulation again between the fifteenth and twenty-fifth days. A second and less decided rise in donor cell count often is observed about the sixtieth day.

### Connecticut State Medical Journal, Hartford

7 293-380 (May) 1943

- Investigation of Deaths in Interest of Public Safety A R Moritz —p 10  
Medical Aspects of Obiterrics W W Herrick —p 313  
Bureaucracy and Clinical Medicine P P Swett —p 323  
Office Treatment of Mild Depression Vera Mather Behrendt —p 324

7 381-452 (June) 1943

- International Control of Disease After War Alice Hamilton —p 383  
Chemotherapy in Treatment of Obstetric and Gynecologic Urinary Tract Infections R G Douglas —p 388  
Chemotherapy of Gastrointestinal Tract I M Morrison —p 395  
Incidence of Pulmonary Tuberculosis in Bronchial Asthma C H Sprague —p 399  
Clinical Significance of Bleeding During Second Half of Pregnancy B P Watson —p 401  
Population of State Mental Hospitals in Connecticut C Barker J H Watkins and I V Hickock —p 406  
Use of Sulfanilamide in Appendical Peritonitis With Report of 2 Cases Complicated by Anuria N R Tolk and M S Popkin —p 408  
First Seventy Five Years of Connecticut State Medical Society C Barker —p 410

### Delaware State Medical Journal, Wilmington

15 51-66 (April) 1943

- Littre's Umbilical Hernia Case Report W E Bird —p 51  
The Doctor of Medicine and His Responsibility A W Adson —p 58

15 67-100 (May) 1943

- How to Preserve Mental Health During Days of Unusual Stress M A Tarumianz —p 67  
Psychoneurotic Reactions Resulting from Organic Disease P F Elfeld —p 71  
Psychasthenia in Child of Seven Years B G Lawrence —p 73  
Therapeutic Value of Pneumoencephalography in Post-Traumatic and Related Conditions G J Gordon —p 74  
Mental Illness and Military Service G J Gordon and M Zimble —p 77  
Alcohol and Subdural Hematoma G S Bieringer —p 81  
Management of Psychotic Diabetics F A Frehan —p 84  
Psychologic Examination of Infants J Jastak —p 88

### Endocrinology, Springfield, Ill

32 373-454 (May) 1943 Partial Index

- Effect of High Protein Diets on Size and Activity of Adrenal Cortex in Albino Rat J Tepperman F L Engel and C N H Long —p 403  
Observations on Relationship of Thyroid to Polyuria of Experimental Diabetes Insipidus C E Radcliffe —p 415  
Ovarian and Placental Function in Addison's Disease L T Samuels G T Evans and J L McKelvey —p 422  
Influence of Hyperthyroidism on Urinary Excretion of Thiamine and Riboflavin B Sure and Z W Ford Jr —p 433

### Gastroenterology, Baltimore

1 449-554 (May) 1943

- Management of Ulcerative Colitis J A Barger —p 449  
\*Whipple's Disease (Lipophagia Granulomatosis) F L Apperly and E L Copley —p 461  
Bacteriologic Epidemiologic Immunologic and Chemotherapeutic Aspects of Bacillary Dysentery E Aeter —p 471  
New Test for Pancreatic Function Experimental Observations H L Popper and H Necheles with Assistance of W H Olson and M Weiner —p 490  
Comparison of Insulin and Food as Stimuli for Differentiation of Vagal and Nonvagal Gastric Pouches E E Jemerin F Hollander and A A Weinstein —p 500  
Effects of Some Intra-Abdominal Operative Procedures on Intestinal Activity Experimental Study K G Wakim and F C Mann —p 513  
Gastric Diverticula M L Tracer —p 518

Whipple's Disease (Lipophagia Granulomatosis) — Whipple in 1915 described a disease characterized anatomically by deposits of fat and fatty acids in the intestinal and mesenteric lymphatic tissues, which were greatly enlarged, the normal structure being replaced by dilated fat-filled lymphatic spaces and granulomatous tissue. The same or a similar condition has been described by others as intestinal lipodystrophy, lymphadenectasis, lymphadenocoele mesenteric chyladenectasis and lipophagia granulomatosis. Apperly and Copley report a case of lipophagia granulomatosis and compare it with 11 other

cases. The disease appears in men aged 40 to 60 with indigestion, gaseous distention and often a history of polyarthritides. Later there is diarrhea or steatorrhea, often with blood, severe wasting and weight loss, moderate anemia and edema, low blood pressure, achlorhydria and often some skin pigmentation or icterus. Necropsy reveals filling of the intestinal mucosa with large fat-filled foamy macrophages, greatly enlarged mesenteric lymph nodes composed of granulomatous tissue containing dilated lymphatics filled with lipid and surrounded by macrophages and giant cells, and often chylous ascites, moderate fibrous pleuritis, pericarditis and peritonitis.

### Journal of Clin Endocrinology, Springfield, Ill

3 257-320 (May) 1943

- Familial Eunuchoid Gigantism K M Malsbacher —p 257  
Ectodermal Disorders in Chronic Hypoparathyroidism A Learner and C I Brown —p 261  
Congenital Myxedema Without Mental Retardation J C Mussio Fournier and I M Cervino —p 265  
Therapy of Seminal Inadequacy I Use of Pituitary, Chorionic and Fquine Gonadotropins C D Davis R L Pullen J H M Madden and F C Hamblen —p 268  
Physiology of Endocrines in Pregnancy Lactation and Puerperium F Novak —p 274  
Endocrine Tumors of Ovary S H Geist and F Spielman —p 281  
Psychology of Menstrual Cycle S Rosenzweig —p 296

### Journal Industrial Hygiene & Toxicology, Baltimore

25 175-196 (May) 1943

- Chronic Toxicity of Aerosol OT A E Benaglia E J Robinson E Utley and M A Cleverdon —p 175  
Determination of Halogenated Hydrocarbons in Atmosphere F H Goldmann and C G Seegmiller —p 181  
Filter Paper Method for Lead Fume Collection L Silverman and J F Ege Jr —p 185  
\*Plumbism Resulting from Oxycetylene Cutting of Painted Structural Steel I R Tabershaw B P W Ruotolo and R P Gleason —p 189  
Observations on Fate of Pentachlorophenol in Animal Organism W Machle W Deichmann and G Thomas —p 192  
Estimation of Minute Amounts of Tetrol in Atmosphere F H Goldmann and D E Rushing —p 195

Plumbism Resulting from Cutting Painted Steel — Tabershaw and his associates point out that the discovery of several cases of lead poisoning in a group of oxycetylene burners engaged in cutting painted steel has brought attention once more to a hazard which was extremely common during and after the first world war. The report concerns 14 men engaged in salvaging an old elevated railway structure. All the workers except two were supplied with mechanical filter respirators approved by the Bureau of Mines for use against toxic metal fumes. The filters were changed daily. Two men were supplied with canister type respirators containing a felt filter and a charcoal-soda-lime mixture for the removal of acid gases and vapors. In the course of the salvage operation practically all the men were ill at one time or another with some slight or major symptoms of lead poisoning. The authors present two typical histories. The evidence is overwhelming that the cutting of structural steel covered with lead-bearing paint is a potential source of plumbism and that neither the use of respirators nor natural ventilation provides complete protection. Nevertheless the wearing of approved respirators should be insisted on during the entire work period. Medical examinations should be done periodically including blood and urine studies. Workers who develop signs or symptoms of plumbism should be transferred to jobs which do not present the same hazard. At present there is a great deal of oxycetylene cutting being done in the repair of damaged ships. Burners cut painted steel to suitable size and shape. There can be no doubt that the workers are exposed to a serious lead hazard.

### Kansas Medical Society Journal, Topeka

44 109-144 (April) 1943

- Fundamentals of Psychiatry VII Oedipus and Castration Complexes W C Menninger —p 109  
Doctor of Medicine and His Responsibility A W Adson —p 111

44 145-180 (May) 1943

- Infectious Mononucleosis from Clinical Standpoint H W Dav —p 148  
Fundamentals of Psychiatry VIII Object Finding Phases of Development W C Menninger —p 151  
Active Serum Complement Fixation Description and Results of Simple Method M Gerunda —p 153

**Military Surgeon, Washington, D C**

92 583-690 (June) 1943

- Medicine Goes to War Again H W Jones—p 583  
 Guide for Standing Operating Procedure for Medical Battalion—Infantry Division H P Carter—p 597  
 Working Concept of Morale for Light Surgeons A H Leighton—p 601  
 New Multi Purpose War Dressing J L Gallagher—p 609  
 Maintaining Quality of Nursing Service in Emergency Claire Dennison—p 617  
 Colonel Bushnell's Epidemiology of Tuberculosis J W Turner—p 626  
 Acrylic Jacket Crown as Abutment for Fixed Bridge F W Stevens—p 639  
 Dental Field Case R N McMillan—p 643  
 Rectus Muscle Strain Simulating Acute Appendicitis W F Bowers and N F Richard—p 645  
 Internal Derangement of Knee Joint G D Caldwell—p 648  
 Modified Calibrated Skin Grafting Knife K M Marks—p 653  
 Malingering Among Soldiers Orthopedic Aspects L N Cozen—p 655

**Missouri State Medical Assn Journal, St Louis**

40 133-160 (May) 1943

- Essential Factors in Partial Gastrectomy for Gastric and Duodenal Lesions C J Hunt and P F Hunt—p 133  
 Outbreak of Staphylococcus Food Poisoning J E Smith and N Nagle—p 135  
 Acute Appendicitis Management of Rupture with Spreading Peritonitis G R Presnell—p 137

40 161-190 (June) 1943

- Treatment of Tumors by Escharotics L V Ackerman and T P Eberhard—p 163  
 Rocky Mountain Spotted Fever in Midwest E B Smith and E H Reinhard—p 166  
 Rocky Mountain Spotted Fever Report of 2 Cases R S Casford—p 171  
 Fibroma of Stomach Case Report H M Wiley—p 171

**New England Journal of Medicine, Boston**

22 559-594 (May 6) 1943

- Spina Bifida and Cranium Bifidum I Survey of 546 Cases F D Ingraham—p 559  
 Spasmodic Rectal Pain Review of Literature and Report of Case H L Bolen—p 564  
 Acute Hemolytic Anemia Following Sulfadiazine Report of Case N H Bover—p 566

228 595-630 (May 13) 1943

- Psychiatry in New Hampshire First Hundred Years S Stone—p 595  
 Medical Management of Intestinal Obstruction With Special Reference to Use of Miller Abbott Tube J H Follev—p 606

228 631-666 (May 20) 1943

- Spina Bifida and Cranium Bifidum II Surgical Treatment F D Ingraham and H Hamlin—p 631  
 \*Isoimmunization with Rh Factor in Acquired Hemolytic Anemia Report of Case W Dameshek and P Levine—p 641

228 667-698 (May 27) 1943

- Small Puddles E P Bagg—p 667  
 Practical Considerations in Therapeutic Use of Blood Derivatives L R Newhouser and E I Lozner—p 671  
 Biopsy of Prostate with Silverman Needle E L Peirson and D A Nickerson—p 675  
 Skin Changes of Nutritional Origin H Jeghers—p 678

**Isoimmunization with Rh Factor**—Dameshek and Levine report that a patient with subacute acquired hemolytic anemia developed severe and almost fatal hemolytic reactions when given successive blood transfusions. Subsequent testing revealed that the patient (group O Rh—) had developed isoimmunization to the Rh factor with the presence in the blood of both a warm anti Rh agglutinin and a cold agglutinin. Transfusions with Rh— blood were without reaction. Splenectomy and biopsy of the liver showed intense myeloid metaplasia of both organs. Death resulted from acute toxic necrosis of the liver. Necropsy revealed widespread myeloid metaplasia in the presence of severe hemolysis. Repeated transfusions in acute hemolytic anemia may be followed by isoimmunization and the development of irreversible hemolysis. As the result splenectomy, which might originally have been curative, may prove ineffective.

**Ohio State Medical Journal, Columbus**

39 505-608 (June) 1943

- Preventive Medicine in Industry J H Foulger—p 521  
 Present Day Influences in Industrial Health C Leggo—p 526  
 Physical Therapy in Relation to General Practice F H Krusen—p 530  
 Essentials and Organizations of Industrial Health Services C M Peterson—p 543  
 Women in Industry Present and Future Problems H C Hesselhine—p 545  
 Myasthenia Gravis with Profound Muscle Atrophy Case Record Presenting Clinical Problems C D Aring and M Scheinker—p 550  
 Importance in Nutrition of Manganese J Forman—p 553  
 Early Surgery in Ohio D W Palmer—p 556

**Pennsylvania Medical Journal, Harrisburg**

46 785-880 (May) 1943

- Neoplasms of Ovary J V Meigs—p 797  
 Clinical and Pathologic Aspects of Certain "Hormone Producing" Tumors S P Reimann and E B Keller Jr—p 805  
 Coronary Artery Occlusion in Bacterial Endocarditis Case Report P S Caplan and A N Alpern—p 809  
 Incidence of Dysphagia from Intrathoracic Extraesophageal Tumors H N Hill and P P Vinson—p 814  
 Importance of Allergy in Practice of Pediatrics L H Crippe—p 816  
 Surgical Treatment of Cancer of Larynx C L Jackson and C M Norris—p 822  
 Psychologic Management of Patient with Cardiac Disease C E Ervin—p 829  
 Differential Diagnosis of Precordial Pain H G Schleiter—p 832

**Public Health Reports, Washington, D C**

58 757-792 (May 14) 1943

- \*Rocky Mountain Spotted Fever Further Experience in Therapeutic Use of Immune Rabbit Serum N H Topping—p 757  
 Improved Antigen for Complement Fixation in American Trypanosomiasis D J Davis—p 775

58 793-824 (May 21) 1943

- National, Provincial and Local Nutrition Programs in Canada G F Amyot—p 793  
 Cooperative Nutrition Program in North Carolina J F Kendrick—p 797  
 Role of Health Department in National Nutrition Program W H Schrell and W Wilkins—p 803

**Immune Rabbit Serum in Rocky Mountain Spotted Fever**—Topping reports his experience with immune rabbit serum in the treatment of laboratory animals infected with the virus of Rocky Mountain spotted fever. The serums used were from two sources and differed only in the antigen used for the active immunization of the rabbits. The methods of concentration and purification were identical. The T serum was prepared with tick antigen and the L serum by the use of infected yolk sac material. The experiments indicate that it is possible to produce an immune serum in rabbits by the use of live virus either from infected ticks or from infected yolk sacs. Administration of this serum to infected guinea pigs and monkeys demonstrated its therapeutic value when given early. With small doses the therapeutic effect varied inversely with elapsed time from the inoculation of the infecting dose to the administration of the serum. If given within twenty-four hours after infection it would completely suppress the disease. If a small dose was given from forty-eight to seventy-two hours after the infection it would modify the disease in such a manner as to prevent death as well as the scrotal reaction of spotted fever in guinea-pigs. This small dose was of no value after seventy-two hours, but if the dose was increased benefit could be demonstrated as late as one hundred and twenty hours after infection (the second day of fever). The results of the human trial are not conclusive because of the small number of cases. The fatality rate in cases treated before the third day of rash was considerably below that expected from past experience with patients receiving no serum. There were only two deaths in the 52 cases treated. Of the 52 patients treated only 2 died, both of whom were men aged 66 and 72 respectively, or a fatality rate of 3.8 per cent as compared to the expected rate of approximately 18.8 per cent. Anti-Rocky Mountain spotted fever serum should be considered as offering hope in the treatment of this disease.



## FOREIGN

An asterisk ( \* ) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## Lancet, London

1 669-698 (May 29) 1943

Forces Behind Specialism in Surgery. A. Bonney—p. 669

Vital Statistics of 1942. P. Sticks—p. 672

\*Infective Hepatitis. 300 Cases in an Outer London Borough. I. C. Ford—p. 675

Jaundice Following Yellow Fever Immunization. Transmission by Intra-nasal Instillation. C. M. Findlay and N. H. Martin—p. 678

Treatment of Immersion Foot by Dry Cooling. C. C. Ungley—p. 681

**Infective Hepatitis**—Ford reviews 300 cases of infective hepatitis which occurred in Wembley, an outer London borough. These 300 cases form part of a larger outbreak extending over surrounding districts. The only death among them was that of a boy aged 16 who was hospitalized in coma and died of hepatic failure three days later. Water, milk or foods could not be suspected as sources of infection nor could the infection have been spread by rodents. With few exceptions the patients all reported known close contact with other persons who either were suffering from the disease or had just recovered. Most patients showed well defined prodromal symptoms such as mental depression, irritability or drowsiness, with loss of appetite and constipation often accompanied by headache with pain in the right epigastrium, sometimes diagnosed as acute appendicitis. Many patients complained of shivering attacks and a few of muscular tenderness or photophobia. After three or four days nausea and vomiting appeared and there was a rise of temperature. Bile in the urine appeared on the fifth or sixth day of the illness and was followed in twenty-four to forty-eight hours by jaundice. The jaundice commenced always in the ocular conjunctivas and often spread to the face, neck, abdomen and the whole body. With the onset of jaundice there was in most cases a remarkable improvement in the patient's general condition. The liver was found to be moderately enlarged but the spleen could not be felt. Many patients lost several pounds. The jaundice usually cleared within one to three weeks. Confinement to bed for a few days with restriction of fats and increase of carbohydrates were effective measures. Calomel was a useful purgative. Both home and school contact could be blamed for the spread of infection. As the infective agent has not been isolated and as it appears that the incubation period is long the only suggestion put forward for the control of the infection is that during an epidemic, children who vomit in school should be excluded for seven days.

**Transmission of Jaundice Following Yellow Fever Immunization by Intranasal Instillation**—Findlay and Martin point out that in 1937 attention was called to the occurrence of jaundice following yellow fever immunization. Evidence was brought forward to show that this jaundice had nothing to do with the yellow fever virus as such but was probably due to some agent in the human serum used in the preparation of the vaccine. It was considered possible that this icterogenic agent had multiplied together with the virus of yellow fever in a serum-Tyrodé culture medium containing minced chick embryo. When the technique of preparing the vaccine was altered by employing only serum taken from donors who had remained in perfect health for a month or more after the serum had been withdrawn and by inactivating the serum for at least thirty minutes at 56°C, no further cases of post-inoculation jaundice occurred in the many thousands of persons immunized in England and Africa from November 1937 onward. Similar precautions taken in Brazil also resulted in the elimination of jaundice as a sequel to yellow fever immunization. Recently jaundice has been reported among American army personnel inoculated with yellow fever vaccine and within the last few months between 250 and 300 cases of jaundice have again been seen following yellow fever immunization in Britain. All attempts to transmit the disease to the usual laboratory animals having failed it was determined to investigate the possibility of transmission to human beings. Four men volunteered. They had never suffered from jaundice. All were immune to yellow

fever, having been immunized eight months previously from a batch of vaccine that had not produced jaundice in any person. Washings were obtained from the nasopharynx of patients with icteric or preicteric symptoms following yellow fever inoculation. For instillation into the nares the volunteers were placed flat on a couch with the head hanging over one end. The nasal washings were then slowly dropped into the nostrils of the volunteers, who were told to sniff. Of the 4 volunteers 1 has shown no evidence of illness. There is doubt whether the patient with whose nasal washings he was inoculated ever suffered from postinoculation jaundice. Of the 3 others, 1 had subclinical icterus associated with mild symptoms. Two however suffered from jaundice. The results so far obtained with jaundice following yellow fever immunization show that in the nasal washings from patients in the preicteric and possibly icteric stage there exists an agent which is capable of inducing jaundice in human volunteers with symptoms similar to those of infective hepatitis after an incubation period varying from thirty to fifty days.

**Treatment of Immersion Foot by Dry Cooling**—Ungley describes the methods employed by Webster and his colleagues in treating cases of immersion foot in the hyperemic stage by dry cooling. (a) Dry ice bags were placed round each foot and changed every four hours or oftener if necessary to reduce skin temperature by about 6 degrees C. (b) the feet were fanned with air cooled by cold water sprayed from a nebulizer. (c) the feet were exposed to room temperature in a cool ward. Pains were relieved and the patients were comfortable within four hours. Edema usually subsided rapidly and contents of blebs were absorbed. In several cases impending gangrene was arrested. Ungley had an opportunity to try methods of dry cooling in immersion foot in the hyperemic stage. Two men were rescued after exposure for thirty-four hours on a raft in the North Sea, reaching the hospital a few hours later. Their feet were cold blue and moderately swollen. During the night the feet became hot (32 to 34.5°C or 89.6 to 94.1°F) and more swollen. Ungley's experience in these cases confirms Webster's observation that cooling the hot limbs relieves pain and tingling. Exposure of the feet to a cool room temperature (15 to 18°C, or 59 to 64.4°F) with a fan playing on the soles proved a simple and satisfactory method. It was not found necessary to spray cold water through the fan or to use icebags. The speed and distance of the fan were adjusted to maintain skin temperatures of from 23 to 26°C (73.4 to 78.8°F), cooling to less than 21°C (69.8°F) gave rise to discomfort. The author thinks that for severe cases requiring long, uninterrupted cooling and not intolerant to restriction of leg movements, Greene's therapeutic refrigerator might prove useful.

## Quarterly Journal of Medicine, Oxford

12 101-140 (April) 1943

\*Familial Hemolytic Anemia (Acholuric Jaundice), with Particular Reference to Changes in Fragility Produced by Splenectomy. J. V. Dacie—p. 101

\*Tonsil Adenoid Operation in Relation to Health of Group of School girls. J. H. P. Paton—p. 119

Galactose Tolerance Tests in Thyrotoxicosis. C. G. Barnes and E. J. King—p. 129

**Familial Hemolytic Anemia and Splenectomy**—Dacie studied erythrocyte fragility to hypotonic saline solution in 24 cases of familial hemolytic anemia. Three main types of quantitative fragility curves could be distinguished—'tailed' curves (12 cases), 'diagonal' curves (6 cases) and 'normal type' curves (5 cases). Splenectomy was performed in 12 cases in 11 of which resistance to hemolysis was increased after operation. In 7 cases with 'tailed' curves increasing in resistance was preceded by a transient postoperative increase in fragility. In 1 case first seen in a hemolytic crisis fragility ultimately became normal in another there was an increase in fragility compared with the preoperative level which persisted for at least three years after splenectomy. Great engorgement with blood was the most notable feature of the 12 examined spleens. Perfusion experiments with excised spleens failed to demonstrate the cause of the congestion. Although it was difficult to free the pulp from blood by perfusion with saline solution the



time of circulation of test objects (fowl erythrocytes) through the spleens appeared normal. The various theories on the pathogenesis of the disease are considered. The available evidence suggests a hemolytic disorder based on the presence of erythrocytes with an increased tendency to hemolysis. Although there is much evidence to support the view that this represents a primary defect in erythropoiesis, experimental and clinical observations on the relationship between hemolytic anemia, splenic congestion and spherocytosis indicate that the possibility of the presence of an abnormal hemolytic agent or metabolite cannot be ignored.

**Tonsil Adenoid Operation and Health of School Girls**—Paton analyzes the records of 909 girls admitted to a boarding school between 1930 and 1939. The girls are recruited from well to do families and are healthy on admission. The majority enter school at or about puberty. The data are extracted from the history and state of health on examination recorded at entry and the records of illness during the school years. Fifty-seven per cent of the girls had had their tonsils removed and 50 per cent had had their adenoids removed. Inquiry into the incidence of illness among 909 girls revealed that the operation group was no healthier than the control group on arrival at school. The operation group was less healthy than the control group while at school. This is shown by the number of school days lost through illness. The operation group suffered less from tonsillitis. The operation group suffered much more from respiratory infections and lost more days from bronchitis alone than they gained in respect of tonsillitis. When the small groups in whom a single operation was performed (tonsil operation 57 cases, adenoid operation 24 cases) are considered, certain deductions are warranted. Removal of the tonsils is the factor in the combined operation responsible for the reduction in tonsillitis and for the increase in respiratory infections. Adenoidectomy alone reduces the liability to respiratory infections, but in the combined operation group the removal of adenoids failed to counteract the increase in respiratory infections which resulted from the tonsillectomy. Removal of adenoids increases the liability to acute otorrhea. Recurrent attacks of otorrhea are seldom prevented and primary attacks of otorrhea are more frequent after the operation. These figures support the conclusion of Glover and Wilson, arrived at from a survey of more than fourteen thousand records, that a large proportion of the tonsil and adenoid operations now done on children are "unnecessary, entail some risk and give little or no return."

### Revista de la Asoc. Méd. Argentina, Buenos Aires

57 81-148 (March 15-30) 1943 Partial Index

Tumor of Carotid Corpuscle Case C I Rivas and T J Oñate—p 91

Dystocia Due to Neuroma Previo Case C J Duverges—p 94

\*Hashimoto's Disease (Lymphoid Goiter) Case S E Luchetti and M Polak—p 107

**Hashimoto's Disease**—Lymphoid goiter is observed in women past 40 years of age. The condition develops slowly, is woody hard on palpation and involves all of the gland. The gland is not adherent to the neighboring tissue. Hypothyroidism is the result. The diagnosis is confirmed by the microscopic examination of tissue removed at the operation. The therapy consists in bilateral subtotal thyroidectomy. Post-operative myxedema is a frequent complication but is readily controlled by administration of thyroid preparations.

### Semana Médica, Buenos Aires

50 525-580 (March 11) 1943 Partial Index

Syndrome of Chronic Cardiac Compression A Yodice—p 525

\*Bismuth in Poliomyelitis Salts of Heavy Metals in Diseases Caused by Neurotropic Virus A Calabrese—p 531

Prostatectomy in One Stage with Perineal Drainage J Toro—p 542

Analgesia by Means of Gases in Obstetric Practice I Nunziata—p 554

**Bismuth Compounds in Poliomyelitis**—Calabrese used bismuth compounds in the treatment of 58 cases of poliomyelitis with encouraging results. The treatment should be begun early and saturation accomplished as quickly as possible. The author

uses hydrosoluble as well as liposoluble bismuth. The hydrosoluble substance is administered in doses of from 3 to 4 mg per kilogram of body weight. This dose is usually given by intramuscular injection and is repeated after twelve hours, because the hydrosoluble substance is rapidly eliminated (in about twenty-four hours). The liposoluble product is given simultaneously and also by intramuscular injection but in smaller doses (1 to 2 mg per kilogram of body weight) and on alternate days. The liposoluble bismuth exerts a sort of depot action. During the subacute stage only the liposoluble substance is given every other day or every third day. The toxicity is slight, gingivitis was observed in some cases, but it disappeared rapidly after lavage with sodium bicarbonate. Vitamin B can be given in addition to the bismuth, and the symptomatic treatment should be maintained.

### Deutsche medizinische Wochenschrift, Leipzig

68 157-184 (Feb 13) 1942 Partial Index

Iron Metabolism and Iron Therapy from Standpoint of Internal Medicine W Schultz—p 157

Importance of Iron Metabolism for Therapy H Albers—p 160

\*Sublingual Application of Desoxycorticosterone in Addison's Disease F Heni—p 162

Writing Test in Occupational Mercury Poisoning E Holstein—p 170

**Sublingual Application of Desoxycorticosterone**—Heni reports 3 cases of Addison's disease in which he resorted to the sublingual administration of desoxycorticosterone. He gave the substance in the form of drops as well as in the form of tablets to be dissolved under the tongue. His experience with this method of administration corroborated the report of American authors (Anderson and others) that the sublingual application of desoxycorticosterone acetate can be employed with good results. The absorption through the lingual and oral mucosa is good but is only three fourths that absorbed from intramuscular injection. For this reason the dose must be about one third higher. Gastrointestinal disturbances developed in 1 of the patients, but these were partly due to excessive dosage. The sublingual administration can replace the intramuscular injection as well as the subcutaneous implantation of crystalline substance in the continued treatment of Addison's disease.

### Klinische Wochenschrift, Berlin

21 169-192 (Feb 21) 1942 Partial Index

Thyrotoxic Gastric Crises H Curschmann—p 175

Modification of Moers Schlenz Method of Blood Pressure Determination in Experimental Animals H Johner and M Gukelberger—p 176

\*Studies on Bomskov's Thymus Hormone with Especial Consideration of Status Thymicolymphaticus J Rechenberger, H Guthert and E Scharrer—p 177

Role of Position of Electric Axis in Localization of Myocardial Lesions L Ungvárny—p 181

\*Attempts to Treat Typhus with Sulfapyridine W Menk—p 185

**Bomskov's Thymus Hormone and Status Thymicolymphaticus**—Rechenberger and his associates extracted the thymus hormone according to Bomskov's method from the thymus glands of children who died in status thymicolymphaticus. They tested its effect on the hepatic glycogen of rats and guinea pigs and found it to be indefinite. Thymus hormone was also extracted from calf thymus according either to Bomskov's or to other methods of extraction. The hormone obtained from calves showed no definite action on the hepatic glycogen of test animals. Raw thymus oil obtained from Bomskov himself produced the same results. The glycogen content of the livers of children who died suddenly in status thymicolymphaticus was within normal limits.

**Sulfapyridine in Typhus**—Menk gave sulfapyridine to patients with typhus in Poland in 1940 chiefly to combat the complicating pneumonias. His observations and those of others seemed to indicate that sulfapyridine was effective for that purpose. The effect on the typhus itself was negative. Animal experiments do not make it probable that sulfapyridine will be effective in human typhus. Tests with numerous sulfonamide compounds revealed only one preparation that had some effect on the Rickettsia mooseri infection of mice.

## Book Notices

**Operative Oral Surgery** By Leo Winter DDS MD F.A.C.D. Professor of Oral Surgery New York University New York. Second edition Fabrikoid Price \$12.50 Pp 164 with 1211 illustrations St. Louis C. V. Mosby Company 1943

In the war emergency Dr. Leo Winter felt it imperative to revise the former edition to include important discoveries and developments in the practice of oral surgery. Many dental surgeons will be called on to provide first treatment to a large number of war casualties which differ but slightly from traumatic wounds occurring in civil life in these days of too frequent automobile accidents. At the battle front the armamentarium for proper treatment is not always at hand therefore Dr. Winter has presented the simplest and most expedient methods of treatment to bring the desired results.

Amplifications cover chemotherapy, shocks, burns, war wounds, dislocation and subluxation of the temporomandibular articulation, pin fixation or skeletal fixation for treatment of fractures, general anesthesia and oral manifestations of blood dyscrasias. A foreword gives a warning to the student of oral surgery of the necessity of a complete knowledge of anatomy and physiology. He should be able to visualize the parts as clearly as if the coverings of the jaws were transparent. The skillful oral surgeon has accurate knowledge of the jaws, sinuses and structures in the floor of the mouth and neck and their mutual relations.

Various methods of local anesthesia and their technic are described in detail, with colored illustrations to show nerves, arteries and veins to locate the point of puncture. When a general anesthetic is required inhalation anesthesia is today the principal medium for control of pain. Minimizing the dangers to the patient is of serious importance. Respiratory obstruction must be carefully watched during oral surgery as it may result in the upper air passages, from anatomic distortions, operators' instruments, packs or hands, laryngospasm and from anesthetic appliances. Lower respiratory obstruction may be caused by aspiration of blood or secretions. A special anesthetist is required by the oral surgeon so that he may concentrate on surgery without the responsibility of watching the effect of the anesthetic on the patient. Special consideration should be given to the type of anesthetic to fit the idiosyncrasies of the patient. In emergencies the anesthesia problem has to be met with the most expedient method that the conditions and supplies permit.

In exodontia special consideration is given to roots in antrums and impacted teeth. In pericoronitis x-ray films are useless in diagnosis but valuable in deciding the technic to be employed when the removal of the tooth is indicated. Pain and its manifestations in various neuralgias are described and differentiated. The pain in tic douloureux is the most severe and surgery the only cure. It definitely is not of dental origin. Swellings of the face and neck present a diagnostic problem, as they may be of dental origin or a definite manifestation of diseases which must be correctly determined and properly treated. Blood dyscrasias are often first manifested in the mouth and recognized by the oral surgeon. A brief outline gives the major features of the various hematologic and related conditions which may be associated with oral manifestations.

Differentiation between adamantinomas and cysts is of utmost importance, as it is essential to resort to proper treatment at the outset. Clinical diagnosis should be supplemented by x-ray examination and a biopsy, which will be the determining factor. Periodic x-ray examination of the teeth and systematic clinical examination of the mouth are safeguards against any abnormalities developing to a stage requiring mutilating surgery.

Dental prosthesis sometimes requires oral surgery in preparation for correction of the bone structure and tissue formation in the mouth to obtain perfect fitting dentures. When treatment and occlusal adjustment fail to clear up pyorrhea pockets the dentist must resort to surgery using either the so-called flap operation or gingivectomy. Fractures are usually caused by some form of trauma but there are also systemic causes which must be considered. The history followed by careful

examination will reveal symptoms of diagnostic significance. Then the best method for immobilization of the part may be determined. Loss of a segment of bone from osteomyelitis removal of a malignant growth or a certain type of injury may require a bone graft, which must be esthetically and functionally correct to reconstruct the lost part.

In the chapter on chemotherapy the clinical action of sulfanilamide on various types of organisms is presented with its relative merits. In oral surgery sulfathiazole has surpassed sulfanilamide for treatment of infectious processes because of the reduced toxicity of sulfathiazole. In the treatment of war wounds in the soft tissues of the face observations of surgeons are that sulfanilamide is superior to sulfathiazole in bacteriostatic activity.

The same problems present themselves in the case of wounds whether they occur in civil or in military life. The factors of respiration, shock, hemorrhage, fracture, infection, foreign bodies and transportation of the individual are always prevalent. Respiration should be watched to make sure there is no obstruction; treatment for shock should be given before its onset rather than after and the control of bleeding is vital for the maintenance of life. After treatment of the wound and removal of foreign bodies where it is advisable, the maintenance of space is important for future surgical consideration. The future success of plastic surgery will depend upon the wisdom and ingenuity of the oral surgeon in the immediate treatment. When the features have completely collapsed as a result of loss of bony substance, it becomes an impossibility for the plastic surgeon to recreate the individual part. Orthodontic and prosthetic appliances should be employed to prevent the collapse of bony fragments.

Surgical treatment of prognathous mandibles is an interesting study. Shortening of the mandible may be accomplished in a relatively short time and harmony in relative size of the mandible to the maxilla may be produced with satisfactory functional and esthetic results. Conversely, in underdevelopment of the mandible it may be extended to a proper relationship between the two jaws. Every operative procedure is so carefully illustrated step by step that this book might be classed as visual education.

**Doctor in the Making: The Art of Being a Medical Student** By Arthur W. Ham M.B. Associate Professor of Anatomy in Charge of Histology Faculty of Medicine University of Toronto Toronto Ontario and M.D. Salter M.A. Ph.D. Cloth Price \$2 Pp 179 with illustrations by Jean McConnell Philadelphia Montreal & London J. B. Lippincott Company 1943

Here is an engagingly written and amusingly illustrated little book which fulfils the promise of the preface that 'It deals with the motives and mental equipment that are necessary if one is to be a successful medical student and—with the common enemies of success. It contains many valuable hints and guides for the student in any field but especially for the high school and college student who is looking toward medicine as a career, as well as for medical students for whom it is designed primarily. For those members of the faculty also who lack adequate insight into the motivations and difficulties of the present day medical student in adjusting himself to the increased scope and greatly expanded content of the medical course the book is especially recommended.

The authors have written from their rich experience at the University of Toronto as faculty advisers of medical students. The fact that ability and academic preparation do not guarantee success unless habits of study, attitudes, general personality characteristics and other factors properly condition the student for his life of study is the ripe fruit of their experience (as it has been of others) and the well illustrated theme of this book.

The book is more than a helpful guide to the poorly adjusted or bewildered student; it is also an excellent medicopsychologic analysis of personality and character in terms of the essential elements which determine the conditions for success in life. The chapter for example on the child self as a handicap to success in adult life is a condensed course in psychobiology which if adequately digested will lead to greater self understanding and insight. That this is essential for any one who hopes to be an understanding and respected physician

—and incidentally a successful one—is the secondary, if unexpressed theme of the book. This is an effort on the part of the authors to cure the student of incipient and actual maladjustments through the process of education as a first step in practicing the aphorism 'Doctor, cure thyself if he is to realize the full responsibilities and greatness of a physician. The chapter on "Understanding and Applying the Scientific Method" is a further analysis of scientific thinking as contrasted with delusional thinking. The student who understands this chapter is well equipped to guard himself against the pitfalls of rationalization and deduction so often the cause of faulty reasoning and diagnosis.

Finally under the title of "Do's and Don'ts for the Student" it is pointed out that the "medical student automatically assumes some of the responsibilities of the profession." This chapter is a fitting conclusion for it emphasizes the human values in the culture of medicine, a culture which studies man in all of his multifold activities and at all levels of his existence. The authors think that "in general the average medical student or physician does not appreciate the cultural value of his knowledge and the great need for him to use this knowledge as a leaven for community opinion." The old fashioned country doctor "was not afraid to let the weight of his opinion be felt in community life, and he was not infrequently the greatest stabilizing force in a community." The authors rightly raise the question whether the present day graduate exerts the same desirable beneficent influence in the modern urban industrial community of which his highly specialized functions are a part.

Doctor in the Making is a valuable contribution not least because of its challenge to greatness in the physician of tomorrow.

**Physiological Principles in Treatment** By Sir Walter Langdon-Brown M.A. M.D. Hon. D.Sc., Consulting Physician to St. Bartholomew's and the Metropolitan Hospitals London and Reginald Hilton M.A., M.D. F.R.C.P. Physician to St. Thomas's Hospital London. Eighth edition. Cloth Price \$3.50. Pp. 323, with 4 illustrations. Baltimore: William Wood & Company, 1943.

The fact that this book has gone into the eighth edition would lead one to believe that it must be exceedingly valuable. Actually, after dipping into the text one wonders if the main reason the book has sold so well is that so many physicians are hungry for knowledge about modern physiologic principles in treatment. Most of the chapters are inadequate, much of the treatment advised is empirical and not based on any physiologic knowledge or thinking, and much is outdated. Thus, one finds under treatment of cholecystitis "A useful routine measure is to give 5 to 10 minims of belladonna to dilate the bile passages and 10 grains of salicylate of soda to dilute the bile, together with 10 grains of hexamine as an antiseptic, and 20 grains of bicarbonate of soda to prevent urinary irritation." Granting that any of these drugs could accomplish any of these things, which is extremely doubtful, how could the changes effected influence a disease which is usually deep in the wall of a gallbladder which commonly has no bile going in or out of it? Still more astounding is the recommendation that antiphlogistine be applied over the gallbladder! Turning to the extremely inadequate section on gastroenterostomy one is astounded to learn that "many neuroses are frequent sequels to the operation." Pernicious anemia has occurred too often to be explained as a mere coincidence! Evidently the writer had a dim recollection of Hartman's 1 case of hyperchromic anemia following resection of a stomach. Certainly it would seem that those who propose to teach ought to be somewhat up to date and fairly well informed.

**Principles of Orthodontics** By J. A. Salzmann D.D.S. Head Dental Service New York City Vocational Schools New York. Fabrikoid. Price \$10. Pp. 674 with 450 illustrations. Philadelphia: Montclair & London: J. B. Lippincott Company 1943.

To the orthodontist this book is disappointing as so little space is devoted to the science and practice of orthodontia and so much to preliminary topics of growth and development of bone, muscle, dentition and tooth eruption. Endocrine function and dysfunction, nutrition and diet have a relationship to dentofacial deformities, though they may be hereditary, environmental or acquired through illness and sometimes accentuated through habits.

Classification and diagnosis of dentofacial anomalies are determined according to different standards. Angle, Simon and Hellman reach their conclusions, determining the deviations from the normal standard, by different methods, which are described in detail. Pont has compiled a table of arch widths based on teeth widths. Thus by the use of the Pont normal tooth index the approximate amount of change required in the arch may be mathematically computed.

In addition to corrective orthodontic appliances, exercises are often prescribed to aid muscular development in forming a better facial contour. Schwarz classifies orthodontic pressure in four degrees, giving results under each degree, with warnings of resulting injury under too great stress. After orthodontic correction is completed retention is but "a leveling off of what we have been doing during treatment." Orban advocates that retention appliances should be worn until the internal transformation of the static jaw structure and the soft tissues is completed.

A complete bibliography makes this book valuable to the student as a reference guide.

**Cancer of the Uterus** By Elizabeth Hurdon C.B.E. M.D. Cloth Price \$5. Pp. 188 with 29 illustrations. New York & London: Oxford University Press 1942.

This book deals with cancer of the uterus. The author, Elizabeth Hurdon, was preeminently fitted for writing it, a task which occupied the last two years of her life. Prior to her death in January 1941 Dr. Hurdon entrusted the manuscript to the hands of her associates Drs. Martindale and Russ, who completed it for publication. The sixteen chapters deal with all phases of the subject, including incidence, etiology, pathology, diagnosis, prevention, treatment, complications and results. The clinical and pathologic material of the Marie Curie Hospital of London forms the basis of this treatise. An analysis of the hereditary histories of patients with uterine cancer at the Marie Curie Hospital was inconclusive. The author states that radiotherapy to a great extent has now replaced the surgical treatment of cancer of the cervix and she quotes statistics from the world literature on this point. There is a comprehensive discussion on the principles, technique, complications and results of radiotherapy of cancer of the cervix. Of 836 patients with cancer of the cervix given radiotherapy in the Marie Curie Hospital in London, 36.2 per cent were free of disease at the end of five years. The five year cures were 80 per cent in stage 1, 61.5 per cent in stage 2, 31.4 per cent in stage 3 and 7.2 per cent in stage 4. The radiation treatment of cancer of the cervical stump is discussed, also the surgical and radiation treatment of cancer of the body of the uterus. Cancer of the vagina, cancer of the vulva and the treatment of uterine hemorrhage in nonmalignant disease are discussed in the last three chapters. This is an excellent book. The presentation is sound and correct. It is a highly practical and important contribution to the literature on cancer of the uterus and is recommended as a useful guide to all who are interested in this subject.

**Lehrbuch der allgemeinen Kinderpsychiatrie einschliesslich der allgemeinen Psychiatrie der Pubertät und Adoleszenz** Von M. Trauner Dr. med. et phil. Priv.-Doz. der Universität Bern. Paper. Price 26 Swiss francs. Pp. 485. Basel: Benno Schwabe & Co. Verlag, 1942.

This is a comprehensive textbook on child psychiatry. The author is a Swiss psychiatrist. He makes it clear that child psychiatry must not be narrowly conceived of as pertaining mainly to major mental illnesses but includes the study of all manner of difficulties, inhibitions and disturbances in psychologic development of the child. He characterizes his point of view as an anthropobiologic one, stemming from the teachings of von Monakow and akin to the psychobiologic approach of Adolph Meyer with its emphasis on envisaging the child "as a whole."

The author presents an orienting survey of the various psychologic approaches to the mental life of the child and discusses "normal physical and psychologic development. In investigative methods are outlined briefly. In his approach to general psychopathology, a developmental point of view is consistently maintained with emphasis on deviation in tempo.

development and in structure. Individual developmental deviations are presented in extenso under such categories as instinct drive feeding intelligence will character and temperament. Individual disturbances and illnesses are classified as somatic somatopsychic psychosomatic and psychic. Somatopsychic disturbances (e.g. syphilis and other nervous system involvements) are those in which the somatic factor is the prominent or determining one. The term psychosomatic is used in a narrower sense than in America primarily referring to psychoneuroses with physical symptomatology. In an appendix 25 illustrative clinical cases are presented.

This comprehensive work has much to recommend it. The attempt to envisage disturbances in childhood in relation to normal processes of growth and development is sound. A real attempt is made to evaluate and give proper emphasis to somatic, psychological, social and other environmental factors in mental health and illness. The book is weak, however, in the intentional neglect of psychological dynamics in favor of a descriptive point of view. The author here avoids some controversial issues but fails to give essential insights into many disturbances. Therapy despite a chapter on forms of therapy is on the whole rather neglected. The author's method of classification deserves attention. The book as a whole despite the serious limitations noted is a distinguished accomplishment and should be available in all medical school libraries.

**Your Child, His Family and Friends.** By Frances Bruce Strain. Cloth Price \$2. Pp 216 with 12 illustrations. New York and London: D Appleton Century Company 1943.

This book like so many others of recent date was written for parents of young children. In a light vein the author gives advice and records her own observations on juvenile behavior. As war activities increase many homes will be affected—the relationship of parents and their children will change. Nursery schools, after-school centers will gain in importance. The author attempts to explain the mechanisms which govern the child's emotional development and the conduct of manifestations which often follow when he has suffered faulty guidance (a rather large order). Toughness in dress, speech, radio programs and motion pictures are the orders of the day. Every real man must be either tough on the outside and tender within or vice versa.

Parents should prepare the child for what he is to expect whether he goes to church, school, doctor, hospital, dentist or barber. Adults who achieve economic success, marital harmony, social adaptation, personal accomplishment, and those who fail may find the explanation in the emotional experiences of childhood. Sex education is treated in a chapter on new brothers and sisters. The book contains a lot of good advice.

**The Inner Ear Including Otoneurology, Otorrhinology and Problems in Modern Warfare.** By Joseph Fischer, M.D., Staff Member, Beth Israel Hospital, Boston, and Louis E. Wolfson, M.D., Instructor in Ear, Nose and Throat, Tufts Medical School, Boston. Cloth Price \$5.75. Pp 421 with 77 illustrations. New York: Grune & Stratton 1943.

Griffith in 1924 in reviewing the history of vestibular equilibration pointed out among numerous other things that it was Flourens over a hundred years ago who first demonstrated that excitation of the semicircular canals of the internal ear produced effects similar to some obtained by certain types of cerebellar stimulation. A close connection between function of one part of the inner ear and the cerebellum was thus pointed out and in the succeeding years the nonacoustic function of the inner ear was solidly established. From the time of Flourens until the present a great deal of investigation has been carried out. Barany through his work in the first ten or fifteen years of the present century excited the imagination particularly of otologists. The number of physiologists and clinicians before and since Barany's time whose ardent labors produced some understanding of the mechanism of the end organ and its central connections in health and disease are legion. Griffith mentions no less than 1701 separate references to the literature from 1820 to 1921, and there has been much work done since then. To assess this enormous material properly to choose what is lasting and important and to combine properly the theoretical and the practical have been the task of the authors of this textbook. Thus they have done remarkably well and the clinician finds for the first time perhaps so well done in English an introduction to a field of great interest and complexity.

There is a beginning chapter on clinical anatomy. It is well illustrated and is followed by a dissertation on the general physiology of the static labyrinth which is followed by a chapter on applied physiology. To avoid confusion the authors have discussed almost every topic twice. In chapters on physiology theoretical considerations are handled and in the portions devoted to functional tests clinical techniques and practical aspects are stressed. There follow illuminating discussions of inflammatory diseases of the inner ear and their intracranial complications as well as more than passing attention to such topics as facial palsies, inflammations of the petrous pyramid, congenital diseases of the inner ear and the neoplasms of this region. The need of otologists for a book of this character has been apparent for a long time. The authors are to be commended for filling this need so well.

**Introduction to Psychiatry.** By W. Earl Biddle, M.D., Senior Physician, Warren State Hospital, Warren, Pennsylvania, and Mildred van Sickle, B.S., R.N., Instructor of Nurses, Warren State Hospital. With a foreword by William C. Sandy, M.D., Director, Bureau of Mental Health, Pennsylvania Department of Welfare. Cloth Price \$2.75. Pp 358 with 38 illustrations. Philadelphia & London: W. B. Saunders Company 1943.

This work by the senior physician and the instructor of nurses of a large state hospital offers an excellent introduction to psychiatry for nurses, nursing attendants and others having to do with the care of mentally ill in institutional settings. It is a very practical work attempting to make clear just what a nurse or attendant will encounter in a hospital setting. The meaning of the situation to the patient, care of the patient and the handling of special problems such as destructiveness, suicidal attempt and aggressiveness toward others are discussed. Psychiatric disorders with illustrative cases are outlined. Chapters on legal considerations and on prevention of mental disorders round out the discussion. The book meets excellently the purpose for which it was written. It is much too elementary and sketchy to be useful to the student of medicine but the introductory material it offers is sound and could well be required reading for attendants and others who must have contact with patients in mental hospitals. An excellent annotated bibliography is provided. Questions at the end of each chapter are included as a teaching aid.

**Laugh at the Lawyer Who Cross Examines You! A Court Room Anti-date.** By Charles L. Cusumano, LL.B. of the New York Bar. Cloth Pp 375. New York: Old Faithful Publishing Company 1942.

Many people, according to this author, who admits that he has writing on the brain prefer a dose of castor oil to an appearance in court as a witness. The oil may be gulped and the results are fairly predictable: the witness may gulp and swallow but is sure of nothing but perhaps a cold sweat. The purpose of this book is to convince potential witnesses that after all an appearance in court need not be a nightmare. If proper preparation has been made and if certain fundamental rules are understood and followed. These rules, which are described as rules of experience, are set forth by the author and developed in detail. Some seventy-five pages are devoted to expert witnesses in general, twelve pages of which are concerned with the medical expert. The reviewer has read the book with mixed emotions. There is much in it that can be recommended, its facetious style, however, may not wear well with many readers.

**Spectrophotometry in Medicine: Being the Authorized Translation of "Medizinische Spektrophotometrie."** By Priv.-Doz. Dr. Ludwig Hellmeyer. Translated by A. Jordan, M.B., B.S., D.Sc., Junior Demonstrator in Chemical Pathology to St. Bartholomew's Hospital, London, and T. L. Tippell. Cloth Price \$6.75. Pp 480 with 120 illustrations. London: Adam Hilger Limited 1943.

The theory and selected methods of absorption spectrophotometry and their application to studies of whole blood, serum, urine, bile, ascitic fluid and cerebrospinal fluid are discussed in this volume, which presents an excellent survey of work in this field up to 1932. The book is well illustrated with charts and tables detailing quantitative aspects of the absorption spectrums of many naturally occurring pigments in normal and in pathologic conditions. Of particular interest are descriptions of the König-Martens spectrophotometer and the Zeiss Pulfrich step photometer and the discussions or supplementary photographic procedures for spectrophotometry and the earlier photo-

electric spectrophotometric methods of Suhrmann and Kollath and of Warburg and Negelein. In the eleven years since the publication of the original volume, from which this book is a translation, practical quantitative absorption spectrophotometry has become an increasingly important research tool. Many advances have been made possible by the introduction, improvement and increased production of spectrophotometers suitable for use in the ultraviolet and visible regions of the spectrum. Much of this progress is not reflected in the present volume. However, since the intelligent use of a physical method requires familiarity with the principles involved, a knowledge of the scope of prior applications and an appreciation of the practical limitations of the method, this book should prove of value to students and to workers in the field.

**The Practice of Refraction** By Sir Stewart Duke Elder M.S., D.Sc. M.D., Surgeon-Oculist to H.M. the King. Fourth edition. Fabrikoid. Price \$1.50. Pp 328, with 183 illustrations. Philadelphia: Blakiston Company, 1943.

This edition of Duke-Elder's popular textbook on refraction was necessitated by the demand, but, as the author says in the preface, "Few changes have been made in this new edition, which retains the essential character of its predecessor, a circumstance rendered imperative owing to the exigencies of military service." For those who do not know the earlier editions, it may be repeated that this is a comparatively short textbook that presents the subject of the correction of defects of the optical system of the eyes and the associated muscles in a practical manner. Theory and mathematics have been eliminated as far as possible and stress has been laid on clinical practice. Consequently it is an ideal book for the student and beginner in ophthalmology, but at the same time it contains the summation of so much clinical experience that the trained ophthalmologist can profit materially and enjoyably by a study of these pages, written with the flowing ease of which Duke-Elder is a master.

**Textbook of Medicine** By Various Authors. Edited by J. I. Conybeare, M.C., D.M., F.R.C.P. Physician to Guy's Hospital. London. Sixth edition. Fabrikoid. Price, \$7.50. Pp 1147. Baltimore: William Wood & Company, 1942.

The first edition of this well known British textbook of medicine appeared in 1929. The editor has encountered more than the customary difficulties of compilation because of the wide separation of the contributors because of the war and the rapid progress of development along some lines. The sections on tropical diseases and vitamin deficiency diseases have been entirely rewritten. Other sections have been revised more or less extensively. By a great effort the size of the book has been immaterially changed. This has been facilitated by avoiding almost all references to men or publications. Textbooks such as this are still in wide use by medical students and physicians.

**Researches in Clinical Physiology** By Sir Almroth E. Wright M.D. F.R.S., Director of the Inoculation Department and Principal of the Institute of Pathology and Research, St. Mary's Hospital, London. Researches from the Inoculation Department, St. Mary's Hospital. II. Cloth. Price 12s 6d. Pp 163 with 2 illustrations. London: William Heinemann Medical Books, Ltd. 1943.

This little book contains reprinted articles by Sir Almroth Wright published between the years 1891 and 1905. The papers deal with various subjects such as the pathology and therapeutics of scurvy, problems of the coagulability of the blood, the causation and treatment of thrombosis, and hemophilia. As most of these papers are now mainly of historical interest a detailed review is unnecessary. For the same reason the book will be of limited interest.

**Facts for Childless Couples** By E. C. Hamblen M.D. Associate Professor of Obstetrics and Gynecology. Duke University School of Medicine, Durham N. C. Cloth. Price \$2. Pp 103 with 11 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas. 1942.

This is a well written book containing a carefully presented analysis of the factors that may combine to produce sterility. Its contents include a chapter on the general considerations of childlessness, followed by chapters explanatory of the reproductive functions of the husband and wife, on examinations of the husband and wife to determine the cause of childlessness, on what treatments of the husband or wife may be necessary, on

the probability of success of such treatments, and a concluding chapter dispelling some popular misconceptions about sterility and about the correction of that condition. The foreword correctly states that the book will be of special value to the childless couple. It can also be read with advantage by physicians to whom childless couples may appeal for help.

**Nutrition and Diet in Health and Disease** By James S. McLester, M.D., Professor of Medicine. University of Alabama, Birmingham. Fourth edition. Cloth. Price \$8. Pp 849, with illustrations. Philadelphia & London: W. B. Saunders Company, 1943.

The speed of intensive research on nutrition is reflected in the new edition of McLester's standard work. It has been necessary to rewrite entirely the chapter on vitamins, the nomenclature is revised, and attention is called to many new products in this field. Much has been added about mineral elements. The food allowances constructed by the Food and Nutrition Board of the National Research Council and a copy of the table are included, and also such activities as the movement for enrichment of flour. Statements are made about dehydration, storage and other modern methods of processing food. A special section has been added on nutrition in the aged and on nutrition in industry. These new sections help to make even better a book which has been recognized among the best in its field.

**Handbook of Health for Overseas Service** By George Cheever Shattuck, M.D. and William Jason Mixer M.D. Second edition. Cloth. Price \$1.25. Pp 228 with 15 illustrations. Cambridge, Massachusetts: Harvard University Press, 1943.

This handbook is intended for use by people who may be unable to obtain medical advice. It is revised from the first edition. The first edition was financed by the Office of Coordinator of Information and was distributed to those overseas who required it. The present edition is published by the Harvard University Press. The subjects of the chapters are keeping fit, common ailments of worldwide occurrence, the tropics, diseases important in the tropics, biting insects, vermin and snakes, the arctic, surgery, first aid and miscellaneous medical information. An appendix includes instruction regarding packing medical and surgical equipment, and tables of weights and measures. All together this is a most practical and useful little book.

**New Aspects of Cheap Food** By Rudolph Keller D.Sc. Paper. Price, 1s 6d. Pp 52. London: Research Books Limited in Association with William Heinemann (Medical Books) Limited, 1943.

This pamphlet is apparently intended to introduce continental ideas of diet and cookery into England. As such it has little interest for the American reader, either professional or lay. Its basis table of food values, in terms of so-called multiples against potatoes, takes into consideration nutritional contributions by price, thus for example white bread, on the basis of its contribution of carbohydrates, protein, fat and calories per ounce, is estimated as 2.9 against potatoes and on the basis of price is equivalent to 0.9 unit of potatoes. The author is a strong supporter of the European school of thought which holds that too much sodium and not enough potassium enters into the diet of the human race.

**A Guide to the Prevention of Weight Lifting Injuries** United States Department of Labor Division of Labor Standards. Special Bulletin No 11. Paper. Price 10 cents. Pp 20 with illustrations. Washington D. C. Supt. of Doc., Government Printing Office, 1943.

The United States Department of Labor has just made available this simple guide. Statistics from three leading industrial states show that sprains, strains and hernias constitute one fourth of industrial accidents. Moreover, about one half of these may be attributed to lifting and carrying weights. The excellent pamphlet discusses the causes and the elimination of the hazard and describes fully safe carrying practice. There are many excellent illustrations.

**Facts About Child Health 1943** U. S. Department of Labor Children's Bureau Publication 294. Paper. Price 10 cents. Pp 16. Washington D. C. Supt. of Doc. Government Printing Office 1943.

This pamphlet is a condensed outline of the work, the policies and the aims of the United States Children's Bureau and as such should be interesting and important reading for every physician, public health worker and informed citizen.



## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS. BUT THESE WILL BE OMITTED ON REQUEST.

### ROENTGEN TREATMENT OF AMENORRHEA AND STERILITY

To the Editor—A patient complains of sterility which has been traced to the presence of anovulatory amenorrhea. Treatment with hormones has been unsuccessful and x-ray treatment has been advised. Kindly let me know the present status of treatment of this type of sterility in particular by x-rays. I am particularly interested in knowing the approximate number of cases treated to date, the approximate percentage of success taking into account the average period of sterility before treatment was started and also the incidence of any harmful effect of the treatment on the mother or unborn child. M.D., New York

ANSWER—The immediate results of roentgen treatment of amenorrhea and sterility are excellent. Kaplan (*New York State J. Med.* 39 1380 [July 15] 1939) treated 142 patients and menstruation was reestablished in 124. In 52 of these women subsequent pregnancy occurred and in this series 17 women conceived more than once. Forty-four women went to term and delivered 50 normal babies. Five women had abortions. Mazer and Baer (*Am. J. Obst. & Gynec.* 37 1015 [June] 1939) observed restoration of menstrual function in 59 per cent of 106 cases of amenorrhea treated by low dosage irradiation of the pituitary gland and ovaries. Twenty women gave birth to healthy babies and 4 had abortions. Mazer and Baer reviewed the literature on the statistics of roentgen treatment of amenorrhea and the results in most cases were encouraging. A survey of the literature revealed no ill effects on the offspring following preconception irradiation within the limits of dosage employed in this type of therapy. The usual number of abortions is within the usual average incidence. Even heavy preconception irradiation of human ovaries was found to have no harmful effects on offspring of the first generation. However, as Mazer and Baer remark, the problem of damage to human germ cells by heavy irradiation still lacks the necessary fundamentals for proper solution, but this problem does not apply to the small doses employed in the treatment of menstrual disorders. Nevertheless these authors admit that the margin between a safe and a harmful dose is probably limited.

Not all authors agree on the harmlessness of irradiation of the pituitary gland and ovaries. Greenhill (1937 Year Book of Obstetrics and Gynecology, p 666) says "The feeling about the use of x-ray treatment to overcome amenorrhea and sterility is somewhat analogous to the sentiment about irradiating the pituitary gland to combat menopausal symptoms. Those who favor x-ray treatment are most enthusiastic about it, but a large proportion of those who do not use this treatment condemn it in no uncertain terms. One thing is true, there is no apparent immediate harm from x-ray treatment in most cases although sometimes permanent amenorrhea occurs. Whether any remote adverse effects will appear from such treatment is theoretical. Of course, only a skilled roentgenologist should be called in to treat women who want to overcome sterility and amenorrhea." Subsequently Greenhill (1939 Year Book of Obstetrics and Gynecology, p 402) says "I wish I could be as confident as Kaplan of the innocuousness of radiation therapy to the offspring of women who have been subjected to this form of therapy. The results of roentgen treatment in cases of amenorrhea and sterility are excellent and as far as we know the treatment of the women is harmless in most instances. However what may happen to the offspring is not definitely known. While it may be fallacious to reason that what occurs in animals necessarily must take place in human beings, we must nevertheless not disregard animal physiology and pathology. In fruit flies, mice and guinea pigs abnormalities appear in the offspring after irradiation but the disturbances usually do not manifest themselves until the third generation, that is great-grandchildren. Since roentgen therapy has not been used for more than thirty years, we do not know what will happen to the great-grandchildren of women who have received deep x-ray treatment. Perhaps we will find that the animal experimentation dealing with roentgen treatment may be applicable to human beings. It may be found that whereas the children and perhaps even the grandchildren of women who were subjected to x-ray therapy were entirely normal the subsequent progeny was detec-

tive either anatomically or physiologically or both. Numerous authorities believe in the possibility of harm of radiation therapy. Among them are H. J. Muller (the first investigator to discover the harmful effects of irradiation), J. H. Mueller, Timofeev-Ressovsky, Little, Bagg, Martius, Peckham and I. Seth Hirsch. Those interested in this subject should read a short article by I. H. Mueller entitled "The Use of Radium and Roentgen Rays in Gynecology in the Light of Genetic Radiation Research" (*Schweiz. med. Wochenschr.* 69 849 [Sept 23] 1939).

Since the immediate results of radiation therapy are good and since it has not yet been proved that harm may result to the human offspring it may be justifiable to apply this therapy to some women who are anxious to have a child. However, the possible theoretical dangers should be explained to both husband and wife and the final decision left to them.

The technique advocated by Kaplan is as follows: Factors used are 200 kilovolts, 4 milliamperes with 0.5 mm of copper plus 1 mm of aluminum filter, target distance 30-40 cm. Treatment is directed through anterior and posterior right and left pelvic fields of 9 by 12 to 10 by 15 cm and to the pituitary area on the skin through a 6 by 8 cm field. Dose given is 75-100 roentgens per field at weekly intervals for three weeks. The anterior pelvis is treated the first week, the posterior the second and the anterior again on the fourth week. Occasionally a fourth treatment is given. The pituitary is treated at the same session as the anterior pelvis.

The treatment recommended by Mazer and his associates is 135 kilovolts, 5 milliamperes at a distance of 40 cm with 6 mm of aluminum filtration through a field of 20 by 20 cm. The rays are directed over the anterior pelvic area. Depending on the thickness of the pelvis, 60 to 90 roentgens is given to the skin. This is repeated at intervals of one week three times. The total dose reaching the ovaries is about 10 per cent of a full skin erythema. The pituitary gland is treated with the same dosage and factors through a field 3 by 3 cm simultaneously.

### CHRONIC NONSPECIFIC URETHRITIS

To the Editor—A single white man aged 34 gives a history without record of venereal diseases or urethral discharge. The Wassermann reaction is negative. He has had sexual contact with one person for several months and has not used a prophylactic. Eight days after and sixteen hours after the last two exposures respectively he noticed a small amount of grayish white mucoid discharge appearing at the external meatus. This did not drip but came almost to a drop when the urethra was stripped manually. The meatus would remain moist and stick to his undergarment. There was no burning, itching or frequency of urination. The urine in the first glass showed shreds and particles; the urine in the second glass showed only a few minute particles and no shreds. Five smears and two cultures were negative for the gonococcus. The prostate was not tender or enlarged. With the exception of a little low back discomfort and a tired painlike feeling down the inside of the left thigh region later on there were no other symptoms. He was given four courses of sulfathiazole (20 Gm for five day periods each time) without any improvement. This was given during the eight month period that the condition has been present. The urethra was irrigated with 1:5000 acriflavine six times, followed by mild protein silver (5 per cent) instillations into the bladder without any improvement. The patient continues well and does not complain except that this condition which has now existed eight months and shows no sign of stopping worries him. Can you tell me where the trouble is? Is this a nonspecific condition? What treatment can I render to clear this up? Can I be sure now that it is not gonorrhea? Why does it continue so long? Alcohol and sexual contact have no effect on it either way. M.D. New Jersey

ANSWER—There is little doubt that the patient is suffering from a nonspecific urethritis. The persistence of infections such as this is almost invariably caused by one of two conditions: there is either a chronic infection of the prostate and seminal vesicles or a stricture of the anterior urethra. The statement was made that the prostate was not tender or enlarged but what about the microscopic study of the expressed secretion? This, and only this, determines the status of these structures as a possible cause of the original complaint. One should calibrate the urethra carefully, watching for stricture of the anterior urethra especially as it is important to note the caliber of the external urinary meatus as a congenital stenosis here is commonly the cause of a nonspecific infection in the first place and it is equally responsible in its becoming chronic.

Obviously the management of such a chronic infection depends on the cause. A careful prostatic and seminal vesicle massage followed by an irrigation once a week and urethral dilation followed by an irrigation on the second week is a successful routine usually in the management of these conditions. If the external urinary meatus will not admit a sound of adequate caliber a urethral meatotomy should be done as a preliminary procedure. It is well likewise to give short intermittent courses of urinary antiseptics such as sulfathiazole.

## GALACTORRHEA AND OBESITY

**To the Editor**—A woman aged 27, unmarried and a virgin, has had a milky discharge from both breasts during the past seven years. The details of her case are as follows. At the age of 20 she started training to be a nurse. In the six months after this her weight increased from 127 to 171 pounds (57 to 77 Kg), where it remained for four years. Her menses, which had been regular and painless but profuse, lasting seven days every twenty-eight days, did not appear for eight months, after which they lasted only three or four days each month and would occasionally be missed for three or four months. During the period of amenorrhea she several times noticed little damp spots on her clothes which appeared to be due to a milky discharge from the nipples. Then she noticed it no more until she was 24, when a milky discharge from the nipples came to be nearly always present, more from the right breast than the left, more in hot weather than in cold, more while she was doing hard work than while she was doing light work. For a time then the right breast was a little larger than the left, they had both become large when her weight increased. The milky discharge has persisted up to the present time. Her weight is now 192 pounds (87 Kg). The menses now last only two days and are scanty and sometimes absent for one or two months. She has never told any one of her symptom till lately. She is a bright healthy young woman who practices her profession on the staff of a large hospital. She has had no illnesses. Her mental outlook seems normal, but she is a little reserved and says that she has never had a particular boy friend. She supports a widowed mother but has no anxieties. Her obesity is general in distribution and does not suggest any particular endocrine disorder. Her skin is normal. The hair is feminine in type and distribution. The breasts are large and inclined to be pendulous. The areolas are pink, 4 cm in diameter and without large tubercles. The nipples are small but prominent and there is a discharge like colostrum from each, but only a few drops could be collected by expression. No other abnormality can be discovered on physical examination. An anteverted nulliparous uterus can be palpated by rectum. The external genitalia are normal and the hymen is intact. The blood pressure is 120/85. Diethylstilbestrol in doses of 5 mg daily has had no effect. M D, Australia

**ANSWER**—The milky discharge from the breasts, known as galactorrhea, is most likely due to hyperactivity of the anterior pituitary hormone prolactin. In rare cases this may be due to persistent, abnormal stimulation of the breasts but nearly always there is some disturbance in other glands of internal secretion. In this case the galactorrhea is undoubtedly linked with the menstrual disturbance and also with the obesity. First the thyroid function should be studied by repeated basal metabolism tests and blood cholesterol studies. If a thyroid dysfunction is found, it should of course be treated. Then a decided attempt should be made by the patient to reduce her weight. This will mean the development of a strong will power to curtail the amount and character of the food eaten. Since the menses now occur with a fair degree of regularity, even though they are scanty, no treatment need be directed toward it. Thyroid therapy alone may suffice to make the menses more normal and help the patient reduce her weight. In this event the secretion of milk may diminish or cease altogether. If not, an attempt may be made to depress pituitary activity by means of estrogens or androgens. If a sufficient amount of diethylstilbestrol fails to affect the flow of milk, the androgens may be tried. Twenty-five mg of testosterone propionate may be given intramuscularly three times a week for four weeks or longer. However, if more than 300 mg of testosterone is given, virilizing effects may appear, such as growth of hair on the chin and upper lip, change in voice and slight enlargement of the clitoris. Furthermore, even if the testosterone propionate brings about relief, its effect will usually be temporary, so that further courses of the androgen will have to be given.

## VISCEROPTOSIS

**To the Editor**—The symptom complex of congenital visceroptosis is too well known to mention. I have a family as patients in which the daughter, aged 10, has the same physical build as that of her mother. Please give me an opinion as to the advisability of fitting this child with an uplift girdle. M D, Virginia

**ANSWER**—Inquiries of this nature are evidence of the fact that there are many physicians who still continue to diagnose and treat visceroptosis as a disease in conformity with the conceptions of Glenard (1885) and Stiller (1907). However, as the result of authentic clinical observations and anatomic research in the past thirty years, the profession has become more and more skeptical about the significance of visceroptosis, congenital or acquired, and even entertains serious doubts as to whether such diagnosis has ever been warranted. Such investigations seem to have reached their culmination in the work of Moody, Van Nuys and Chamberlain (*THE JOURNAL*, Dec 8 1923, p 1924) and of Moody (*J Anat* 61 223 [Jan] 1927). Draper and Touraine (1932), Alvarez (1931) and others have pointed out that exceptional athletic prowess and the asthenic habitus are not incompatible. Many patients are more comfortable

when wearing an abdominal support, especially those who have protuberant abdomens. Such improvement, whether real or apparent, is not so much attributable to elevation of the abdominal organs as to increased intra-abdominal tension and better support for the spinal column. Appliances directed to the treatment of "virginal ptosis" are particularly ineffectual and rarely indicated. An adequate amount of intraperitoneal fat furnishes an effective and permanent support for the viscera. Therefore proper dietary measures should be instituted with this in mind. If the abdominal muscles are flabby or undeveloped, abdominal exercises such as those outlined by Martin (*Surg, Gynec & Obst* 15 150 [Aug] 1912) usually prove helpful.

## ADHERENT SCAR IN FRONT OF TRACHEA

**To the Editor**—A woman aged 40 with a history of a thyroidectomy fifteen years ago complains of difficulty in swallowing and of pressure in front of her neck. She shows in the center of her old scar right in front of the trachea a deep funnel shaped scar, which is adherent to the trachea. X-ray examination, bronchoscopy and esophagoscopy reveal no pathological changes. The patient's symptoms can probably be derived from the deeply situated scar. I intend to remove the scar and separate the adhesions between the skin and the trachea, but what can be done to prevent a recurrent adhesion? M D, Ohio

**ANSWER**—By all means this scar should be removed, including all the affected skin. If normal skin with subcutaneous fat is brought over the trachea, there is little likelihood of recurrent adhesion.

## GLYCOSURIA IN DIABETES

**To the Editor**—It seems to me that the answer to the query entitled "Unclassified Glycosuria in Diabetes" (*The Journal*, July 17, 1943) is inadequate on three counts. 1. A diagnosis of probable diabetes is given on the basis of a dextrose tolerance curve (data in note) which appears to me to indicate a normal much more than a diabetic individual. 2. I consider his discussion of the renal glycosuria overcautious. 3. The suggestions tendered to the physician for confirming or discrediting a diagnosis of diabetes are rather incomplete.

The basic character of the patient's dextrose tolerance curve was a forty-five minute rise from a normal fasting blood sugar to a moderate height which was maintained as a plateau for a period of nearly two hours, whereupon a very sharp descent to a value below the fasting blood sugar occurred. It should be emphasized that, except for the blood sugar, there was no abnormality. This is an essentially normal overlong maintenance of a high plateau value, this is an essentially normal curve. The rise was fairly sharp, as was the descent. There was not noticed this long straggling rise to a high blood sugar level with a subsequent very slow but continuous decline to near fasting levels typical of a person with diabetes. The liver, of course, is the important organ in determining the level of the blood sugar, the role of insulin in this organ is not as distinctly understood. The work of Soskin has clearly demonstrated that one of the most fundamental effects of insulin in the liver is that it, in conjunction with the anterior pituitary hormone, establishes a distinct equilibrium point above which sugar is taken from the blood and below which sugar is released to the blood. Insulin may or may not play a role in the systems involved in the breakdown or synthesis of the metabolic systems involved in the breakdown or synthesis of glycogen by the liver. It is probable that it does. However, the essential fact is that insulin is the limiting factor in determining the equilibrium point, but there are a number of additional factors which may be involved in the systems which determine the rate of glycogenolysis and its reverse. Therefore the plateau observed is much reduced in significance because there may have been operating factors other than insulin which determined the length of time which was required before normal levels were reached. In this case excessive nervousness incident to the taking of the sample could easily have led to this prolonged plateau. The sharp return to a below normal level has far more significance.

As for the glycosuria, if the patient has the normal fasting blood sugar the data seem to indicate that there can be no question that it is due to either impaired renal function or a normal low renal threshold for sugar. I have seen persons who display renal thresholds to sugar of from 100 mg to 300 mg per hundred cubic centimeters. Further indication that the glycosuria is due most probably to a low renal threshold rather than a diabetic blood sugar is the fact that although the patient has had the glycosuria for fifteen years he has been in excellent health during this period.

It seems to me that in view of the indecisive nature of the evidence pointing to diabetes a few simple follow ups should be made which could go a long way in clearing up the matter. First, the patient's normal blood sugar level under various conditions should be determined. Second, the sugar level of the patient to normal stimuli such as meals should be noted. Also, because of the inconclusive nature of the tolerance test recorded, several more should be made, including the Exton-Rose two dose test. Once the patient's normal blood sugar level has been determined, the question of the renal glycosuria is easily clarified.

Samuel J. Taub, M D, Chicago

## VACCINE AND SERUM FOR ROCKY MOUNTAIN SPOTTED FEVER

**To the Editor**—In *Queries and Minor Notes* in *The Journal*, June 12, 1943, page 475, the statement was made, with regard to vaccine for immunization against Rocky Mountain spotted fever, that "one of the biological laboratories has been licensed to manufacture the egg vaccine but because of press of war work it is doubted that the material is commercially available at this time." The Lederle Laboratories have been distributing both Rocky Mountain Spotted Fever Vaccine (Cox type) and Anti Rocky Mountain Spotted Fever Serum since May 5, 1942. These products are hence commercially available. Frank C. Crompton, New York



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## THE UNFITNESS OF YOUNG MEN IN MOTOR FITNESS

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The medical and public health reports<sup>1</sup> of the Metropolitan Life Insurance Company and the Medical Division of the Selective Service<sup>2</sup> do not indicate the extent of unfitness of young men in motor fitness but deal with the more general health aspects involving teeth, eyes, heart, ears, feet, lungs, hernia, musculo-skeletal defects and venereal diseases. Louis I. Dublin points out that the health of young men of the nation is better than ever on the basis of morbidity and mortality statistics. In the Navy, rejections have averaged 54.9 per cent and in the Army about 50 per cent. Colonel Rountree, in commenting on the situation, says that this constitutes a problem of national concern and importance. It should call for immediate investigation and a prompt remedy. However, there is another side to the picture which is overlooked in these medical reports but which is of primary importance to the immediate needs of the armed forces. This is the state of young men in the dynamic aspects of motor fitness. Before the facts uncovered in the University of Illinois survey are presented it is important to clarify the logic of the important elements in motor fitness.

There is evidence to show that a large proportion of young men entering college from high school are unable to handle their bodies with the degree of efficiency needed in wartime. This situation reflects the protected softness of their lives and the inefficiency of educational programs to produce an acceptable level of motor fitness, due undoubtedly to inadequate time allotment, facilities and leadership as well as the types of program offered in the schools. In wartime, physical education is charged with preparing young men for hard physical work in industry or military service. Motor fitness may be demonstrated by means of stunts or performances with the body, thus showing that it can be controlled and balanced in various positions, that it is supple and normal in all major joints and that it is strong in the trunk and limbs, also that it is agile in climbing, jumping, crawling or dodging with speed, that it can develop a highly powerful effort if necessary and that it possesses stamina in a variety of endurance feats involving long continued effort and recuperation.

### PRACTICAL EMPHASIS IN MOTOR FITNESS

Physical ability involving balance, flexibility, agility, strength, power and endurance in a variety of performances sums up to motor fitness. A bad gap or blind area of development in any of these aspects will result in physical inefficiency in a large number of related performances. Motor fitness emphasizes the more generalized gross and fundamental physical abilities which are dominated by development of the kinesthetic sense, muscular energy and suppleness of the tissues and joints, including the aspects which are basically involved in athletic or work skills with the big muscles of the body rather than the finer low energy precision skills. It means capacity to run, jump, dodge, fall, climb, swim, ride, lift and carry loads and endure long hours of continuous work.<sup>3</sup>

Balance represents neuromuscular control paralleling the development of the kinesthetic sense in acts of sitting, skating, riding, tumbling, walking logs or fences, skiing, dancing and a host of everyday skills. Many people are handicapped because they fall and get hurt at the slightest provocation: slip on a rug, slip in the shower or in the pool or tub or when they dismount from a moving vehicle. The greatest number of serious accidents are due to falls involving poor awareness of unsteadiness or lack of compensating control. Many adults cannot ride a bicycle, skate, swim or ski. They are unsteady in shooting or fall easily from moving vehicles. Some do not readjust quickly to experiences in which the body is turned or revolved. Balance in this sense is educable. It can be learned by gradual education of the kinesthetic sense in a variety of balance stunts. The more natural and important these are the better, but good preliminary training is associated with any fundamental gymnastic program. Advanced tumbling and diving require superb development of this ability.

Flexibility emphasizes the ability to move easily in the full range of joint movements, to tuck up tightly, to bend easily at the waist, to twist the spine easily, to point the toes fully and to breathe deeply and fully without much extra effort. Good suppleness is a concomitant of gradual and thorough body conditioning. It usually indicates that the joints and muscles are free from abnormal "muscle bound" conditions due to injury or abnormal development. Many events require flexibility directly, such as hurdling, obstacles, running under low wires, crawling through culverts and small diameter tunnels, vaulting through the arms, jumping over a stick held in the hands, skinning the cat and fancy diving. Body suppleness also indicates roughly a type

From the School of Physical Education, University of Illinois.  
1 Health Aspect of the Draft, Statistical Bulletin of the Metropolitan Life Insurance Company, 21-14 (Oct.) 1940. Physical Fitness of Draftees, *ibid.* 21-12 (Nov.) 1940. Physical Fitness of American Youth, *ibid.* 22-13 (June) 1941.  
2 Rountree, L. G. The Health of Registrants and the Pre-ident's Plan of Rehabilitation, *Science* 94:552 (Dec. 21) 1941. Rountree, L. G. and Bagges, A. N. Health of Registrants and Rehabilitation of Rejectees, *Ann. Am. Acad. Polit. & Social Sci.* 220:81-88 (March) 1942.

3 Cureton, T. K. How Fit Are We? in Physical Fitness Work Book, Champaign, Ill., Stipes Publishing Company, 1942, pp. 3-24. An Inventory and Screen Test of Motor Fitness for High School and College Men (edited reprint), *Physical Educator* 3:6-7 (Jan.) 1943. Physical Fitness as a National Need, *J. Phys. Ed.* 40:66-67 (March-April) 1943.

of physiologic youthfulness, an important characteristic of tissues and healthy blood vessels. Many people are awkward because they lack flexibility. The old person walks jerkily, so may an injured athlete whose torn tissues have healed with adhesions. People with poor flexibility usually tire easily, have little grace in bodily movements and learn physical skills slowly.

Agility emphasizes the capacity for fast reaction in controlled nimble movements "rabbit-like" in action, and to move quickly, dexterously and easily. It implies ability to dodge a ball or a missile quickly, to spring quickly to the feet, to climb up a cargo net quickly, to weave through a maze of obstacles quickly, to vault fences or barriers quickly or to zigzag quickly in running from shell hole to shell hole, to get down and up quickly, to put on a life preserver or parachute quickly, perhaps to climb out of a burning plane quickly or to pull oneself into a lifeboat, to climb a rope onto a ship or to lower oneself by rope from a burning building, and to vault onto a horse or vehicle quickly. Quick and efficient control of the body in an emergency may save the life of one individual or many. One should be able to change one's position quickly to avoid capture, fire, flood, bombs, gas, shells or gunfire. Obstacles must be overcome, sometimes in a hurry. Speed and endurance in the fundamental locomotion efforts are first essentials.

Strength emphasizes the capacity of the hands, legs or trunk to exert great force. Strong hands and arms are important for grasping, lifting or pulling heavy or resistant objects, such as shells, equipment, a partner, a heavy rifle or a machine gun. Holding the whole weight of the body suspended from the hands is a severe test if any appreciable time is involved. Swinging on or climbing ropes requires great strength of the hands, arms, shoulders and the large depressor muscles of the chest and back. Strength of the feet and legs is also important to bear the body weight, armor, pack and any extra burden. Weak feet and legs are a great handicap in marching under load, in lifting an injured buddy for a carry to safety, for jumping, running, skating, sking or pushing a car out of the mud. Most of all the trunk is the base from which the arm and thigh muscles arise. It serves as a base to support forceful movements of the arms and legs. The muscles of the upper part of the back and chest pull the arms downward in chinning or climbing. The muscles of the buttocks give force to all locomotion efforts, as in cycling, running or jumping. The long back muscles hold the trunk upright and make it steady in pulling and pushing. The abdominal and thigh flexor muscles reinforce all kicking movements of the legs and sit up and leg lifting movements. A very weak person may not be able to sit up at all or lift the legs from the floor while lying on the back, or, again, he may be one who cannot chin the bar once or lift the equivalent of his own weight from the floor. A strong man can pick up a 200 pound deer, log or an injured man and put any one of these in a wagon.

Power emphasizes the capacity to release great explosive force to sudden violent efforts. Speed and force must be combined for maximum effect in a jump, sprint run, pole vault, baseball game or a grenade throw for distance. Usually the whole body is projected or some object is impelled by power transferred from the body.

Endurance is capacity for continuous exertion involving in the first minute or two severe depletion of the oxygen reserve and the development of oxygen debt with severe distress. This is usually overcome by

forced ventilation and adequate circulation of the blood. When relief comes, it is sometimes called "second wind." Local fatigue may develop in particular muscles, such as those of the feet and calves in hopping, or in the arms in chinning, without much effect in other parts of the body or in the general circulation. Circulatory (cardiac) fatigue may be due to long continued exertion for several minutes or hours. Cramps may develop or the control and rhythm of the movement may be lost. Ability to recuperate to a degree and continue to run, swim, climb a mountain or march under load are most obvious tests of endurance.

#### CLINICAL TESTS OF ILLINOIS STUDENTS

In 1940 a sample of 1,000 entering men students at the University of Illinois were tested on aspects of motor fitness with the following results:

- 13 per cent could not swim at all (across tank)
- 64 per cent could not swim 50 yards
- 31 per cent could not chin themselves once
- 25.9 per cent could not chin themselves five times
- 24.1 per cent could not jump an obstacle waist high
- 41.7 per cent could not skin the cat

Some 14.2 per cent were judged by instructors to have very poor (soft, flabby or undeveloped) physiques and 10 per cent had a very poor posture.

In 1941 it was decided to continue this testing in order to study the men as carefully as possible. A standardized chinning-dipping-vertical jump test<sup>4</sup> was given to 3,099 men in the service courses in physical education. In this sample of university men some 620 men could not chin themselves more than 4.5 times, push up on the parallel bars more than 4.5 times or jump vertically more than 18½ inches above their reach. These standards are so low, as experts in physical education understand them, that the results were considered serious enough to warrant special effort to remedy the situation.

A voluntary physical fitness clinic was formed for men who scored in the lower 20 per cent on the test. Some 176 men were studied carefully in the clinic. The selection was entirely on the basis of the chinning-dipping-vertical jumping test, although all men had been approved for exercise by the health service department. About 20 per cent of the men were fat and soft—of the endomorph or endomedial class according to Sheldon's classification<sup>5</sup>. About 35 per cent of the men were of the ectomorph or ectomedial class by the same system. Only 1.18 per cent were judged as having a well developed mesomorphic type of physique. A general sample of the student population showed a much greater proportion of the more desirable body types: 21.18 per cent mesomedials compared to 8.33 per cent in the clinic, 32.36 per cent ectomesomorphs compared to 5.95 per cent in the clinic. The general university male population sample averaged 321.61 on the composite score of the Larson test compared to 213.08 for the clinic sample. This difference is equivalent to the difference between a 68 percentile rating on the test compared to a 7 percentile rating as an average for the clinic sample.

In the physical fitness clinic about 50 per cent of the men could not make a hard abdominal wall to resist a fist pushed into it by an examiner. On a physique rating scale giving A, B, C, D and E ratings some

<sup>4</sup> Larson, L. A. A Factor and Validity Analysis of Strength Variables and Tests with a Test Combination of Chinning, Dipping and Vertical Jump. *Research Quarterly* 11: 82-96 (Dec.) 1940.  
<sup>5</sup> Sheldon, W. H., Stevens, S. S. and Tucker, W. B. *The Varieties of Human Physique*. New York: Harper & Bros. 1940.

84.5 per cent of these men were rated below a B by the examiners who felt the muscles of the arms, chest, part of the back, buttocks, thighs and legs under contraction. Some 36.9 per cent of the men scored below 7.9 on the Schneider test for organic efficiency, being classified as functionally unfit on this test.

The clinic sample was given an inventory of motor fitness<sup>6</sup> composed of thirty items in all with five items in each of the areas of emphasis on balance, flexibility, agility, strength, power and endurance. The results are given in table 1.

In endurance 72.50 per cent could not swim 440 yards, nor could 67.8 per cent chin themselves eight times or dip on the parallel bars eight times to meet the passing standard for the clinic. Some 46 per cent failed the mile run in seven minutes and 32.2 per cent could not hold their breath thirty seconds after running in place for sixty seconds.

In power 68.50 per cent could not run 100 yards in 13.8 seconds nor could 61.5 per cent jump 20 inches above their reach. Some 56.9 per cent failed in their attempt to climb the 20 foot rope in twenty-five seconds. 43.2 per cent could not put the medicine ball 34 feet and 37.35 per cent failed the standing broad jump at 6 feet 6 inches.

In agility 54 per cent could not vault a bar placed at chest height, or 4 feet 6 inches nor could 39.1 per cent jump over a stick held in the hands nor could 32.2 per cent execute a running dive and roll to clear 5 feet between two lines.

In strength, 78.20 per cent could not do the extension press up with the hands straight forward from the shoulders and pushing up from hands and toes, nor could 78.2 per cent hold the feet off the floor for sixty seconds while sitting in the V sit position with the hands on the hips. Some 21.82 per cent could not do twenty leg lifts and twenty sit ups in succession.

In flexibility 67.7 per cent did not possess as much vital capacity as the average standard for men of the same surface area, corrected for temperature. Some 11.5 per cent could not touch the floor with their finger tips while keeping the knees straight throughout a slow forward trunk bend.

In balance 95.40 per cent could not do a hand stand nor could 52.30 per cent do a squat stand for ten sec-

TABLE 1—Results of Tests

Endurance	45.35 per cent efficient
Power	46.51 per cent efficient
Agility	63.28 per cent efficient
Strength	67.14 per cent efficient
Balance	67.64 per cent efficient
Flexibility	74.97 per cent efficient

onds. Some 10 per cent could not do a 1 foot toe balance for ten seconds with the eyes open.

These facts, showing the men to be very deficient in many aspects of motor fitness paved the way for the adoption of a universal motor fitness test required of all men students in the University of Illinois in 1942. A motor fitness test was devised using the best two items in each of the foregoing categories for balance, flexibility, strength and power and three items in agility and endurance.

## ILLINOIS MOTOR FITNESS SCREEN TEST

It was impossible to test a very large sample with the thirty item inventory because of the large amount of time required with the staff available. Some simplification was needed but something more inclusive than the chinning-dipping-vertical jump test. The three item test correlated 0.447 with the 30 item criterion by direct correlation of total scores on each. A multiple

TABLE 2—Classification of Motor Fitness of University of Illinois Men

Total Scores	Frequency	Percentile	Rating
0	—	0	Poor
1	16	0.34	
2	20	0.63	
3	61	1.91	
4	71	2.51	
5	121	3.75	
6	143	8.75	Below average (fair)
7	19	12.71	
8	21	17.82	
9	50	27.27	
10	40	31.50	Average
11	63	43.45	
12	70	60.10	
13	78	78.90	Good Superior
14	66	100.00	
Number of students 439			

R of 0.548 was obtained by combining chinning, dipping and vertical jumping to predict the criterion of thirty items. Some screen test was needed which would correlate much higher than this. A combination of frog stand, trunk extension, flexibility, dive and roll, extension press up, medicine ball put and chinning combined by multiple regression technique to predict the criterion with a multiple R of 0.672 using the item in each major category of emphasis so that balance, flexibility, agility, strength, power and endurance would be represented. With the two best items from each category and the addition of foot and toe balance, vital capacity, residuals, bar vault, dynamometer strength, standing broad jump and mile run gave 0.860. A battery was finally arranged of fourteen items which correlated 0.872. The battery was called the Illinois Motor Fitness Screen Test. It has a reliability of 0.912 by correlating the scores made on successive weeks under the same conditions. The reliability of the individual items ranges from 0.87 to 0.95. When administered properly the items are relatively stable measures of ability, as the total gain in composite scores is only 0.63 point out of 14 as an average in the tests in successive weeks. However the items are improvable in a semester of training with greater percentage of improvement usually recorded in the balance and endurance items and least in the power items. The total scores improve from 23 to 40 per cent, depending on the time and intensity of training. The correlation between attendance and improvement is 0.444. The test has been normed for University of Illinois men with the results shown in table 2 (4392 cases tested in May and September 1942).

For screening purposes, when it is desirable to identify or "screen out" the lower 20 or 30 per cent the result may be controlled very well in a large sample. The distribution in table 2 shows that passing ten items would result in sectioning the lower third of the whole sample. In practice the standards have been made slightly harder than the distribution given, because after the first introduction of the test men will train for the test. The "passing" standard at the University of

6. Classification in Motor Fitness in Physical Fitness Workbook, pp. 37-52. An Inventory and Screen Test of Motor Fitness for High School and College Men. Physical Educator of the Phi Epsilon Fraternity, January, 1943.

Illinois is eleven items, including one endurance item, plus a rating above 3 in physique, and swimming ability for 75 feet.

The test is fundamentally arranged to differentiate the ability of the men into three groups according to their need for motor fitness conditioning.

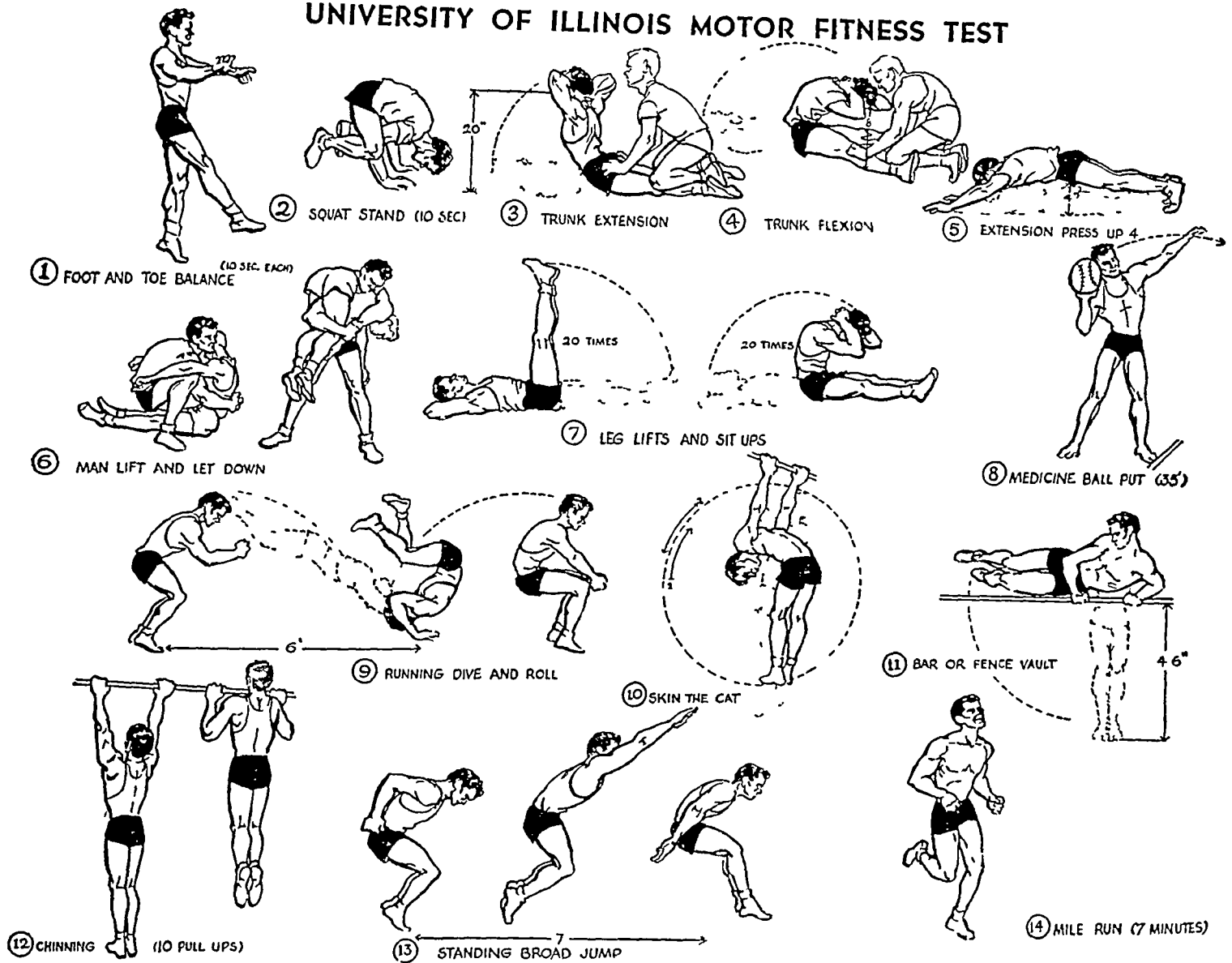
1 Basic (poorest 30 per cent), failing to pass eleven of the fourteen items, or failing to pass one of the three endurance items, getting a physique rating of below 4 out of 10, inability to swim 75 feet over deep water.

2 Restricted (middle 30 per cent), failing to pass eleven items including two endurance items, getting a physique rating below 5, inability to swim 100 yards.

must take beginning swimming. Those with physique ratings below 5 because of poor musculature or posture are allowed to choose from apparatus stunts, weight lifting, individual tumbling, double tumbling, boxing and wrestling. Those who have physique ratings below 5 because of being too fat or because they failed the mile run are allowed a restricted choice from soccer, individual athletics, touch football and ice hockey, six-man football, military athletics—all vigorous running activities with considerable endurance work involved.

Students in group 3 are allowed to choose any course they like including some of the more socialized courses of dancing, bowling, badminton and tennis.

### UNIVERSITY OF ILLINOIS MOTOR FITNESS TEST



University of Illinois motor fitness tests

3 Satisfactory (upper 40 per cent), passing eleven items including three endurance items, 7, 12 and 14 in table 3, rating above 5 on physique and ability to swim 100 yards.

Students in group 1 are assigned to especially arranged conditioning classes (P E M 60, basic physical fitness). They follow a graduated syllabus of work and maintain records of their physique, organic capacity and motor ability. These are kept in a physical fitness workbook which provides a guide for them to follow in the work.

Students in group 2 are allowed a restricted choice of course for physical education. They must select a course from a group which is known to have vigorous conditioning value. Those who do not swim 100 yards

The results on the screen test are quite satisfactory for differentiating ability and as a basis for assigning physical education classes. The test aims to identify the poorer ones in the lower 20 or 30 per cent so that they may be grouped for special instruction and better supervision than is usually provided. Individual conferences and guidance take more time and instructors with experience

#### ANALYSIS OF MOTOR FITNESS OF 2,628 YOUNG MEN

In September 1942, 2,628 entering men into the University of Illinois were tested, fresh from the high schools of Illinois and nearby states. The gross classification resulted in 35.84 per cent being classified in the basic group, failing to pass the test, 23.71 per cent were

put into the restricted group as near failures 40.45 per cent were rated satisfactory. The results are shown in table 3.

The results are rather startling because among the 35.84 per cent who failed to pass the test the proportion of failures on the fourteen items is so high that concern should be manifested for the physical and health future of the men. For instance 79 per cent could not hit the legs from the floor twenty times while lying on the back and then do twenty sit ups in succession. This standard is not very high because a fit man can do as many as 100 leg lifts and two hundred to five hundred sit ups. Some 78.8 per cent could not chin themselves ten times in succession and 76.1 per cent could not jog a mile in seven minutes a very mediocre performance for any one who has the ability to run the distance. The organic capacity must be low in these cases, and the Schneider test scores for these failures in the mile average about 7 (functionally inefficient). Table 3 gives the results for all fourteen items in the three classes of satisfactory, restricted and basic. The results show that very large percentages of men fail relatively low

if all men in both groups pass it. It is a good item only as the percentage of failures is definitely greater in the poorer group. This might be shown more exactly with lateral correlations between the total scores and the pass and fail responses on any item. It is obvious that a test with only a few items does not adequately test the ability in enough fundamental qualities and is apt to miss the point if applied to the low tail of the distribution curve. The screen test used in this work has been made to do just what it does very well—separate the poor men from the better ones at the 20 to 40 percentile level of ability.

The results are quite stable as the ranks of the items according to relative difficulty rating correlated 0.92 in two samples taken in July and September 1942 with different men involved.

#### RESULTS IN SWIMMING ABILITY

In the September 1942 data there were 2,557 who responded to the swimming questionnaire. Responding that they could not swim 'at all' were 679 men or 26.55 per cent. Stating that they could swim 75 feet

TABLE 3—Results of Motor Screen Test—Analysis of Failures

Item Number	Area of Emphasis	Name of Item and Standard	Number and Percentage of Failures on Each Item							
			Satisfactory		Restricted		Basic		Total	
			Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
1	Balance	Foot and toe balance 10 seconds each	42	4.0	34	5.5	161	17.1	237	9.6
2	Balance	Squat stand on hands 10 seconds	136	12.8	128	20.6	513	54.5	777	29.54
3	Flexibility	Trunk extension, 20 inches	10	10.0	103	16.5	223	23.7	436	16.44
4	Flexibility	Trunk flexion 6 inches	169	17.8	130	24.9	47	5.6	346	31.24
5	Strength	Extension press up once 4 inches	248	23.3	210	34.5	671	71.2	1,129	44.15
6	Strength	Man lift and let down once own weight	23	2.2	21	3.4	163	17.2	207	7.84
7	Endurance	Leg lifts and sit ups 20 each in succession	208	28.0	324	52.0	744	79.0	1,276	51.52
8	Power	Medicine ball put 35 feet	89	8.9	90	14.5	435	46.2	614	23.10
9	Agility	Running dive and roll 6 feet (or agility run)	80	8.0	140	23.3	280	62.5	500	31.16
10	Strength	Skin the cat hips one foot below shoulders and back	83	7.8	98	15.7	600	64.7	781	30.06
11	Agility	Bar or fence vault 4 feet and 6 inches	19	1.8	25	4.0	306	32.5	350	13.22
12	Endurance	Chinning the bar (pull ups) 10 times	173	11.6	200	32.1	743	78.8	1,116	40.53
13	Power	Standing broad jump 7 feet on mat	18	1.7	37	5.9	332	34.2	367	14.35
14	Endurance	Mile run 15 minutes minimum	172	16.2	178	28.6	717	76.1	1,067	40.21
Total			1,063	40.45	623	23.71	943	35.8	2,629	100.0

(Physical Education Classes for Men University of Illinois September 1942 2,629 Cases)

standards in fundamental events which physical educators claim to be significant in motor fitness.

The results also show that every item in the motor screen test has some discriminating value in that there are the fewest failures in the satisfactory group, more in the restricted group and most of all in the basic group. It is not easy to arrange a satisfactory test with only a few items because there are various aspects to motor fitness which are highly specific in themselves and deserve separate emphasis. The same items used to discriminate the basic group from the restricted group are not equally good for discriminating the satisfactory group from the restricted group. For instance the differential in percentage failures between the basic and restricted groups is greater for skin the cat, mile run and chinning. Then follow the dive and roll, extension press up, squat stand, medicine ball put, bar vault, standing broad jump, leg lifts and sit ups, trunk flexion, man lift and let down, foot and toe balance and trunk extension. For separating the satisfactory group from the restricted group the items rank as follows for differentiating value: leg lifts and sit ups, chinning, running dive and roll are best. Then in order are mile run, extension press up, skin the cat, squat stand, trunk flexion, medicine ball put, trunk extension, standing broad jump, bar vault, foot and toe balance and man lift and let down. Obviously an item is not any good

but not as much as 100 yards were an additional 40.13 per cent or a total of 66.68 per cent who could not meet the 100 yard swimming standard. Some 20.92 per cent stated that they could swim as much as 440 yards, and 12.40 per cent stated that they were life savers.

TABLE 4—Classification of Basic Group

	Number	Per Cent
NS Unable to swim 75 feet after jumping into deep water feet first (non-swimmers)	235	37.84
PS Unable to swim 100 yards any way at all (poor swimmers)	133	21.42
AS Able to swim 100 yards but unable to demonstrate crawl, back crawl, breast and side stroke 75 feet each (average swimmers)	150	25.00
SS Able to swim 440 yards and demonstrate four strokes as named (superior swimmers)	73	11.76
LS Qualified in life saving with one or more of the national life saving organization (life savers)	21	3.28
	611	100.00

It was decided to investigate this situation further by requiring the men in the basic group to take the swimming test in the pool. Exactly 621 men reported at the pool for the test and were classified as shown in table 4.

By actual test 59.26 per cent, or 368 men out of 621, could not pass the 100 yard test in the pool. By test 84.86 per cent could not swim 440 yards, and 80.6 per cent said that they could not on the questionnaire.

#### RESULTS IN PHYSIQUE RATINGS

With the understanding that men with physique ratings below 4 would be classified in the basic group and assigned to developmental work, 321 men failed to pass the standard because of having very poor posture, soft muscles under contraction or more than an inch of fat in double fold over the abdomen. The average rating for the entire sample was 5.45, for the satisfactory group it was 6.20, for the restricted group 5.57 and for the basic group 4.48. Not all men in the basic group had low ratings on physique. The correlation between the physique ratings and the motor fitness screen test scores for 680 cases was computed to be 0.318.

A careful study and classification of two samples of Illinois men show that according to Sheldon's body type criteria 66 out of 168 men were rated above average in physique and were in the lower 20 per cent in motor fitness by the screen test scores.

#### RESULTS IN ORGANIC FITNESS

Using the Schneider test as a measure of organic condition, 507 men in the basic group were tested. The reliability of the testing was 0.860. The mean score was 10.805 with the standard deviation 4.368. There were 128 men with scores below 9 classified as organically unfit (untrained).

#### IMPLICATIONS OF MOTOR UNFITNESS

Several important implications of the results may be pointed out:

1 The deficiency of large numbers of young men in fundamental motor ability traits of balance, flexibility, agility, strength, power and endurance is a fact. The proportions of motor unfitness are appalling.

2 Physical training programs are not compensating rapidly enough for urbanization with its associated mechanization, indoor work, dependence on motor vehicles and lack of the necessity of hard physical work in youth.

3 Large numbers of young men are entering adult life unconditioned and unmotivated to maintain physical fitness. This trend may contribute greatly to high accident rates, rapid loss of health after the age of 30 and widespread chronic disease because of the lack of preventive hygiene and conditioning work for the body.

4 Physical education and recreational programs have been inadequate, possibly because of inadequate time, facilities and leadership. In addition, the programs too infrequently focus on the physical fitness objective in terms of big muscle and organic endurance criteria. The socialization of the programs has possibly hurt the conditioning value of the activities. Many activities, such as bowling, dancing, socialized games, archery, bait and fly casting, badminton and tennis possibly contribute very little as they are taught in typical physical education or recreation classes.

5 Basic motor fitness training would include deliberate emphasis on ability in a wide range of activities for balance, flexibility, agility, strength, power and endurance, apart from health knowledge, rules of the game, social play relations or form in refined physical skills.

6 The fact that 60 per cent of those failing to pass the motor fitness test cannot swim 100 yards, and 85 per cent of these cannot swim 440 yards, is a deplorable fact which indicates lack of organization in the schools to teach the important skills of swimming. Thousands of drownings in the war are directly attributable to this omission.

7 Physique is an important base for evaluating physical fitness and it correlates 0.318 with the motor fitness screen test scores, but this evidence suggests that motor fitness is quite unique apart from physical proportions and is due to training of the gross neuromuscular abilities for balance, flexibility, agility, strength, power and endurance. Likewise, organic efficiency is an important base, but the Schneider test correlates only 0.381 with the motor fitness screen test scores, although it correlates as high as 0.85 with endurance running criteria. This would seem to indicate that for a rounded emphasis physique, organic efficiency and motor efficiency need to be stressed, not one to the exclusion of the others.

8 These facts imply the great importance of physical fitness work from the dynamic approach as used in physical education. The findings suggest a fruitful area of work of primary importance from the health and safety point of view.

## PHYSIOPATHOLOGIC ASPECT OF THE DISORDERS OF MUSCLES IN INFANTILE PARALYSIS

### PRELIMINARY REPORT

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NEW YORK

Infantile paralysis is not merely an acute disease of the anterior horn area of the gray matter of the spinal cord. Lesions are also found in the posterior horns in the sympathetic column and in the dorsal root ganglions. The white matter and the vessels of the pia are also involved. In addition, any part of the central nervous system, cerebral cortex, cerebellum, pons and medulla may be affected. However, the affinity of the virus for the gray matter of the cord is striking. After the period of acute inflammation, resolution takes place. It is usually complete in the white matter and sometimes even in the gray matter. In many cases anterior horn cells are destroyed or damaged by direct action of the virus. Distribution and intensity of the lesions vary widely.

These lesions explain the symptomatology of infantile paralysis very well. After a stage of general malaise, as seen in any infectious disease, there are signs of meningeal irritation, pain, followed more or less quickly by paresis or paralysis. The irritation of the meninges, dorsal root ganglions, posterior roots and posterior horns explain the pain which is one of the definite symptoms of the disease. The lesions of the anterior horn cells explain the motor deficiency, ranging from pronounced paralysis to slight weakness.

The paralysis is a flaccid one. The muscles become atrophic and toneless, the tendon reflexes being absent.

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as well as some cutaneous reflexes. Tenderness on pressure of the muscles and pain caused by active and passive motion are also common findings. Hyperesthesia is found in most of the cases. In the weak or paralyzed muscles the existence of neuromuscular degeneration can easily be demonstrated and is the consequence of the lower motor neuron lesion.

Recently a new concept of infantile paralysis has been described by Kenny<sup>1</sup> and has been approved by some physicians. This new concept is fundamentally different from the one accepted for more than a century. The phenomena described in this concept are (1) muscle 'spasm,' (2) 'mental alienation' and (3) 'incoordination.' Only recently the existence of some true paralysis has been accepted by the proponents of this concept. Muscle spasm is regarded as the most damaging symptom in poliomyelitis and is said to lead to degeneration if not treated. The muscles opposed to those in "spasm" become "alienated," divorced or erased from the patient's mind. The muscles which are in "spasm" are the damaged ones. 'Spasm' is described as being generally present in the following groups: neck, back, hamstrings, calf and pectoralis muscles. The "alienated" muscles are nonfunctioning not because they are paralyzed by the lesions of the anterior horn cells but rather because for some unknown reason they are unable to receive impulses. The dissociation of the muscle from the brain is regarded as due to some physiologic block. "Alienated" muscles may become permanently nonfunctioning if not treated. In summary according to this concept, infantile paralysis is a "spastic" not a flaccid paralysis, the muscles affected by this disease are those in "spasm." The antagonist muscles are "mentally alienated," and some muscles show incoordination. The danger of paralysis lies mainly in allowing "spasms" to continue.

In view of this concept investigations were conducted in order to find whether or not these newly described symptoms actually exist and if they were actually overlooked for more than a century.

#### EXPERIMENTAL RESULTS

Forty-nine patients were tested. Neuromuscular degeneration was explored by chronaxia measurements and "spasm" was studied in some of these patients mostly by electromyograms. Muscles which might be considered to be "alienated" as well as muscles in "spasm" were primarily explored by chronaxia measurements. Muscles regarded as normal clinically were also studied.

The degree of neuromuscular degeneration can be evaluated by chronaxia measurements. This test allows us to detect slight neuromuscular degeneration. In all 'alienated' muscles there was evidence of neuromuscular degeneration. In most of the "alienated" muscles, the nerves and muscles were in a state of partial neuromuscular degeneration. In a partial neuromuscular degeneration some of the muscle and nerve fibers are damaged while other fibers of the same muscle escape degeneration. This part of the muscle is therefore still able to respond to stimulation of its motor nerve. The extent of the lesion in each individual muscle depends obviously on the number of anterior horn cells damaged. Some of the muscles considered to be 'alienated'

according to the definition of Kenny<sup>1</sup> were found in total neuromuscular degeneration. This means that all the fibers composing the muscle were in deep degeneration with pronounced increase in the chronaxia, and the muscle was no longer able to respond to stimulation of its nerve. Thus in these patients different degrees of injury of lower motor neuron lesions were found.

Paralysis and neuromuscular degeneration are generally found in certain muscles or groups of muscles. These muscles are in order of frequency in the upper extremity the deltoid, biceps, brachialis anticus, brachioradialis, pronator teres, opponens pollicis, infra- and supraspinatus and clavicular part of pectoralis major, in the trunk the rectus and oblique abdominis muscles, mostly in their lower part, in the lower extremity the tibialis anticus, quadriceps, extensor digitorum brevis, extensor proprius hallucis, extensor digitorum longus and peronei. The hamstring and the calf muscles were also affected but less frequently.

According to the definition of Kenny the word "spasm" is used to express a certain degree of reflex shortening of the muscle. It can sometimes be located by observation or gentle palpation of the muscle, but it is usually demonstrated when the muscle is passively stretched. Examination of the patients who were the subjects of this report showed that "spasm" can be easily confused with a pseudospasm.

In some cases pain was caused by passive stretching of the muscles without resulting contraction, while in other cases there was definite contraction in response to stretch without severe pain. Some patients may show contracture or shortening due to replacement of some muscle fibers by fibrous tissue. The latter can be confused with "spasm" if pain is elicited by pulling of the muscle. The only means of detecting "spasm" with accuracy is by the study of action potentials.

Where "spasm" was present, electrical activity was recorded by stretching of the muscles. This test sometimes appeared to be difficult, because the interference of voluntary movement has to be carefully avoided. When the muscle is stretched and pain elicited, the patient sometimes tends to resist. With most patients complete relaxation could be induced and interference of voluntary motion could be avoided.

Muscles in definite "spasm" showed generally normal chronaxia, that is to say no trace of neuromuscular degeneration could be evidenced. On the other hand, in muscles with total neuromuscular degeneration there was no "spasm" at any time. Some patients were found to have partial neuromuscular degeneration also in the hamstring and calf muscles simultaneously with some "spasm." In such muscles the fibers which escape degeneration have normal chronaxia and are those in "spasm."

Action potentials of sixteen patients were recorded. Whether or not the legs were involved "spasm" was recorded in the hamstring muscles of all these patients. This phenomenon in the hamstring muscles was also pronounced in a patient who had only meningeal signs. "Spasm" was recorded in the gastrocnemius muscles of some patients but very rarely in the extensor digitorum longus, tibialis anticus and quadriceps. In the abduction of the thigh and in the tensor fasciae lata "spasm" could not be recorded. In the upper extremity activity produced by stretching of the muscles was found less frequently. It was sometimes found in the biceps in the extensor digitorum communis very seldom in the flexor digitorum sublimis and in none

<sup>1</sup> Kenny, Elizabeth. The Treatment of Infantile Paralysis in the Acute Stage. Milwaukee and New York: Bruce Publishing Company, 1941. Iohn John F. in collaboration with Sister Elizabeth Kenny. The Kenny Concept of Infantile Paralysis and Its Treatment. Bruce Publishing Company, 1943.



of the cases in the pectoralis. As a rule "spasm" could not be detected at rest in any of these patients except one. Thus it was found that the more advanced the degeneration, the less extensive was the "spasm."

## COMMENT

The principal and the most crippling symptoms of the disease are muscle paralysis and paresis. Some muscles are painful and tender. In some muscles the so-called "spasm" is evidenced. The paralysis is always flaccid and associated with neuromuscular degeneration, the latter can easily be detected by chronaxia measurements.

As stated previously, the permanently paralyzed and degenerated muscles are exactly the opposite of those considered to be in "spasm." The principal location of muscle "spasm" and the most frequent distribution of neuromuscular degeneration show obviously that "spasm" does not lead to neuromuscular degeneration. "Spasm" is consequently not the "most damaging symptom" of the disease.

We know that lower motor neuron lesions lead to flaccidity, atonia and abolition of the tendon reflexes, and this is the contrary to "spasm" or hypertonicity. It has been shown<sup>2</sup> that muscles in degeneration are frequently in fibrillation, but activities of single fibers cannot give a sustained contraction or tetanus of a muscle and thus cannot be responsible for "spasm."

In a partial degeneration, part of the muscles and nerve fibers escaping degeneration respond like normal structures. It is not surprising, therefore, that in patients with unilateral partial degeneration of the hamstring and calf muscles, "spasm" might be found on both sides, though always more pronounced in the normal leg.

It is worth while to notice that at the onset of the disease the principal location of the so-called "spasm" is, roughly speaking almost the same as that found in any meningitis or meningeal irritation in the neck, back, hamstring, and posterior calf muscles. In infantile paralysis some other muscles may be found in "spasm." In meningitis one generally does not find for instance, tension in the pectoralis major or the latissimus dorsi. It should also be mentioned that in some severe lower motor neuron injuries of different etiology than poliomyelitis there may be definite shortening of the uninvolved antagonist muscles. For instance, in a lesion of the brachial plexus with paralysis of the deltoid, biceps, brachioradialis, coracobrachial, triceps, extensor of the fingers, it is not infrequent to find definite shortening which might be called "spasm" in the normal superior trapezius, pectoral and latissimus dorsi. The same distribution is frequently found in poliomyelitis. Thus in a peripheral lesion of the lower motor neuron, and without any lesion of the spinal cord, one might have a similar picture of "spasm." It is a well known fact that, if a protagonist muscle is paralyzed, the stretch reflex of the antagonist muscle is always increased. There are, therefore, obviously at least two mechanisms of "spasm" one being the meningeal irritation of the posterior roots and the second being an increase of the activity of the opposite muscles to those paralyzed by a lower motor neuron lesion.

There is a third factor which may also account for part of the mechanism of "spasm", inflammation of the posterior ganglions and posterior horns where part of the posterior roots end. Lesions of the sensory protoneuron explains that occurrence of severe and continuous pain. It also explains the hyperesthesia and some other sensory disturbances found in this disease. This also allows us to understand why pulling of some muscles may elicit pain without giving rise to any tension or "spasm." If the anterior horn cells are destroyed, they are not able to respond to the stimulation of the sensory end organs. "Spasm," as it is said, can most easily be demonstrated by stretching of the muscles. In doing so, centripetal impulses mostly from the muscle spindles and also from other sensory organs of the tendons are sent to the spinal cord and referred as pain.

Thus the mechanism of the so-called "spasm" is three-fold: meningeal irritation of the posterior roots, involvement of the sensitive protoneuron and an exaggeration of the tonus in the muscles opposed to those paralyzed or weak. In the latter phenomenon it is known that there are not only mechanical factors but also absence of the normal inhibitory influence (Sherrington's reciprocal innervation) of the involved muscles on their antagonists. "Spasm" has not therefore a unique or single cause. Under the heading of "spasm" there may be even three different phenomena. One of the three factors is sufficient to elicit a reflex response and a shortening of the muscle. The meningeal component of "spasm" disappears relatively quickly. This meningeal reaction explains why it is more pronounced at the onset of the disease. Irritation of the posterior horns and ganglions may last longer than meningeal reaction. The last and the most persistent type of "spasm" is the one due to the increase of the normal tonus in strong muscles.

Besides these three factors, it should be mentioned that in a normal subject the stretch reflex of the hamstring and calf muscle was sometimes as manifest as in any case of poliomyelitis. In normal subjects definite action potentials were recorded. The pulling of these muscles did not elicit pain, but the tension was uncomfortable.

According to Kenny's concept, "alienated" muscles are muscles which have lost their ability to produce voluntary movement, these muscles are divorced from the mind because their antagonists are in "spasm." The findings reported here show definitely that no mental condition or any "physiologic block" is needed to explain "alienated" muscles. No one has been able to demonstrate that paralysis ever occurs in poliomyelitis without a certain degree of neuromuscular degeneration. This is the result of the damage of the anterior horn cells. Depending on the intensity and the extent of the lesions, the degeneration will be more or less well defined. This will be indicated by chronaxia measurement. It explains why some so-called "alienated" muscles may recover quickly. The reason for this is that we are dealing with a slight degree of partial degeneration.

Some muscles considered to be "alienated" were found in total neuromuscular degeneration, thus indicating that all the fibers composing the muscle were in deep degeneration. The chronaxia was much increased. These muscles are no longer able to respond to stimulation of its nerve. In infantile paralysis muscles with pronounced degeneration are doomed because their loss of function is the result of destruction of

2 Denny Brown, D. E., and Pennybacker, J. B. Fibrillation and Fasciculation in Voluntary Muscles. *Brain* 61: 311-334 (Sept.) 1938.  
Tower, Sarah S. The Reaction of Muscle Denervation. *Physiol. Rev.* 19: 148 (Jan.) 1939.  
Persistence of Fibrillation in Denervated Muscle and Its Nonoccurrence in Muscle after Tenotomy. *Arch. Neurol. & Psychiat.* 42: 219-223 (Aug.) 1939.  
Solandt, D. Y., and Magladery, J. W. The Relation of Fibrillation to Atrophy in Denervated Muscle. *Brain* 63: 255-263 (Sept.) 1940.

all anterior horn cells. A muscle is generally supplied by motor neurons from several segments of the spinal cord. Therefore total degeneration implying a more widespread lesion, is not as frequent as partial degeneration. Other muscles also considered to be "alienated" had completely disappeared and were replaced by fibrous tissue. In these muscles the proliferation of fat and connective tissue had masked the atrophy.

It was not infrequent to find a deep neuromuscular degeneration in the pectoralis major, the clavicular part, while the sternal part was normal and in "spasm." In this instance the degeneration was as pronounced in the clavicular part of the pectoralis major as it was in the corresponding deltoid. The reason for this is obvious: we were dealing with a deep injury in the fifth and sixth segments of the spinal cord while the lower segments were spared.

The third and least important symptom described by Kenny is 'incoordination.'

Muscles partially involved are obviously weak and the force employed is not well adapted to the aim of the movement. If, among the muscles which have to carry out motion one or several are paralyzed or paretic there will necessarily be considerable disturbance in the function of the extremity. The automatic regulation of the movement will be interfered with as well as the voluntary movement. This, of course, might be called "incoordination." We should, however, know that the mechanism of this symptom is to be found in the maldistribution of the impulses reaching muscles with different ability to respond, this ability to respond being the result of damage to some motor units.

#### SUMMARY

A new concept of infantile paralysis was recently described by Kenny and has been approved by some physicians.

According to this concept three principal symptoms are found: "spasm," "mental alienation" and "incoordination."

In view of this new concept, investigations were conducted. Forty-nine patients with infantile paralysis were tested with chronaxia measurements and in some cases action potentials were recorded. The following conclusions were drawn:

1 "Muscle spasm" is not "the most damaging symptom" and does not lead to neuromuscular degeneration. "Spasm" is not an entity but a complex phenomenon. It is the result of a combination of the normal stretch reflex, meningeal irritation of the posterior roots, increase of the normal tonus in healthy and strong muscles or muscular fibers opposed to weak or paralyzed muscles, lesions of dorsal root ganglions and posterior horns. Pain is a common symptom in acute poliomyelitis. This is a referred pain which is increased by stretching of the muscles.

2 In "alienated muscles" there is neither a functional paralysis nor a "physiologic block." That these muscles have partially or completely lost their power to contract is due to the fact that the anterior horn cells are damaged or destroyed. In the paralytic or paretic muscles considered to be "alienated" there is always some degree of neuromuscular degeneration.

3 "Incoordination" does not consist in a misdirection of nerve impulses. It is caused, if at all, by the inability of partially or totally denervated muscles to respond to otherwise normal nerve impulses.

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## COLD HEMAGGLUTININS IN ACUTE HEMOLYTIC REACTIONS

IN ASSOCIATION WITH SULFONAMIDE MEDICATION AND INFECTION

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Although mild anemia following the use of the sulfonamide compounds is common the appearance of a severe and fulminating hemolytic anemia is unusual. Because this type of reaction, when it occurs is unexpected and usually out of proportion to the amount of drug that has been administered it has been thought to be an example of hypersensitivity or idiosyncrasy. However definite proof of this or other type of pathogenic mechanism has not been discovered. In the cases reported here in which acute hemolytic anemia developed during the course of an acute infectious disease and following administration of sulfathiazole and sulfadiazine, a potent hemagglutinin was found. This agglutinin which was most active at ice box and room temperatures ("cold" hemagglutinin), reacted with the red cells of large numbers of prospective group O donors and with those of the patient (autoagglutinin). Although temperatures of 37 and 56 C caused inactivation, the agglutinin was reactivated at room or ice box temperatures. The possibility is present that the agglutinins in these cases were a factor in intravascular hemagglutination and hemolysis with the appearance clinically of acute hemolytic anemia and hemoglobinuria. The relationship of abnormal hemagglutinins to severe hemolytic reactions is discussed, together with the importance of the recognition of cold hemagglutinins in performing compatibility tests for transfusion purposes. The presence of cold hemagglutinins in atypical pneumonia has recently become diagnostically significant. These abnormal antibodies may also be important in the development of acute hemolytic anemia in this and other diseases.

#### REPORT OF CASES

CASE 1—F B, aged 26 a sales engineer became ill with mild fever, sore throat and cough. Although signs of pulmonary consolidation were not evident the patient was given sulfathiazole in the dosage of 1 Gm every four hours for two days following which sulfadiazine in the same dosage was administered. In all, he took approximately 9 Gm of sulfathiazole and 4 Gm of sulfadiazine. Another physician (Dr Edward Broderick) was called on the fourth day and the sulfadiazine was discontinued. Symptomatic treatment for the cough being given. Since there was continued mild fever of 99 to 101 F agglutination tests for typhoid, paratyphoid and undulant fever were done and reported negative. The sputum was negative for acid fast bacilli and pneumococci and a throat culture revealed no pathogenic organisms. On August 28 one week after sulfadiazine had been discontinued the patient complained of passing dark urine. On examination he was found to be somewhat pale and sallow, the red blood cell count was 3.7 million per cubic millimeter. On August 29 the patient was pale, dyspneic and uncomfortable. His urine was a dark wine color. He was then admitted to the Leonard Morse Hospital of Natick, Mass. with the presumptive diagnosis of sulfathiazole poisoning. The lungs showed fairly numerous scattered crepitant rales but no definite evidence of consolidation. The urine was dark burgundy red with a heavy trace of 'albumin' a rare red cell in the sediment but no casts. The

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From the Joseph H. Pratt Diagnostic Hospital and the Biol. Laboratories of the Boston Dispensary.

blood sulfathiazole level was zero. Blood examination revealed hemoglobin 60 per cent (Sahli), red blood cells 330 million, white blood cells 29,400, polymorphonuclears 84 per cent with an occasional myelocyte. Since a transfusion seemed desirable, the patient's blood was typed and found to be in group O (international). Numerous prospective group O donors were then cross matched with the patient's serum by the slide method at room temperature but were found to be "incompatible"—i.e. there was decided agglutination. Transfusion was accordingly postponed.

On August 30 the patient's condition was much worse. Pallor had noticeably increased and there was moderate jaundice. He was very dyspneic and was passing small amounts of red-brown urine which gave a strongly positive benzidine reaction. The red blood cell count was now 226 million and the white blood cell count 42,200. A consulting internist made the diagnosis of 'hemolytic streptococcus infection, chiefly in the throat and lungs, with question of blood stream invasion' and advised the readministration of sulfadiazine in a dosage of 1 Gm every two hours for two doses, then every hour. On this regimen the patient's condition became rapidly worse. An x-ray film of the chest showed "rather extensive mottled dullness in the right lung fields extending from the hilus to the right base, suggesting a virus pneumonia."

On August 31 the patient's condition was critical. He was stuporous, extremely pale and moderately jaundiced. The red blood cell count was under 20 million and the leukocyte count was 43,000. The red cells showed distinctive spherocytosis and polychromatophilia, the many polychromatophilic macrocytes contrasting sharply with the small, dense appearing spherocytes. An occasional nucleated red cell was seen. Differential count of the white cells showed a severe polymorphonuclear leukocytosis with immature polymorphonuclears, including an occasional myelocyte. Four nucleated red cells were seen in counting 100 white cells. The platelets were abundant. The hypotonic fragility test was 0.56 to 0.24 per cent. The blood bilirubin was 3.6 mg per hundred cubic centimeters.

The diagnosis of acute hemolytic anemia with hemoglobinuria secondary to administration of a sulfonamide compound was made and sulfadiazine was immediately discontinued. It was suspected that the "incompatibility" reactions against group O cells were due to the presence of a cold hemagglutinin. Examination of the patient's serum revealed a potent hemagglutinin which had the following characteristics: greatest activity at ice box (4 C) and room (20 C) temperatures, agglutination titer 1:128,<sup>1</sup> inactivation at blood temperature (37 C) and at 56 C, reactivation when the temperature was lowered to 20 C, agglutinating activity against red cells of all group O individuals tested, autoagglutination, slight agglutination of guinea pig and rabbit red blood cells, hemolysis in low titer of rabbit red blood cells in the presence of guinea pig complement, no isohemolysis or autohemolysis demonstrable. By use of the Landsteiner test tube technique at 37 C,<sup>2</sup> compatible group O donors were obtained and the patient was given a transfusion of 500 cc of blood. The precaution was taken of keeping the blood continuously warm throughout its removal from the donor and administration to the patient. By means of a U tube connection, 350 cc of a 5 per cent solution of sodium bicarbonate was continuously given during the transfusion. The patient's condition was almost immediately improved and on the following morning the urine had lost its brownish red color. He was given another transfusion of properly matched and warmed blood on this day (September 1), followed by an infusion of 500 cc of 5 per cent solution of sodium carbonate.

On September 2 the patient's condition was greatly improved. There was still a slight elevation in temperature. Jaundice was no longer present. The urine was completely normal in color and free from albumin<sup>3</sup> and the benzidine reaction was negative. The red blood cell count was 279 million and the leukocyte count had dropped to 27,000. On September 3 the patient's temperature was normal. On the fourth day the red

blood cell count rose to 334 million and the leukocyte count was 17,500. Although leukocytosis (17,000 to 20,000) persisted for another week, the course was now one of continuous improvement. On September 12, when the patient was discharged from the hospital, the red cell count was 392 million. On September 19 it was 45 million. Tests of the patient's serum on October 2 indicated almost complete disappearance of the cold hemagglutinin, which was now active only at ice box temperature in a titer of 1:2.

CASE 2—L. M., a housewife aged 50, had an acute illness with fever on Dec 15, 1942. Three days later she was seen by a physician, who prescribed sulfadiazine. This was apparently taken for three days, the total dosage being between 6 and 12 Gm (the stories varied). The therapeutic response to the drug being unsatisfactory, diagnosis of a virus infection was made. She began to feel very weak several days later. On December 31, when seen by Dr. Small of Norwood, Mass., she presented evidences of bilateral patchy pulmonary consolidation suggesting a "virus" pneumonia. There was a lemon yellow tint to the skin, and since the dyspnea seemed out of proportion to the degree of pulmonary involvement the patient was admitted to the Norwood Hospital on Jan 1, 1943. She was in a desperate condition, with extreme pallor and moderate icterus. The temperature was 103 F. The blood showed a hemoglobin content of 28 per cent, a red cell count of 700,000 per cubic millimeter and a leukocyte count of 23,000 with 80 per cent polymorphonuclears. Great difficulty was experienced in performing red cell counts or making blood smears because of the strong tendency of the red cells to clump within the pipets and on the hemacytometer, the blood smears showed masses of agglutinated red cells. These phenomena were later obviated by warming the Hayem solution, the pipets, the hemacytometer and slides immediately before use. The patient's blood group was O (international), but cross matching with the patient's serum against numerous prospective group O donors showed "incompatibility" in all. In addition there was autoagglutination. The possibility of a cold hemagglutinin was suspected by the pathologist, Dr. Schultz, and compatible donors were obtained by performing the cross matching test at incubator temperature. Four transfusions of 500 cc of citrated blood were then given, great care being taken to keep the blood and all utensils warm during the procedure. After the second transfusion, on January 3, the red blood cell count rose to 267 million, but on January 4 it was 220 million and on January 5 it was 205 million. On January 6 when I saw the patient, there was only slight pallor and icterus. The lungs showed no consolidation. The liver was readily felt two to three finger-breadths below the right costal margin but the spleen was not felt. The hemoglobin content was 54 per cent and the red cell count 271 million. The blood serum at this time showed no abnormal agglutinins. Without further therapy the patient made an uneventful recovery.

CASE 3—G. W., aged 24, an upholsterer, was admitted to the J. H. Pratt Diagnostic Hospital on Feb 14, 1943. About fifteen days before admission, an acute illness developed with fever, malaise, severe headache and aching pains in the shoulders, arms, back and legs. During the first week of his illness sulfadiazine in a total dosage of approximately 6 Gm was administered. This was apparently without effect, since a temperature of 101 to 103 F continued and a severely sore throat developed on the seventh day of illness. He then noticed enlarged glands in the neck and later in the groins. His urine became very dark. On February 10 he became quite weak. His physician, Dr. Leavitt of Stoneham, Mass., noted jaundice and a rash on the trunk. On admission to the hospital he looked weak, pale, thin and jaundiced. An eruption composed of fine macules which faded on pressure was present over the skin of the abdomen. A small shallow ulceration of the buccal surface of the lower lip and a large, somewhat deeper one on the right tonsillar fossa were present. The gingivae were normal and no petechiae were present. Examination of the heart and lungs was negative. The spleen was readily palpable three finger-breadths below the left costal margin but the liver could not be felt. There was generalized lymphadenopathy, but no enlarged sized glands being readily felt in the cervical, axillary, inguinal and femoral nodes.

1 Serum dilution, total solution 1:512.  
2 Dameshek, William, and Schwartz, S. O. The Presence of Hemolysis in Acute Hemolytic Anemia. *New England J. Med.* 215: 75 (Jan 13) 1938.  
3 The "albumin" in cases of hemoglobinuria is probably due to hemoglobin present.

The clinical diagnosis was infectious mononucleosis with jaundice. The urine was milkygray colored and contained 2 plus bilirubin (bile) and increased quantities of urobilinogen (4 plus) and urobilin (3 plus). By the Wallace Diamond technique the urinary urobilinogen was positive in a dilution of 1:160. There was no hemoglobinuria as determined by the benzidine test. The total blood serum bilirubin (Malloy-Evelyn technique) was 6 mg per hundred cubic centimeters with 3.4 mg "direct" and 2.6 mg of the indirect variety. The blood showed hemoglobin 63 per cent 9.8 Gm (Evelyn photoelectric) red blood cells 3.10 million white blood cells 12,500 platelets 285,000, reticulocytes 5.6 per cent. The lymphocytes were of all shapes, sizes and staining characteristics with a number of large, early cells characteristic of those seen in infectious mononucleosis. The red cells showed definite spherocytosis, which contrasted strikingly with the large polychromatophilic cells present. The hypotonic fragility showed beginning hemolysis at 0.72 per cent sodium chloride and complete hemolysis at 0.24 per cent.

The clinical diagnosis of infectious mononucleosis was thus substantiated by the typical findings in the blood smear, but the presence of anemia, spherocytosis, increased hypotonic fragility, slight reticulocytosis and greatly increased urinary urobilinogen indicated a hemolytic process. The possibility that this might be due to the recent sulfadiazine administration was suspected, and because of our experience with abnormal agglutinins in the previous cases the serum was investigated. A potent abnormal hemagglutinin was found with the following characteristics: agglutination of the red cells of all the blood groups including those of group O; autoagglutination, most pronounced agglutination at ice box and room temperatures, inactivation at 56 C; slight but no definite inactivation at 37 C; no isohemolysins or autohemolysins; slight hemolysis of guinea pig and rabbit cells with inactivation at 56 C. A very strong sheep cell agglutinin (in serum inactivated at 56 C) was also found; this was positive in a total serum dilution of 1:1,024. This heterophile agglutinin was thus entirely distinct from the isoagglutinin which was active in temperatures below 56 C. Another unusual finding was present. Venous blood when removed allowed to clot and to stand at ice box or room temperature developed a reddish tinge, then a striking degree of hemoglobinemia in the serum. After twenty-four hours of standing the blood serum contained approximately 150 mg of hemoglobin per hundred cubic centimeters. When serum was immediately removed from the clot and inactivated by heat and then returned to the clot, further hemolysis did not occur. Hemolysis did not occur in blood which was oxalated and allowed to stand at room or ice box temperature for the same length of time as the clotted blood. There was, however, a small zone of hemolysis just above the layer of sedimented red blood cells. When red cells which had been washed several times (three to seven) in isotonic solution of sodium chloride were allowed to stand at ice box temperature they caused hemoglobin discoloration of the saline solution. This gradually diminished as the patient improved, as did the phenomena of isoagglutination, autoagglutination and stasis hemolysis. By the time of the patient's discharge on February 20 they had completely disappeared. The heterophile agglutination test on this date was still strongly positive; however, to a total dilution of 1:512.

At first typing of the red cells for the blood group was impossible since, even with washing the red cells three to seven times an AB blood group was obtained. After four days, however, the autoagglutinin adsorbed to the red cells had so diminished that correct blood typing was possible when it was found to be group O.

There was a spontaneous rise in the reticulocytes to 13 per cent on February 20 followed by a gradual rise in the red blood cell count. Simultaneously the patient made a slow but steady clinical improvement with gradual regression in fever, jaundice, lymphadenopathy and splenomegaly. The temperature reached normal on February 20. On March 5 there was only slight lymphadenopathy and the spleen was barely palpable. On this date the red cell count had risen to 5.2 million, the leukocyte count was 6,200 per cubic millimeter and the lymphocyte percentage had fallen to 52. The heterophile agglutination test was now positive in a dilution of 1:128, no abnormal agglutinations were present.

## COMMENT

Acute hemolytic anemia which results during the administration of the sulfonamide compounds differs strikingly from the mild hemolytic anemia which develops so commonly, particularly after administration of sulfanilamide. It is rapid in its onset and progress its effects are often violent and it may even be fatal. Since only an occasional patient develops the acute condition it has been thought to be the result of an idiosyncrasy or allergy, although actually the mechanisms involved are quite obscure. Long, Bliss and Feinstein<sup>4</sup> readministered small doses of sulfanilamide to 4 persons who had previously had acute hemolytic anemia following administration of the drug. In 3 instances anemia developed after a few days—on the identical day which had previously witnessed the appearance of the anemia. The presence of autoagglutinins in the cases of Antopol and his associates<sup>5</sup> and of Rothstein and Cohn<sup>6</sup> and of cold isohemagglutinins and autohemagglutinins in the present cases suggests a possible relationship between these substances and the development of the anemia. In several previous papers Schwartz and I<sup>7</sup> have pointed out the importance of the presence of hemolysins in acute hemolytic anemia. Agglutinins and hemolysins are both antibodies which are often closely related. Some substances that are agglutinins under one set of conditions are hemolysins under another. Miller and I<sup>8</sup> have investigated this possibility further and have demonstrated that agglutinins injure the red cell membrane, making it susceptible to hemolysis by trauma and stasis. Ham and Castle<sup>9</sup> have stressed erythrolysis—due perhaps to agglutination of red cells—as the sole cause of hemolysis.

Since the time of Vidal,<sup>10</sup> agglutinins have been found in many cases of acute acquired hemolytic anemia. It is possible that autoimmunization occasionally develops with the production of an antibody active against the patient's own red cells. A somewhat similar condition appears to hold true in erythroblastosis fetalis<sup>11</sup> in which an anti-Rh agglutinin develops in the mother by isoimmunization with the fetus's red cells, which except for the presence of the Rh agglutinin are identical with those of the mother.

The possibility is present that a sufficient number of red cells of a patient taking a sulfonamide compound may be so altered as to serve as an antigen with the subsequent formation of an agglutinating antibody. Another, perhaps more likely, possibility is that certain infections may themselves result in the development of abnormal hemagglutinins. This we have previously commented on in our review "Acute Hemolytic Anemia"<sup>12</sup> and in a personally observed case of acute hemolytic anemia occurring with type XVII pneumo-

4 Long P H, Bliss Eleanor A and Feinstein W H. Mode of Action. Clinical Use and Toxic Manifestations of Sulfanilamide. *J A M A* 112:115 (Jan 14) 1939.

5 Antopol William, Applbaum Irving and Goldman Lester. Two Cases of Acute Hemolytic Anemia with Autoagglutination Following Sulfanilamide Therapy. *J A M A* 113:488 (Aug 5) 1939.

6 Rothstein Iadore and Cohn Sidney. Acute Hemolytic Anemia. Autoagglutination, Toxic Hepatitis and Renal Damage Following Sulfathiazole Therapy. *Case Report Ann Int. Med* 16:152 (Jan) 1942.

7 Dameshek and Schwartz footnotes 2 and 17.

8 Dameshek William and Miller E B. Pathogenetic Mechanisms in the Hemolytic Syndrome. *Arch Int Med* 72:1 (July) 1933.

9 Ham T H and Castle W B. Studies on Destruction of Red Blood Cells. Relation of Increased Hypotonic Fragility and of Erythrolysis to the Mechanisms of Hemolysis in Certain Anemias. *Proc Am Phil Soc* 82:411 1940.

10 Vidal F. cited by Dameshek and Schwartz in *Acute Hemolytic Anemia*.

11 Dameshek William, Greenwalt T J and Tat R J. Erythroblastosis Fetalis—Acute Hemolytic Anemia of the Newborn. *Am J Dis Child* 65:571 (April) 1933.

coccus pneumonia<sup>12</sup> Peterson, Ham and Finland<sup>13</sup> have recently reported "that the great majority of the patients with primary atypical pneumonia tested this season showed cold agglutinins in dilutions of serum or plasma ranging from 1:10 to over 1:10,000 at 0 C." It is possible that the combination of a high titer of abnormal autohemagglutinins and of a sulfonamide compound might result in agglutination and injury of red cells within the patient's own circulation and thus in the development of hemoglobinuria and acute hemolytic anemia. Since the hemagglutinins are generally more active at temperatures lower than 37 C, it is possible that they have their greatest effect either in peripheral vascular areas or in those organs, such as the spleen, which have a relatively static circulation. The development of *in vitro* hemolysis in case 3 when the clot was allowed to remain in the serum is perhaps evidence in favor of this assumption. It may be of considerable practical importance to take measures to prevent chilling of the patient with "virus" pneumonia and other conditions in which a cold hemagglutinin is found.

Similar mechanisms may be present in other hemolytic conditions, as in the "blackwater fever" of malaria<sup>14</sup>. The presence of an abnormal isohemagglutinin and autohemagglutinin in our case of infectious mononucleosis is of unusual interest. In this disease, for some reason thus far obscure, heterophilic agglutinins active chiefly against sheep red cells are present and have assumed great diagnostic importance. Isoagglutinins have thus far not been described. Since an abnormal isohemagglutinin was present in this case in association with acute hemolytic anemia and the use of a sulfonamide compound, it is reasonable to suspect a relationship between them.

The importance of the recognition of abnormal agglutinins cannot be overestimated. Since most testing for transfusion purposes is still performed by the slide technic at room temperature, the serum of the recipient with the cold agglutinin will routinely agglutinate the red cells of all persons tested, group O or otherwise. As in the present case, these individuals are normally classed as "incompatible" and a transfusion will often be postponed until the patient's condition is critical. Use of the Landsteiner-Levine test tube technic at both ice box (or room) and incubator temperatures is essential, not only because it demonstrates the "cold" nature of the agglutinin but because it is more sensitive than the slide method and will thus occasionally demonstrate a "warm" hemagglutinin or hemolysin which has previously been unrecognized. The agglutinin titer may occasionally be so high as to make testing of the patient's red cells for type difficult, owing to the small amount of hemagglutinin adsorbed to the red cells. This can usually be obviated by several washings of the patient's red cells with isotonic solution of sodium chloride.

It is well to remember that transfusions in cases of acute hemolytic anemia may be followed by severe reactions, although these may be diminished by the use of a careful cross matching technic. Thus as few transfusions as possible should be given, chief reliance being placed on the recuperative powers of the person's bone marrow. Since the hemagglutinin functions chiefly below 37 C, it is recommended that the blood be kept

continuously warm from its first removal from the donor's circulation. It is best not to use bank blood, since the red cells are already more or less modified and thus more liable to injury. Alkalinization with solution of sodium carbonate intravenously as recommended by DeGowin and his associates<sup>15</sup> may be of value in reducing the severity of the renal reaction.

The development of renal shutdown in some cases of acute hemolytic anemia is probably due to agglutination of red blood cells within the glomeruli and subsequent blockage of renal tubules, as with incompatible transfusion reactions. If anuria occurs, death may result, but milder degrees of renal impairment have been evidenced in a number of cases by an increase in the nonprotein nitrogen concentration of the blood<sup>16</sup>. It is possible that death from uremia has in some cases been erroneously thought to be due to precipitation of the drug or its acetylated derivative in the renal tubules.

The appearance of spherocytosis and increased hypotonic fragility in experimental and acquired hemolytic anemias has already been commented on in previous papers. The conception that spherocytosis represents an inherent fault in red cell formation in the bone marrow has been adequately disproved through both experimental and clinical observations<sup>17</sup>. We have shown that the spherocyte is a mature red cell which has been injured by the activity of a hemolytic agent. Thus spherocytosis, long considered pathognomonic of familial hemolytic jaundice, may occur in various hemolytic syndromes and—as in these cases—in the initial and active stages of the acute hemolytic reactions associated with the sulfonamide compounds.

A word regarding terminology. The type of abnormal isoagglutinin described is active not only against all types of human red blood cells but against those of the patient and to some extent against those of other animal species. Thus it might be called a "panagglutinin," although the term autoagglutinin has usually been used. Since the various terms have often been indiscriminately and interchangeably used and since the agglutinins are generally more effective at temperatures lower than 37 C, it is suggested that the term "cold hemagglutinin" be utilized.

#### SUMMARY

Severe hemolytic reactions occurred in 3 cases of acute infectious disease in which sulfadiazine and sulfathiazole had been used. They were associated with the presence in the blood of potent cold hemagglutinins, which were also active against the patient's own red blood cells (autoagglutinin). In 2 cases, so-called virus pneumonia was present, in the third a case of infectious mononucleosis, potent heterophile sheep cell agglutinins were also found. It is probable that both the drug and the hemagglutinins were causally related to the sudden development of intravascular hemolysis with hemoglobinuria and acute hemolytic anemia. Recognition of the presence of a cold hemagglutinin is important both diagnostically and therapeutically, especially from the standpoint of possible transfusions. Chilling of the patient with "virus" pneumonia should be avoided.

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## ACUTE TOXIC NEPHROSIS

A CLINICAL AND LABORATORY STUDY BASED ON A  
CASE OF CARBON TETRACHLORIDE POISONING

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Acute parenchymatous renal injury results from the toxic action of a large number of unrelated substances. Their classification is neither easy nor indeed rewarding for in most instances the clinical pattern of the poisoning is very similar. Even the microscopic differences in the kidney are not very great. Mercurial nephrosis is selected by Fishberg<sup>1</sup> as the typical instance of this type of renal disease, it is of course the one most frequently seen in practice. Nephrosis due to ethylene glycol, dioxane tartrates and the like is much less common. The renal lesions that develop during cholera or after intravascular hemolysis or burns or crushing injuries should also be considered under this general heading, since they share a "toxic" cause and a common clinical pattern of proteinuria, oliguria, edema, hypertension and azotemia with more or less characteristically depressed consciousness, and at autopsy the kidneys show epithelial degeneration.

The present report is an analysis of events in a case of renal injury due to the inhalation of carbon tetrachloride. Our purpose is to associate the renal, cardiovascular and symptomatic expressions of toxic nephrosis. We realize that carbon tetrachloride is not often thought of as a renal poison and that, like every other poison, it has certain distinctive features. Still the course of the disease in this patient is so like that in most cases of toxic nephrosis of moderate severity that the observations made can apply generally.

## METHODS OF STUDY

The course of the renal lesion was followed by (1) routine urinalyses, (2) measurement of urinary output, (3) determinations of blood urea nitrogen and (4) urea clearance, (5) estimation of urinary concentrating power and count of the urinary sediment by the method of Addis<sup>2</sup> and (6) measurement of the plasma clearances of diodrast and inulin and of functioning tubular secretory capacity for diodrast ( $Tm_p$ ).

Measurements of diodrast and inulin clearance and  $Tm_p$  were made substantially as described by Smith, Goldring and Chasis.<sup>3</sup> Diodrast-iodine and inulin in plasma and urine were determined by the methods of Corcoran and Page.<sup>4</sup>

The patient was referred to the authors by Dr Emmett B Lamb from the Lilly Laboratory for Clinical Research, Indianapolis City Hospital.

Assistance was given the authors by Mrs E Bowers Alward RN, Mr Truman Woodmansee BS, Miss Mary J Armstrong BS and other associates in the Lilly Clinic.

1 Fishberg A M Hypertension and Nephritis ed 4 Philadelphia Lea & Febiger 1939

2 Addis Thomas and Shely M C A Test of the Capacity of the Kidneys to Produce Urine of High Specific Gravity Arch Int. Med. 30 539 562 (Nov) 1922

3 Smith H W Goldring William and Chasis Herbert The Measurement of the Tubular Excretory Mass Effective Renal Blood Flow and Filtration Rate in the Normal Human Kidney J Clin. Investigation 17 265 278 (May) 1938

4 Corcoran A C and Page I H Applications of Diphenylamine in the Determination of Levulose in Biological Mediums I The Determination of Inulin J Biol Chem 127 601 608 (March) 1919 The diodrast-iodine method will appear shortly in the Journal of Laboratory and Clinical Medicine. It embodies the iodine electrophotometry described by Elton Jack Pitesky Isadore and Alving A S A Direct Photoelectric Colorimetric Method for the Determination of Diodrast and Iodides in Blood and Urine J Biol Chem 142 147 157 (Jan) 1942

Cardiovascular changes were demonstrated by (1) determinations of arterial pressure (twice daily during hospitalization), (2) clinical examination of the heart, retinal vessels and other organs, (3) electrocardiography (4) thoracic fluoroscopy and roentgen orthocardiography and (5) ballistocardiographic measurement of cardiac output (method of Starr, Rawson, Schroeder and Joseph<sup>5</sup>).

The general clinical study was based on a careful history and physical examination, daily observation of progress during hospitalization and frequent examination thereafter.

## PROTOCOL

A white man aged 36, a welder, spent four hours straightening and welding a bent gasoline tank into which he sprayed carbon tetrachloride from time to time to prevent an explosion. At midnight, when he finished, he felt weak and nauseated and, although it was a cold winter night, he had to keep his car window down to keep awake on the 2 mile drive to his home. He went to bed at once and was awakened in about four hours by excruciating headache and generalized painful muscular stiffness at which time he also noticed difficulty in breathing. He vomited copiously that morning, and for three days he did not eat or drink because of immediate and violent emesis on swallowing. He did not void more than

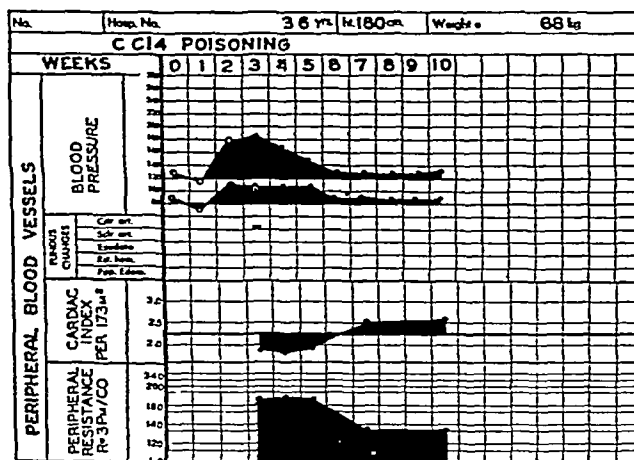


Chart 1—Clinical course in a case of toxic nephrosis due to carbon tetrachloride and special observations on the peripheral blood vessels. The observations extend over a period of ten weeks. The blood pressure measurements indicated between the second and seventh weeks are weekly averages of two daily readings. Cardiac index = cardiac output per square meter per minute. Peripheral resistance is calculated from mean arterial pressure and cardiac output. The bases of the observations are described in the text.

1 or 2 teaspoons of dark urine during the first two days and a cup more or less on both the third and fourth days. He passed about a pint of urine on the fifth day. He was able to eat a small amount that day also. His nose bled on the fifth day for several minutes, but he tried to go back to his work. He found that weakness and muscle pain—particularly in the back of the neck—prevented him working more than one hour. The sixth day he noticed that his ankles and eyes were puffy and his abdomen was distended. Proteinuria was discovered. He had eaten little because of anorexia and occasional vomiting but by the ninth day had gained about 15 pounds (68 Kg) over his normal weight. His blood pressure that morning was 180/114 at a routine examination six months before it had been found to be 130/90 and it was only 118/72 on the first day of his illness.

On admission to the Lilly Clinic on the ninth day of illness he was obviously very ill. His conjunctivas were hyperemic, his face body and extremities were pasty and bloated and his voice was hoarse. He complained greatly of pain along

5 Starr Isaac Rawson A J Schroeder H A and Joseph N R Studies on the Estimation of Cardiac Output in Man and of Abnormalities in Cardiac Function from the Heart's Recoil and the Blood's Impact the Ballistocardiogram, Am J Physiol 127 128 (Aug) 1939



the ligamentum nuchae and moderately of difficulty in breathing. His nose showed evidence of recent minor epistaxis. The optic disks were slightly reddened and the retinal arteries and arterioles constricted (grade 1 plus). Nothing abnormal was revealed by examination of the heart and lungs. The thrust of the apex beat was increased (grade 2 plus). The blood pressure was 174/114. The abdomen was moderately distended with fluid and gas. The liver was not palpable.

In spite of the absence of physical abnormalities in the chest a roentgenogram showed a small amount of fluid in both pleural cavities and the lung markings were increased in a manner which suggested irritative pulmonary edema. The heart and great vessels were not abnormal. An electrocardiogram (eleventh day of illness) showed a low QRS complex in the three standard and one (CR 4) precordial leads. The R wave of lead CR 4 measured 0.5 mm. The changes were interpreted as myo-

The results of some of these, and of other examinations, are shown graphically in the accompanying charts and some of them are tabulated.

An unexpected finding was made on the twenty-fifth day of the illness when, in connection with another study, the patient was given 0.2 cc of 1:5,000 epinephrine intravenously with an immediate resultant rise in arterial pressure from 160/100 to 270/140. The pressure remained at this level for about ten minutes and was maintained there by four succeeding doses of 0.2 cc during the next twenty minutes. The pressure fell slowly during the next half hour, but the patient continued to complain of severe headache and nervousness for twelve hours after the injection. In comparison with other normal subjects observed during this study, this patient's sensitivity to epinephrine was more than five times greater.

The course throughout the period of observation was one of progressive improvement, with apparent complete recovery at the end of about two months. An adequate diet was supplemented with a vitamin preparation, in addition, 400,000 units of vitamin A was given daily during his three weeks of hospitalization. The extra vitamin A was given empirically because of the increased renal function which sometimes appears in hypertensive patients during treatment with this substance.<sup>6</sup> No other special treatment was given.

#### COMMENT

The interest of this case falls under two headings: (1) the significance of carbon tetrachloride as the specific intoxicant and (2) the general characteristics of toxic nephrosis which it exemplifies.

*Carbon Tetrachloride Nephrosis*—This topic has been recently reviewed in some detail by Smetana<sup>7</sup> and will be touched on here only because it is neither widely nor sufficiently realized that carbon tetrachloride is capable of causing renal injury. In his review, Smetana collected reports of 141 cases of carbon tetrachloride poisoning, in 33 of which renal symptoms were present. It appears that the probability of toxic nephrosis is doubled when the intoxication occurs by inhalation rather than by oral ingestion, since 27 of the 33 cases of renal injury developed among the 99 cases in which exposure was respiratory.

The symptoms and laboratory findings of this condition have been tabulated by Hagen, Alexander and Peppard.<sup>8</sup> Briefly, it is distinguished by (1) immediate effects of narcosis reflecting injury to the central nervous system and irritation of mucous membranes, (2) delayed effects (twelve to thirty-six hours) including headache and mucosal irritation (respiratory, conjunctival, gastric) with hepatitis and a curious painful muscular rigidity, and (3) late effects (two to eight days) including the foregoing with evidence of a hemorrhagic diathesis and toxic nephrosis (proteinuria, oliguria, hematuria and cylindruria) with generalized edema, hypertension, clouded mental state and azotemia. The case reported by them is that of a man who inhaled the fumes of carbon tetrachloride after its use as a fire extinguisher. Definite evidence of hepatic damage developed but otherwise his general course was very like that of our patient. Indeed, it has been suggested<sup>9</sup> that the symptoms are sufficiently characteristic to prompt inquiry as to exposure to this chemical in the absence of a definite history.

It will be gratifying if the industrial exposure of unskilled workers during the present acceleration of

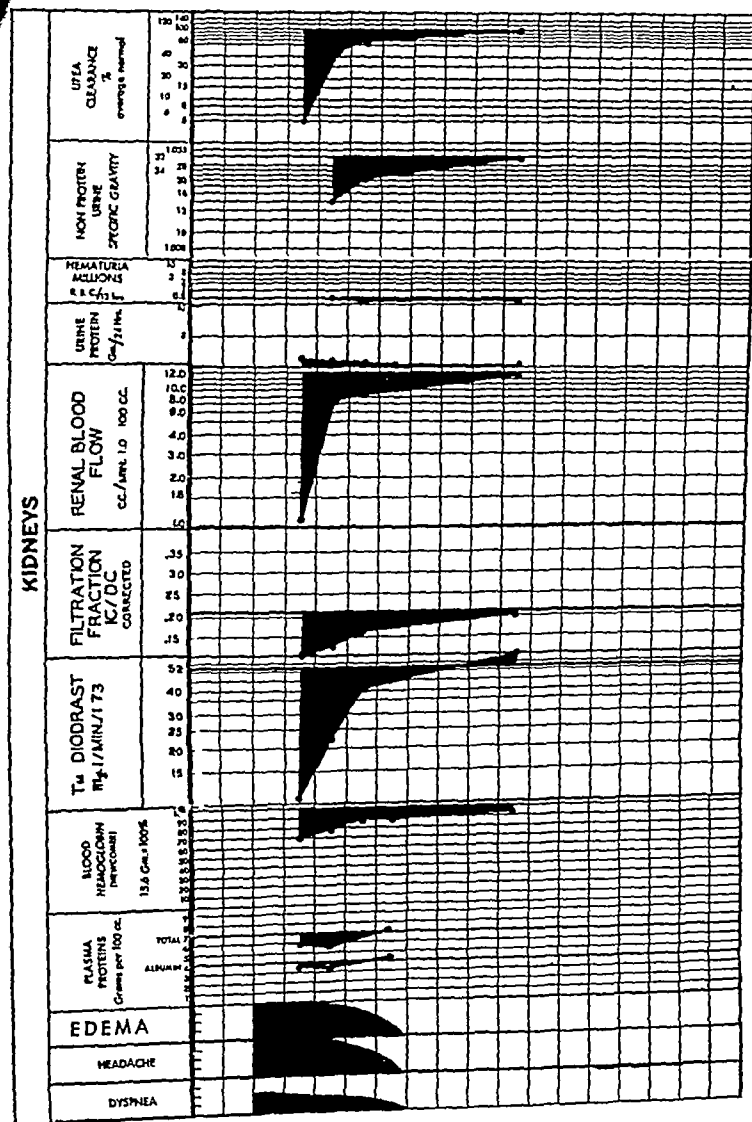


Chart 2—Special observations on the kidneys

cardiac damage consistent with anterior cardiac infarction. An electrocardiogram on the twenty-sixth day was entirely normal.

His blood showed 409 million red and 11,400 white blood cells per cubic millimeter, hemoglobin was 66 per cent of normal. Plasma bilirubin was 0.5 mg per hundred cubic centimeters and the icterus index normal. The urine contained a trace of urobilinogen. Plasma protein content was 5.9 Gm total and 3.7 Gm albumin per hundred cubic centimeters. He excreted 0.38 Gm of hippuric acid during one hour after the intravenous administration of 1 Gm of sodium benzoate on the tenth day. At this time the blood urea nitrogen was 73 mg per hundred cubic centimeters and urea clearance about 5 per cent of normal. On the twenty-sixth day the hippuric acid excreted during the test amounted to 1.1 Gm.

An Addis test done on the twenty-first day of illness revealed a maximum nonprotein urinary specific gravity of 1.014, a protein content of 1.2 Gm in twenty-four hours and excretion of red and white blood cells and casts within normal limits.

6 Taylor R D, Corcoran A C and Page I H. The Effect of Vitamin A on Blood Pressure and Renal Function in Hypertensive Patients. *Central Soc Clin Research* 15: 73-74 (Nov.) 1942.  
7 Smetana Hans. Nephrosis Due to Carbon Tetrachloride. *Int Med* 63: 760-777 (April) 1939.  
8 Hagen W S, Alexander H A and Peppard T A. The Effects of Carbon Tetrachloride. *Report of Case*. *Minnesota Med J* 25: 715-718 (Oct.) 1940.

production does not result in other similar cases. Fortunately recovery nearly always occurs. It is usually considered to be complete but we believe that ours is the first case in which a detailed study of renal function has been done and convincing evidence obtained of renal restitution to integrity.

The insignificance of hepatic damage is particularly striking in our case in view of the severe renal disease. The patient had not been jaundiced at any time during his illness. On the ninth and tenth days there was neither clinical nor chemical evidence of hepatic injury. If the presence of only a trace of urobilinogen in the urine is ascribed to failure of excretion by the coexistence of severe renal with mild hepatic damage, still the hippuric acid test indicates normal hepatic synthesis from the sodium benzoate when the amount excreted is corrected for renal damage in the manner suggested by Kohlstaedt and Helmer,<sup>9</sup> i. e. by reference to the concurrent urea clearance.

Since carbon tetrachloride may form phosgene on heating, persons exposed to its heated fumes as was our patient, may have the complication of phosgene poisoning in the mucosal and pulmonary irritation which

ethylene glycol diiodane, burns, traumatic anuria and transfusion hemolysis). Here the injury seems to depend simply on the concentration of the toxin in the tubule fluid as the result of abstraction of water from it in the proximal tubule and loop of Henle. The injured cells swell and desquamate. At first, as during diabetic coma<sup>10</sup> the tubular barrier may be functionally disorganized, so that its reabsorption is no longer selective. However this may be, the injured cells themselves may impede the flow of tubular fluid and the kidney swells, partly from their obstructive effect and partly from the interstitial reaction at their injured basement membranes. Interstitial pressure is increased and effective intraglomerular filtration pressure is correspondingly reduced, as is also the rate of renal blood flow.<sup>11</sup> The swelling subsides as recovery begins, renal blood flow and filtration rate are increased. The normal basic architecture and particularly the stroma of the kidney are well preserved. Restoration to integrity is therefore possible if the initial injury is not too severe. New epithelium is formed and its functions of secretion (as shown in the  $T_{mp}$ ) and capacity for reabsorptive work (maximum specific gravity, chart 2)

Functional Changes in Toxic Nephrosis Due to Carbon Tetrachloride

Day of Disease	Effective Renal Blood Flow (HD) Cc	Plasma Diodrast Clearance per Min	Plasma Inulin Clearance	Filtration Fraction	$T_{mp}$ Mg Diodrast Iodine per Min	HD/ $T_{mp}$ Cc per Min	Maximum Urinary Specific Gravity	Cardiac Index 1 per Sq M	Blood Pressure Mm Hg
10	116	67.8	5.8	0.086	3.7	31.3		1.80	157
22	74	464	56	0.12	23.8	32.5	1.014	1.76	126
32	830	610	81	0.16	41	30.7	1.022	2.52	109
64	1170	649	128	0.20	65	17.2	1.030	2.64	116

Successive changes during toxic nephrosis in effective renal blood flow (calculated from diodrast clearance and hematocrit index) inulin clearance, filtration fraction (inulin/diodrast clearance ratio), maximum tubular capacity for secretion ( $T_{mp}$ ), maximum nonprotein urinary specific gravity, the apparent volume of blood flow per unit of functioning tubular mass (HD/ $T_{mp}$ ), cardiac index (liters of cardiac output per square meter of body surface per minute) and blood pressure (mean of systolic and diastolic brachial pressure). The values of clearance and  $T_{mp}$  are expressed as cubic centimeters or milligrams per minute per 1.73 square meters of surface. The values obtained in the fourth observation (64th day) are taken as normal.

usually develops. However, such irritation occurs even after exposure to the unaltered substance.

**Toxic Nephrosis.**—The renal injury which may follow exposure to toxic substances is of particular interest. Here, in contrast to acute Bright's disease, the injury is primarily epithelial and not vascular. Clinically, however, the syndrome differs only quantitatively from glomerulonephritis in its relationships of proteinuria, pyuria, cylindruria, oliguria, hypertension and edema. Since the nephron is the structural unit of renal function and damage within it, whether epithelial or vascular, extends to the whole nephron, the gross clinical and functional patterns of acute toxic nephrosis and acute glomerulonephritis are very similar.

The injury probably begins with contact of the toxin and epithelial renal cell at the cell's tubular surface, where the poison is apt to be more concentrated than it is in blood or interstitial fluid. When the injury is largely to the cells of the proximal tubule as it is with mercury or tartrate, it may be that the toxins have been concentrated within the cell by active reabsorption much as is dextrose in this area. At least tubular fluid is still dilute at this point and the concentration of the toxin is probably not at a maximum. As would be expected the more common site of injury is the epithelium of the distal tubule (e. g. carbon tetrachloride,

recover together. A similar parallelism of concentrating power and  $T_{mp}$  exists in cases of essential and malignant hypertension.<sup>12</sup>

The order in which these changes developed is shown in the values of diodrast and inulin clearance and  $T_{mp}$ . The principles of their interpretation under normal conditions and in hypertension have been discussed elsewhere in some detail.<sup>13</sup> It will suffice to note that inulin clearance (IC) is equivalent to the rate at which water is filtered off from the renal plasma through the glomerular capillaries into the tubules (normally about 120 cc a minute) while diodrast clearance (DC) is roughly equivalent to the rate at which plasma flows through functioning tissue, i. e. the volume of plasma from which filtration occurs (normally about 600 cc a minute). If inulin clearance is divided by diodrast clearance (IC/DC), the result, known as filtration fraction, expresses the proportion of plasma water squeezed

10 McCance R. A. and Widdowson E. M. Functional Disorganization of the Kidney in Disease. *J. Physiol.* 95: 26-44 (Feb.) 1939.

11 Linder F. and Sarre H. Dekapsulation und Durchblutung der Sublaminären Zirkulation. *Chir. u. Gynäk.* 45: 40-48 1939.

12 Corcoran A. C. and Page I. H. Quantitative Formulation of Maximum Urinary Specific Gravity. *J. Mount Sinai Hosp.* 8: 49-63 (Jan. Feb.) 1942.

13 White H. L. Observations on the Behavior of Diodrast in the Dog. *Am. J. Physiol.* 130: 254-263 (Sep.) 1940. Corcoran A. C., Smith H. W. and Page I. H. The Plasma Volume Determined from Blood by the Dye-Explanated Kidney. *ibid.* 134: 333-341 (Sep.) 1941. Corcoran A. C. and Page I. H. Renal Effects of Experimental and Clinical Hypertension. *J. Lab. & Clin. Med.* 26: 1713-1728 (Aug.) 1941. Smith Goldring and Chalmers. *Smith* 11.

9 Kohlstaedt K. G. and Helmer O. M. A Study of the Hippuric Acid Excretion as a Test of Hepatic Function. *Am. J. Digest Dis.* 13: 446 (Sept.) 1936.

out through the glomerular capillaries by intraglomerular pressure (normal, about 0.18). The clearance of diodrast is much higher than that of inulin because most of the diodrast present in renal arterial plasma is removed in one renal passage, so that little or none remains in renal venous blood, in contrast to about 20 per cent of the inulin and 10 per cent of urea. This efficient excretion of diodrast is maintained, as long as the plasma concentration of diodrast is not too high, by active secretion of diodrast from renal interstitial fluid through the cells of the proximal convoluted tubule to the tubular fluid. At high plasma concentrations the secretory capacity is exceeded and the amount reaching the tubular fluid and thence the urine attains a maximum. Just as one might estimate the cars of a railroad in terms of the freight they can carry, so the maximum capacity to transfer diodrast is conceived of as a measure of tubular mass and, by abbreviation, referred to as  $Tm_D$  (normally about 50 mg of diodrast-iodine a minute<sup>3</sup>). The rate of effective renal plasma flow (DC) divided by tubular mass ( $Tm_D$ ) expresses the rate at which plasma perfused that volume of renal tissue which can excrete 1 mg of diodrast as iodine, and if the effective renal blood flow has been calculated from the plasma flow and hematocrit index (H) the unit volume of renal blood flow may be similarly calculated as  $HD/Tm_D$  (normally, about 23 cc a minute).

In the present case, toxic nephrosis reduced effective renal blood flow (chart 2 and table) and caused a proportionately greater reduction in filtration rate and functioning tubular mass ( $Tm_D$ ). From this it might seem as though a large increase in the volume of blood flowing to the units of uninjured functioning tubular tissue had occurred ( $HD/Tm_D = 31$  and  $32$  cc a minute in observations 1 and 2). That this apparent hyperemia is not real is suggested by the coexistence of hypertension, increased peripheral resistance, retinal arterial constriction and low absolute level of effective renal blood flow. The explanation for it probably depends on diodrast entering the renal interstitial fluid through a set of capillaries attached to a nonsecreting and injured nephron and then diffusing over to be excreted by a secreting and uninjured nephron. Diodrast clearance thus comes to exceed the true level of plasma flow to functioning and secreting nephrons. The measurement of  $Tm_D$ , in which transfer capacity is fully saturated, is not affected and the result is a high level of diodrast clearance in relation to  $Tm_D$ . The process has been termed "vicarious hyperemia" by Smith<sup>14</sup>. Since in such cases as this there is probably no hyperemia but rather ischemia, perhaps the term "vicarious clearance" might better convey the meaning of an altered significance of diodrast clearance. As originally visualized with reference to the renal changes of essential hypertension, this process was due to formation of "impotent nephrons" which filtered but could not secrete. The parallel reduction of filtration rate and tubular secretory capacity suggests that in this case of toxic nephrosis both filtration and secretion were temporarily in abeyance in many nephrons.

Decreased filtration rate and filtration fraction are observed in eclamptogenic toxemia of pregnancy,<sup>15</sup>

experimental glomerulonephritis<sup>16</sup> and acute and chronic Bright's disease.<sup>17</sup> In these conditions the glomeruli are known to show definite structural changes, and we have therefore tentatively attributed the decreased filtration rate and fraction to the formation of virtual shunts of blood through injured glomerular capillaries which are still canalized but no longer filter.

Others<sup>18</sup> have observed this phenomenon in pre-eclampsia and eclampsia and attributed it to afferent arteriolar vasoconstriction or renal edema. Its presence in some cases of toxic nephrosis—we have observed it in a case of mercurial nephrosis but not in another due to oil of tansy<sup>19</sup>—suggests at least that it depends on another mechanism than glomerular injury or afferent constriction—most probably renal edema. This, with or without tubular obstruction by detritus, increases intrarenal pressure and thus decreases the effective pressure of filtration. "Vicarious clearance" alone does not explain the severe depression of filtration fraction here observed.

Whatever the cause of the reduction in glomerular filtration rate, among its results are oliguria and sodium retention, which together lead to edema. In acute Bright's disease and eclampsia additional widespread irritative vascular injury is postulated as a basis both of edema and of cardiac injury. It is, to say the least, doubtful whether such a factor plays a role in toxic nephrosis in which the injury is renal and not vascular but epithelial. The myocardial damage in our patient during his illness may therefore depend on some other factor than local vascular injury—possibly the acute hypertension which his heart was suddenly called on to maintain. A similar factor may play a role in eclampsia and acute Bright's disease.

The hypertension itself is of particular interest. As in most cases of toxic nephrosis, it did not develop in the first days of the renal injury, when renal blood flow is often greatly reduced,<sup>11</sup> but was delayed, perhaps until renal swelling had increased the intrarenal pressure. Such a view is in accord with the hypothesis that this hypertension is of renal origin and due to release of renin and formation of angiotonin in the blood<sup>20</sup> as the result of reduced intrarenal pulsation.<sup>21</sup> The mechanism has its parallel in the experimental

16 Fouts P J, Corcoran A C, and Page, I H. Observations on the Clinical and Functional Course of Nephrotoxic Nephritis in Dogs. *Am J M Sc* 201 313 326 (March) 1941.

17 Unpublished observations.

18 Wellen Irwin Welsh Catherine A and Taylor H C, Jr. The Filtration Rate Effective Renal Blood Flow Tubular Excretory Mass and Phenol Red Clearance in Specific Toxemia of Pregnancy, *J Clin Investigation* 21 63 70 (Jan) 1942.

19 On the third day of mercurial nephrosis a patient (B P) showed the following clearances: diodrast 246 inulin 23.5 cc per minute filtration fraction 0.09  $Tm_D$  was 5.3 mg diodrast iodine, and dextrose  $Tm$  37 mg per minute. Blood pressure was 144/94. This patient recovered but further observations were not made. Tabulated here are the findings in a patient suffering from toxic nephrosis due to ingestion of oil of tansy. The nephrotoxic action of this drug is not generally recognized.

Day of Disease	Plasma Diodrast Clearance	Plasma Insulin Clearance	Filtration Fraction	$Tm_D$ Mg Iodine per Min	Mean Blood Flow
4	42	11	0.26	2.63	110
11	223	44	0.19	12.4	162
20	469	92	0.20	18.0	

20 Page, I H. Studies on the Mechanism of Arterial Hypertension. *J A M A* 120 757 762 (Nov 7) 1942.

21 Kohlstaedt A G and Page I H. The Liberation of Renin by Perfusion of Kidneys Following Reduction of Pulse Pressure. *J Exper Med* 72 201 216 (Aug) 1940.

11th, H W. Notes on the Interpretation of Clearance Methods Used Kidney, *J Clin Investigation* 20 631 635 (Nov) 1941.  
12th, A C, and Page I H. Renal Function in Late Pregnancy, *Am J M Sc* 201 385 396 (March) 1941.

hypertension of fibrocollagenous perinephritis described by Page<sup>22</sup> in which also the renal parenchyma is compressed. Our patient's pronounced sensitivity to epinephrine—which on somewhat inadequate grounds is stated to be a general phenomenon in nephritis as compared to essential hypertension<sup>23</sup>—may suggest that another pressor system may have been operating such as that described by Bing<sup>24</sup> in which renal anserobiosis leads to formation of a pressor amine from dihydroxyphenylamine. However, the existence of such pressor systems under conditions compatible with life has not been established.

The coincidence of decreased cardiac output and electrocardiographic evidence of cardiac damage might suggest that injury has decreased output by causing cardiac insufficiency. The ballistocardiographic record resembles that seen in essential and malignant hypertension<sup>25</sup> and, during intravenous administration of angiotonin, the effector substance of the renal pressor system<sup>26</sup>. In cases of uncomplicated essential hypertension, as during administration of angiotonin or, apparently, toxic nephrosis, cardiac output decreases as peripheral resistance makes it more difficult for the heart to maintain a normal output and a greatly increased pressure. The decreased output is therefore more probably the result of incomplete cardiac adaptation than actual cardiac insufficiency.

#### SUMMARY

Because the essential lesion of toxic nephrosis is based on destruction of the epithelium of the nephron, its manifestations are much the same in spite of wide differences in the causative toxic agents. The clinical and functional characteristics of toxic nephrosis due to carbon tetrachloride, considered in detail in the report, therefore apply generally. The stroma of the kidney is left intact so that complete recovery may occur by epithelial regeneration. The clinical manifestations of edema, oliguria and proteinuria are associated with decreased renal secretory capacity and with decreased renal blood flow and glomerular filtration rate. Analysis of data from diodrast and inulin clearances suggests that the injury extends temporarily to both the secretory and the filtering functions of the nephrons. The hypertension is presumably of renal origin and due to release of the renal pressor system (renin renin-substrate angiotonin). The resultant increase in peripheral resistance rather than a specific myocardial injury is the presumptive cause of the decrease in cardiac output present during the persistence of hypertension.

Clinical recovery is associated with a reversal of all these changes and their return to normal. In the case presented renal damage was associated with pressor hypersensitivity to epinephrine.

<sup>22</sup> Page I H. The Production of Persistent Arterial Hypertension by Celloghane Perinephritis. *J A M A* **113**: 2046-2098 (Dec. 2) 1939.

<sup>23</sup> Hulse W and Denke E. Adrenalversuche bei Hypertonien. *Klin Wchnchr* **3**: 1724 (Sept. 16) 1924.

<sup>24</sup> Bing R I and Zucker M L. Formation of Pressor Amines in the Kidney. *Proc Soc Exper Biol. & Med.* **46**: 343-347 (Feb.) 1941.

<sup>25</sup> Taylor R D and Page I H. The Effect of Antipressor Kidney Extract Angiotonin Methyl Guanidine and Tyramine on Cardiac Output as Measured by the Ballistocardiograph in Hypertensive and Normal Person. *Am J M Sc* **205**: 66-72 (Jan.) 1943.

<sup>26</sup> Page I H and Helmer O M. A Crystalline Pressor Substance Angiotonin Resulting from the Reaction Between Renin and Renin Activator. *J Exper Med* **71**: 29-42 (Jan.) 1940.

## BRONCHOSCOPY AND ASTHMATOID RESPIRATION

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Altered respiration of an asthmatic type may result from a variety of clinical conditions which produce changes in the caliber of the bronchial lumen. The term asthmatic respiration is used to imply a type of respiratory cycle in which the expiratory phase is accompanied by a wheezing sound similar to that heard in true bronchial asthma but for which there may be a number of different etiologic factors. My purpose in this paper is to indicate the diagnostic and therapeutic value of bronchoscopy in simulated asthmatic, or asthmatic breathing.

The initial impetus in the study of altered respiration, bronchoscopically considered probably stems from Chevalier Jackson's classic description of the "asthmatic wheeze".<sup>1</sup> Often quoted, the original words bear repeated emphasis. "The asthmatic wheeze may be defined as a sound heard by placing the ear in front of the patient's mouth during expiration. It resembles the wheezing of an asthmatic patient but is drier. It is caused by the vibration of the air passing the foreign body in the bronchus." Lukens<sup>2</sup> in 1925 described the bronchoscopic findings in bronchial asthma and was one of the earlier writers to suggest diagnostic bronchoscopy on almost all asthmatic persons.

The investigation of the tracheobronchial tree in order to rule out conditions which might simulate asthma has been advised by many authors. Jackson<sup>3</sup> has reported a large series of foreign body cases in children erroneously diagnosed as asthma. Gaarde has been quoted as emphasizing that "to limit the study of the asthmatic patient to an allergic investigation, to investigation of the nose and throat, to a search for foci, or to a roentgenogram of the thorax, is to invite diagnostic and therapeutic failure."<sup>4</sup> Clerf<sup>5</sup> has pointed out that many patients present signs and symptoms which do not fit the textbook description of asthma and suggests "wheezing respiration" as a better term for atypical symptoms requiring endoscopic investigation. Consequently an ever increasing degree of attention is being directed to the importance of wheezing respiration in diseases other than bronchial asthma. Among these, foreign bodies in the air and food passages have been mentioned most frequently.<sup>6</sup> Laryngeal pathologic changes tumors of the trachea or bronchi whether benign or malignant,<sup>6</sup> acute or chronic inflammatory processes involving the air passages, strictures or stenoses may cause altered respiration of an asthma-

From the Presbyterian Hospital Chicago.

<sup>1</sup> Jackson on Chevalier. A New Diagnostic Sign of Foreign Body in Trachea or Bronchi: the Asthmatic Wheeze. *Am J M Sc* **156**: 625-636 (Nov.) 1918.

<sup>2</sup> Lukens R M. Bronchoscopy in the Treatment of Asthma. *Laryngo* **35**: 227-234 (March) 1925.

<sup>3</sup> Jackson Chevalier. Chronic Nonspecific Infections of the Lungs. *J A M A* **5**: 729-736 (Sept. 4) 1936.

<sup>4</sup> Frickman L E and Vanson P P. Bronchoscopy in Asthma. *J Allergy* **4**: 286-293 (May) 1935.

<sup>5</sup> Clerf L H. Present Status of Bronchoscopy in Bronchial Asthma. *Ann Int. Med* **9**: 1050-1056 (Feb.) 1936.

<sup>6</sup> Overholt R H and Rutel W R. Clinical Studies of Primary Carcinoma of the Lung. *J A M A* **114**: 757-742 (March 2) 1930. Clerf L H and Bucher C J. Adenoma (Mixed Tumor) of Bronchus. *Ann Otol Rhin & Laryng* **51**: 836-850 (Sept.) 1942.

<sup>7</sup> Gatewood E T. Bronchoscopic Observations of Laryngotracheobronchitis. *Virginia M Monthly* **63**: 600 (Jan.) 1937. Gittins T R. Laryngotracheobronchitis in Children. *Arch. Otolaryng* **36**: 491-493 (Oct.) 1942. Myerson M C. Tuberculosis of the Trachea and Bronchus. *J A M A* **116**: 1611-1615 (April 12) 1941.

toid type. The common denominator in all these conditions is a narrowing of the airway. To the bronchoscopist falls the role of interpreter for pediatrician, internist, surgeon and roentgenologist, although a cooperative effort on the part of all is prerequisite.<sup>8</sup>

The explanation for a wheezing type of respiration in most cases is to be found in a consideration of the normal physiologic movements of the bronchi during respiration. Elongation and expansion occur during inspiration. In expiration these structures contract and shorten. Thus a pathologic process which narrows or partially blocks the bronchial airway will interfere principally with the egress of air. Because of an abnormal irregularity of the lumen plus a physiologic bronchial contraction the vibration of the outgoing air will produce an altered expiratory sound. This sound is most often wheezing in character.

In an attempt to emphasize further the bronchoscopic aspects of simulated asthmatic, or asthmatoïd, breathing, the following case reports are presented.

#### REPORT OF CASES

CASE 1—J. O., a 2 year old boy, fell while eating popcorn and a momentary coughing spell ensued. Subsequently the child coughed frequently for several hours until brought to the Presbyterian Hospital. An expiratory wheeze was quite audible to the examiner's ear, 6 to 12 inches from the child's mouth. There was neither dyspnea nor cyanosis. A few wheezing rales were heard over both lung fields. Roentgenograms of the chest were normal.

Bronchoscopy was performed several hours later with a 5 mm by 30 cm instrument and without anesthesia. A shell-like object presented in the right main bronchus, one margin was apparently fixed to the medial wall, while the other, which was thin and frayed, moved with each expiratory motion. The wheezing expiratory sound was accentuated with the bronchoscope in situ. There was considerable diffuse tracheobronchitis. The free margin was grasped and rotated, and the object was removed. It was found to be a maize (popped corn) hull. No other particles were seen on completion of the examination.

On the following day there were scattered rales over both lung fields and a slight elevation of temperature. On the second postoperative day the chest was clear on clinical and roentgenographic examination, the temperature was normal and the child was discharged. There were no sequelae.

To the bronchoscopist the asthmatoïd wheeze and the history of a choking spell made a diagnosis of foreign body fairly obvious. A suggestion to defer bronchoscopy was disregarded because of the potential danger of vegetable matter in the tracheobronchial tree. The signs of partial or complete bronchial obstruction<sup>9</sup> were absent, probably because of the exceedingly thin mobile margin of the hull and the fact that the tissue reaction had not reached its maximum.

CASE 2—V. C., a boy aged 16 months, was brought to the hospital for emergency treatment. There was an indefinite, though suggestive, foreign body history. There had been several periods of impending asphyxia with severe cough followed by subsidence of all symptoms except for a wheezing type of respiration. An asthmatoïd wheeze, grossly audible on expiration, was the only finding on entrance. The larynx was exposed without anesthesia and a foreign object was seen in the subglottic space. During inspection its position suddenly changed as a result of cough and inspiration. A small bronchoscope was introduced and one half of a hard nut shell (pistachio) was quickly removed as it lay across the bifurcation of the trachea. All symptoms disappeared and the child was discharged on the following day.

The history of a shifting type of obstruction, with alternate episodes of impending asphyxia and relative freedom, left little time for roentgenograms. The asthmatoïd wheeze was the all important indicator of some pathologic condition in the trachea. Shifting of the foreign body at the time of direct examination was doubtless a repetition of the events preceding admission.

CASE 3—E. B., a 4 year old girl, had been treated for asthma for one week without results. There was no history other than that the child had been well until two weeks prior and had since been having noisy breathing along with a progressively increasing difficulty in swallowing. Wheezing respiration was audible. Fluoroscopy disclosed the presence of a sizable metallic toy dog in the upper esophagus. The trachea was displaced anteriorly. On endoscopy much stagnant secretion was encountered in the pyriform sinuses and on entering the esophagus. The object was removed without trauma or undue respiratory embarrassment and the subsequent course was uneventful.

Only occasionally are esophageal foreign bodies of sufficient size to cause any considerable displacement of the trachea. The wheezing respiration in this case resulted from encroachment on the membranous posterior trachea with narrowing of the lumen and an overflow of secretions from an obstructed esophagus.

CASE 4—M. S., a 6 year old girl, had been having episodes of coughing and wheezing for six months. There was a family history of allergic disturbances. When first seen, her appearance was that of a child experiencing a typical asthmatic attack. There was a slight anemia and an elevation of the white blood count to 15,000 per cubic millimeter with 78 per cent polymorphonuclear forms, 20 per cent lymphocytes and 2 per cent eosinophils. Roentgenograms disclosed an area of increased density in the left lung with atelectasis of the lower lobe and fixation of the left diaphragm.

On bronchoscopy the mucosa of the left main bronchus was observed to be reddened and hypertrophic. Near the termination of this bronchus there was a definite narrowing which yielded on passage of the tube. A black foreign object was encountered and was displaced slightly by the suction tip, resulting in the outpouring of a profuse foul secretion. The object was engaged with a side curved forceps but crumbled immediately. Black fragments were removed, other pieces came away with suction and coughing. All evident particles were removed and thorough aspiration was carried out. The entire mass was sent to the laboratory. Positive tests for iron and traces of lead were obtained. Because of one minute intact metallic fragment, it was concluded that the material represented the corrosive products of an iron carpet or upholstery tack. Subsequent bronchoscopic and roentgenographic studies showed complete resolution of the pulmonary pathologic condition and the child has been free from "asthma" for one year.

Asthmatic symptoms, present for six months, were outstanding and the familial allergic history was misleading. The findings were those of partial bronchial stenosis due to the prolonged sojourn of a foreign body, corrosion of the object with bronchial obstruction, atelectasis and the typical "drowned lung." All symptoms and findings disappeared on removal of the offending agent.

CASE 5—Mrs. G. B., aged 38, had been troubled by a cough and wheezing at night for several months. The symptoms were progressing in severity and no conclusions could be drawn as to the cause. An investigation of allergic factors proved negative. There was no evidence of any contributory pathologic condition in the upper air passages. Roentgenograms of the chest were interpreted as normal. The patient insisted that her wheezing respirations were aggravated by lying on her left side and this was confirmed clinically. There were no physical signs of altered breath sounds except for a grossly audible asthmatoïd wheeze.

Reddening and thickening of the mucosa of the left main bronchus were noted. A foreign object was encountered at

<sup>8</sup> Friedberg, S. A. *Endoscopy in the Diagnosis and Treatment of Diseases of the Chest*, Illinois M. J. 81: 212-216 (March) 1942.  
<sup>9</sup> Jackson, Chevalier, and Jackson, C. L. *Bronchoscopy, Esophagoscopy and Gastroscopy*, Philadelphia, W. B. Saunders and Company, 1934, p. 182.



3 cm from the tracheal bifurcation. Several fragments of calcareous material were obtained and the entire mass was then removed with a side curved forceps. The object proved to be an irregular broncholith measuring 1.5 by 1.25 by 0.75 cm. A biopsy specimen of the adjacent thickened mucosa was obtained.

The broncholith was radiopaque. A chest film taken following bronchoscopy appeared identical to the original film. The reason for failure to observe the stone roentgenographically was thought to be its proximity to the dense hilar shadows.

Microscopic examination of the bronchial mucosa disclosed a chronic inflammatory reaction with hemosiderin particles engulfed in numerous macrophages.

The patient has been free from all asthma-like symptoms for fourteen months. After careful questioning she recalled a severe coughing spell which occurred while eating Christmas dinner two years previously. The effects of this attack lasted several hours. The possibility of her having aspirated food particles which formed the nucleus of the broncholith has been the only etiologic factor thus far available. The subject of broncholiths and stone asthma has been well described by Pendergrass and de Lorimer.<sup>10</sup>

Although this patient's symptoms were those of typical bronchial asthma with accentuation of discomfort during cold weather and at night one suggestive discrepancy was the aggravation which resulted on lying on her left side. The negative roentgenogram was misleading but fortunately not dissuasive. This and the preceding case would seem to support the rather radical contention of some authors that every case of asthma is entitled to diagnostic bronchoscopy.

**CASE 6**—Mrs R S aged 41, had been having bronchial asthma of an allergic nature for thirteen years. While on vacation she suddenly developed pain in the left chest and a productive cough. This was not preceded by any choking episode, respiratory infection, dental care or illness of any type. When brought to Chicago there were physical and roentgenographic findings of a rapidly cavitating abscess of the left upper pulmonary lobe. Bronchoscopy was requested three weeks after the onset of symptoms. Inspection of the left main bronchus and upper lobe orifice revealed no evidence of obstruction. Passage of a flexible catheter and aspiration of a large quantity of foul secretion from the left upper lobe resulted in subsidence of the daily temperature elevation. External drainage of the cavity was carried out because of the persistent cavity. The diagnosis was anaerobic pulmonary abscess contributory cause unknown.

This case is of interest for several reasons. Considering the prevalence of bronchial asthma with its attendant bronchial and bronchiolar obstruction from edematous mucosa and mucous plugs, atelectasis and lung abscess are infrequent complications. Bronchiectasis is more commonly associated with asthma and may have its inception in atelectasis but Clerf<sup>11</sup> is a result of wide experience, stated that he could not recall having seen or heard of lung abscess secondary to bronchial asthma. In view of the apparent benefit from bronchoscopy in this case and the well known salutary effects on early lung abscesses it is interesting to speculate on the outcome had endoscopic drainage been performed at the onset of symptoms or shortly thereafter. Finally bronchoscopy was an important element in the exclusion of organic or accidental bronchial obstruction as a predisposing etiologic factor.

**CASE 7**—A C a man aged 48 had been troubled by a mucus productive cough for about five years. At times there would occur episodes of asthmatic breathing followed in several days by the expectoration of considerable purulent secretion.

Bronchoscopy during one of the asthmatic spells disclosed a stenosis of the left lower lobe bronchus through which only a thin aspirator could be passed. There was a generalized chronic tracheobronchitis. Improvement in symptoms followed the procedure. Bronchograms subsequently verified the impression of bronchostenosis. The lingula branch of the left upper lobe also was involved.

Studies on this patient could not be continued but it was my impression that the situation was analogous to the type of bronchostenosis described by Prickman and Moersch.<sup>12</sup> Though the patient had a chronic cough asthmatic breathing appeared only at intervals and seemed to be on the basis of bronchial narrowing.

**CASE 8**—Miss L F aged 32 had been under treatment for pulmonary tuberculosis for two years. An exacerbation of symptoms including periodic attacks of wheezing respiration was responsible for a request for bronchoscopic study. Examination disclosed an infiltrating tuberculous lesion just above and involving the primary subdivisional area of the left main bronchus.

Bronchoscopy is now regarded as an indispensable adjunct in the treatment of tuberculosis. The ever widening concept of endoscopy is borne out by the realization that only a short time ago pulmonary tuberculosis was looked on as a contraindication to the procedure.

#### SUMMARY AND CONCLUSIONS

1 Altered respiration of an asthmatic type may result from a variety of clinical conditions which produce changes in the caliber of the tracheobronchial lumen.

2 Pathologic narrowing of the bronchial lumen coupled with physiologic shortening and contraction of the bronchi, probably combine to produce an abnormal vibration of the outgoing air during expiration. The resultant sound is often wheezing in character.

3 Illustrative cases indicate the diagnostic and therapeutic value of bronchoscopy in simulated asthmatic breathing.

4 Endoscopic investigation is warranted in any case of atypical bronchial asthma which does not respond readily to diagnosis and therapy.

12 Prickman L H and Moersch H I. Broncho stenosis Complicating Allergic and Infectious Asthma. Proc Staff Meet. Mayo Clin 16: 305-306 (May 14) 1941.

**Immersion Foot**—Submarine warfare has focused attention on immersion foot—a vascular disease of the extremities due to exposure. This condition seen in survivors from ships torpedoed in the cold waters of the North Atlantic is in no way different in its etiology and pathology from the trench foot observed in the last war. In either case the lesion is caused by temperatures sufficient to chill but not to freeze the tissues. Experimentally exposing an extremity to cold causes formation of edema fluid with a relatively high protein concentration. This is interpreted as meaning that cold is sufficient to freeze the tissues can produce an increase in capillary permeability and an inflammatory exudate. The edema formation is roughly proportional to the degree of cold and to the duration of exposure.

Shipwrecked sailors exposed to cold for prolonged periods develop swollen discolored anesthetic and even pulseless extremities the distal portions usually being affected most severely.

Men habitually exposed to warm environments such as those of the Mediterranean and African races and those employed in boiler rooms apparently are more susceptible than others to immersion foot but there is no evidence that this susceptibility is due to a preexisting vascular abnormality. However one episode of immersion foot apparently renders the feet less resistant to further exposure to cold. Wilkin Robert W and Friedland Carl K. Peripheral Vascular Disease. *New England J Med* July 1 1943.

10 Pendergrass E P and de Lorimer A A. Broncholith and Stone Asthma. *Lancet* 25: 317-22 (Dec) 1935.

11 Clerf L H. Personal communication to the author in 1941.



## Clinical Notes, Suggestions and New Instruments

### ARACHNODACTYLY COMPLICATED BY DISLOCATED LENS AND DEATH FROM RUPTURE OF DISSECTING ANEURYSM OF AORTA

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AND  
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An interesting syndrome called Marfan's disease for the French physician of that name who first drew attention<sup>1</sup> to it in 1896 was encountered in a young man in the course of our examination of selectees at this station. The descriptive name arachnodactyly was given to the syndrome by another Frenchman, Achard,<sup>2</sup> because of the spider-like appearance of the extended fingers. Of unknown etiology, it has been described

as being both familial and hereditary. As the dystrophy affects skeletal muscle structure as well as visceral organs, it has been thought by some to arise from an embryologic defect in the mesoblastic tissue, and by others to be due to faulty secretion by the hypophysis.

In discussing two additional theories of origin, namely germinal and due to "status dysraphicus," Marfan<sup>3</sup> concluded that not any are satisfactory and all can be assailed by critics.

Our subject was a youth of 21, eldest of a family of five children, who was born in Brazil of German parents, each of whom is healthy. It was first noticed that he had trouble with his eyes at about 9 years, and he had been wearing glasses since that time. He had always been tall for his age and grew unusually fast.

At the age of 14 he first developed pains in the muscles and joints, but the attack was not sufficiently severe to cause him to stay in bed. This was passed off as being due to growing pains and it was not until seven years later that symptoms of heart disease were manifested. These first came on as breathlessness and pains in the chest, precordium and neck.

Besides the parents there are three brothers and one sister living and well. We examined the younger brother, aged 15, who was tall for his age (69 inches, or 175 cm) but could

find no evidence of eye, skeletal or visceral defect. The other children were of average size and development.

His physiognomic features showed most of the typical findings of the syndrome, namely bossing of the frontal eminences, prominent supraorbital ridges, protrusion of the upper half of the ears, large chin, high arched palate, long slender teeth, very long hands and feet, small amount of subcutaneous fat and pronounced degree of muscle hypotonia with ligamentous relaxation.

The degree of ligamentous relaxation (double jointedness) was extreme in this case as the boy could lock both his legs behind his head and lay his thumb back along the wrist and across the inside of his closed fist with the distal phalanx protruding.

Some of these features can be noted in the accompanying photograph taken within a year before his death (fig 1). The height and elongation of extremities is well shown, particularly the spider-like appearance of the left hand as it is extended. He wore size 11½ shoes.

He was 76 inches (193 cm) tall and weighed 165 pounds (75 Kg). There was no scoliosis, kyphosis or lordosis as is often observed in these cases, but the costochondral ridges were prominent and he was pigeon breasted.

Physical examination showed, in addition to the foregoing, the rather unusual finding of essentially normal vision in the right eye with visual acuity of 20/50 corrected to 20/30 (myopia) and a normal lens and eyeground. The left eye showed a normal ocular rotation and no squint. The globe was equal to the right in size. Vision was limited to counting fingers at 5 feet. The pupil was round. On dilatation the lens was



Fig 1—Note height and elongation of extremities. Spider-like appearance of left hand is well shown.



Fig 2—Absence of normal indentation between right auricle and ascending aorta suggestive of aneurysm.



Fig 3—Metacarpals and phalanges elongated with spider-like spread of digits. Epiphyses all closed.

subluxated downward and tilted slightly backward at 12. Congenital opacities were present in the periphery which partially caused the poor vision, correction coming only to 20/200. 11° optic nerve and fundus were negative.

A report secured from an optometrist who first examined the boy in February 1939 gave vision in left eye corrected to 20/200 by 2.25 cylinder axis 120. He did not notice a subluxated lens at that time. (About 50 per cent of the cases show a

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Owing to lack of space, this article is abbreviated here by omission of a table summarizing five autopsies. The complete article appears in the authors' reprints.

1 Marfan, A. B. Un cas de deformation congenitale des quatre membres plus prononcee aux extremités caracterisee par l'allongement des os avec un certain degre d'immiscement, Bull et mem Soc med d hop de Paris 13 220, 1896.

2 Achard, C. Arachnodactyle, Bull et mem Soc med d hop de Paris 19 834 840 (Oct) 1902.

3 Marfan, A. B. Arch d'ophth 2 881 (Oct) 1938.

abnormality as dislocation of the lens of the eye often bilateral, and pathologic change in the structure of the heart, either congenital or acquired from rheumatic infection<sup>4</sup>)

The remainder of his physical examination was essentially negative except for findings in the cardiovascular system. He was found to have all the classic signs and symptoms of aortic insufficiency. The cheeks were pale and the pulse was of the collapsing water hammer type.

Examination of the chest showed a heaving precordium with the point of maximum impulse in the sixth interspace, anterior axillary line. There was a slight systolic and loud diastolic murmur at the base of the heart and aortic orifice transmitted into the neck and to the left of the sternum.

Capillary pulsations were present in the finger nail beds, and Duroziez's sign could be heard over the femoral and brachial arteries. His blood pressure measured in millimeters of mercury was 140 systolic and 30 diastolic.

The liver and spleen were not enlarged and there was no edema of the extremities. Functional capacity might be graded class III (New York Heart Association). Laboratory examination showed blood Wassermann reaction and urinalysis negative.

Roentgenographic examination of the heart in the antero-posterior view showed no definite evidence of aneurysm except

Five days after our examination here, while the youth was sitting in a classroom of a radio school in Philadelphia, he suddenly collapsed and died instantly. An autopsy report furnished us by the coroner of Philadelphia County revealed aortic valvular regurgitation with pronounced enlargement of the heart and massive hemopericardium, chronic dissecting aneurysm of the ascending arch of the aorta with acute fatal rupture into the pericardial sac.

#### COMMENT AND SUMMARY

It has been stated by most authors that a characteristic feature of Marfan's disease has been some weakness of the cardiovascular system, frequently congenital valvular disease or valvular disease as a sequel to rheumatic polyarthritis. In none of the cases so far reported has a complication such as seen in this case been noted. Autopsies in these cases are rare, ours being the fifth reported to date. Fletcher and Southworth<sup>4</sup> have briefly reviewed the 3 previously reported, and Rambar and Denenholz<sup>5</sup> described a fourth in which no congenital cardiac or pulmonary anomalies were noted.

The patient gave a history of rheumatic fever in early childhood and to this cause is attributed our finding of aortic valvular disease, of which he had all classic symptoms. The aortic incompetence was no doubt responsible for the loud diastolic murmur heard at the base of the heart, but it has been pointed out that this can occur in cases of dissecting aneurysm without actual impairment of the semilunar valves<sup>6</sup>.

The roentgenographic features of dissecting aneurysms are usually not pathognomonic. The close approach of the aortic and right auricular tangents in this case suggest extension of dissection along the ascending aorta, which is definitely widened at this point. Although the patient had all the signs of aortic regurgitation, the heart was not definitely of aortic configuration.

A frequent finding in dissecting aneurysms was noted in this case in that the youth gave a history of onset of his heart trouble seven months prior to death by pain in the precordium and chest radiating to the neck. This was followed by one to two hours of unconsciousness from which he recovered without a definite cause other than valvular heart disease being discovered. It is possible that this episode marked the onset of the tear and subsequent dissection of the aneurysm causing death.



Fig. 4—Metatarsals and phalanges elongated with characteristic inward deviation of terminal phalanges of outer three toes.

the disturbance of the aortic and right auricular tangents<sup>5</sup>. This resulted in absence of the normal indentation between the right auricle and the ascending aorta in the cardiac silhouette (fig. 2). There was a smooth edged slightly concave shadow extending into the neck suggestive of extension of the aneurysm along the innominate artery such as seen in 1 case described by Wood, Pendergrass and Ostrum<sup>7</sup>. There was loss of the normal concavity of the left cardiac border. The transverse cardiac diameter was just within the upper limits of normal with beginning enlargement of the left ventricle. The lungs were clear.

Films taken of the hands and feet showed the spider-like spread of the digits (figures 3 and 4). The metacarpals metatarsals and phalanges were unusually elongated but it will be noted that all epiphyses were closed. A characteristic feature is seen in the inward deviation of the terminal phalanges of the outer three toes<sup>8</sup>.

#### EMPHISEMA OF THE ORBIT

##### A STUDY OF SEVEN CASES

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According to Bray,<sup>1</sup> orbitopalpebral emphysema is not a very common condition, but when found it is always of traumatic origin and secondary to a fracture of the nasal orbital wall. Contusion over the orbital area with resultant driving of the eyeball into the orbit and recession of the orbital fat to one side may alone result in fracture by direct contact of eyeball and orbital wall. The common points for this type of fracture are in the lacrimal and ethmoidal bones. The lamina papyracea of the ethmoid bone a smooth very thin quadrilateral plate which encloses the ethmoidal cells and forms a large part of the medial wall of the orbit is the most logical point of fracture.

After fracture on blowing the nose or sneezing nasal pressure is built up so that air is forced into the orbital cavity or even into the lids if the pressure is great enough to penetrate the tarso-orbital fascia. Fuchs<sup>2</sup> states that the mere presence of a communication between the orbital tissue and a pneumatic

<sup>8</sup> Rambar A. C. and Denenholz E. J. Arachnoidaetia. Report of a case with autopsy. Including Histologic Examination of Eye. J. Pediatr. 15: 844-852 (Dec.) 1939.

From the Station Hospital Fort Eustis, Virginia.

In the cases Edward M. Glasburn, Captain, M. C. o. otolaryngologist did the intranasal examinations. Joe M. Blumberg, Major, M. C. photographed the x-ray films presented. Thomas A. Campbell, Captain, M. C. and Tilmann H. Foxt, First Lieutenant, M. C. radiologist interpreted the x-ray films.

<sup>1</sup> Bray, Aaron. Orbitopalpebral Emphysema Caused by Perforation of the Ethmoidal Cell. J. A. M. A. 65: 1275 (Oct. 9) 1915.

<sup>2</sup> Fuchs, H. Ernst. Textbook of Ophthalmology, ed. 8 (transl. by Duane) Philadelphia J. B. Lippincott Company, p. 61.

<sup>4</sup> Fletcher, Palmer H. and Southworth, Hamilton. Arachnoidaetia and Its Medical Complication. Arch. Int. Med. 61: 5 (May) 1938.

<sup>5</sup> Loebl, J. The Heart Visible, Philadelphia F. A. Davis Company 1914, pp. 158-159.

<sup>6</sup> Wood, I. C., Pendergrass, E. P. and Ostrum, H. W. Dissecting Aneurysm of the Aorta. Am. J. Roentgenol. 28: 442-444 (Oct.) 1932.

<sup>7</sup> Stewart, J. M. A Case of Arachnoidaetia. Arch. Dis. Childhood 11: 64 (March) 1930.

cavity is not sufficient to produce the emphysema but that occasionally blowing of the nose alone will produce it

Diagnosis of orbitopalpebral emphysema is relatively easy, since there is usually a history of trauma along with the characteristic crackling feeling of air under the skin. If the lids are grossly involved there is considerable swelling with little or no inflammatory signs and with very little tenderness



Fig. 1 (case 1) —Mottled appearance, left orbital region, significant of emphysema

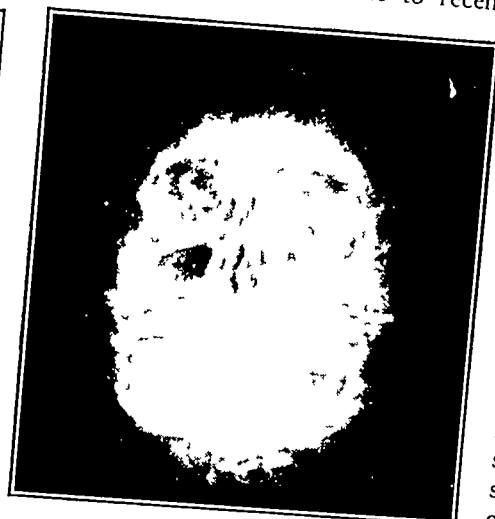


Fig. 2 (case 3) —Opaque left maxillary sinus emphysema of left lower lid

pannusitis in case 2. Patient 3 had a very fine fracture line in the left malar bone anterior and lateral to the left maxillary sinus. In addition the left maxillary sinus was opaque, indicating the probable presence of blood (fig 2). Patient 5 showed rather pronounced evidence of emphysema in the upper lid and cloudiness of the left antrum. Whether the latter was due to recent injury or old sinusitis could not be determined by x-ray examination. It is interesting to note that 3 of the 5 patients given x-ray examinations had a cloudy antrum on the same side as the emphysema.

No definite roentgenologic evidence of fracture line in the ethmoid, frontal, maxillary or lacrimal bones could be seen in any case. Due emphasis must be placed on the great difficulty in making a definite x-ray diagnosis of any fracture of the medial orbital wall, particularly of the lamina papyracea. Pancoast, Pendergrass and Shaeffer<sup>4</sup> state that fractures of the ethmoid bone are very difficult to diagnose roentgenologically, as they usually present only secondary evidence of fracture, such as interstitial emphysema or clouding of the ethmoidal cells.

Intranasal examination in each case of the cases in the series failed to disclose evidence of bleeding or fracture.

In every case the pupils dilated well with 1 drop of 1 per cent atropine except in case 3, in which 4 drops was required for full dilatation. Fundus examination was negative in every case.

The ciliary injection in case 3 and diplopia in case 4 were absent at the end of the fifth day.

The procedure followed in handling cases was as follows: gross examination, a stereoscopic x-ray film of the orbit, instillation of atropine until the pupil was well dilated, fundus examination, pressure bandage if necessary and admittance to the hospital. Each patient was cautioned not to blow his nose. The air was absorbed and no patient complained of ocular symptoms after the tenth day.

#### Clinical Summary of Cases Presented

Case	History of Recent Trauma	X ray Evidence of Fracture	Evidence of Ocular Contusion	Other Contusion Evidence	Gross Proptosis	Emphysema of Lids	Time Interval for Absorption	Complications
1	Yes	Emphysema of lid	None	None	None	Lower	5 days	None
2	Yes	Emphysema of lids	None	Slight ecchymosis of lids	None	Upper and lower	5 days	None
3	Yes	Emphysema of lid cloudy antrum fine fracture of malar bone	Slight ciliary injection and slight irregularity of pupils	Pronounced ecchymosis of lids	None	Lower	7 days	None
4	Yes	Emphysema of lids cloudy antrum	None	Diplopia on looking up and to right	Yes	Small amount upper and lower	6 days	None
5	Yes	Emphysema of lid cloudy antrum	None	None	None	Upper	6 days	None
6	Yes	No x ray	None	None	Yes	Small amount, upper and lower	5 days	None
7	Yes	No x ray	None	None	None	Upper and lower	7 days	None

ones who showed proptosis. Patient 3 had considerable ecchymoses of the left eyelids and tenderness over the superior and lateral orbital margins. This patient also was the only one who showed some degree of ocular contusion.

Five of the 7 patients had stereoscopic x-ray films of the orbit. All 5 showed x-ray evidence of emphysema. Two of these, patients 1 (fig 1) and 2 showed no evidence of fracture except for the emphysema. There was x-ray evidence of chronic

#### SUMMARY

Seven cases of orbitopalpebral emphysema were studied, all with a history of recent trauma. In 5 of the cases stereoscopic x-ray films of the orbit were taken.

No definite fracture lines could be demonstrated to communicate with the nasal cavity. There were no complications in any case.

3 Meek, Raymond L. Commander USNR. personal communication to the author.

4 Pancoast, Henry K. Pendergrass, Eugene P. and Shaeffer, J. Parsons. The Head and Neck in Roentgen Diagnosis. Springfield, Illinois & Baltimore: Charles C Thomas, 1940.

THE PHLEBOMANOMETER A NEW APPARATUS FOR  
DIRECT MEASUREMENT OF VENOUS PRESSURE  
IN LARGE AND SMALL VEINS

G E BURCH MD AND TRAVIS WINSOR MD  
NEW ORLEANS

The importance clinically as well as experimentally of quantitative venous pressure determinations is well known. With full realization of the value of venous pressure measurements, they are neglected because the apparatuses are difficult to use, are too bulky to carry as part of the physician's instruments of examination, are applicable only in fairly large veins and are difficult to clean and sterilize for subsequent use.

About four years ago, Burch and Soderman<sup>1</sup> described a simple direct method for measuring venous pressure. The method has proved of value clinically and has been used more and more by others. But it like other direct methods which employ a column of a fluid as the manometer has the dis-

sensitivity of the brass bellows. The bellows is enclosed in a housing (c) constructed so that the bellows activates the needle when the former is expanded by increasing the pressure within. A lock nut (d) is used to lock the bellows support (c) in place once the bellows is adjusted, so that the needle returns

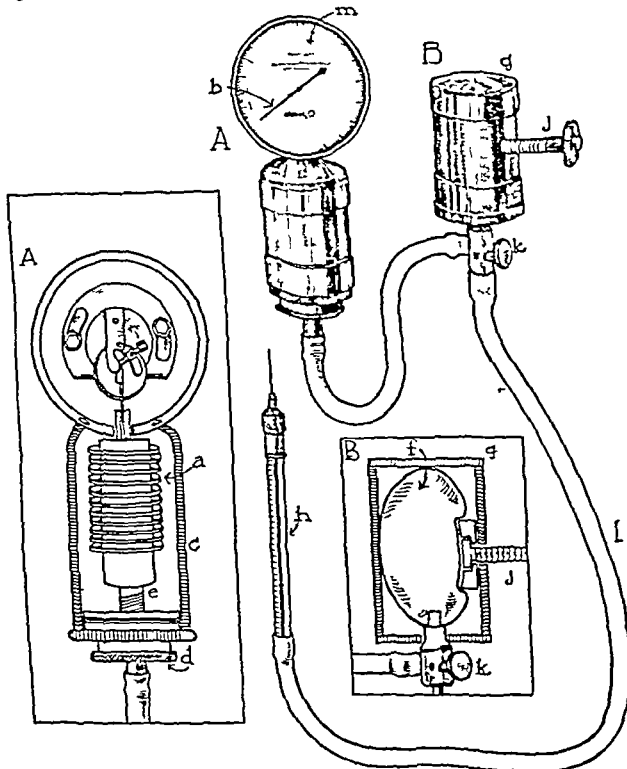


Fig 1—Diagram of the phlebomanometer. See text for details.

advantage of being difficult to carry, prone to spillage of the fluid in the manometer either during use or when being transported from place to place, hard to use and bulky. In order to overcome these disadvantages and to make the apparatus compact, easily portable and of a size to fit in the physician's medical bag, a new instrument which we have named the phlebomanometer was constructed. The desirable features of the previously described apparatus<sup>1</sup> were incorporated in the new one.

APPARATUS METHOD

The apparatus is illustrated in figures 1, 2 and 3.

The construction of the apparatus is diagrammatically represented in figure 1. It consists essentially in adapting the principles of the ordinary aneroid manometer used clinically for recording arterial blood pressure to a manometer sensitive enough to record venous pressure. The metal bellows in the former is replaced by a more sensitive brass bellows (a). The brass bellows is of such a sensitivity that a pressure of 680 mm. of water rotates the needle (b) almost completely around the dial. The dial is drawn and numbered to conform to the

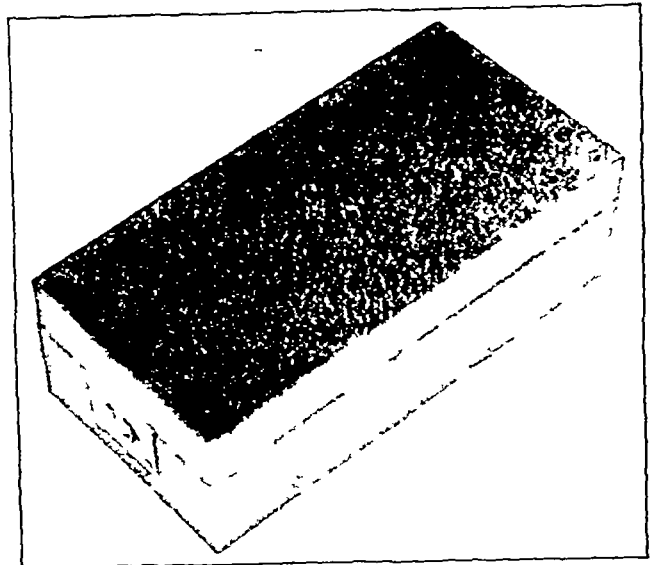


Fig 2—The apparatus enclosed in a compact case approximately one third actual size.

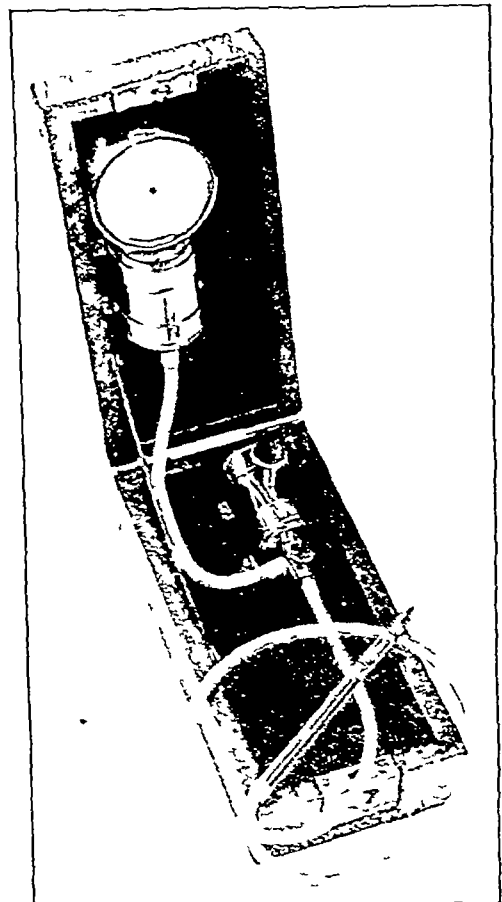


Fig 3—The phlebomanometer ready for use.

to the zero mark on the dial when the pressure within the system is atmospheric. The relationship of the bellows to the gear levers and jewel bearings which rotate the needle is shown in the inset (f) which is an enlargement of the interior of f.

Mr C. Morgani Jr. constructed the apparatus.  
From the Department of Medicine, School of Medicine, Tulane University and Charity Hospital of Louisiana.  
<sup>1</sup> Burch C. E. and Soderman W. A. A Direct Method for the Determination of Venous Pressure. Relationship of Tissue Pressure to Venous Pressure. J. Clin. Investigation 15: 31 (Jan.) 1939.

The bellows is connected with rubber tubing to a small rubber pressure bulb (B) enclosed in a metal housing (g) and to an adapter (h) to which is fitted a 25 gage hypodermic needle. The pressure within the system is varied by a screw clamp (j). Valve k, such as is found on the pressure bulb of any clinical arterial blood pressure recorder, is placed in the system, so that it is possible to return the pressure easily within the system to atmospheric, at any desired moment.

Figures 2 and 3 are reproductions of photographs of the assembled apparatus mounted in a box of about the size of the container used for the ordinary clinical aneroid arterial blood pressure recorder. The apparatus shown in the photographs is approximately one third the natural size.

The glass adapter and needle are dry and sterile and kept, until used, in a narrow bore test tube. The adapter is 10 cm long and has an outside diameter of 5 mm and a bore of 1 mm. The surface of the adapter is cross hatched at about 1 mm intervals.

#### USE OF THE APPARATUS

In use the sterile adapter and needle are removed from the sterile test tube and connected to the rubber tubing (l) leading from the recording portion of the apparatus. A 2 per cent sterile aqueous solution of sodium citrate, which is stored in 1 cc glass ampules, is drawn into the glass adapter by first closing valve k and creating a negative pressure within the system. This negative pressure is produced by unscrewing screw clamp j until the meniscus of a column of the citrate solution reaches about the middle of the adapter. The pressure within the system is returned to zero by means of the screw clamp. The needle is then inserted into the vein studied. The pressure of the blood within the vein slowly forces the meniscus of the citrate solution farther into the glass adapter. The pressure within the phlebomanometer is increased by compressing the pressure bulb (f) with the screw clamp until the meniscus ceases to move. This occurs when the pressure within the recorder is equal to the blood pressure in the vein. That pressure, the venous pressure, is then read off the dial (m).

#### COMMENT

Since the pressure is determined when the meniscus is not moving, the bore of the needle may be as small as 8 microns.<sup>2</sup> A small needle makes it possible to make measurements in very small veins. The veins should be at heart level or at a constant level for before and after studies if the studies are used for comparison. The capillary pressure in the adapter is 2 cm. This can be corrected by holding the adapter when inserting the needle into the vein so that the meniscus is about 2 cm above the surface of the vein.

The use of the apparatus is very simple. It is not necessary to have the recording apparatus at heart level. It may be placed on the patient's bed or on an adjoining table. It is necessary only that the vein, at the point of entrance of the needle, be at heart level or a constant level.

Only the glass adapter and needle are sterilized. The sterile 2 per cent aqueous sodium citrate solution is put up in 1 cc glass ampules to make it easier to handle and carry. Many successive venous pressure measurements may be made with 1 cc of citrate solution.

The entire apparatus is compact, being no larger than an ordinary clinical aneroid, arterial blood pressure manometer. It will fit easily in a physician's medical bag. The phlebomanometer obviates problems of spillage of fluids, injection of fluids into the veins, loss of blood, problems of sterilization, preparation of the apparatus for further use, and the like.

The fact that the phlebomanometer makes it possible to measure the pressure in small veins adds greatly to the advantage of the apparatus. Frequently it is desirable to know the pressure in structures such as the hands, feet, abdomen and face, where only small veins are found. This is encountered frequently in problems of diagnosis.

The phlebomanometer may be used to measure tissue pressure, spinal fluid pressure, intrapleural pressure or wherever a water manometer is needed. This obviates the purchase of more than one type of water manometer for these various clinical purposes.

<sup>2</sup> Landis E. M. Microinjection Studies of Capillary Blood Pressure in Human Skin, Heart 15:209 (May) 1930

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT  
HOWARD A. CARTER, Secretary

### ULTRAVIOLET LAMPS FOR DISINFECTING PURPOSES

#### Introductory Statement

Clinical evidence submitted to the Council on Physical Therapy shows that under properly controlled conditions the killing of air borne micro-organisms by ultraviolet rays may be used to supplement other methods of disinfecting air for prevention of cross infection in contagious wards, in nurseries and for reducing air borne infection of wounds in hospital operating rooms. Council acceptance is limited to ultraviolet disinfecting lamps designed for installation in hospital nurseries, hospital wards and operating rooms.

Satisfactory evidence is not available to warrant acceptance of ultraviolet lamps for disinfecting solids. To kill a micro-organism a direct hit by ultraviolet rays of sufficient intensity is required. This is difficult to accomplish on the edge of a drinking cup, for example, also in a liquid containing suspended matter or in air laden with dust particles that shield the organism. Ultraviolet radiation cannot penetrate deeply and hence may be absorbed by finger marks, saliva, cosmetics or other foreign matter on a drinking cup. In view of the present available evidence, ultraviolet radiation appears to be an uncertain means of sterilizing solid objects (drinking cups, combs, brushes, shaving utensils, toilet seats and shoes) even if irradiation of the whole surface is possible. Ultraviolet lamps for disinfecting purposes are not accepted for disinfecting air in schools, waiting rooms, public gathering places and large halls. The evidence now available does not indicate that the incidence of colds can be reduced by the installation of ultraviolet lamps and by the irradiation of an enclosure occupied by people.

It is noted that a lamp used for disinfecting purposes is a single unit in an installation, and that compliance of the ultraviolet output of a single lamp unit with the Council's requirements does not insure adequate radiant disinfection or the safety of the occupants of the room in which an installation of such lamps is in actual use. Obviously the manufacturer and distributor of such lamps must assume some responsibility for the adequacy of the lamp installation for purposes of radiant disinfection of the air and for the adequacy of the protection from injury of the occupants of the space irradiated.

The total amount of direct and scattered ultraviolet radiation incident on the occupants must be kept below the level that will produce conjunctivitis, erythema and any other (at present unforeseen) injurious physiologic effects that may arise from prolonged irradiation. This requirement may be met by suitable arrangements of the lamp fixtures and baffles and not by requiring the applicants to wear glasses and special covering of exposed parts of the body (face, hands) normally uncovered. Hence, if the irradiation is of penetrating intensity, in a corridor of the hospital for example, care should be taken that the attendants do not receive an exposure which will cause injury to the skin or eyes, and particular attention should be taken to make sure that the intensity of the space at eye level through which a transient may pass or tarry momentarily will not cause injury to the eyes. Under no circumstances should the occupants of a room be able to look directly at the burner when standing within the region of potent intensity.

Ultraviolet lamps for disinfecting purposes shall have under suitable ventilating conditions of a room a concentration of ozone not to exceed one part in ten million.

Where there are aisles-ways and spaces between bed and wherever transient personnel carry on their work the ultraviolet radiation intensity shall not exceed 0.5 microwatt per square centimeter for a continuous exposure of eight hours and shall not exceed 0.1 microwatt per square centimeter for a continuous exposure of twenty-four hours per day.

The General Electric Germicidal Lamps manufactured by the General Electric Company Lamp Department, Nela Park, Cleveland have been mounted in fixtures manufactured by various firms. The burner or source of ultraviolet radiation and the different fixtures have been examined by the Council.

The characteristics of the General Electric Germicidal Lamps are given as follows:

	C E Germicidal 30 watt	C E Germicidal 15 watt
Glass types	974 glass	974 glass
Lamp watts — arc ballast	30 — 10	15 — 5
Length in sockets	6 in	18 in
Milliwatts 2.7 A	9,000—10,500	3,600—4,200
Max Int Microwatts/cm 1 m	100—117	40—46
Max Int Microwatts/cm 1 ft	740—840	300—340
Lamp life hours three hour operating intervals	2,500	2,500
Lamp life hour continuous operation	4,000	4,000

The ultraviolet radiation is confined almost entirely to the wavelength 2,537 angstroms. Fixtures should be designed and installed so as to insure little or no direct irradiation of the individuals in the rooms.

When first installed the radiant ultraviolet energy is considerably more intense than 20 microwatts per square centimeter at 1 meter, recognized by the Council as being the minimum intensity for acceptance. As the lamps age the intensity drops off rapidly at first and slower later on. Under ordinary usage the lamps maintain the acceptable minimum intensity or above for the guaranteed period of four thousand hours of continuous operation. If however, the lamps fall below this intensity before the guaranteed period has elapsed, the firm will make an adjustment on pro rata basis. Users of the equipment are advised to test the lamps each month to determine whether they are up to standard. Since the lamps burn at a characteristic color constantly there is no way of determining whether they are emitting sufficient ultraviolet radiation except by testing them with an ultraviolet meter.

The fixture manufacturers listed here have presented their products equipped with General Electric Germicidal Lamps, for consideration by the Council.

#### AMERICANAIRE ULTRAVIOLET GERMICIDAL UNIT

(Models UV-30, UV-15, Hospital Operating Room,  
Ward and Nursery Models)

##### ACCEPTABLE

Manufacturer American Sterilizer Company, Erie, Pa

The Americanaire Ultraviolet Germicidal Unit is designed to irradiate the upper air of a room with ultraviolet radiation for disinfecting purposes. The unit is designed to be mounted on the wall above head level. An adjustable baffle protects occupants from direct irradiation.

A complete Americanaire assembly consists of a reflector housing a General Electric Germicidal lamp, a baffle and conductor cord and plug. Model UV-30 is 36 inches in length, 6 inches in width and 9 inches high. The input of the burner used in this model is 30 watts. Model UV-15 is 18 inches in length, 6 inches wide and 9 inches high. Input of the burner is 15 watts.

#### BURTON ULTRAVIOLET AIRRADIATOR GERMICIDAL UNIT

(Hospital Operating Room, Nursery and Ward Models)

##### ACCEPTABLE

Manufacturer Burton Manufacturing Company, 3855 North Lincoln Avenue, Chicago

The Burton Ultraviolet Airradiator Germicidal Unit is designed for the reduction of air borne bacteria and cross infection. The unit is equipped for wall mounting and includes a cord and plug set. The reflector is adjustable. The fixture is equipped with 30 watt General Electric Germicidal Lamp.

#### RADIAIRE

(Operating Room, Ward and Nursery Models)

##### ACCEPTABLE

Manufacturer Tru Aid Company, 1019 1023 North Madison Avenue, Los Angeles

The Radiaire, Model 991-15, produces ultraviolet radiation for disinfecting purposes. This model is designed for irradiation of operating rooms and hospital wards. The fixture is provided with removable baffles. Correct installation of the unit is said to insure little or no direct irradiation of individuals in the room being irradiated.

This unit was designed for and is used with, both the 15 watt and 30 watt General Electric Germicidal Lamp.

#### U-V-RAY AIR STERILIZERS

(Hospital Operating Room, Ward and Nursery Models)

##### ACCEPTABLE

Manufacturer Taft-Stern Company, Inc., 221 North LaSalle Street, Chicago

The U-V-Ray Air Sterilizers are designed for use in hospital operating rooms, wards and nurseries for the reduction of air borne bacteria. The burner housing is so mounted that only the air above head level is irradiated. Electrical equipment for the units includes toggle switch, auxiliary, replaceable starter and wire.

The U-V-Ray units were designed for and are used only with the General Electric Germicidal Lamp.

The Council on Physical Therapy voted to accept the foregoing ultraviolet lamps for disinfecting purposes and equipped with General Electric Germicidal Lamps.

### Council on Pharmacy and Chemistry

#### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

ALVIN E. SMITH, M.D., Secretary

**LIVER INJECTION** (See New and Nonofficial Remedies 1943 p 392)

The following dosage forms have been accepted:

**THE UPJOHN COMPANY, KALAMAZOO, MICH**

**Liver Extract for Parenteral Use, 5 U S P Units per Cc.** 2 cc ampul and 10 cc rubber capped vial. A sterile aqueous solution of liver preserved with 0.5 per cent phenol.

**Liver Extract for Parenteral Use, 10 U S P Units per Cc.** 1 cc and 15 cc ampuls and 10 cc rubber capped vial. A sterile aqueous solution of liver preserved with 0.5 per cent phenol.

**BUFFINGTON'S, INC., WORCESTER, MASS**

**Purified Solution Liver, 10 U S P (Injectable) Units per Cc.** 10 cc vial. A sterile aqueous purified solution of liver preserved with 0.5 per cent phenol.

**FLINT, EATON & CO., DECATUR, ILL**

**Liver Injection (Crude) 1 and 2 U S P Units per Cc.** 15 cc and 30 cc multiple dose vial. A sterile aqueous purified solution of liver preserved with 0.5 per cent phenol.

**ALUMINUM HYDROXIDE GEL** (See New and Nonofficial Remedies 1943 p 365)

The following additional dosage form has been accepted:

**ALBA PHARMACEUTICAL DIVISION, WINTHROP CHEMICAL COMPANY, INC., NEW YORK, SUCCESSOR**

**Creamalin (Unflavored)** Contains 5.5 per cent aluminum hydroxide (equivalent to 3.6 per cent aluminum oxide). Marketed in bottles of 6 fluidounces and 1 pint.

**DIETHYLSTILBESTROL** (See New and Nonofficial Remedies 1943 p 403)

The following dosage forms have been accepted:

**GEORGE A. BREON & COMPANY, INC., KANSAS CITY, MO**  
Caplets Diethylstilbestrol 0.2 mg and 1 mg



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SATURDAY, SEPTEMBER 11, 1943

## CLOSTRIDIUM WELCHII INFECTION OF THE UTERUS

Gas gangrene of the uterus is a rare disease. Toombs and Michelson<sup>1</sup> in 1928 were able to assemble records of only 45 cases. Falls<sup>2</sup> in 1933 reported 6 cases, and Lash<sup>3</sup> in the same year reported 3. Marchetti<sup>4</sup> in 1934 found 56 cases reported in the literature, to which he added 1 of his own. The largest individual series is probably that of Russell and Roach,<sup>5</sup> who in 1937 reported 17 cases of their own. Clinically the post-abortal and the puerperal groups may be differentiated. How does the infection occur? Is *Clostridium welchii* a normal inhabitant of the vaginal tract? Bysshe<sup>6</sup> obtained 45 per cent of positive *Clostridium welchii* vaginal cultures from 547 routine examinations of pregnant and puerperal women. Of the patients with positive cultures, 20 per cent showed some puerperal morbidity and clinical evidence of at least endometritis. Falls found gas bacilli present in the vaginal tract of 861 per cent of all cases in three hospitals. The incidence of positive cultures among his gynecologic cases amounted to 33 per cent and of incomplete abortions to 29.41 per cent. Douglas and Rhees<sup>7</sup> obtained 35 per cent of positive *Clostridium welchii* cultures following operative deliveries.

The presence of *Clostridium welchii* organisms in the vagina does not apparently determine a clinical infection. A necessary factor for the development of a severe infection is intervention sufficient to introduce

the *Clostridium welchii* bacilli into the uterus. Wrigley<sup>8</sup> believes that a severe maternal infection results not only from intrauterine manipulations which introduce the infection into the uterus but also from damage to the maternal tissues with the child dead at the time of manipulation. This opinion was supported by Lash but was denied by Toombs and by Hill on the basis of their reports of fatal puerperal infection in which the mother was delivered of a living child. Without mechanical intervention of some kind, *Clostridium welchii* infections are rare. Strains resembling those which cause fulminating infection have been present in the vagina but not in the uterus without resultant infection. This is in keeping with the supposition that *Clostridium welchii* does not usually gain access to the uterine contents except through intervention.

Recent bacteriologic studies by Hildred Butler<sup>9</sup> showed that the strains of *Clostridium welchii* are subject to great variation. She studied more than 600 strains of this organism with regard to growth characteristics, capsulation in broth cultures, production of alpha toxin, phagocytosis by human leukocytes and pathogenicity of washed cultures for guinea pigs. The severe generalized infections were caused by two distinct and recognizable variants, and the nature of the patients' symptoms was correlated with the characteristics of the strain. The severe clinical cases could be divided into two groups: (1) those characterized by jaundice, which was usually accompanied by hemoglobinemia and hemoglobinuria, and (2) those characterized by collapse without jaundice. For a control group Butler used strains of *Clostridium welchii* from abortifacient cases without symptoms of severe infection or without symptoms of infection due to this organism. She found that all the strains causing severe general infection were heavily capsulated, resistant to phagocytosis and productive of fatal infection in guinea pigs when washed cultures were used. The observation that a certain proportion of *Clostridium welchii* strains are capable of initiating a fatal infection in the guinea pig when the inoculum consists of organisms washed free of toxin that some strains are resistant to phagocytosis by human leukocytes and that this resistance is practically unaffected by the presence of antitoxin but is completely removed by the addition of antibacteriologic serum appropriate to the strain concerned suggests that some strains are highly invasive in addition to producing a potent exotoxin. The importance of the invasiveness of the infecting strain has not been sufficiently investigated, probably because of preoccupation with the toxemic aspect of these infections.

1 Toombs, P. W., and Michelson, I. D. *Clostridium Welchii* Septicemia Complicating Prolonged Labor Due to Obstructing Myoma of Uterus, *Am J Obst & Gynec* 15: 379 (March) 1928.

2 Falls, F. H. *Endometritis and Phlogometra Due to Welch Bacillus*, *Am J Obst & Gynec* 25: 280 (Feb.) 1933.

3 Lash, A. F. *Puerperal Sepsis B. Welchii Fatal Types*, *Am J Obst & Gynec* 25: 288 (Feb.) 1933.

4 Marchetti, A. A. *Intrapartum Gas Bacillus Infection*, *Am J Obst & Gynec* 27: 613 (April) 1934.

5 Russell, P. B., Jr., and Roach, M. J. *B. Welchii Infections in Pregnancy, with a Review of the Literature and a Report of 17 Cases*, *Am J Obst & Gynec* 38: 437 (Sept.) 1939.

6 Bysshe, S. M. *The Significance of Clostridium Welchii in the Genital Tract of Pregnant and Puerperal Women*, *Am J Obst & Gynec* 35: 995 (June) 1938.

7 Douglas, R. G., and Rhees, Henrietta S. *Bacteriologic Findings in the Uterus During Labor and the Early Puerperium*, *Am J Obst & Gynec* 27: 203 (Feb.) 1934.

8 Wrigley, A. J. *Puerperal Infection by Pathogenic Anaerobic Bacteria*, *Proc Roy Soc Med* 23: 1645 1930.

9 Butler, Hildred M. *Further Bacteriological Studies of Clostridium Welchii Infections Following Abortion*, *J Obst & Gynaec Brit Emp* 50: 105 (April) 1943.

Sadusk and Manahan<sup>10</sup> report 2 cases of postoperative infection with *Clostridium welchii* with positive blood cultures in which the blood stream was rapidly sterilized by the use of sulfanilamide and the patients recovered. They have also demonstrated the bacteriostatic action of sulfanilamide on *Clostridium welchii* in vitro. Coralie Rendle-Short<sup>11</sup> reports 6 cases. Four of the patients were treated with anti-gas gangrene and sulapyridine and all 4 recovered. The other 2 were not so treated and died. Evaluation of the effectiveness of the sulfonamides in *Clostridium welchii* infection of the uterus will not be possible until more clinical observations checked by complete bacteriologic studies, become available.

### CHRONIC GASTRITIS AND CANCER OF THE STOMACH

Konjetzny in 1913 working with freshly fixed, resected material suggested that carcinoma of the stomach develops on an inflammatory basis. He formulated his concept of "gastritis hyperplastica atrophicans" and concluded that the greater portion of gastric carcinomas (about 85 per cent) arose on the basis of chronic gastritis and that the latter constitutes a precancerous condition. Investigations of Orator including a study of 700 cases of ulcer and 150 of cancer, seemed to establish a close association between the presence of chronic gastritis and its allied intestinal metaplasia and that of gastric carcinoma. He concluded that about 80 per cent of gastric carcinomas arose on a basis of precancerous gastritis and that the remainder arose through cancerous transformation of gastric ulcers, so-called ulcerocancers. This opinion was supported by some workers in this field and was opposed by others. Some suggested that the gastritis was a result, rather than a cause, of the cancer.

Guiss and Stewart<sup>1</sup> working in the pathologic laboratories of the Memorial Hospital for the Treatment of Cancer and Allied Diseases made a careful anatomic study of the relationship of chronic atrophic gastritis and gastric cancer. For their study they used stomachs which were obtained immediately, or within two or three hours at most after death. Surgically resected material was obtained within five to ten minutes of its removal. Five distinct groups of material suitable for study were collected. Group A consisted of 35 stomachs obtained from premature infants born at from six months gestation to term and from a few infants who were stillborn at term or who died within a few days of birth. Group B was made up of 73 "normal" stomachs obtained from persons who had no history or other indication of gastric disease. With few exceptions

these were all from persons who died as a result of trauma or from acute infectious diseases of short duration. This group was augmented by an additional 22 specimens from young subjects who died of electric shock. Group C included 77 "normal" stomachs obtained from patients who died of nongastric cancers. None of these patients gave any history of gastric symptoms and as far as could be ascertained differed from group B only in that they died of cancer after prolonged illnesses. Group D was composed of 73 gastric carcinomas, the majority being surgically resected specimens. Group E was a miscellaneous group of unselected consecutive stomach specimens resected for gastric lesions other than carcinoma, such as gastric ulcer, myoma and sarcoma.

The microscopic studies showed that intestinal metaplasia, heterotopia of the pyloric glands, mucosal cysts, heavy leukocytic infiltration and large numbers of lymphoid aggregates were not found in truly normal stomachs but were evidences of gastric changes. Stomachs of patients who died of cancer other than gastric cancer were essentially identical with those of persons who died from other causes, except that they contained fewer lymphoid follicles and collections and less leukocytic infiltrate. This difference was directly proportional to the degree of malnutrition present and was not due to the presence of cancer itself in the patient. Eighty-two per cent of stomachs from apparently normal persons who died within the gastric cancer age (over 40) showed microscopic evidence of chronic atrophic gastritis. Sixty-six per cent of stomachs from persons over 40 who died of extragastric cancer showed microscopic evidence of chronic atrophic gastritis. Ninety-seven per cent of stomachs with gastric carcinoma showed associated chronic atrophic gastritis. There was a similar incidence of chronic atrophic gastritis in association with gastric diseases other than carcinoma.

The chronic atrophic gastritis associated with gastric carcinoma appears therefore, to be a nonspecific "reaction" to inflammation and gastric injury in general. The authors did not see any evidence to suggest an etiologic relationship except that chronic atrophic gastritis may be caused or intensified by the presence of carcinoma in the stomach. The factors included in the present concept of chronic atrophic gastritis, such as mucosal atrophy, increased amounts of leukocytic infiltrate and lymphoid aggregates, intestinal metaplasia and pyloric gland heterotopia are all rather closely correlated, variation in one factor tending to be associated with proportionate changes in the others. This correlation probably justifies the consideration of these changes as a pathologic entity.

Guiss and Stewart feel that the concept that chronic atrophic gastritis is a precancerous lesion is not borne out by their observations. They point out that the slight difference in incidence of gastric atrophy between

10 Sadusk, J. F. Jr. and Manahan, C. P. Sulfanilamide for Puerperal Infections Due to *Clostridium Welchii*. *J. A. M. A.* **113**: 17 (July 1), 1939.

11 Rendle-Short, Coralie. *Clostridium Welchii* Infection of the Uterus. *Complicatio Deliv.* *J. Obst. & Gynaec. Brit. Emp.* **49**: 281 (Dec) 1942.

1 Guiss, Lewis W. and Stewart, Fred W. Chronic Atrophic Gastritis and Cancer of the Stomach. *Arch. Surg.* **46**: 825 (June) 1942.

cancerous and noncancerous stomachs in their series is far from being convincing. Atrophic gastritis is an exceedingly common condition with advancing age. Mere statistical correlation of incidence of gastric atrophy and of gastric cancer is quite insufficient to show causal relation. Both atrophy and cancer appear to be events in aging organs. Gastric cancer is probably correlated not only with gastric atrophy but with atrophy of other organs, such as the genitalia, breasts, circulatory apparatus or even the skin, thus reducing to absurdity the conclusions based on mere statistics as to incidence.

## Current Comment

### DEHYDRATED NERVE GRAFTS

To avoid sacrificing a "minor" nerve for repair of a more vital one, numerous zoologists have tried grafts of preserved or fixed nerves, such as petrolatum stored grafts or grafts fixed in alcohol or solution of formaldehyde. None of these have proved satisfactory. Since these failures were presumably due to denaturation of the stored nerves, Weiss and his colleagues<sup>1</sup> of the department of zoology, University of Chicago, have developed a nondenaturing preservative method. Nerves dissected aseptically were dropped into isopentane which was immersed in liquid nitrogen at  $-195^{\circ}\text{C}$ , where the nerves froze instantaneously. The frozen nerves were then dehydrated over phosphorus pentoxide in a high vacuum at  $-40^{\circ}\text{C}$  and the resulting dried nerves were stored in sealed aseptic containers. Before using, the stored nerves were rehydrated usually by immersion in isotonic solution of three chlorides in vacuo at room temperature, where they resumed their normal appearance and major histologic characteristics, including specific staining reactions.<sup>2</sup> Thus far segments of these rehydrated "devitalized" nerves about 1 to 2 cm in length have been grafted into gaps in hindlimb nerves of 38 rats, 4 cats and 18 monkeys. The grafts were usually spliced to the severed nerve stumps by two short arterial sleeves.<sup>3</sup> Twenty-one homoplastic (rat to rat) grafts and eight heteroplastic (cat to rat) grafts have been studied microscopically from six days to eighteen weeks after the operation. Homoplastic devitalized grafts heal and promote regeneration much as do live grafts. Sheath cells and nerve fibers invade the grafts promptly, traveling in straight parallel courses without appreciable branching or confusion. Four months after the operation, regeneration is so perfect that there is no evidence of the old proximal "suture line." The regenerated fibers are of normal caliber with normal impulse conduction, motility and sensitivity being fully restored. In contrast, heteroplastic devitalized grafts are unsuccessful, behaving much like foreign bodies. Weiss concludes from this evidence that frozen-dried homoplastic nerve grafts are of clinical promise and that "banks of assorted nerve sizes stored in the dry condition could readily fill a steady demand."

### ORAL AND RECTAL TEMPERATURES AFTER EXERCISE

Temperatures taken by rectum are about 1 degree F higher than those taken by mouth. The body temperature rises several degrees as a result of exercise, the extent of rise being dependent on the amount, intensity and nature of the exertion. Recently Brennemann<sup>1</sup> reported the recording of the rectal and oral temperatures just before and just after various degrees of exercise in 10 children and 3 adults, all apparently in sound health. The rectal temperatures rose from 1 to 4 degrees F higher after exercise while oral temperatures remained relatively unchanged, rose only slightly or even dropped. The increase in rectal temperatures and hence the variation from the oral was directly proportional to the intensity of the exercise. Normal temperatures both by rectum and by mouth were resumed in from thirty to sixty minutes. The clinical implications are obvious: a high afternoon or postexercise rectal temperature in a child cannot be presumed to reflect a disease process and conversely the danger of such a high temperature masking a disease process should not be overlooked.

### ALCOHOL AND IMMUNIZATION

During several cholera epidemics of the nineteenth century higher mortality rates were noted among excessive users of alcohol than among the nonalcoholic. From this Koch<sup>1</sup> concluded that alcoholic intoxication lowers natural resistance to the cholera vibrio, this conclusion was afterward extended to include other pathogenic micro-organisms.<sup>2</sup> Lushbaugh<sup>3</sup> of the department of pathology of the University of Chicago has recently made tests to study the effects of alcohol on acquired specific immunity in laboratory animals. Active immunity against pneumococci was produced in rabbits by repeated subcutaneous, intra-abdominal and intravenous injection of a formaldehyde killed type I vaccine. After six injections of this vaccine the rabbits yielded serums which agglutinated homologous type I pneumococci in dilutions as high as 1:1,280 (average 1:640). An additional group of rabbits was immunized passively by intravenous injection of commercial immune rabbit serum given in amounts sufficient to raise their specific agglutinating titer to 1:80. Inoculation tests showed that both methods of immunization afforded adequate protection against 0.1 cc of a six to eight hour broth culture of living type I pneumococci given intracutaneously. The same dose caused 100 per cent fatalities in control nonimmunized rabbits. Alcohol was administered orally by means of a stomach tube to 34 actively immunized, 15 passively immunized and 22 nonimmunized rabbits. The usual dose was 50 to 60 cc of 24 per cent alcohol, an amount sufficient to produce a stuporous condition bordering on coma. This dose usually raised the alcohol content of the blood stream to 400 to 600 mg per hundred cubic cm.

<sup>1</sup> Weiss, Paul, and Taylor, A. C. *Proc. Soc. Exper. Biol. & Med.* 52: 326 (April) 1943.

<sup>2</sup> Hoerr, N. L. *Anat. Rec.* 66: 81, 91 (Aug. 25) 1936.

<sup>3</sup> Weiss, Paul. *Science* 93: 67 (Jan. 17) 1941.

<sup>1</sup> Brennemann, Joseph. *Disparity Between Oral and Rectal Temperatures After Exercise*. *Am. J. Dis. Child.* 66: 16 (July) 1943.

<sup>2</sup> Koch, Robert. *Ueber die Cholera-Bakterien*. Berlin: G. Reimer, 1911.

<sup>3</sup> Pickrell, K. L. *Bull. Johns Hopkins Hosp.* 63: 237 (Oct.) 1941.

<sup>3</sup> Lushbaugh, C. C. *J. Immunol.* 46: 151 (March) 1943.

timeters, which concentration was maintained by giving additional doses of alcohol as needed. Two hours after the intoxication was begun each rabbit together with a nonintoxicated control was given the routine test dose of pneumococci. Of 27 nonintoxicated immune controls only 1 rabbit died of pneumococcic septicemia, a 3.7 per cent mortality. Of 49 intoxicated immune rabbits 32 died, a 65 per cent mortality. Both active and passive immunity was therefore almost completely suppressed as a result of two hours of alcoholic intoxication. Differences were noted between the dermal lesions at the site of the test injection in the intoxicated and the nonintoxicated groups. In intoxicated animals the local edema and leukocytic infiltration were reduced, suggesting an almost total suppression of the local inflammatory reaction. Lushbaugh found that the alcoholic lessening of immunity can be partially overcome by a massive (fivefold) therapeutic dose of commercial antiserum. This confirms the current clinical belief that a "double dose" of antiserum is necessary in the alcoholic.

#### PROBLEMS OF PERSONNEL IN TUBERCULOSIS SANATORIUMS

The incidence of tuberculosis has risen throughout the warring nations. The unprecedented increase in discovery of early tuberculosis by mass roentgenography places new stress on facilities for the care of tuberculous patients in sanatoriums. The recent report<sup>1</sup> under the auspices of the Trudeau Society, of the personnel problems of tuberculosis sanatoriums resulting from war conditions is hence particularly timely. This report is based on detailed information obtained from two hundred and thirty-four institutions caring for nearly 40,000 patients. Large institutions have had a greater loss of personnel than smaller ones. Sanatoriums in the middle Atlantic and New England states have suffered most and hospitals in the Rocky Mountain states least. The loss of personnel has involved physicians, nurses, pharmacists, dietitians, social service workers, technicians and indeed all categories of personnel. In the face of this situation the council of the American Trudeau Society has adopted a resolution that measures be taken immediately to insure proper financial support for existing sanatoriums, that reduction in the number of available beds be not approved and that the situation be brought to the attention of the War Manpower Commission with the request that measures be taken to insure adequate personnel both in number and in quality so that tuberculosis sanatoriums can effectively carry out their part in the war effort. Hospitalization is the major factor in the control of tuberculosis in the patient as well as in the community. When existing sanatoriums cannot maintain adequate or usual capacity or acceptable standards of service at the same time as case finding surveys are discovering new cases of tuberculosis in large numbers, all the agencies concerned, social and governmental, must cooperate in well organized and resolute efforts to provide needed facilities.

<sup>1</sup> Personnel Problems of Sanatoria Resulting from War Conditions. Report of a Study Made by the Committee on Sanatorium Standards, American Trudeau Society, Medical Section of the National Tuberculosis Association, April 1943.

#### MOTOR VEHICLE ACCIDENT FATALITIES

Over twenty-five thousand deaths were reported as having occurred from motor vehicle accidents in 1941 in thirty-seven states, the District of Columbia and New York City.<sup>1</sup> These figures represent a motor vehicle accident rate of 30.7 per hundred thousand of population; they have recently been analyzed by the Bureau of the Census. The analysis reveals many factors related to the time, place and other features of the accident which should prove valuable to traffic safety engineers and educators. From the medical point of view it is important that 67.5 per cent of the death certificates for victims of fatal motor vehicle accidents specified the motor vehicle as the only cause of death. In these cases the average life after the occurrence of the accident was 1.4 days as contrasted with the duration of 8.4 days for fatalities from accidents which were complicated by other conditions. Such a list of complications includes diseases present before the accident or those which resulted from or were aggravated by the accident itself. The most frequent cause contributing to death was intracranial lesions of vascular origin (cerebral hemorrhage, embolism and thrombosis). Other disease of the circulatory system (hemorrhage outside the brain) was another frequently associated condition. When hemorrhage was the most important contributory cause of death the duration of injury was only 1.5 days. A large proportion of deaths that specified only one cause—motor vehicle accident—also appear to have resulted from hemorrhages, hence the importance of prompt first aid is readily apparent.

#### FALSE POSITIVE SYPHILITIC REACTIONS

False positive syphilitic reactions have been attributed to numerous causes, with smallpox vaccination recently added to this list. Using the Kolmer-Kline, Hinton and Mazzini techniques, Lynch<sup>2</sup> found that pseudosyphilitic serum reactions developed in 16 per cent of his patients within two weeks after vaccination. The serums usually remained positive for at least two months. In order to confirm these data a group of 202 serologically negative medical students and nurses was vaccinated by Favorite<sup>3</sup> of Hahnemann Medical College followed by periodic serologic tests with the Kolmer, Kahn and Mazzini techniques. From fourteen to sixty days after vaccination, 24 (11.8 per cent) of these individuals gave positive pseudosyphilitic reactions with one or more of these techniques. Many of the reactions were of 3 or 4 plus intensity. Subsequent retests made at fourteen day intervals showed that the false positive syphilitic reactions gradually decreased in intensity. All serums became negative by the end of four months. The pseudoreactions were about equally divided between the nonimmune and the accelerated (vaccinoid) groups, none occurring after immune vaccination reactions.

<sup>1</sup> Annual Summary of Motor Vehicle Accident Fatalities 1941, Part II, Analytical Summary, Department of Commerce Bureau of the Census, Washington, D. C. July 31, 1943.

<sup>2</sup> Lynch, F. W., Boynton, Ruth E. and Kimball, Anne C. False Positive Serologic Reactions for Syphilis Due to Smallpox Vaccinations (Vaccinia). *J. A. M. A.* 117: 591 (Aug. 23), 1941.

<sup>3</sup> Favorite, G. O. *Proc. Soc. Exper. Biol. & Med.* 52: 297 (April) 1944.

# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

### PLAN FOR THE ALLOCATION OF INTERNS AND RESIDENTS IN HOSPITALS, 1944

Approved by Directing Board, Procurement and Assignment Service

In view of changing needs, both civilian and military, and of the last year's experience in attempting an allocation of hospital house staffs, a new allocation plan has been developed. It involves three major changes. The first of these is that internships and residencies are being changed over from a twelve to a nine month base period to remedy the difficulties inherent in a nine month medical school year and a twelve month hospital year. The second is that certain essential commissioned men will be permitted to give some service as hospital residents, under conditions outlined here. The third is that interns as well as residents are included in the allocation plan. One of the reasons for this change is that hospitals which have shifted from two year to one year internships have drained by approximately 1,400 the supply of interns which would in earlier years have been available to smaller hospitals.

#### COMPLIANCE

This year certain hospitals have failed to cooperate with the Procurement and Assignment Service plan because of their reliance on Selective Service deferments for the maintenance of their staffs. Since Selective Service deferment of residents is rapidly becoming a thing of the past, hospitals will find it of great advantage to cooperate with the Surgeon Generals and the Procurement and Assignment Service in this new allocation plan, which is designed to provide an equitable distribution of the house staff members available.

#### SHIFT FROM TWELVE TO NINE MONTH BASE

There has been general dissatisfaction with the three month overlapping of intern and resident services, which have been wasteful of urgently needed medical manpower.

To remedy this situation the Directing Board of Procurement and Assignment Service proposed on the recommendation of its Hospital Committee that a nine-nine-nine month plan be adopted. For those men who would be commissioned the proposal was:

The internship should be reduced from twelve to nine months.

One half of the interns should be retained for a second nine months as assistant residents.

One half of that group should be retained for a third nine month period as residents.

#### AGREEMENT WITH SURGEON GENERALS

This proposal has been accepted by the Surgeon Generals of the Army and Navy in this modified form:

The internship shall be reduced to nine months.

One third of the interns who hold commissions in the Army and Navy may be deferred for nine months (tenth to eighteenth months).

One half of this number or one sixth of the total number of commissioned interns may be deferred for an additional nine months (nineteenth to twenty-seventh months).

Acceptance of the plan by the Surgeon Generals is conditional on agreement by the state boards of medical examiners that eligibility for licensure of those who receive only nine months' internship will not be impaired and with the understanding that internships shall begin within thirty days after the completion of the medical course and that hospitals will limit their appointments of interns and residents to individuals who hold commissions or who have been officially rejected for commissions in the armed forces.

#### DEFINITION

In the interest of uniformity under this program the Procurement and Assignment Service will classify house officers as follows: interns during the first nine months, assistant residents during the second nine months and residents during the third nine months of hospital service.

The Procurement and Assignment Service believes that minimum adequate hospital medical service can be provided only if each hospital exerts every effort to obtain and retain women and physically disqualified house officers, since the number of men to be deferred by the armed services will not be adequate to meet even the minimal needs for hospital residents, and since the Procurement and Assignment Service cannot assign men to house staff positions.

The overall cut will be about one third. For the average hospital the allocation for 1944 will be somewhat less than two thirds of the 1940 number of residents and two thirds to three fourths of the 1940 number of interns.<sup>1</sup> It will be necessary in general to make proportionate cuts from 1940 in the new house staff quotas with certain adjustments for present teaching loads and pronounced shifts in patient population. The number of house staffs included in the quotas of the individual hospitals will include women physicians and all male physicians whether or not physically disqualified and whether or not commissioned. The allocation of this personnel will be primarily on the basis of the needs for civilian medical care.

#### CHANGE OVER TO NINE MONTH PLAN

Under this plan two thirds of all commissioned interns now in hospitals will be eligible for orders to active duty on or about Jan. 1, 1944 (nine months after the beginning of their internships) and at about the time the new graduates will be beginning their internships.

In many hospitals there are residents holding commissions who have already been deferred by the Army or Navy until July 1, 1944.

On their departure certain house staffs will be reduced below the quota level for three months. For most hospitals this will come at a time of relatively low census. In cases of extreme difficulty every effort will be made by the Procurement and Assignment Service to assist the hospitals through this three month period.

#### PROCEDURES

All hospitals have been asked to submit immediately analyses of their present and past situations for the purpose of facilitating this allocation for 1944. Based on this information and on field studies now in progress, the Hospital Committee will complete its estimates of the total number of physicians.

<sup>1</sup> The 1940 figure for interns include all physician registrars interns by the educational number of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION regardless of the length of their appointment.

who will be available for house staff positions in 1944. With this information the committee will set house staff quotas for each hospital and from them build state quotas. In setting tentative quotas by the Procurement and Assignment Service for individual hospitals consideration will be given to obvious injustices which might occur in a too arbitrary application of the allocation plan.

Each state will be required to remain within its total quota that is no requests will be granted for deferments which would bring a state total over the quota established for that state. The state chairman may find it desirable to make certain changes in hospital allotments within the limits of his total state quota. Such changes will be subject to appeal and review at the national level. State chairmen will receive requests for deferments from hospitals and transmit them to the Washington office of the Procurement and Assignment Service which will review them and make recommendations to the Surgeon General.

A commissioned intern may move to a second hospital at the end of his nine or eighteen month service, so a hospital may ask for the service of a commissioned intern or assistant resident from another hospital for a nine month assistant residency or residency. In other words, movements of physicians on house staff shall not be discontinued or discouraged as long as the physician desires the hospital service and the hospital and state remain within their quotas.

*NOTE—The Council on Medical Education and Hospitals of the American Medical Association has approved the plan described. The shortening of the internship is a regrettable wartime necessity but certain undesirable features of the existing house staff program should be corrected by the plan.—Ed*

## WARTIME NURSING IS DIFFERENT

Statement Issued by Directing Board of War Manpower Commission's Procurement and Assignment Service for Physicians, Dentists, Veterinarians, Sanitary Engineers and Nurses

It is utterly impossible to provide the necessary volume of wartime nursing service on a peacetime basis. Places where nursing is going on as usual must share with others. Individual nurses who have not made adjustments to wartime needs for their service should understand the necessity for their participation.

The National Nursing Council has pointed out that the value of any national plan must be judged by its usefulness at the local level, i. e. where nurses live and work—in the country, in the villages, towns and cities of the nation.

Wartime nursing is different! That inescapable fact must be generally accepted by nurses by physicians and by hospital administrators. Energy and motion now spent in resistance to change must be released for the attack on war created needs.

Nurses have wrought many changes, but not enough in the pattern of nursing service since Pearl Harbor. "We just do the best we can" is heard more frequently than "This is our plan." Generally speaking educational programs have received more thought than the service programs. Acceleration of the basic course in nursing is an outstanding example. State boards of nurse examiners have initiated others.

The principles of good nursing have not changed, but nurses are learning to concentrate on the essentials. In the analysis and administration of nursing service radical changes are being made. Tremendously valuable assistance in caring for patients is being secured from the Red Cross nurses aides and other volunteers as well as from paid auxiliary workers.

Thus far nursing has not been rationed; such rationing would be complicated by the differences in individual nurses and the degree of essentiality of needed services. The sharing of services is more difficult than the sharing of goods.

A critical shortage of nurses exists. Here are the facts. Over 36,000 nurses are now with the armed forces and the Red Cross has accepted responsibility for the recruitment of an equal number by June 30, 1944. Our men are receiving skilled medical care of a high order, as shown by the high

percentage of recovery from injury. Skilled nursing is an important factor in such care. Then too the very presence of nurses near the bases of military operations has repeatedly been described as a potent force in maintaining morale.

There has been an unprecedented increase in the use of civilian hospitals. Hospitals gave fourteen and a quarter million more days of care in 1942 than in the preceding year, and the trend still is definitely upward. This is in keeping with the rapid growth of the Blue Cross (group hospitalization) plans and the Children's Bureau hospitalization program for the care of the families of service men.

Nursing is essential to the nation's health. The National Nursing Inventories (of nursing resources) of 1941 and 1943 by the U. S. Public Health Service offer a comparison of data for the two years.

The total number of nurses graduated in the two years is well in excess of the number withdrawn for military service; this fact is not apparent in the inventory. The returns are apparently incomplete. Active nurses who did not return their questionnaires apparently did not realize the profound importance of the information requested. This information is the basis for present planning and safeguarding the future.

The relatively small decrease in the number of institutional nurses is much less significant than the increased use of hospitals in creating the serious shortage of nurses.

The large number of inactive nurses who reported themselves available is encouraging but available for what? Full time? Part time? These nurses and others who are still 'hidden' can make a valuable contribution to our nursing resources. Although it requires a little more planning the service of two part time nurses can equal that of one full time nurse. Wartime nursing puts a tremendous burden on all the administrative nurses.

Here is the program of the new Nursing Division of the Procurement and Assignment Service. The Red Cross recruitment committees are pledged to recruit 36,000 nurses this year. The new division will (1) determine the availability for military service or essentiality for civilian service of all nurses eligible for military service and submit such determinations to the American Red Cross for use in procurement of nurses for the armed forces; (2) promote plans for maximum utilization of full time nurses and those who are able to serve only part time; (3) develop and maintain a roster of all graduate registered nurses; and (4) develop and encourage sound methods of supplementing the work of nurses with nonprofessional personnel.

### National Nursing Inventories

	1941	1943
Total returns	289,286	259,174
Active		
Institutional	81,708	77,704
Public health	17,766	18,900
Industrial	5,512	11,220
Private duty	46,793	44,299
Other	21,276	18,476
Inactive but available for nursing	2,252	8,746
		(of the 8,746 are married and under 40)
Inactive not available	90,079	49,829
In Nurse Corps of Army and Navy	6,571	over 36,000
		(precise data not available)

Through the War Manpower Commission not only will nursing have the benefit of the experience of medicine in the procurement and assignment of physicians but means will be found to interpret wartime nursing to physicians and their cooperation secured in effecting desirable wartime adjustments.

### SUGGESTED READING

1. Priorities for Nurses. National Nursing Council for War Service, 1790 Broadway, New York. May 1943 revised edition.
2. Distribution of Nursing Service During War. National Nursing Council for War Service, 1790 Broadway, New York. May 1942.
3. Volunteers in Health, Medical Care and Nursing. U. S. Office of Civilian Defense, Washington, D. C.



## PHYSICIANS NEEDED FOR COAST GUARD

A request for physicians who are needed immediately for service with the United States Coast Guard has been made by the War Manpower Commission's Procurement and Assignment Service.

In a communication addressed to the state chairmen for physicians of the Procurement and Assignment Service, the latter's directing board requests that the central office of Procurement and Assignment Service be supplied immediately with the names of a specified number of available physicians "who are not

physically disqualified so that representatives of the United States Public Health Service may get in touch with them with a view to inviting them to apply for commissions."

The United States Public Health Service furnishes the physician personnel for the Coast Guard. The request states that state chairmen should continue furnishing each month until further notice a specified number of names of available physicians for possible recruitment by the United States Public Health Service.

## MISCELLANEOUS

### EXTENSION OF TIME FOR FILING DECLARATION OF ESTIMATED TAX GRANTED ARMED FORCES

Any taxpayer who is a member of the military or naval forces of the United States in active service on September 15 has been granted an extension of time for such period as may be necessary but not beyond March 15, 1944, within which to file the declaration of estimated tax required by the Current Tax Payment Act of 1943 and to pay such estimated tax or any installment thereof otherwise required to be paid before March 15, 1944.

If under the terms of the extension the time for filing a declaration of estimated tax is extended beyond the close of the taxpayer's taxable year and the taxpayer makes his income tax return and pays the tax for such taxable year on or before March 15, 1944, no declaration of estimated tax need be filed for such year.

As used in the recent regulation authorizing the extension of time for the filing of declarations and paying tax, the term "member of the military or naval forces of the United States" includes any individual in the Army of the United States, the United States Navy, the Marine Corps, the Coast Guard, the Army Nurse Corps, Female, the Women's Army Corps, the Navy Nurse Corps, Female, the Women's Reserve Branch of the Naval Reserve, the Women's Reserve branch of the Coast Guard Reserve and the Women's Reserve branch of the Marine Corps Reserve (Marine Corps Women's Reserve) and any commissioned officer of the Coast and Geodetic Survey or of the Public Health Service.

### THE U S CADET NURSE CORPS

Surg Gen Thomas Parran, U S Public Health Service, Miss Lucile Petry and Mrs Eugenia K Spalding, director and associate director respectively of the U S Cadet Nurse Corps, have completed a nationwide tour in response to a request from the National Nursing Council for War Service and the American Hospital Association to provide first hand information to hospitals and nursing schools about the new Nurse Corps. The tour began at Harrisburg on August 9 and ended at Seattle on September 1. Great interest has been shown in this new program, which will provide nursing education without cost to the student. This is not a federally standardized program, Dr Parran said, corps members will attend any of the thirteen hundred accredited nursing schools that meet requirements of the law. The quota for the corps is 65,000 new student nurses this year. They will receive monthly allowances of from \$15 to at least \$30, and during the final period of training maintenance and monthly allowances will be paid by the school of nursing or hospital.

### ORDER RESTRICTING USE OF NUTGALLS AND TANNIC ACID REVOKED

The order restricting the use of nutgalls and tannic acid U S P was revoked on August 24 by the War Production Board. Order M-204 controlling the distribution of these products was put into effect on Aug 8, 1942 chiefly to conserve supplies of tannic acid for use in the treatment of burns.

The National Research Council has advised the War Production Board that medical opinion has been increasing pro-

gressively against the use of tannic acid in burn treatment and that the Committee on Surgery of its Division of Medical Sciences recently voted that the use of escharotics be discontinued.

A fairly generous supply of nutgalls is available for the manufacture of tannic acid U S P. This supply is supplemented by importations from Peru of tara, from which tannic acid is made. The WPB Chemicals Division considers that there no longer is a critical shortage in this field.

### STATEMENT OF PROTEST OF NETHERLANDS PHYSICIANS

The Office of War Information received on August 10 reports from overseas sources concerning the struggle by 6,200 physicians in occupied Holland to avoid compulsory membership in a Nazi controlled medical association. According to the reports, the Dutch physicians in June voluntarily renounced the practice of their profession rather than join the Nazi dominated Chamber of Physicians. The physicians sent a protest statement to Arthur Seyss-Inquart, reich commissioner for the Netherlands, explaining their refusal to join. Several hundred physicians were arrested following receipt of the statement, but most of them were released after several weeks during which medical service in Holland was brought to a virtual standstill. Nazi authorities agreed to permit the doctors to return to practice if they would sign a statement that they had not intended their protest as an "insult" to the occupation authorities or as a "political" gesture. The physicians agreed. Shortly after this truce, however, Seyss-Inquart ordered a fine to be imposed on the doctors of Amsterdam.

The text, slightly edited, of the statement to Seyss-Inquart, in which Dutch physicians explained their refusal to join the Nazi controlled Chamber of Physicians, follows:

"It was with astonishment and indignation that we doctors of the Netherlands learned of your latest instruction concerning the practice of our profession.

"This instruction stipulates among other things that doctors are no longer at liberty to give up their profession or renounce the title connected with it.

"This means that you are again trying to force them to join the Artsenkamer. You threaten with severe penalties those who act contrary to your instructions.

"It has been the practice of Netherlands doctors to work in the interests of our patients and our people. Medical care and sanitary conditions in the Netherlands have always been on a high level, thanks to the quality of our research and practice. The Netherlands Society for the Promotion of Medical Science has maintained high standards as a professional organization. It worked along Dutch rules, built on Dutch traditions, and included almost all Netherlands doctors. We have voluntarily abandoned this excellent organization because we wanted to prevent the enslavement of the Dutch medical body. You then founded the Artsenkamer, which was to impose on us national socialist principles.

"Mr Reich Commissioner, you must have realized with what aversion we looked on this imported institution imposed on us. The doctors of the Netherlands had and have a great distrust of this organization. In December 1941, on behalf of 4,501

doctors a letter was addressed to you in which you were urgently requested not to take the steps to apply national socialist measures in the field of medicine. The implementation of racial theories resulting in the deportation of the insane and sick persons and the sterilization of healthy people proves that much of our anxiety was justified. Proof of how much this association runs counter to the spirit and inclination of the Dutch doctors is furnished by the fact that recently 6200 of them voluntarily ceased practicing in order to escape your medical association.

Nevertheless, you are trying through coercive measures to impose on us what we do not want and place us under the trusteeship of a small political group which does not have our confidence or respect.

Mr. Reich Commissioner, the doctors come under your latest decree because at the beginning of their career they took an oath. This oath binds us to certain ethical standards which make it impossible in the future to meet your demands. If it comes to a point where we are confronted with unacceptable demands, it might happen that without regard for your threats we would have to risk our freedom and lives.

"We expect that you will spare us this conflict and will let us work in freedom and peace. The further course of things will depend on you, and you, Mr. Reich Commissioner, are responsible for that to the Dutch nation."

### WARTIME GRADUATE MEDICAL MEETINGS

In a preliminary report the Central Committee of the Wartime Graduate Medical Meetings announces that it presented some of the facilities at its disposal at the Georgia State Medical Association meeting which was held on May 13, 1943, at which Drs. James Means, Virgil P. Sidenstricker and William N. Evans appeared at the invitation of the committee.

Also on May 3-5 Drs. Edwin E. Osgood and L. T. Coggeshall participated in a refresher course at the invitation of the Wartime Graduate Medical Meetings offered by the University of Alberta Hospital in Edmonton, Alta.

The Regional Committees to date have responded as follows:

Region 1 (Maine, New Hampshire, Vermont and Massachusetts) and Region 2 (Connecticut and Rhode Island) have consolidated their activities and will work in cooperation with the First Service Command and the Naval District in the New England states. Plans are nearing completion for postgraduate courses at the Newport Naval Hospital for September 14-15-16, including a one day presentation of medical subjects, one day of surgical subjects and one day of subjects in the various fields of medicine. Approximately twenty-five speakers will be presented.

Plans are likewise being formulated for a one, two or three day program to be presented at New London in October.

In Region 3 (New York) courses have already been conducted and others are now being formulated. On July 23 a program covering the 'Diagnosis and Treatment of Cardiac Pain' was presented at the St. Albans Naval Hospital, on July 27 a two hour lecture on Chemotherapy was presented at the St. Albans Naval Hospital and on August 3 a lecture by Dr. Henry Meleny on 'Malaria' at the Brooklyn Naval Hospital. Plans are being made for lectures on shock, burns and plasma and the dysenteries for some time in September.

In Region 10 (Kentucky and Tennessee) the committee has planned an excellent course for the week of October 3 covering burns, shock, blood derivatives and substitutes, chemotherapy, general surgery and the dysenteries.

In Region 18 (Montana and Wyoming) plans are proceeding for courses to be offered in the autumn covering the subjects of anesthesiology, shock, burns, blood derivatives, clinical psychiatry, psychosomatic medicine, cardiovascular problems, dysenteries, acute respiratory disease, physical therapy, diagnostic roentgenology.

In Region 19 (Colorado and Utah) plans have been made for programs to be offered on September 30 and October 1 in Denver.

The national consultants are now compiling the names of prominent men throughout the entire country who are willing to serve on a national faculty. This faculty will aid the committees in meeting the demands for teachers.

Requests have recently been received in the central office for speakers to appear on the program being offered by the Dalhousie University for Medical Officers in the Canadian Forces during the week of October 11 and also for the annual meeting of the Saskatchewan Medical Society to be held in Regina, Sask., on September 16, 17 and 18.

### PUBLIC HEALTH UNDER HITLER

According to *Donauzeitung*, Belgrade, June 20, on June 17 there were 20 cases of food poisoning in Athens, causing two deaths. Fresh measures are being taken by the police.

LBM announces in *Der Neue Tag*, Prague, on June 6 that all pharmacists with or without diplomas, who are not yet registered with the working community of the medical profession (*heilberufe*) in Bohemia and Moravia must register by June 15, 1943. This applies in the first place to all those not active in public pharmacies, i.e., those active in wholesale business, industry, offices (*behorden*), domestic service (*haushalt*) and so on. Only those pharmacists who comply with the order of registration in good time may expect that their qualifications will be considered in case of their mobilization for the war effort. The registrations are to be addressed to the 'Working Community of the Medical Profession in Bohemia and Moravia, Working Committee of Apothecaries, Prague II.'

According to *Glas Crnogorica*, Cetinje, March 31, the epidemic of smallpox among the Moslem refugees in the Plyelje has been spreading. There are now 200 cases at least. Every day there are deaths.

According to Radio Rennes, July 12, an important delegation of French doctors went to Germany in July at the invitation of the general commissioner for foreign workers in Germany to attend special lectures in Berlin and then to be attached to different camps to supervise the health of their compatriots.

The dean of Marseilles University announced that the pharmacy medical students of the 1942 class are requested to carry on their professional activity in Germany for the benefit of the French workers. *Le Mot d'Ordre*, July 7, reports. The students will take care of those wounded in labor accidents and those suffering from illness or wounds resulting from the war. They will principally have to fight venereal diseases. The students had to pass a special examination in Paris on July 24 before being included in the medical personnel.

*Vocea Romaniei*, of July 7 stated that the cabinet has decreed that the Ministry of Social Policy and Health is authorized to summon for compulsory work all doctor assistants, nurses, laboratory assistants, disinfectors and sanitary personnel irrespective of sex or whether they are publicly or privately employed. Those over 70 are exempted and those above 60 and mothers with children under 18 are employable only in their place of residence. Aliens may not be summoned.

According to Radio Romania, July 12, the minister of health has decided that universities must admit an extra number of medical students who are obliged to attend summer courses in hospitals in order to increase the number of doctors. Students will follow summer courses in the town or country hospitals and will be supervised by doctors. All students from the first to the third year will follow summer classes. For women students there will be two months practice and one month's holiday and for men one month's practice and one month's holiday.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Tests to Determine Intelligence of Spastic Children—**An initial endowment of \$5,000 has been given to the University of Southern California, Los Angeles, by the Crippled Children's Society of Los Angeles County and the California State Society for Crippled Children to undertake scientific research to develop tests for measuring the intellectual and performance capacities of spastic children. This particular phase of the study is being undertaken for the first time and will be supported over a period of five years. Volunteer public and professional organizations, as well as individuals dealing with spastic children, will have access to the psychometric clinic which is a unit of the psychology department at the University of Southern California.

**Labor Unions Endorse Blood Test—**The executive board of the California State Federation of Labor at its meeting held in Los Angeles June 12, recommended that member unions require each applicant for membership to have a blood test made before admission into the union. The results of such tests are to be a matter of strict confidence between the examining physician and the applicant. The results, under no circumstances are to be revealed to the union or to the employer and will have no bearing on the applicant's admission into the union. So far as is known this is the first time that union labor has taken this sort of action anywhere in the United States, according to *California's Health*.

**Anesthetists Needed—**Anesthetists are being sought by the Los Angeles County Civil Service Commission for positions in the Los Angeles County Department of Charities to render professional medical services in the care and treatment of patients in anesthesia services. Men or women who have graduated with a degree of M.D. from an approved medical school and who have completed at least a one year internship in an approved hospital are wanted for these positions. There are no maximum age limits nor residential requirements. Full information can be obtained from the office of the commission, Room 102, Hall of Records, Los Angeles 12. Applications must be filed on or before September 18.

### CONNECTICUT

**Clinical Congress—**The annual clinical congress of the Connecticut State Medical Society will be held at the New Haven Medical Association, New Haven, September 28-29. Among the speakers will be

Dr. Alexander W. Winkler, New Haven, Insulin Derivatives and Their Combined Use  
Dr. Cyril N. H. Long, New Haven, Recent Progress in the Problem of Shock  
Dr. Edward L. Howes, Washington, D. C., Debridement, Not Chemotherapy, Heals Wounds  
Dr. Robert M. Lewis, New Haven, Caudal Anesthesia  
Dr. Robert C. Batterman, Brooklyn, Demerol, a New Synthetic Analgesic: Its Indications as a Substitute for Morphine  
Comdr. Francis J. Braceland (MC), U. S. Naval Reserve, Fatigue and Anxiety  
Dr. Nolan D. C. Lewis, New York, Electric Shock Therapy in Psychoses—Indications and Present Status  
Dr. Harry Gold, New York, Newer Digitalis Crystalline Compounds  
Dr. Paul L. Boissert, New Haven, Tetanus Toxoid for the Civilian Population  
Dr. Bernard S. Brody, New Haven, Osteomyelitis of the Skull  
Dr. James A. Evans, Boston, Problems of Thrombophlebitis and Pulmonary Embolism  
Francis H. L. Taylor, Ph.D., Boston, The Problem of Nutrition in the Presence of Excessive Nitrogen Requirement in Severely Ill Patients  
Lieut. Col. Francis R. Dieuaide, M.C., A.U.S., Malaria

One session will be devoted to a discussion of modern knowledge of pulmonary disease with the following speakers: Drs. Francis G. Blake, New Haven, on "Acute Infections of the Lung"; H. McLeod Riggins, New York, "Some Difficulties in the Differential Diagnosis of Certain Pulmonary Diseases"; Kirby S. Howlett Jr., Shelton, "Recent Trends in the Therapy of Pulmonary Tuberculosis"; Leonard Greenburg, New York, "Industrial Pulmonary Problems," and Gustaf E. Lindskog, New Haven, "New Trends and Results in Surgical Therapy of Lung Suppuration." A series of demonstrations by members of the staff of Yale University Medical School is also planned.

### GEORGIA

**Annual Registration of Licentiate of State Examining Boards—**On September 1 the Joint Secretary, State Examining Boards, started mailing to all licentiates of the State Board of Medical Examiners and of other Georgia state examining boards blanks to enable them to comply with the law requiring annual registration. No fees attach to such registration. Physicians will do well to execute the blanks furnished and to return them to the Joint Secretary as promptly as possible.

### ILLINOIS

**Personal—**Dr. Joseph H. Chivers, medical director of Crane Company, Chicago, has been appointed chairman of the advisory committee to the state division of industrial hygiene, succeeding the late Dr. Philip H. Kreuscher. Dr. Frederick W. Slobe, Chicago, a new member of the committee, was named vice chairman.

#### Chicago

**Fremont Chandler Named Professor of Orthopedic Surgery—**Dr. Fremont A. Chandler, associate professor of orthopedic surgery at Northwestern University Medical School, has been appointed professor of orthopedic surgery and head of the department at the University of Illinois College of Medicine. Dr. Chandler will also be director of the Illinois Surgical Institute for Children. He succeeds Dr. Henry B. Thomas, who is retiring at the university after an affiliation since 1909. Dr. Thomas was instrumental in establishing the surgical institute for children which opened for patients in May 1931.

**Eye and Ear Infirmary Now Directed by Welfare Department and Illinois University—**The physical plant of the Illinois Eye and Ear Infirmary will be under the supervision of the state department of public welfare and all professional activities and all personnel connected with professional activities will be under the direction of the University of Illinois College of Medicine in accordance with an agreement recently announced by the university. Despite their appointments to Illinois, the members of the infirmary staff will retain their positions in other universities as well, and students of other Chicago universities will be given the clinical facilities of the infirmary as in the past. Dr. Harry S. Gradle, chief of staff of the Illinois Eye and Ear Infirmary, under the new setup becomes professor of ophthalmology at the medical school. Dr. Peter C. Kronfeld, dean of instruction at the infirmary, will become associate professor of ophthalmology at the medical school and director of education in ophthalmology.

### INDIANA

**State Medical Meeting—**The ninety-fourth annual session of the Indiana State Medical Association will be held in conjunction with the Ninth Naval District at the Claypool Hotel, Indianapolis, September 28-30, under the presidency of Dr. Carl H. McCaskey, Indianapolis. Out of state speakers will include

Senior Surgeon Herman E. Hilleboe, medical officer in charge of Tuberculosis Control Section, U. S. Public Health Service, Tuberculosis Control in Industry  
Admiral Ross T. McIntire, surgeon general, U. S. Navy, Navy Medical Services in Combat  
Dr. Reed M. Nesbit, Ann Arbor, The Modern Treatment of Prostatic Cancer—A Rational Basis for Delayed Hormone Therapy  
Dr. Norman H. Jolliffe, New York, The Cause, Signs and Treatment of Malnutrition  
Comdr. John F. Lutten (MC), U. S. Navy, Battle Casualties with Special Reference to the Use of Sulfonamides  
Dr. Ernest Perry McCullagh, Cleveland, The Use of Gonadal Hormones in General Medical Practice  
Brig. Gen. George F. Lull, M.C., U. S. Army, The American Doctor in the War  
Capt. Joseph A. Tartre, senior dental officer, Ninth Naval District, Navy Dental Corps at the Great Lakes Naval Training Station  
Col. Thomas T. Mackie, M.C., U. S. Army, Tropical Diseases—A War and Postwar Problem Affecting the Continental United States  
Dr. John M. Waugh, Rochester, Minn., Vaginal Hysterectomy: Indications and a Method  
Dr. Peter C. Kronfeld, Chicago, Indications for Paracentesis of the Anterior Chamber  
Dr. George J. Thomas, Pittsburgh, Pentothal Sodium, Range of Usefulness, Complications and Their Management

Dr. Harry S. Gradle, Chicago, will address the breakfast meeting, September 29, and Rear Admiral John Downes, Commandant, Ninth Naval District, will speak in the afternoon. The annual banquet will be held Wednesday evening with Dr. Herman L. Kretschmer, Chicago, President-Elect of the American Medical Association, speaking on "War Problems Faced by the Medical Profession." A new feature of the program this year will be sixteen instructional courses to be held Tuesday at the Claypool Hotel. Each course will accommodate twenty members. Included among the subjects will be the treatment of pneumonia, recognition and treatment of

common skin diseases routine interpartum examination and care undulant fever tularemia Rocky Mountain spotted fever, recognition and treatment of early tuberculosis and neuro-psychiatric aspects of every patient

### MARYLAND

**Hospital News**—The resident staff of Mercy Hospital, Baltimore recently inaugurated a program of weekly meetings. On July 16 Dr Henry F Zingari spoke on 'The Rh Factor and Its Relationship to Erythroblastosis Fetalis' and Dr John C Osborne on Tetrathionate. A new program of medical motion pictures has also been launched at the hospital. A film on Inguinal Hernioplasty, sponsored by the Singer Sewing Machine Company, was shown on July 12.

**Friedenwald Award Goes to Thomas Brown**—The American Gastroenterological Association has awarded its 1943 Julius Friedenwald Medal to Dr Thomas R Brown, associate professor emeritus of medicine Johns Hopkins University School of Medicine Baltimore. Coincidentally the July issue of *Gastroenterology* was dedicated to Dr Brown in recognition of his many accomplishments as a clinician and a teacher and to mark his contributions in the field of gastroenterology. Dr Brown graduated at Johns Hopkins in 1897.

### MASSACHUSETTS

**Tufts Observes Fiftieth Anniversary**—The Tufts College Medical School Boston, will celebrate its fiftieth anniversary with a number of exercises September 15 October 6. Included on the program will be a talk at the medical school September 15, by Major Gen James C Magee on Military Medicine with Special Reference to Tropical Diseases, a lecture before the William Harvey Society September 16, at the Beth Israel Hospital by Dr Timothy Leary, professor emeritus of pathology at the school on 'Excess Cholesterol as a Pathogenic Agent' and a talk September 29 by Col Raymond W Bliss. On September 22 a feature of the celebration will be the presentation and unveiling of portraits of Dr Leary and Dr Cadis Phipps, professor of medicine. The anniversary exercises will conclude on October 6 with a general meeting at the John Hancock Hall at which the speakers will include Leonard Carmichael, LL.D., president of Tufts College and Capt A Warren Stearns (MC) USNR, dean of the medical school now on military leave. Another feature of the celebration will be the release of a book on the history of Tufts College Medical School written by Dr Benjamin Spector professor of anatomy and professor of the history of medicine which is said to be the first published history of the school.

### MISSOURI

**Physician Marks Ninety-Second Birthday**—A reception was held at the Lucerne Hotel on August 25 to celebrate the ninety-second birthday of Dr Caleb Anderson Ritter, Kansas City. Dr Ritter graduated at the Indiana Medical College, Indianapolis in 1877. He is an Affiliate Fellow of the American Medical Association.

**Starkloff's Name Added to St. Louis Hospital**—The St. Louis City Hospital (The Max C Starkloff Memorial) is the new designation of the hospital in accordance with action taken recently to honor the first health commissioner of St. Louis who served thirty years under five mayors. A bill was recently adopted changing the name to Max C Starkloff Hospital but through the efforts of the medical staff, this action was repealed and the compromise name adopted.

**Physicians Resign Because of New Full Time Health Policy**—Dr James L Mudd since 1935 tuberculosis controller of St. Louis and Dr Hyman I Spector chief of the medical dental and nursing section of the St. Louis Health Department have resigned effective September 1. The resignations were the result of the new full time policy for physicians serving in executive capacities. The policy was recommended by the civil service commission and passed by the board of aldermen.

### NEBRASKA

**Annual Registration Due On or Before October 1**—Physicians licensed to practice medicine in Nebraska are required by law to register with the Department of Public Welfare annually on or before October 1 and to pay a fee of \$1. A license expires if the licensee fails to register but within the thirty days next following its expiration it may be revived by the payment of the registration fee and a penalty of \$1. If that is not done an order of revocation is issued and thereafter the revoked license can be reinstated only on the recommendation of the board of examiners in medicine and on the payment of the renewal fees and penalties then due.

### NEW JERSEY

**Personal**—Dr George W Tyrrell was guest of honor at a banquet on July 29 given by the medical profession of Perth Amboy and vicinity in honor of his completion of fifty years in the practice of medicine. Dr Tyrrell has been a member of the staff of the Perth Amboy General Hospital from its inception and was dean from 1927 to 1935.

**Officers of State Medical Agencies**—Dr John H Rowland New Brunswick was elected president of the New Jersey State Board of Medical Examiners on July 14 to succeed Dr Samuel Barbash Atlantic City. Newspapers report that he is the first New Brunswick physician to head the board. Dr Earl S Hallinger Camden was reelected secretary. Dr James Mallory Carlisle Westfield was elected president of the state board of health at a meeting on July 13.

**Dr Bristol Declines State Health Appointment**—Dr Leverett D Bristol Montclair health director of the American Telephone and Telegraph Company has declined the position of state director of health to which he was recently elected (*THE JOURNAL*, July 31 p 959). The *New York Times* reported on August 18. In a statement to the press Governor Charles Edison said Dr Bristol's reasons for declining the position were set forth in a letter marked personal and confidential and that he was not free to reveal them.

### NEW YORK

**Grant to Install Blood Bank**—A grant has been awarded by the government Office of Civilian Defense to the Arnot-Ogden Memorial Hospital in Elmira for the installation of a blood and plasma bank. The bank is one of many scattered within the 300 mile limit along the eastern coast for the purpose of maintaining an adequate supply of frozen plasma for possible civilian disasters and accidents in war factories.

**Dr Bigelow Named Assistant Commissioner of Mental Hygiene**—Dr Newton J T Bigelow Brentwood clinical director of the Utica State Hospital Utica has been appointed superintendent of the Hudson River State Hospital Poughkeepsie, and acting assistant state commissioner of mental hygiene. Dr Bigelow will fill the military absence of the present assistant commissioner, Dr Harry Beckett Lang Albany.

**Building for Manufacture of Plasmochin**—The Winthrop Chemical Company at Rensselaer is constructing a \$75 000 building to be devoted exclusively to the production of plasmochin. Completion of the building is expected by September 15 but operation will not start until about November 15. The new facilities are expected to increase the company's plasmochin production capacity about 300 per cent. The new building is located on the company's 27 acre plant property. One story high, the new unit is one of twenty-six manufacturing laboratory and office buildings operated by Winthrop in Rensselaer. For the production of penicillin a building outside the factory grounds has been leased.

**Postgraduate Lectures**—Two lectures on hypertension will be delivered before the Onondaga County Medical Society and the Syracuse Academy of Medicine in Syracuse October 19 under the auspices of the state medical society and the state department of health. Dr Herman O Mosenthal, clinical professor of medicine New York Post-Graduate Medical School and Hospital Columbia University will discuss the classification and medical treatment of hypertension and Dr J William Hinton associate clinical professor of surgery at the school the surgical treatment of hypertension. A lecture has been planned under the same auspices for the Delaware County Medical Society in Hamden September 14. Dr Roscoe D Severance Syracuse speaking on Pain In and Related to Adult Feet.

### New York City

**Rapid Treatment Center at Bellevue**—The Federal Works Agency has approved a grant of \$290 000 to reconstruct one of the dormitory buildings at Bellevue Hospital for a rapid treatment center for venereal diseases and another grant of \$272 718 for maintenance. A convalescent rehabilitation camp on Welfare Island is also included in the project.

**Ledyard Fellowship**—The Society of the New York Hospital announces that applications for the Lewis Cass Ledyard Jr Fellowship must be received by the committee by December 15 for the 1944-1945 award. The fellowship was established in 1939 by Mrs Ruth E Ledyard in memory of her late husband a governor of the New York Hospital. The income amounting to about \$4 000 annually will be awarded to an

investigator in the fields of medicine and surgery or in any closely related field. About \$3000 will be available as a stipend and approximately \$1,000 for supplies or expenses of the research. In making the award, preference will be given to younger applicants who are graduates in medicine and who have demonstrated fitness to carry on original research of high order. Application for the fellowship should be addressed to the Committee of the Lewis Cass Levard Jr. Fellowship, the Society of the New York Hospital, 525 East 68th Street.

**Program to Rehabilitate Men Discharged for Mental Illness**—The New York Hospital has established a psychiatric rehabilitation program to aid in reclamation of men rejected or discharged by the armed forces because of mental illness. According to the *New York Times*, the private psychiatric project is said to be the first of its kind to operate in the metropolitan area. The Payne Whitney Psychiatric Clinic at the hospital has been conducting a special outpatient clinic since August 19 in cooperation with state selective service officials and social service agencies. Integration of psychiatric treatment with psychologic testing, retraining and employment is to be emphasized. The originators of the plan were Dr. Thomas A. C. Rennie, attending psychiatrist at the clinic and associate professor of psychiatry at Cornell University Medical College, who will direct the program, and Mrs. Kelly Simon, chief of psychiatric social service at the clinic. Dr. Rennie recently was named director of the division of rehabilitation of the National Committee on Mental Hygiene. The Commonwealth Fund has granted funds for the project. The clinic will serve as an actual treatment center for men in need of total overall service in their own rehabilitation and as a fact finding agency to determine the extent of the problem, the amount of help necessary for rehabilitation, the nature of psychiatric disabilities and what percentage of the patients treated may eventually be reemployed. It is expected that such facts may ultimately be of value in orienting federal authorities in their war and postwar rehabilitation planning. The social service agencies that will cooperate include the New York City Committee on Mental Hygiene, the Social Security Board, the United States Employment Service, the Vocational Adjustment Bureau, the American Rehabilitation Committee, the Community Service Society and the Young Men's Christian Association. The State Selective Service Board will refer cases to the clinic.

### OREGON

**Society Publishes Service Bulletin**—The Oregon State Medical Society has started the publication of a *Service Bulletin* to meet the growing need for a medium of exchange of news and information and, especially, of mailing addresses. The state society believes that, with a third of its men in service, the need has outgrown the capacity of its office to care for it. According to the *Service Bulletin*, the journal *Northwest Medicine* has done its excellent best to fill the need, but, with three states to serve, it has neither the staff nor the space to cover these things in detail and still maintain its standard of scientific publication. The *Service Bulletin* will go to both physicians at home and in the field and to members of the society and to nonmembers. The bulletin was launched with the August issue and contains a roster of Oregon physicians in service with the most recent ranks and addresses that could be obtained. Needed information is indicated with an asterisk. In addition the bulletin contains news notes of medical activities of physicians in the state.

### PENNSYLVANIA

**Personal**—Dr. Loyal A. Shoudy, chief of medical service, Bethlehem Steel Company, Bethlehem, was recently presented with the title "Alumnus Summa Laude Dignatus" as a part of the commencement exercises of the University of Washington, Seattle, and represents the university's annual election to honor an alumnus. Dr. Shoudy graduated at Washington in 1904. —A portrait of Dr. Thomas H. A. Stites was recently placed in the reception room of the surgery building at the Pennsylvania State Tuberculosis Sanatorium number 2 at Cresson to mark his recent retirement as medical director after serving for sixteen years (*THE JOURNAL*, May 29, p. 323). Dr. Stites has returned to his home in Nazareth and Dr. Benjamin Franklin Royer, Chambersburg, is acting medical director of the sanatorium.

### Philadelphia

**Report on Medical Art**—Dr. Samuel B. Sturgis, honorary director, department of medical art, College of Physicians of Philadelphia, recently made available his first report. The department was launched in 1940 following the gift by Dr. Sturgis of a collection of medical art. At that time Dr. Sturgis

was asked to become honorary director or curator of the collection of medical art. The collection has now almost 7,000 items, covering prints, photographs and original documents, the subjects including buildings, certificates of membership, meeting notices, portraits, clinics, lectures, matriculation cards, medical celebrations, sculpture, medals and caricatures. The assembling of the collection was donated to the college by Dr. Sturgis. According to the first report, there are at least 200 more photographs and miscellaneous items to be incorporated. Eventually it is hoped to attend to such phases as medical drawings and illustrations. Among the contributors to the department of medical art have been Drs. William W. Keen, Astley P. C. Ashurst, George E. de Schweinitz, Albert P. Brubaker, James M. Anders, all of whom are deceased, and Drs. William N. Bradley, Francis R. Packard, Edward B. Krumbhaar, Burton Chance, Samuel McC. Hamill, and Mrs. J. Hampton Carson and Mrs. Erwin F. Faber. The original collection, containing twelve completed portfolios of the Faber collection donated by Dr. Sturgis, is named the Sturgis Collection of Medical Art of the College of Physicians of Philadelphia.

### RHODE ISLAND

**Clifford Beers Dies**—Clifford Whittingham Beers, founder and secretary of the American Foundation for Mental Hygiene, died on July 9 in Butler Hospital, Providence, after a long illness. He was 67 years old. Mr. Beers was born in New Haven, Conn., in 1876. He graduated at the Sheffield Scientific School, New Haven, in 1897. In 1908 Mr. Beers founded the Connecticut Society for Mental Hygiene, the first organization of its kind in the country. The following year he was instrumental in establishing a National Committee for Mental Hygiene, of which he served as secretary for a number of years. In 1928 he founded the American Foundation for Mental Hygiene, serving as its secretary. He organized and became secretary-general of the first International Congress on Mental Hygiene in Washington in 1930, establishing the same year the International Committee for Mental Hygiene. The following year he established the International Foundation for Mental Hygiene, also serving as its secretary. Mr. Beers was a member of many nationally known societies concerned with mental hygiene. He had received numerous awards for his work, including the Cross of Chevalier of the Legion of Honor by the French government in recognition of international work in mental hygiene and in 1933 the gold medal of the National Institute of Social Sciences for "distinguished services for the benefit of mankind." He was honored in 1934 by the publication of a presentation edition of "Twenty-Five Years After—Sidelights on the Mental Hygiene Movement and Its Founder," containing about five hundred twenty-fifth anniversary tributes, collected by the late Dr. William H. Welch, chairman of the Tribute Committee, appointed by the National Committee for Mental Hygiene in connection with the anniversary celebration. The author of numerous articles on mental hygiene, Mr. Beers outlined his early experiences in his autobiography "A Mind that Found Itself" first published in 1908. According to the *New York Times*, in 1900, overpowered by a delusion that he was doomed to a serious disease, he leaped from a fourth story window but suffered only a few broken bones in his feet. The suicide attempt, however, caused him to regard himself as a criminal, hunted by detectives. His family placed him in a private sanatorium, where he lived for two years, never speaking. In another institution he began to grope his way out of the darkness. He then conceived the idea of reforming insane asylums, and, to gather material for his crusade, actually fought his way into the violent wards of both a private and a state institution. He spent some three hundred hours in a strait jacket and was also committed to a padded cell. Eventually he got a letter through to the governor of Connecticut, and some of the more brutal attendants were discharged. Mr. Beers was finally released as cured in 1903. He returned to business in 1904 but in 1906 gave it up, resolved to devote his life to improving the condition of the insane and to aiding the mentally ill. He wrote and published his book in 1908.

### TEXAS

**Houston Post Publishes Baylor Section**—On July 31 the *Houston Post* published a supplement devoted exclusively to the Baylor University College of Medicine, Houston. The issue contained photographs, feature articles, lists of faculty appointments and general discussions of the activities of the school, which recently moved from Dallas to Houston.



## GENERAL

**Society for Research in Psychosomatic Problems**—Information has just been received concerning the first annual meeting of the American Society for Research in Psychosomatic Problems held in Detroit in May at which Dr Winfred Overholser Washington D C, was named president-elect Dr Tracy I Putnam New York president and Dr Edwin G Zabriske, New York secretary-treasurer Dr Adolf Meyer, professor emeritus of psychiatry Johns Hopkins University School of Medicine Baltimore was chosen honorary president The constitution was unanimously adopted and research committees on psychosomatic problems appointed in obstetrics and gynecology early infancy and childhood physiologic mechanisms and the psychosomatic implications of animal experimentation psychosomatic teaching in medical schools psychosomatic research in psychosomatic problems, psychosomatic approach to social and cultural problems and psychosomatic problems in war medicine internal medicine and industrial medicine The meeting was held in conjunction with the meeting of the American Psychiatric Association The society was created last year but the formal organization was delayed until the joint meeting with the American Psychiatric Association in Detroit

**Academy of Neurological Surgery**—The sixth annual meeting of the American Academy of Neurological Surgery will be held at the Percy L Jones General Hospital Battle Creek Mich, September 17-18 with hotel headquarters at the Hart Hotel Brig Gen Joseph E Bastion M C U S Army, commanding general of the hospital will give the address of welcome Major Frank H Mayfield M C, A U S will deliver the presidential address on 'Some Notes on the History of the Army Medical Department' Speakers will be

Lieut Jo e M Ferrer Jr M C A U S Penicillin Therapy  
Capt Preston C Iverson M C A U S Skin Grafting for Decubitus Ulcers  
Col Robert H Kennedy M C A U S The Use of Local Anesthetics  
Col Walter B Martin M C A U S Malaria A Military and Public Health Problem  
Lieut Col Paul A Petree M C A U S The Psychoneuroses with Emphasis on the Battle Reaction  
Major Paul L Culich M C A U S Common Problems Associated with the Optic Nerve  
Major Ross M Newman and Capt James G Irving M C A U S Care of Neurogenic Bladder  
Lieut Col David Reeves M R C Some Unusual Cranial Neoplasms Encountered at the Hoff General Hospital Santa Barbara Calif  
Major Barnes Woodhall M C A U S Demonstration of the De Jong Stimulator  
Capt George S Baker M R C New Methods of Treatment for Osteomyelitis of Skull in War Casualties  
Dr Rupert B Ramey Los Angeles The Similarity of Symptoms Resulting from Certain Cauda Equina Tumors and Herniated Intervertebral Disk  
Dr John E Raaf Portland Ore Electroencephalographic Studies Immediately Following Head Injury  
Dr Theodore C Erickson Madison Wis The Cortical Representation of the Sacral Segments  
Dr A Earl Walker Chicago Studies on Concussion  
Lieut Comdr Charles Hunter Sheldon (MC) U S N R Observations on Monkey Cerebrum Through Lucite Calvarium

There will be a roentgenologic conference Saturday conducted by Lieut Col Joseph C Bell M C A U S and a symposium on amputations by Major Mayfield Capt Fred F Senerchia Jr M C A U S Lieut Col Francis McKeever M C A U S and Comdr James C White (MC) U S N R

**Approve Expansion of Firms for Manufacture of Penicillin**—Nine companies have received authority from the War Production Board to build new facilities to increase the production of penicillin the New York Times reported on August 30 Four of the concerns and three others have been producing the drug but five are entering as newcomers in the field it was stated The total cost of the expansion for the nine firms will exceed \$3,000,000 Although the army gets only 50 per cent other units of the armed forces as well as maritime workers receive their share and large supplies are needed for continued research and tests Control of the drug for civilian use is vested in Dr Chester S Keefer Boston chairman of the committee on chemotherapeutics National Research Council By agreement of the agencies working to develop penicillin every gram allocated to civilians goes to Dr Keefer and he passes it along to hospitals for clinical tests or to specific physicians The nine companies which have applications approved for expansion are the Abbott Laboratories North Chicago \$2,000,000 Reichel Laboratories Kimberton Pa for its laboratories at Phoenixville Pa \$532,831 Upjohn Company Kalamazoo Mich \$100,000 Bayer Company a division of Sterling Drug Company Inc manufacturing for Winthrop Chemical Company at Kenilworth N Y \$50,000 Commercial Solvents Corporation Terre Haute Ind \$41,700 Eli Lilly & Co

Indianapolis \$370,000 Lederle Laboratories, Inc Pearl River, N Y \$880,596 Schenley Research Institute, Lawrenceburg Ind \$24,781, and Cutter Laboratories Berkeley Calif, \$420,664 Abbott Reichel Upjohn and Winthrop were already producing penicillin as well as the Merck Company of Rahway, N J Charles Pfizer & Co of Brooklyn and E R Squibb & Co of New York City, which had already enlarged their facilities

## LATIN AMERICA

**Health Activities in Latin America**—In July a five year maintenance plan was proposed for Central America covering projects in Costa Rica Nicaragua Honduras El Salvador and Guatemala according to the Newsletter of the Health and Sanitation Division of the Coordinator of Inter-American Affairs The plan was submitted by Dr Eugene P Campbell field director for Central America and Lieut Col Henry W Van Hovenberg chief of party in El Salvador Maintenance would consist in expenditures for labor to make repairs in malaria control ditching, sewage disposal plants health centers and slaughterhouses

**Public Health Conference**—The Central American Public Health Conference in El Salvador, July 12-16, included field trips and conferences Projects visited were the malaria control work in Sonsonate and Ayutla, the health center in Santa Tecla the health center in Santa Ana, the malaria control work and sewage treatment plant in San Miguel, and the venereal disease clinic in El Salvador Among the subjects discussed at the conference meetings were the feasibility of combining care and preventive measures in health centers the problem of malaria control, tuberculosis control, child hygiene control of communicable disease, health education statistics and laboratory procedures

**Construction**—In Bolivia the uncompleted construction of the former Italian Club in La Paz was purchased to house the ministry of health and health center The building of a hospital is under consideration at Guayaramerin New health centers are planned for Bolivar, Colombia and in Ecuador a new health center and dispensary will be erected in Quito renovation has started on the children's clinic there Approval has been given to plans to reinforce the medical school building at the University of Guayaquil The erection of a new hospital is planned in Manta and the completion of one in Bahia de Caraquez An important undertaking in Tegucigalpa is the construction of a building to serve as a public health department for Honduras and the public health center for the city The building is located in the center of the town on a site donated by the Honduras government

**Health Education**—In Brazil the ministry of health and education has authorized the establishment of a fellowship program in addition to the program now operating under the direction of the Institute of Inter-American Affairs Ninety-three scholarships for the National School of Nursing have been been provided by the various departments in Colombia

**Care for Rubber Workers**—Interest in the medical care of rubber workers in the republics is evidenced in the various plans set up In Colombia plans have been completed for a 40 bed hospital at Miraflores and for 30 bed institutions at La Chorrera and Aracucara Under construction are 20 bed floating hospitals for use on the Caqueta and Putumayo rivers The floating units will weigh about 70 tons and be constructed on wooden flat bottomed barges The construction of small dispensaries has been approved by the Rubber Development Corporation on the banks of rivers to supplement the larger hospital units In Guayaquil Ecuador twelve dispensaries planned in the medical care program for rubber workers are now in operation only four stations are accessible by regular means of communication the others requiring either mule or canoe trip Three practical doctors were sent to the Mosquitoia portion of Honduras during June to supply medical aid to the rubber gatherers the chief of the group will be stationed at Brewers Lagoon This is a part of a program recently launched to care for rubber tappers in remote malaria infested jungles of Central America by a new type of roving doctor (THE JOURNAL July 17 p 822)

**Personal**—Dr John J Phair epidemiologist in the division of health and sanitation left Washington on August 6 to spend about six weeks in Chile as a consultant in methods of controlling meningitis Dr George C Dunham director of the division of health and sanitation returned to Washington on August 2 after an extended trip to Mexico Brazil Panama and Colombia Dr Charles Cadwallader medical officer with the field party in Brazil was sent to Bogota Colombia August 17 for four months to assist in the development of a program for marine air inspection quarantine regulations to the Colombian government



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

July 17, 1943

#### Army Medical Service in the Field

Lieut Gen Sir Alexander Hood, director general of the army medical services, has described the steps taken to adapt the medical services in the field to the needs of modern warfare. The essence of the new organization is the more advanced stations of surgeons and the swifter provision of surgical treatment. The new chain of evacuation of casualties differs slightly from the old. It is (1) the regimental aid post, (2) the casualty collecting post, (3) the advanced dressing station, (4) the field dressing station, (5) the advanced surgical center, (6) the casualty clearing station and (7) the general hospital. For the second link in the chain, the casualty collecting post, there is a new type of officer, who is not a doctor but is frequently drawn from the personnel of the army medical corps. He is equipped with a motorcycle, and his duty is to expedite and organize the rearward movement of casualties.

At the third link, the advanced dressing station, is stationed a surgeon who examines the casualties, and on his judgment their further movement depends. Those requiring an urgent operation bypass the next link, the field dressing station, and are taken straight to the fifth, the advanced surgical center. Those suffering from shock go to the field dressing station for resuscitation treatment. All other cases, having had their front line treatment completed, miss out two links and go straight to the casualty clearing station.

The advanced surgical center marks the greatest improvement in the system. It contains a field dressing station, a field surgical unit and a field transfusion unit. The field surgical unit is new and saved many lives in North Africa. It consists of a surgical team with equipment for one hundred operations and is provided with 20 beds in case it is desirable to retain patients for a time. When circumstances permit nursing, sisters are attached to it. This is the most advanced point at which they serve.

Another innovation is the parachute field ambulance surgical team, which is dropped with the troops with its equipment in containers. This was used last November in Tunisia, and numerous operations were performed not only on British troops but on German prisoners and on Arabs wounded in air raids. Lieut C G Rob, the first paratroop doctor to win the military cross, performed a heroic feat. When dropped by parachute he broke his leg. Nevertheless he carried on. When the blood transfusion supplies gave out he took a pint of his own blood for a patient. The citation states that he performed some one hundred and forty operations after being dropped by parachute, in many cases under enemy bombing.

In the North African campaign a unique incident took place. A British officer was director of the medical services of all the allies engaged and there was the fullest cooperation. On one occasion the Americans urgently required a 200 bed hospital. It was provided by the British and actually flown to the point where it was required.

Among other novelties are the Nuffield anesthetic apparatus, which enables ether to be administered in the tropics, formerly difficult if not impossible, and the chloroform capsules, used to get the seriously wounded out of tanks.

#### Leprosy in the British Empire

At a meeting of the British Empire Relief Association it was stated that there are still over 2 million persons with leprosy in the British Empire. The money now available under the Colonial Development and Welfare Act allows our colonies

to provide adequate measures of prevention and treatment. It was suggested that a second research station, besides the one at Calcutta, should be established, with facilities for training leprosy workers. Sir Cuthbert Sprawson pointed out that seventy-one years after the discovery of the leprosy bacillus there is probably more leprosy in the world than when it was discovered. But there was another side to the picture. In the past twenty to thirty years the care of persons with leprosy had improved and the atmosphere of leprosy hospitals had changed to one of hope. The benefit given by the hydnocarpus oils, introduced in 1916 by Sir Leonard Rogers, drew patients to the hospitals and allowed the doctor to instruct the patient and the public. We have learned that it is of no use to attempt propaganda and preventive treatment among a primitive population unless it is combined with curative treatment. Increased knowledge of nutrition has helped, for poverty, entailing insufficient and improper feeding, is an important predisposing cause of leprosy. Knowledge of prevention has increased, but methods of segregation must be adapted to local customs and prejudices. Field research has shown that many persons with mild attacks of leprosy recover spontaneously, sometimes without knowing that they have had the disease. We have learned how important it is to keep the patients exercised and occupied in some useful work. Special institutions are necessary for those who have passed through the contagious stage but are left crippled or are too old or too feeble for work.

#### Restoration of Museum of Royal College of Surgeons

The wrecking of the greatest pathologic and anatomic museum in the world—that of the Royal College of Surgeons—by German bombs has been described previously (*THE JOURNAL*, July 8, 1941, p 58, Feb 28, 1942, p 747). Nearly two thirds of the specimens were destroyed, including much that was irreplaceable, such as the Hunterian collection. Within a few weeks the council of the college set up a committee under the chairmanship of Prof Grey Turner to plan a new museum based on the surviving specimens and the traditions of the old but adapted to present conditions, which differ vastly from those of a hundred and fifty years ago when the museum was founded by the government's purchase of John Hunter's great collection. The museum was then the only one of the kind, but now every medical school has formed its museum. The museum will be devoted to the development, structure and functions of man and his diseases. Comparative anatomy will be retained only as far as it throws light on the anatomy and functions of the human body in health and disease. Anthropology will be retained, but greater discrimination will be used in this subject. The Hunterian collection will be restored as far as possible by replacement of the destroyed specimens and by making copies of models based on records, illustrations or recollection. It will not be separately exhibited but distributed among the appropriate sections.

It is recommended that the museum shall consist of two sections—anatomy and pathology—and that the council shall establish chairs for the control of these chairs of human and comparative anatomy and human and comparative pathology. For reconstituting the series of anatomic dissections the committee has obtained the help of leading teachers of anatomy. The object is to display the structure of the body from every possible aspect and at all ages, comprising normal (including microscopic) anatomy, topography and applied anatomy, surgical anatomy, embryology and senile changes. Restoration of the pathologic collections offers less difficulty. Selected members of the Royal Society of Medicine are being organized to make a systematic collection. Regional pathology will be developed primarily for the expert, as the needs of the student are largely met by the museums of the medical schools. There will be sections of military surgery, forensic medicine and

industrial diseases, also a historical section which will include Hunterian and post-Hunterian relics and one devoted to the evolution of modern surgical instruments. A new feature is a series of X-ray films or lantern slides of films and exceptional cinematographic films of surgical conditions and operations.

## BRAZIL

(From Our Regular Correspondent)

July 15 1943

### Special Public Health Service for the "Rubber Army"

Dr George C Dunham Medical Corps U S Army, and director of the Division of Health of the Bureau of the Coordinator of Inter-American Affairs arrived at the Calibouço airport of Rio de Janeiro July 11 during the course of an inspection trip of the health and sanitation projects now under way in Brazil. Mr Jefferson Caffery, American ambassador in Brazil. Dr Dunham and Hon Gustavo Capanema minister of health of Brazil signed a contract a few months ago to start a medical and sanitary organization named Serviço Especial de Saude Publica (Special Service of Public Health) and known as the SESP, to take charge of the main tasks of the health work in the Amazon basin where there are millions of rubber trees loosely scattered over the largest fluvial basin in the world, and in the Rio Doce valley where large iron deposits are located besides some relatively minor projects, like the construction and operation of a first class nursing school at the University of São Paulo. Both in the Amazon basin and in the Rio Doce valley tropical malaria is highly prevalent. The American representative of the Division of Health of the Coordinator of Inter-American Affairs in Brazil is Dr George M Saunders a specialist in tropical medicine with many years of practice of this kind of work in the Virgin Islands and in West Africa. Important sanitary engineering projects are being carried out at and around the cities of Belem state of Para, and Manaus state of Amazonas (present populations 220 000 and 115 000 respectively). Smaller drainage projects are being executed at secondary fluvial harbors such as Altamira Breves Santarem Rio Branco, Val de Cans and Porto Velho where sanitary centers have been organized to introduce health education and propaganda and medical and sanitary assistance into adjoining areas. Six large launches are being built to develop this medical work, and twelve smaller motor boats are already at work with doctors nurses and pharmacists. This is the beginning of a future large fleet of medical floating clinics to be operated beside many more fixed dispensaries which will be located at the most strategic points in connection with endemic malaria. In Santarem a special hospital with 50 beds is being built and in Breves a first class large malaria clinic is in course of organization. The headquarters of the whole Amazon health organization is in Belem, at the mouth of the river where a great entomologic laboratory is already functioning. A subordinate laboratory will be created at Manaus 1 000 miles up river. Many thousand immigrants from the semiarid northeastern states of Brazil have been moved to the Amazon basin and this human flow called the Rubber Army is continuing to be driven into the area. This is a tremendous task because the rubber collecting workers have to be attracted subjected to a careful medical examination educated in the principles of individual malaria control and effectively protected against the disease during the trip mainly overland through malaria infested districts. An important work to be done from the very beginning is the dietetic education of these backward agricultural workers and the effective protection of them against many more health hazards including venomous snakes. A chain of medical centers and food dispensing establishments has been organized along the inland routes and special dietitians have been placed at these medical

centers. In the Rio Doce valley the work is not so well developed yet as in the Amazon basin but previous surveys have demonstrated that malaria is also very prevalent in the region. As minor tasks of the SESP there are several training centers for medical specialists, nurses, nurses aides, laboratory technicians and sanitary inspectors.

## Brief Items

Dr Edgard Schneider, president of the University of Porto Alegre, Rio Grande do Sul, Brazil, has been invited by the U S government to visit the principal universities of the United States. The University of Porto Alegre includes five institutions: the Law School, the Medical School, the Engineering School, the School of Pharmacy and Dentistry and the School of Sciences.

Dr Ernani S Pereira has been appointed chief of the medical service of the Division of Personnel of the municipality of Rio de Janeiro, succeeding Dr João B Canto whose death has been reported in a previous letter.

Drs Paulo Elhajalde and Nilton Costa presented to the Brazilian Anatomic College a paper on the pathology of silicosis in the gold mines of Brazil. The lecture was illustrated by photographs photomicrographs, X-ray films and anatomic specimens of the cases presented. They discussed the correlation of the disclosed lesions with pneumonitis and with tuberculosis. For some time silicosis has been studied in Brazil particularly in connection with the Morro Velho and the Passagem gold mines and several interesting papers have been published by Drs C M Teixeira M Curt E Macedo O Barbosa M Moreira and Araujo Lima in the scientific bulletins of the National Department of Mineral Production.

Dr Aloysio de Castro professor of medicine at the University of Rio de Janeiro has been elected president of the Brazilian Academy of Medicine.

Dr Clementino Fraga recently retired as professor of medicine of the University of Rio de Janeiro has been elected professor emeritus by the University of Salvador, state of Bahia. Before being professor at Rio de Janeiro Dr Fraga held the same position for several years at the University of Salvador.

Dr Barbosa Vianna professor of pediatric surgery and orthopedics at the University of Rio de Janeiro has been elected to the presidency of the Brazilian Anatomic College.

## Death of Dr Antonio Fontes

Dr Antonio Cardoso Fontes director of the Oswaldo Cruz Institute, has died at the age of 64. As soon as he received his medical degree Dr Fontes began to work as an assistant of Oswaldo Cruz in 1902 in the preparation of antiplague serum and vaccine for the first time in Brazil to combat a disease that had entered the country through the ports of Santos and Rio de Janeiro. This serologic work was the origin of the present Oswaldo Cruz Institute at Manguinhos near Rio de Janeiro. After the work against plague Dr Fontes followed Oswaldo Cruz as one of his principal assistants in the campaign to eradicate yellow fever from Rio de Janeiro (1902-1903). As an investigator at the Oswaldo Cruz Institute Dr Fontes specialized in the study of the tubercle bacillus. He is known as the inventor of a special method to stain the bacillus and as a pioneer in the demonstration of the filtrable phase in the life cycle of the bacillus. Dr Fontes was a member of several Brazilian and foreign scientific associations. The scientific papers of Dr Fontes are numerous particularly in the fields of plague (1902-1903) and the biology of the tubercle bacillus (1910-1935). In the last few years Dr Fontes was deeply interested in the problem of cancer this being the reason of his last visit to the United States in 1942. He succeeded Dr Carlos Chagas in 1934 as director of the Oswaldo Cruz Institute in which post his administrative work is as laudable as his scientific studies. A few months ago his name was placed in the Brazilian Book of Merit.

## Deaths

**Edward Ross**, Brooklyn University of Louisville School of Medicine, 1936, diplomate of the National Board of Medical Examiners, appointed first lieutenant in the medical reserve corps, U S Army June 26, 1936, reappointed first lieutenant on June 26, 1941, served with the 245th Coast Artillery Regiment from Jan 11, 1941 until May 10, 1942, when he was relieved from active duty and reverted to inactive status, was honorably discharged on May 5, 1942 by reason of physical disqualification, promoted to temporary captain, Army of the United States, Feb 1, 1942, named ship surgeon in the U S Merchant Marine in June 1942, aged 30, died recently in the Medical Center, Stephen A Harkness Pavilion for Private Patients New York, of acute pericarditis.

**Samuel Ernest Fletcher**, Chicopee, Mass., Boston University School of Medicine, 1892, served two terms as mayor of Chicopee, city bacteriologist and formerly city physician, for several years chairman of the library commission, member and chairman of the school committee and board of health, examiner for the Selective Service System recently and also during World War I, served as president of the chamber of commerce, director of the Chicopee Cooperative Bank and the Cabot Trust Company, a member of the staff of the Wesson Maternity Hospital, Springfield, consulting physician, past president and for many years chief of the staff of the Wesson Memorial Hospital, Springfield, where he died, June 22, of carcinoma of the bone, aged 76.

**Robert Lee Bradley** \* Roswell, N M, University of Louisville (Ky) Medical Department 1890, councilor of the Fifth District and past president of the New Mexico Medical Society, formerly member, vice president and secretary of the New Mexico Board of Medical Examiners, served as president of the Pecos Valley District Medical Society, fellow of the American College of Surgeons, a captain in the medical corps of the U S Army during World War I, at one time mayor of Roswell, served as president of the Roswell National Bank and as vice president of the First State Bank and Trust Company, member of the staff of St Mary's Hospital, aged 76, died, June 19, of uremia.

**Calvin Edward Bradley**, Tulsa, Okla., Barnes Medical College, St Louis, 1905, member of the Oklahoma State Medical Association, Oklahoma State Pediatric Society and the American Academy of Pediatrics, specialist certified by the American Board of Pediatrics, Inc, vice president and formerly a member of the state board of medical examiners, served as a captain in the medical corps of the U S Army and later with the British army during World War I, was decorated by the British government for gallantry, on the staffs of the Hillcrest Memorial and St John's hospitals, aged 58, died, July 6, of heart disease.

**John Wilson Elder** \* Albuquerque, N M, Western Pennsylvania Medical College, Pittsburgh, 1892, a major in the medical corps of the U S Army during World War I, active in the National Guard in Pennsylvania and New Mexico, for many years surgeon in charge of the Santa Fe Coast Lines Hospital, formerly associated with the Indian Service, served as superintendent of the Laguna Sanatorium for Tuberculosis, recently district health officer for Bernalillo and Sandoval counties, had been health officer in several districts in New Mexico, aged 78, died, June 9, of cerebral hemorrhage.

**George Woodruff Williams** \* Trenton, N J, Georgetown University School of Medicine, Washington, D C, 1917, a member of the state board of medical examiners from July 1939 to February 1942, fellow of the American College of Surgeons, visiting surgeon at the state prison, served as a lieutenant in the U S Navy during World War I, surgeon on the staff and director of the intern committee of St Francis Hospital, aged 50, died, June 20, in the Graduate Hospital of the University of Pennsylvania, Philadelphia, of a brain tumor.

**Benjamin F Akin**, Jackson, Ga., Georgia College of Eclectic Medicine and Surgery, Atlanta, 1899, member of the Medical Association of Georgia, secretary and past president of the Butts County Medical Society on the staff of the R F Strickland and Son Memorial Hospital, Griffin, aged 73, died, June 12, of heart disease.

**Elmer David Augspurger** \* Lodi, Calif., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907, served on the staffs of the

Buchanan and Mason hospitals, aged 62, died, June 25, in San Francisco of acute catarrhal jaundice.

**Frederick T Avery**, Palos Park, Ill., Northwestern University Medical School, Chicago, 1894, aged 74, died, June 19, in the Englewood Hospital, Chicago, of hypertension, heart disease and pulmonary edema.

**James T Baker**, Huntington, W Va., University of Virginia Department of Medicine, Charlottesville, 1901, aged 74, died, July 19, of coronary thrombosis.

**Robert O Ball**, Tacoma, Wash., Eclectic Medical Institute, Cincinnati, 1893, aged 75, died, June 18, of pernicious anemia.

**Marion Thomas Beaman**, Eva, Okla. (licensed in Oklahoma in 1932), aged 81, died, June 6, of chronic nephritis.

**Axel P Bergman** \* New Haven, Conn., University of the City of New York Medical Department, New York, 1895, member of the American Roentgen Ray Society, aged 74, radiologist to the Hospital of St Raphael, where he died, June 18, of carcinoma of the stomach.

**William Troy Bivings Jr** \* Atlanta, Ga., Cornell University Medical College, New York, 1932, member of the staffs of St Joseph Infirmary and the Emory University Hospital, aged 36, died in the New York Hospital, June 15, of anterior mediastinal mesothelioma with metastases.

**Joseph L Boehm** \* New York, Missouri Medical College, St Louis, 1899, adjunct professor of urology at the New York Polyclinic Medical School and Hospital, at one time professor of genitourinary surgery at the St Louis College of Physicians and Surgeons, member of the American Urological Association, fellow of the American College of Surgeons, on the staff of the Bellevue Hospital, aged 66, died, June 29, of heart disease.

**Frank Bernard Broderick**, Detroit, Detroit Homeopathic College, 1904, veteran of the Spanish-American War and World War I, formerly member of the city council, coroner of Wayne County and city physician, served on the staff of the Grace Hospital, aged 63, died June 17, in the Veterans Administration Facility, Dearborn, Mich., of myocardosis.

**Arthur Eugene Brown**, Greenville, Pa., Western Reserve University Medical Department, Cleveland, 1902, member of the Medical Society of the State of Pennsylvania, served during World War I, aged 66, on the staff of the Greenville Hospital, where he died, June 10, of cardiorenal disease.

**Frank Reitz Buchanan**, Canton, Okla., Chicago College of Medicine and Surgery, 1914, medical examiner for the local draft board, aged 51, died, June 4, of coronary occlusion.

**Thomas Dickinson Burgess** \* Williamson, W Va., University of Maryland School of Medicine, Baltimore, 1892, aged 73, died, June 24, of heart disease.

**Edward Ward Burns**, Honesdale, Pa., College of Physicians and Surgeons, New York, 1894, member of the Medical Society of the State of Pennsylvania, for many years a member of the school board of Honesdale, served as medical examiner for several insurance companies, surgeon for the Erie Railroad for thirty years, aged 71, died, June 21, in the Wayne Memorial Hospital of a streptococcal infection.

**Charles James Carey**, Towson, Md., College of Physicians and Surgeons, Baltimore, 1897, for many years superintendent of the Eastern Shore State Hospital, Cambridge, aged 72, died, June 24.

**John B Corsiglia**, Brooklyn, Long Island College Hospital, Brooklyn, 1897, aged 72, died, June 11, of heart disease.

**Edgar Eugene DeLa Perriere**, Winder, Ga., Chattanooga (Tenn) Medical College, 1909, also a druggist, aged 58, died, June 8, in St Mary's Hospital, Athens, of uremia.

**Marie Adelheid Dies**, Buffalo, Illinois Medical College, Chicago, 1904, aged 67, died, June 7, of myocarditis.

**Loyal Lindsey Dunlop** \* Madrid, N Y, Albany Medical College, 1916, past president of St Lawrence County Medical Society, served as coroner of St Lawrence County, health officer for the towns of Madrid and Louisville, served during World War I, member of the staffs of the A Barton Hepburn Hospital, Ogdensburg and the Potsdam Hospital, aged 52, died, June 14, of coronary thrombosis in Ottawa, Ont., Canada.

**Edward Everett Higdon**, Fredericktown, Mo., Barnes Medical College, St Louis, 1903, member of the Missouri State Medical Association, past president of St Francis Iron Madison-Washington-Reynolds Counties Medical Society, aged 73, died in Ironton, May 28, of bronchopneumonia and hypertension.

**Guy Munford Kendall**, Corder, Mo Kansas Medical College Medical Department of Washburn College Topeka, 1908, aged 65, died in the Research Hospital, Kansas City, June 17, of carcinoma of the splenic flexure

**Allison Jardine Laird**, Des Moines, Iowa, University of the City of New York Medical Department 1887, aged 85 died June 8 of myocarditis and hypertension

**Henry Elmer Laymon**, Warren Ind., Medical College of Indiana Indianapolis 1897, formerly president of the First National Bank, aged 75 died June 19

**William Lechner** & Hartford Conn. Baltimore Medical College 1910 fellow of the American College of Surgeons for many years surgeon of the city fire department served during World War I one of the founders, chief surgeon and head of the medical defense unit Mount Sinai Hospital consulting surgeon to the Hartford and St Francis hospitals, aged 59, died suddenly, August 10 of coronary thrombosis

**Edward Austin McManus**, Los Angeles L R C P Ireland and L R C S Ireland 1923 on the staff of the Queen of Angels Hospital, aged 53 died June 3 of coronary thrombosis

**Philip George Manecke**, Brooklyn University of the City of New York Medical Department 1893 member of the Medical Society of the State of New York, aged 79, a founder and surgeon in chief of the Betham Deaconess Hospital where he died June 8 of cerebral hemorrhage and hypertension

**Martin Luther Matthews**, Sanford N C University of North Carolina School of Medicine Raleigh 1903 member of the Medical Society of the State of North Carolina aged 68 died June 12 in the Lee County Hospital

**Wallace Bruce Matthews**, Grand Rapids, Mich., Chicago Homeopathic Medical College 1890 aged 81 died, June 3 in the O Keete Sanitarium East Grand Rapids of Parkinson's syndrome

**William Wilson Maxwell**, Mavview Pa University of Pennsylvania Department of Medicine Philadelphia 1896, served during the Spanish-American War and World War I, aged 69 senior resident physician to the Mavview State Hospital, where he died July 2, of coronary thrombosis

**Eben P S Miller**, Chicago Harvey Medical College, Chicago 1905 member of the Illinois State Medical Society, medical examiner for the Selective Service Board number 123 served on the staffs of the Garfield Park Community and Franklin Boulevard hospitals, aged 70 died June 16, of coronary thrombosis

**James Lyons Miller**, Waukegan Ill Loyola University School of Medicine Chicago, 1916 veteran of the Spanish-American War served on the staffs of St John's Hospital, Largo N D the Victory Memorial and St Therese's hospitals at one time health officer of North Chicago, aged 71, died, June 25 of cerebral hemorrhage

**William Joseph Monaghan**, Secaucus N J Medico-Chirurgical College of Philadelphia 1896 served during World War I formerly superintendent of the Hudson County Hospital aged 72 died June 26 in the Fitch Memorial Hospital Neptune of myocardial failure

**Samuel Moore**, Chicago, University Medical College of Kansas City Mo, 1898 member of the Illinois State Medical Society member of the staff of the Garfield Park Community Hospital, aged 71 died June 15, of arteriosclerotic heart disease

**Frank Beattie Morrissey**, St Paul, University of Minnesota Medical School Minneapolis 1919 member of the Minnesota State Medical Association fellow of the American College of Physicians specialist certified by the American Board of Internal Medicine served during World War I and as a major in the Minnesota National Guard on the staff of St John's Hospital aged 51 from 1920 to 1933 a member of the staff of the Veterans Administration Facility Minneapolis where he died June 16 of cirrhosis of the liver

**William A J Mosley**, Thomasville, Ga Meharry Medical College Nashville Tenn, 1895 aged 71 died June 24 of cerebral hemorrhage

**Otto Louis Mulot**, Brooklyn University of the City of New York Medical Department New York 1889 served during World War I aged 75 for many years on the staff of the Brooklyn Hospital where he died, June 22, of acute yellow atrophy of the liver

**James J Murphy**, Annapolis Md University of Maryland School of Medicine Baltimore 1896 served as health officer and physician medical examiner for the draft board during

World War I and recently chairman of the examining physicians of the local Selective Service Board, aged 68, on the staff of the Emergency Hospital, where he died, June 26, of diabetes mellitus and carcinoma

**Joseph Francis Nagle** & Youngstown Ohio, Georgetown University School of Medicine, Washington, D C, 1919, surgeon for the Pennsylvania Railroad, aged 48 member of the staff of St Elizabeth's Hospital, where he died, June 13 of coronary thrombosis

**Vivian John Neale** & Chicago, Bennett Medical College, Chicago, 1915, on the staff of St Bernard's Hospital, aged 50, died June 28, of cerebral hemorrhage

**Edward Lewis Neff**, Pittsburgh Western Pennsylvania Medical College Pittsburgh 1891 member of the Medical Society of the State of Pennsylvania aged 84, died, June 15, of intestinal obstruction

**Dorothy Nina Agee Rich**, Lava Hot Springs Idaho University of Tennessee College of Medicine Memphis 1920, member of the Idaho State Medical Association, aged 45 died, June 5 of pneumonia

**Frederick W Rich**, Charlotte Hall, Md Chicago Homeopathic Medical College, 1889, the Hahnemann Medical College and Hospital Chicago 1905 served on the staff of the Washington County Hospital, Hagerstown, aged 84 died, June 3, in the Relax Sanitarium of chronic myocarditis

**Francis Leslie Richardson**, Weiser Idaho Chicago Medical School 1925 aged 52, died, June 22 in the Veterans Administration Facility, Boise of heart disease

**Carroll Bancroft Rugh**, New Alexandria, Pa, Jefferson Medical College of Philadelphia 1885 member of the Medical Society of the State of Pennsylvania bank president, aged 82, died, June 11 in the Westmoreland Hospital, Greensburg, as the result of an injury received in a fall

**Walter Burns Ryder**, Long Beach, Calif, Chicago Homeopathic Medical College 1899 aged 75 died June 4, of cerebral sclerosis and acute cardiac dilatation

**Mark Page Stanley**, Northboro Mass, Baltimore Medical College 1895 aged 69 died, June 10, in the Memorial Hospital Worcester, of coronary thrombosis

**Herbert P Wilson** & Wynne Wood Okla, Vanderbilt University School of Medicine, Nashville, Tenn, 1893 an Affiliate Fellow of the American Medical Association, the first councilor of the Seventh District of the Oklahoma State Medical Association at one time physician in charge of the Wynnewood Sanitarium, aged 85, died May 1, of cerebral sclerosis

#### DIED WHILE IN MILITARY SERVICE

**Allen Ashton Altman**, Berkeley Calif Stanford University School of Medicine, San Francisco, 1939 member of the California Medical Association began active duty as a lieutenant junior grade, in the U S Naval Reserve Sept 7 1942 aged 28 was accidentally shot and killed in the North Pacific area April 11

**George Howes Ketler** & Menands N Y University of Buffalo School of Medicine 1934 assistant in medicine at the Albany Medical College from 1937 to 1939 and later an instructor in medicine, served on the staffs of the Albany and Memorial hospitals Albany, began active duty as a captain in the medical reserve corps of the U S Army in October 1940 a flight surgeon in the Army Air Corps aged 32 was killed July 21 in an airplane crash in the Latin American area

**Ben Robbins**, Pittsburgh University of Tennessee College of Medicine Memphis 1937 began active duty as a first lieutenant in October 1940 and later was commissioned a captain in the medical reserve corps of the U S Army a flight surgeon attached to the Air Corps aged 30 died June 5 of a fractured skull in the North African area (non-battle casualty)

**Samuel W Wein** & New York Long Island College Hospital Brooklyn 1925 fellow of the American College of Surgeons served on the staffs of the Lebanon and Jewish Memorial hospitals began active duty as a captain in the medical corps Army of the United States Sept 9 1942 aged 42 died in Camp Campbell Ky July 20 of coronary thrombosis

## Bureau of Investigation

## SOME MISCELLANEOUS MEDICAL FRAUDS

## A Variety of Schemes Debarred from the Mails

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of *THE JOURNAL*. Following are brief abstracts of some fraud orders not dealt with previously.

**Brown Remedies Company**—Under this name and the names J A Brown, Dr Brown and J A B, one J A Brown, a farmer living on a rural route outside the town of Bremond, Texas, conducted a mail order scheme for about fifteen years selling various products that he termed "botanicals" for the treatment of different diseases. A complaint to the Post Office Department from a dissatisfied customer caused that agency to investigate Brown's enterprise. An inspector for the department entered into a test correspondence with Brown to learn how he did business. An inquiry was addressed to Dr Brown stating that the writer had diabetes was on a diet and wondered what Brown could do for him. Brown replied that the treatment for this case would cost \$5.10. At another time he intimated to the same inquirer that the latter had cancer but could be cured by Brown's botanicals for \$28.50. On the receipt of some money Brown sent his patient a shipment containing small packages of herbs. Two chemists in the employ of the Government reported that their examinations showed the treatment to consist of four preparations containing, respectively, gentian dandelion root, dried flower of red clover and ground root of burdock. In December 1942 the Post Office Department notified Brown to show cause on Jan 1, 1943 at its Washington office why a fraud order should not be issued against him and the various names under which he operated. Brown replied in a series of three letters but did not appear at the hearing or send any counsel to represent him. The Government offered as its witness at the hearing Dr Fred W Norris, Senior Medical Officer of the Food and Drug Administration Federal Security Agency, as one well qualified to give expert medical testimony. Dr Norris testified that the selection of a proper mode of treatment required in a particular case necessarily was based on an accurate diagnosis, a process which in itself necessitates physical examination by a competent practitioner involving use of the hands of the examiner and often the utilization of instruments, X-rays, blood tests and other laboratory procedures. He showed that a reading of the list or description of symptoms set forth in the cited letters addressed to Brown would not enable any one to determine just what specific disease entities were present, and without such determination it would be impossible to prescribe proper treatment. Dr Norris testified further that he was familiar with the herbs comprising the "treatment" and that the total effect of these preparations would be approximately the equivalent of that obtained from the drinking of a cup of hot water together with use of a mild appetizer. He showed further that dandelion, red clover and burdock are rapidly being discarded by medical science and no longer appear in the United States Pharmacopeia, whereas gentian has no recognized specific value in the treatment of any known disease entity and acts merely as a bitter or stomachic. Also he said, the dietary advice prescribed under the circumstances mentioned would be worse than useless and in the case of a person suffering from many ulcerated or inflammatory conditions of the gastrointestinal tract it would be harmful. Brown's letter in answer to the memorandum of charges stated that he sold botanicals by mail but denied that he made any claim "as to the curative effects of any roots or herbs." The evidence definitely established, however, that Brown was representing through the mails that he could effectively treat various diseases with the herbs that he sold, and consequently the findings were that he was attempting to obtain remittances of money through the mails by means of false and fraudulent pretenses, representations and promises. A fraud order closing the use of the mails to the names J A Brown, Brown Remedies Company, Dr Brown and J A B was issued by the Post Office Department on Feb 6, 1943.

**L H Forte**—From Hattiesburg, Miss., this person conducted a medical business by mail, representing that he could cure whatever ailed a customer. Though Forte put the title "Dr" before his name, no evidence could be found in the exhaustive biographic files of the American Medical Association to show that he ever attended a medical school or was licensed to practice medicine in any state. It was, in fact, his unwarranted selling of alleged cures, accompanied by medical advice that led to the investigation of his scheme by the Post Office Department. A letter sent to him, asking whether he had any medicine that would cure diabetes, brought the reply that he could cure the writer and restore her to "perfect health" with a treatment for which he asked \$12.50. On appeal from the inquirer he reduced the price to \$5, which amount was sent him. In return, Forte mailed the customer a liquid consisting essentially of oil of citronella, and a package composed of 40 per cent of epsom salt and 60 per cent of sulfur. With these he sent instructions for taking, and some additional advice. When the Post Office Department, after due investigation of Forte's quackery, notified him to show cause on Oct 22, 1942, why a fraud order should not be issued to debar him from further use of the mails, he neither appeared at the hearing nor sent anyone to represent him. At that hearing Dr Fred W Norris, Senior Medical Officer of the Food and Drug Administration, testified that the treatment described above was utterly worthless for diabetes. Also the hearing brought out that Forte had represented through the mails that for \$10 he would "guarantee" a cure with his treatment without even knowing what diseases the inquirers might have. The investigation of his business had elicited from him the statements that he had commenced the enterprise in 1935 that it consisted in selling

by mail only certain "powders" and "sights," and that he did not practice medicine or sell cures. All these claims the investigation proved false. Accordingly, the Post Office Department, on Nov 17, 1942, issued a fraud order debarring Forte from further use of the mails.

**Manks' School of Natural Healing Southern School of Natural Healing and "Dr" Sanford B Manks**—Under these names one Sanford B Manks, who at times used the "degrees" ND and DMK after his name, conducted a mail order scheme from Deland, Fla., selling a correspondence course in the study of naturopathy or drugless healing. The Post Office Department charged Manks with representing that all persons who completed the course, regardless of their former education, would be legally qualified to establish offices for the practice of naturopathy or drugless healing in any of the states in the Union that as a result of taking the course they would be fully qualified and able to diagnose accurately and prescribe for and treat any and all diseases suffered by mankind and cure such conditions as cancer, diabetes, cirrhosis of the liver, gall stones, typhoid fever, measles, mumps, chicken pox, arthritis, infantile paralysis, psoriasis, pneumonia and erysipelas. In August 1942 the Post Office Department called on Manks to show cause on Sept 14, 1942, why a fraud order should not be issued against him and the several names under which he operated. He replied with a letter which made general denial of all the charges and submitted a number of alleged testimonial letters from various persons with whom he had had dealings. Manks, however, neither appeared at the hearing in Washington nor sent counsel to represent him. At that hearing the Government introduced as exhibits various advertisements taken from magazines and other periodicals in which Manks offered the opportunity to "become Drugless Practitioners," "Learn the Healing Science of the Ages—the Laying on of Hands," "Learn Drugless Therapeutics, Practice Naturopathy and Metaphysical Healing," and "Study the coming profession. Become a Drugless Practitioner and Metaphysician, practicing under the Chirothesian Certificate." A mass of other exhibits also was introduced, consisting of letters and typewritten statements sent by Manks through the mails in answer to inquiries. It was shown that in some of these he had represented himself as "a retired Naturopathy Practitioner, Drugless Physician, and Metaphysician, of about 45 years' practice, study, research and experimentation, 'qualified to teach you the rational principles to be used in restoring the sick body to health,' and as having the 'degrees' of 'ND, CC, TS'." It was shown that the Post Office inspector who had investigated this case had visited and interviewed Manks at his place of business and discovered that Manks maintained his residence and office entirely in one automobile trailer which was parked in the yard of the house in which his wife and daughter lived. That the trailer was a small ordinary type and that the interior was equipped with a bed at one end and a portable typewriter and merger office equipment at the other end. It contained no scientific equipment such as one would expect to find in a medical school. Manks told the inspector that he had once engaged in the cleaning and laundry business at Portland, Maine, and moved to Deland, Fla., in 1939. What he was selling through the mails was, he declared, "the vast amount of knowledge" acquired during a lifetime. He claimed to have the equivalent of a high school education but was unable to furnish the names of any institutions from which he had graduated except that he exhibited a diploma from the Blumer College of Naturopathy, Hartford, Conn., dated June 5, 1932, which school he stated was now out of existence. Manks admitted that he was not a physician, chemist or pharmacist. Dr Fred W Norris, Senior Medical Officer of the Food and Drug Administration, gave expert medical testimony for the Government at this hearing to the effect that he had examined all of the "lectures" comprising the course of study sent out by Manks and was of the opinion that this alleged course would in no way enable a student thereof to diagnose or cure human diseases. Many of the theories set forth in these lectures, he stated, contradicted other theories expressed in the same course. Further, he testified that a person taking such a course would not be qualified to pass or even to take an examination required by law in any of the states of the Union before the issuance of a license to practice any medical profession concerning the treatment of human diseases. Since the testimony in the case was considered sufficient to show that Manks's scheme constituted a fraud on the public, it was debarred from the mails on Nov 13, 1942.

**Tesano Tea Company Inc**—This New York concern, whose manager was in Elmer H Baden, sold through the mails a nostrum known as "Tesano Tea" and represented, in advertisements placed in various periodicals and through written and printed matter sent through the mails that if taken as directed it would control diabetes, reduce the sugar content of blood and urine, restore the diabetic person to a more normal condition and relieve the symptoms of diabetes without the use of insulin or dietary measures. A microscopic examination made by a microanalyst in the employ of the Food and Drug Administration at Washington showed that Tesano Tea was a coarsely ground mixture of chamomile flowers, juniper berries, anise seed, caraway seed, fennel seed, senna leaves, equisetum stems, mint leaves, mallow flowers, strawberry leaves, and a substance closely resembling bilberry (the common European form of huckleberry). A chemist for the Food and Drug Administration made a chemical analysis of the tea brewed from this mixture according to the directions and reported that the mineral matter found in the water soluble portion amounted to 1.43 sodium and potassium salts, 0.05 iron, 0.07 calcium, 0.15 sulfate and minute traces of other minerals found in herbs soluble in water, together with tannin from barks and chlorophyll from the leaves of these herbs. In August 1942 the Post Office Department ordered the Tesano concern to show cause at a hearing to be held on August 28 why it should not be debarred from the use of the mails for perpetrating a fraud on the public in the sale of this tea. After various postponements the hearing was finally held on October 1 and the Post Office at that time introduced all of its evidence. In addition to the evidence on the composition, mentioned above, expert



medical testimony for the government was given by Dr. Maurice Protas, a physician well qualified by education and experience to give such testimony. He stated that he had made a careful study of diabetes and had treated several thousand sufferers from that disease and testified that the use of the Tesano Tea according to the composition as shown by the analyses reported would have no beneficial effect on a diabetic condition, would not reduce the sugar content of the blood or urine or in any way alleviate the symptoms of the malady or restore a diabetic person to a normal condition. Further he testified that should such a person use this tea and relax his dietary precautions or discontinue the use of insulin (if taking it) in the belief that Tesano Tea would permit of such discontinuance and relaxation he might grow progressively worse, go into a diabetic coma and die. The Tesano company was represented at the hearing by its attorney who requested additional time within which to present expert medical testimony. The respondents were given until October 8 to introduce such testimony and thereafter the time was extended until November 2 at their request. However there was received from the attorney for the respondents a letter dated Nov. 20, 1942 in which he stated that after consultation with his client company the latter as the result of a medical opinion they had received concerning their product had decided to discontinue the sale of Tesano Tea and to return all remittance received to the senders besides shipping all herbs on hand back to the concern from which they had been purchased. Further the Tesano people offered to dispose of their fixed assets so that the corporation would either be dissolved or considered abandoned. Despite these representations the Post Office Department felt that the defendant concern or its successors or assigns might at some time decide to resume their fraudulent enterprise and to prevent this a fraud order barring the scheme from the mails was issued on Dec. 14, 1942 against the Tesano Tea Company, Inc.

## CEASE AND DESIST ORDERS

### Abstracts of Certain Federal Trade Commission Releases

The work of the Federal Trade Commission in helping to protect the public against misrepresentation or fraud in the medical as well as other fields has been greatly extended by the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act. The Food Drug and Cosmetic Act of 1938 added to the Food and Drug Administration's control of the advertising claims and statements made on the label of a medicine or on the carton or in the accompanying leaflet, whereas what might be termed collateral advertising, that which appears in circulars, newspapers and magazines and over the air, comes more actively under the purview of the Federal Trade Commission by virtue of the Wheeler-Lea Amendment.

THE JOURNAL has at various times commented on the activities of the Federal Trade Commission in this connection, even before the Wheeler-Lea Amendment gave it its added rights. In some cases the Commission may accept from the person or concern involved a stipulation that the objectionable practices or claims cited will be discontinued. In other cases the Commission issues what is known as a Cease and Desist Order in which the individual manufacturer or distributor cited is ordered to cease and desist from practices which have been declared objectionable. In some cases the claims cited have been discontinued by the firms several months (or even longer) before the issuance of the order. Abstracts of some of the orders issued in 1942 follow in this form: name of product, name of distributor, date of issuance of complaint, date of issuance of Cease and Desist Order and terms of order.

**Bee Dew Cosmetics**—Lillian S. Nash trading as Bee Dew Cosmetic Company, Detroit, complaint issued Aug. 18, 1942, order issued Oct. 30, 1942. Order directed the respondent to discontinue any advertising which represented that Bee Dew Special Hair Grower, Bee Dew U Gro, Bee Dew Special U Gro, Bee Dew Scalp Oil, Bee Dew Shampoo and Bee Dew Pressing Oil promote the growth of new hair or constitute a cure or remedy for or possess any value in the treatment of falling hair, baldness, dull hair, scalp irritation or dandruff, beyond cleansing the hair and scalp, allaying itching due to minor scalp irritations and facilitating the removal of loose dandruff scales or any advertisement which uses the word grow or grower or any term similar to these in phrasing or tending to describe the preparations designated Bee Dew Special Hair Grower, Bee Dew Special U Gro and Bee Dew U Gro or which otherwise represents that any such product has any effect on the growth of the hair. The respondent was ordered further to discontinue any advertisement which represents that her product Bee Dew O No will give complete protection from offensive body odor or have any effect thereon in excess of affording temporary protection from such odors.

**Chinese Herbs**—Edwin Tom trading as Master Herb Company, Los Angeles, complaint issued April 21, 1942, order issued Oct. 4, 1942. Order prohibited any advertisement representing that these herbs constitute a cure or remedy for rheumatism, arthritis or asthma or possess any value in treating such conditions in excess of giving temporary relief from the symptoms of pain associated with rheumatism and arthritis and temporary relief from the pains of asthma or any advertisement

representing that such herbs possess therapeutic value in treating any other diseases or ailments beyond affording temporary palliative relief from some of the pains or other symptoms that accompany them. Also prohibited were the representations that the herbs in question are a cure or remedy for or have any value in the treatment of stomach ulcers or that their use will renew the glands of the body or enable the user to regain strength or vigor.

**Di Function**—Di Function Company, Inc., Fort Worth, Texas, complaint issued Jan. 13, 1942, order issued Nov. 6, 1942. Order prohibited further advertising, misrepresentations that the product is a cure or effective treatment for sugar diabetes, will revive the glands of the pancreas or enable them to produce sufficient insulin for the body's needs or enable a victim of sugar diabetes to discontinue dieting and the use of medicines with safety.

**Double Vitamin Cold Cream and Skin Softening Cream** (formerly called Ward's Tissue Cream)—Montgomery Ward and Company, Chicago, complaint issued March 21, 1942, order issued October 16, 1942. Order prohibited the concern from further representing that any of its cosmetic preparations containing vitamins A and D have therapeutic value when applied to the skin or any effect on the appearance of the skin beyond the emollient, soothing and cleansing action of ordinary cosmetic cream mixtures, that the presence of vitamins A and D in these products gives them special properties over and above those of ordinary cosmetic creams or that the use of such toiletries because of their vitamin content will have any beneficial effect in keeping the facial skin firm and smooth or the hands soft, smooth and white or in promoting growing skin or retarding the appearance of age. The Ward concern also was prohibited from further use of the words tissue cream or similar terms to describe any cosmetic preparation or from representing in any way that its creams have therapeutic value in treating or nourishing the skin tissues.

**Electro Health Short Wave Diathermy**—Electro-Health Appliance Company, Los Angeles, complaint issued June 12, 1941, order issued Nov. 10, 1942. Order directed the concern to discontinue any advertisement which represented that the device is harmless and constitutes a competent treatment for the various ailments mentioned in the advertising or any other disorder unless specifically limited to cases in which no acute inflammatory process is involved and in which the application of heat is not likely to induce hemorrhage or any advertisement which fails to reveal clearly, conspicuously and unequivocally that the device is unsafe to use unless a competent medical authority has determined as a result of diagnosis that the use of diathermy is indicated and has prescribed the method of such treatment and the user has been thoroughly instructed by a physician or trained technician in the use of the device.

**Hollywood Magic Garment**—Hollywood Magic Garment Company, Los Angeles, complaint issued Feb. 11, 1942, order issued Jan. 26, 1943. Order prohibited dissemination of any advertising which represented that this device constitutes an effective method for the removal of excess flesh or weight or that it is in all cases safe to use. This order was based on the findings of the Commission that the garment in question made of rubberized cloth which fits tightly about the neck, wrists and ankles induces perspiration and thus causes the body to lose substantial quantities of water, salt and consequently weight. The findings continue, however, that the effect is only temporary since the wearer of the garment because of thirst produced by the amount of water lost must proceed almost immediately to drink a quantity of water or other liquid with the result that the weight of the body becomes about the same as it was before the process was begun. The Commission also found that the device cannot be properly regarded as safe in all cases as its use may raise body temperature to such a point that heat exhaustion will follow and it should never be used in the presence of any serious pathological condition when the debilitating effect of the loss of fluid and salt from the body would be distinctly detrimental.

**Pescor Shortwavatherm**—Physicians Electric Service Corporation, manufacturer Solomon E. Mendelsohn, officer and the Navy Department Store Company, sales agent, both of Los Angeles, complaint issued Jan. 31, 1942, order issued Oct. 27, 1942. Order prohibited further use of misrepresentations in the advertising of the product in question, a short wave diathermic device, as follows: that the thing resulted from years of diligent engineering research and incorporated safety features that physicians prescribe and recommend short wave diathermy in many ailments (of which more than 40 were named in the advertising) that even the unskilled lay public can use this device in the treatment of self diagnosed diseases and ailments by individual self application in the home and that it will prove a scientific, harmless and effective method of relieving or curing arthritis, sinus infection, lumbago and other conditions.

**SNL (Suffer No Longer)**—Cora Lee Wiley, Adel, Ga., complaint issued Dec. 22, 1940, order issued Nov. 6, 1942. Order prohibited further advertising misrepresentations that this product constitutes a cure or remedy for or possesses any value in the treatment of gonorrhea or any disease or disorder of the female organs.

**VBEV**—Purity Products, Inc., distributor Newark, N. J., The Journal of Living Publishing Corporation, advertiser and Victor H. Lindlacher, editor, the latter two of New York, complaint issued Feb. 10, 1940, order issued Feb. 12, 1943. Order prohibited the respondents from further disseminating any advertisement which represented that VBEV has any value in the treatment of arthritis, nervousness, indigestion, sleeplessness, lack of energy, underweight or general run-down condition or any disease or condition caused by or associated with a vitamin B deficiency. Respondents were further ordered to cease representing that the product will beneficially affect any manifestation of vitamin B or vitamin G deficiency or the assimilation or absorption of food to increase weight or that it is anything more than a food supplement capable of supplying certain vitamins which can be obtained from many foods.



## Correspondence

### GRANULOCYTOPENIA AFTER USE OF SUCCINYLSULFATHIAZOLE

To the Editor —I am much interested in an article which appeared in *THE JOURNAL*, July 3, reporting the death of a patient alleged to be due to acute agranulocytosis due to the administration of succinylsulfathiazole. I feel that it is highly important that all toxic manifestations, especially the more serious ones such as acute agranulocytosis following the administration of the sulfonamides be given special consideration. I do not, however, feel it at all desirable that questionable occurrences of drug sensitivity should be reported dogmatically as being due to the sulfonamides. In this report it appears that the patient was probably sensitive to sulfathiazole, and I should like to refer to one such observation which I reported in a paper entitled "Succinylsulfathiazole: An Adjuvant in the Surgery of the Large Bowel" (*THE JOURNAL*, Sept. 26, 1942, p. 265). Under the subtitle "Toxicity of Succinylsulfathiazole" an instance was reported of a moderately severe reaction to succinylsulfathiazole. The patient was subsequently shown to be highly sensitive to sulfathiazole, and it was emphasized that any patient receiving succinylsulfathiazole should be under close observation.

I do not agree fully with the conclusions of the article. Unfortunately, mention was not made as to whether or not this patient had been on a restricted diet, although reference was made to an article by Spicer, Daft, Sebrell and Ashburn, "Prevention and Treatment of Agranulocytosis and Leukopenia in Rats Given Sulfanilylguanidine or Succinylsulfathiazole in Purified Diets" (*Pub. Health Rep.* 57:1559 [Oct. 16] 1942), involving observations made on animals on highly restricted, purified diets. Also, unfortunately, the author has not given any data as to the white cell count on the February 9 admission, although the statement is made that "repeated blood counts revealed rapidly developing acute agranulocytosis" and the question is raised as to whether all of these counts were done after the patient had developed a sore throat. I am fully aware of the possibility that a sensitive individual may react to a relatively small quantity of drug, however, I am not aware of any instance in which acute agranulocytosis has developed in the patient when the quantity of drug in the blood was so low that it could not be detected by the usual quantitative colorimetric procedure. It is not my purpose to detract from a proper report showing the toxicity of succinylsulfathiazole, but I cannot agree that this is a proved case of acute agranulocytosis due to the administration of succinylsulfathiazole, and I am unable to find in the literature any support for the following concluding statement: "Sensitivity has been shown to be present not only when there has been an interruption in the course of medication but also when there has been a prolonged administration of large doses of the drug." I am unable to find where succinylsulfathiazole was referred to in any of the references given. In fact, the original publication announcing succinylsulfathiazole was not written until 1941 (Poth, E. J., and Knotts, F. L. *Proc. Soc. Exper. Biol. & Med.* 48:129 [Oct.] 1941).

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[NOTE—This letter was referred to Dr. S. A. M. Johnson, who replies.]

To the Editor —The subject matter of the article entitled "Succinylsulfathiazole: An Adjuvant in the Surgery of the Large Bowel" is familiar to me. The toxic reactions of succinylsulfathiazole are undoubtedly due to sulfathiazole, a product

of its hydrolysis. Therefore in any sulfonamide hypersensitive individual receiving succinylsulfathiazole reactions peculiar to sulfathiazole are to be anticipated.

In referring to the article by Spicer, Daft, Sebrell and Ashburn, "Prevention and Treatment of Agranulocytosis and Leukopenia in Rats Given Sulfanilylguanidine and Succinylsulfathiazole in Purified Diets," I applied the treatment used for the experimental agranulocytosis and did not mean to emphasize the part that diet played in its production. Incidentally, my patient was on a regular hospital diet until he became too ill to eat.

The results of the blood examinations, which were on a chart that was deleted from the original paper, were: Feb. 13, 1943, white blood cells 8,500 with a differential count of polymorphonuclears 65 per cent, basophils 1 per cent, small lymphocytes 22 per cent and mononuclears 7 per cent; February 16, white blood cells 7,200; February 26, white blood cells 7,000 and March 1, white blood cells 1,400 with a differential count of polymorphonuclears 30 per cent, small lymphocytes 62 per cent and mononuclears 8 per cent. On the morning of March 2 the white blood cell count was 1,200 with a differential count of small lymphocytes 90 per cent and mononuclears 10 per cent. In the afternoon the white blood cell count was 500. On the morning of March 3 the white blood cell count was 500. In the evening of March 3 the white blood cell count was 200 with a differential count of small lymphocytes 14 per cent and large lymphocytes 86 per cent. The first blood examination which showed a drop in white blood cell count and in polymorphonuclear count was taken on the morning the patient first experienced a sore throat.

A sternal puncture examination was done on March 3. This also was deleted from the original paper. It revealed a marrow which was moderately cellular. There was a complete absence of myelocytes with fairly numerous myeloblasts showing no evidence of maturation. There were numerous megalocytes, many phagocytic endothelial cells and occasional plasma cells. The development of granulocytes was stopped at the primitive blast and myeloblast stages.

In a hypersensitive individual toxic reactions may manifest themselves with the administration of almost minute quantities of a drug. These reactions at the same time are not dependent on the blood concentration. Levin and Bethell in their report "Fatal Granulopenia Developing During the Administration of Sulfadiazine" (*Univ. Hosp. Bull., Ann Arbor* 8:30 [April] 1942) stated that the blood concentration of the sulfonamide derivatives gives no indication of the likelihood of ensuing granulocytopenia. Likewise Rinkoff and Spring in their article "Toxic Depression of the Myeloid Elements Following Therapy with the Sulfonamides" (*Ann. Int. Med.* 15:89 [July] 1941) stated that the dosage of the drug, not the blood concentration, is probably the factor that determines whether a toxic manifestation could occur in a susceptible individual. Also Lyons and Balberor in their article "Febrile Reactions Accompanying the Readministration of Sulfathiazole" (*THE JOURNAL*, March 21, 1942, p. 955) state that it is possible to produce such a high degree of hypersensitivity to the drug that a very small dose may elicit a febrile response.

The sentence "Sensitivity has been shown to be present not only where there has been an interruption in the course of medication but also where there has been prolonged administration of large doses of the drug" did not refer entirely to succinylsulfathiazole per se but to the sulfonamides in general and to sulfathiazole in particular. I wish to reemphasize that succinylsulfathiazole most likely owes its toxicity to sulfathiazole, a product of its hydrolysis. The following statements taken from various papers are of interest: Rinkoff and Spring,

in discussing the toxicity of the sulfonamides (Toxic Depression of the Myeloid Elements Following Therapy with the Sulfonamides, *Ann Int Med* 15 89 [July] 1941), state that although a small dose may cause a leukopenia or fatal agranulocytosis these toxic effects on the bone marrow usually manifest themselves after prolonged use especially in the instances in which the disease itself has a deleterious effect on the hemopoietic system. Havne and Larimore (Sulfathiazole as a Cause of Death, *THE JOURNAL*, Oct 18, 1941, p 1353) said that their patient was the first example as far as they knew of an apparently well person in whom acute agranulocytosis developed after prolonged medication with sulfathiazole during which time no other drug was used. Lee Thompson (Agranulocytosis Due to Sulfathiazole *North East Med* 41 133 [April] 1942) commented in his case of agranulocytosis due to sulfathiazole that interruption of administration seems to be the most important factor in fatal cases. Levin and Bethell (Fatal Granulocytopenia Developing During the Administration of Sulfadiazine, *Univ Hosp Bull, Ann Arbor* 8 30 [April] 1942) in speaking of sulfonamide derivatives stated that granulocytopenia usually develops after prolonged or interval use of such drugs. Long, Haviland, Edwards and Bliss (The Toxic Manifestations of Sulfanilamide and Its Derivatives, *THE JOURNAL*, Aug 3, 1940, p 364) found that patients who have a toxic reaction caused by one of these drugs may have a similar reaction when another member of the sulfonamide group is prescribed. Lyons and Balberor (Febrile Reactions Accompanying the Readministration of Sulfathiazole *ibid* March 21, 1942, p 955) stated that it is well known that antigenic agents may often be administered continuously without any deleterious consequence, but, if an interval is interposed between courses of the antigen, hypersensitive reactions are apt to occur.

STURE A M JOHNSON, M.D., Ann Arbor Mich

#### USE OF LIVER TO OVERCOME TOXICITY OF SULFONAMIDES

*To the Editor*—This communication is prompted by the Current Comment in the July 17 issue of *THE JOURNAL*, page 812. It concerns the remarkable findings by Chamelein and Funk that injections of whole liver reduced the toxicity of sulfanilamide and diethylstilbestrol in rats.

Certain experiments that I have done lead me to believe that the action of whole liver extract in ameliorating the toxic effects against both of these substances is through its high content of ascorbic acid. It has long been known that liver, next to the adrenal glands, contains more ascorbic acid than all other animal tissues (Aron H., and others *Jahrb f Kinderh* 1 123 1921).

The effect of ascorbic acid in reducing the toxic effects of neor-phenamine is also well known (Sulzberger, M B, and Oser B L *Proc Soc Exper Biol & Med* 32 716 1934). Recently I was able to reduce the sensitivity of a patient to large doses of salicylates by the concurrent administration of vitamin C (*J Lab & Clin Med* 28 28 [Oct] 1942). Others and myself have been able to reduce the toxicity of the sulfonamides by concomitant administration of vitamin C in large doses (Pulner Louis *Acad York State J Med* to be published).

Recently also I was able to give to 3 patients effective doses of diethylstilbestrol even though they were previously remarkably sensitive to exhibition of this drug. This was done by giving a preliminary intravenous injection of ascorbic acid

(100 mg) and giving 100 mg of ascorbic acid by mouth with each tablet of diethylstilbestrol. This was reported in a lecture on vitamins in a postgraduate course in gastroenterology (May 17, 1943 at the Greenpoint Hospital). This lecture is to be published in the *American Journal of Digestive Diseases*.

How vitamin C improved the tolerance to certain chemical drugs is unknown. One author (Aulthey, M *Prat med franc* 18 107 [March] 1937) is of the opinion that vitamin C acts by assuring the vitality and proper functioning of the liver cells.

LOUIS PELNER, M.D., Brooklyn

#### "QUINACRINE-CALCIUM THERAPY OF TYPHUS"

*To the Editor*—In your editorial comment "The Quinacrine-Calcium Therapy of Typhus" in the July 24 issue the work of Dr van Meerendonk is described with a closing remark that opinion about it cannot be ventured until further experiences are reported.

Permit me to call your attention to an article on "The Use of Atabrine in Two Cases of Typhus Fever," published in the April 1943 issue of the *Medical Bulletin of the Veterans Administration*. While the German investigator's work antedates mine no mention of it was made in a medical publication of any United Nation until an abstract of this treatment appeared in the October 1942 issue of the *Tropical Diseases Bulletin* (London) and so recorded by the *Quarterly Cumulative Index Medicus*.

As seen from the report of the 2 cases of typhus in the *Medical Bulletin of the Veterans Administration*, no knowledge of Dr van Meerendonk's work could have been available when the effects of the drug on typhus were first noted at this hospital. While no priority for the use of atabrine in treatment of typhus can be claimed by the undersigned I respectfully submit my article published in the *Medical Bulletin of the Veterans Administration* as evidence of an independent discovery of the use of atabrine in the treatment of typhus.

It may be added that a report of 2 more typhus cases apparently successfully treated with atabrine has been submitted for publication to the *Medical Bulletin of the Veterans Administration*.

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#### DUSTING POWDER FOR RUBBER GLOVES

*To the Editor*—In the issue of April 17 you kindly published a note from me, recommending starch as a substitute for talcum as a dusting powder for gloves. At the time that letter was written there was reason to believe that we (M G Seelig, D J Verda and F H Kidd) had overcome the undesirable gelatinization property of starch. We were in error and therefore were obliged to institute a new search. We have now found that potassium bitartrate is a completely satisfactory substitute for talc. The potassium bitartrate in addition to being free from all the undesirable and dangerous properties of talc, possesses the highly desirable property of being bacteriostatic. Several of our leading St. Louis hospitals have used the potassium bitartrate with complete satisfaction and safety.

M G SEELIG, M.D., St. Louis  
Director of Pathology, Barnard Free  
Skin and Cancer Hospital

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS

##### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL Sept 1, page 55

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II November Sec Dr J S Kodman 225 S 15th St Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY Written Part I Various centers Jan 21 Final date for filing application is Oct 21 Sec, Dr P M Wood, 715 Fifth Ave New York 22, N Y

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written Part I Locally Feb 12 Final date for filing application is Nov 15 Sec Dr Paul Titus, 1015 Highland Bldg, Pittsburgh, Pa

AMERICAN BOARD OF OPTHALMOLOGY Oral Parts I and II Chicago, Oct 29 Sec Dr John Green 6830 Waterman Ave St Louis, Mo

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Written and Oral Part II Chicago Jan 21 22 Sec, Dr Guy A Caldwell 3503 Pryor St New Orleans, Louisiana

AMERICAN BOARD OF OTOLARYNGOLOGY Oral Chicago, October Sec Dr Dean M Lurie University Hospital Iowa City Iowa

AMERICAN BOARD OF PEDIATRICS Written Locally, Feb 4 Oral Philadelphia March 25 26 and San Francisco May 6 7 Sec, Dr C A Aldrich 707 Tullerton Ave, Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY Written Locally, Oct 30 Oral Locally Dec 20 21 Final date for filing application is Sept 30 Sec, Dr Walter Freeman 1028 Connecticut Ave NW, Washington, D C

AMERICAN BOARD OF RADIOLOGY February Final date for filing application is Dec 15 Sec, Dr B R Kirklin, 102 110 Second Ave S W Rochester Minn

AMERICAN BOARD OF UROLOGY Oral Chicago, February Written Various centers December Final date for filing application is Nov 1 Sec, Dr Gilbert I Thomas 14 19 Willow St Minneapolis Minn

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Acts State Law not Applicable to Practice on Grounds for Public Buildings Ceded by the State to the United States**—Lynch, who was licensed to practice medicine and surgery in Tennessee but not in Arkansas, rendered on a site of land purchased by the United States government "medical first aid work" to approximately 2,000 employees of a contractor engaged in the construction in Arkansas of a colony for Japanese evacuees. The Desha county chancery court, Aug 19, 1942, enjoined him from practicing medicine in Arkansas without a license so to do. The next day he filed a writ of prohibition in the Supreme Court of Arkansas against the chancellor of the Desha chancery court to prevent the chancellor from proceeding further in the injunction suit. The Supreme Court issued a temporary writ of prohibition against the chancellor, which was made permanent about six weeks later. The chancellor moved for a rehearing.

The sole question here present, said the Supreme Court, is whether a physician not licensed in Arkansas, who confines his practice to workmen engaged in constructing federal buildings on property owned by the United States, is subject to the laws of Arkansas relating to the practice of medicine and surgery. Admittedly the state of Arkansas has yielded jurisdiction over the area in question by reason of section 5644, Pope's Digest, which provides, in part, as follows:

"The state of Arkansas hereby consents to the purchase to be made or heretofore made by the United States, of any site or ground for the erection of any armory, arsenal, fort, fortification navy yard, custom house, lighthouse, lock, dam, fish hatcheries, or other public buildings of any kind whatever and the jurisdiction of this state within and over all grounds thus purchased by the United States, within the limits of this state, is hereby ceded to the United States Act April 29, 1903, p 346, sec 1

Article 1, section 8, clause 17 of the constitution of the United States provides that Congress shall have power

to exercise exclusive Legislation in all Cases whatsoever, over such District (not exceeding ten Miles square) as may, by Cession of particular States, and the Acceptance of Congress, become the Seat of the Government of the United States, and to exercise like Authority over all Places purchased by the consent of the Legislature of the State in which the Same shall be, for the Erection of Forts, Magazines, Arsenals, dock yards, and other needful buildings

We think, continued the Supreme Court, that there can be no doubt that the buildings constructed by the government on its property to be used for the relocation of the Japanese come within the term "other public buildings of any kind whatever," as used in section 5644, supra, and under the aforementioned provisions of the United States constitution as "other needful Buildings," in this time of war stress. The Supreme Court of the United States in *Surplus Trading Company v Cook*, 281 U S 647, 50 S Ct 455, held that certain blankets located within Camp Pike on land owned by the United States and lying within Pulaski County, Ark (now known as Camp Robinson), are not subject to taxation by this state because Arkansas has surrendered and ceded its jurisdiction over the area to the United States, the court there saying:

It long has been settled that, where lands for such a purpose are purchased by the United States with the consent of the state legislature the jurisdiction theretofore residing in the state passes, in virtue of the constitutional provision, to the United States, thereby making the jurisdiction of the latter the sole jurisdiction

The War Department of the United States by proclamation No WD 1, issued Aug 13, 1942, has designated the property in question here as a military area

We think, continued the court, that the issue here has been decided against the chancellor's contention by this court in *Loung v G L Tarlton, Contractor, Inc*, 162 S W (2d) 477. In that case it was charged that two Delaware corporations engaged in constructing military buildings for the United States at Camp Robinson were violating the laws of this state because they had failed to qualify in Arkansas as foreign corporations. This court, however, rejected that contention, saying:

The laws of this state relative to the domestication of foreign corporations have no application for the reason that appellees were engaged in construction work for the United States at a military post under the jurisdiction of the United States

In the case under consideration, said the Supreme Court, it is conceded that Dr Lynch is confining his practice to the area owned by the United States, administering to the employees of the construction company, which by contract with the United States is required to keep available a physician for its employees. We think it clear, under the aforementioned authorities, that the laws affecting the practice of medicine and surgery in Arkansas do not control and cannot apply to the rights of Dr Lynch to practice on property the jurisdiction over which has been surrendered to the United States, and the title to which has been acquired by the United States. The writ of prohibition against the chancellor preventing him from proceeding further in the original injunction suit against Dr Lynch was affirmed.—*Lynch v Hammock*, Chancellor, 165 S W (2d) 369 (Ark., 1942)

## Society Proceedings

### COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct 10 13 Dr W L Benedict, 102 Second Ave S W, Rochester Minn Secretary  
American Public Health Association, New York, Oct 12 14 Dr Reginald M Atwater, 1790 Broadway, New York, Executive Secretary  
Association of Military Surgeons of the United States Philadelphia Oct 21 23 Colonel James M Phalen Army Medical Museum Washington, D C Secretary  
Delaware Medical Society of, Wilmington, Oct 12 13 Dr W O La Motte 601 Delaware Ave Wilmington, Secretary  
District of Columbia Medical Society of the Washington Sept 30 Oct 2 Mr Theodore Wiprud, 1718 M St N W, Washington, Secretary  
Indiana State Medical Association Indianapolis Sept 28 30 Mr F A Hendricks, 23 East Ohio St, Indianapolis, Executive Secretary  
Inter State Postgraduate Medical Association of North America Chicago Oct 26 29 Dr Arthur G Sullivan 16 North Carroll St, Madison Wis, Managing Director  
Kansas City Southwest Clinical Society, Kansas City, Mo Oct 4 6 Kansas City North, 1115 Grand Ave Kansas City, Mo, Secretary  
Dr William M North, 1115 Grand Ave Kansas City, Mo, Secretary  
Kentucky State Medical Association Louisville Oct 4 6 Dr P L Blackerby, 620 South Third St Louisville Acting Secretary  
Michigan State Medical Society Detroit Sept 22 24 Dr L Fernald Foster 2020 Olds Tower Lansing, Secretary  
Mississippi Valley Medical Society, Quincy, Ill Sept 29 30 Dr Harold Swanberg 510 Maine St Quincy, Ill, Secretary  
Oklahoma City Clinical Society Oklahoma City Oct 18 21 Dr Clark H Hall, 117 North Broadway, Oklahoma City Secretary  
Omaha Mid West Clinical Society, Omaha, Oct 25 29 Dr J D McCarthy, 1036 Medical Arts Bldg Omaha Secretary  
Pennsylvania, Medical Society of the State of, Philadelphia Oct 5 7 Dr Walter F Donaldson, 500 Penn Ave Pittsburgh Secretary  
Virginia Medical Society of, Roanoke Oct 25 27 Miss Agnes Edwards, 1200 East Clay St, Richmond, Secretary  
Wisconsin, State Medical Society of Milwaukee Sept 13 15 Mr Charles H Crownhart, 110 East Main St Madison Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1943 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents for one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### Alabama State Medical Assn Journal, Montgomery

12 325-380 (May) 1943

Administration of Pentothal Sodium Oxygen Anesthesia C. A. Carraway and B. M. Carraway—p. 325  
Hypertension as Urologic Problems G. A. Cashman—p. 32  
Luetagen Serum Studies of Immunologic Reactions in Normal and Syphilitic Patients Preliminary Report W. Marshall—p. 335

12 381-444 (June) 1943

Objectives in Medical Education A. C. Furstenberg—p. 381  
Nonspecific Urinary Tract Infections Present Status of Treatment J. B. Hicks—p. 386

#### American Heart Journal, St. Louis

25 573-718 (May) 1943

\*Pulmonary Embolism With and Without Acute Cor Pulmonale with Especial Reference to Electrocardiogram D. Murnaghan S. McGinn and P. D. White—p. 573  
Amount of and Changes in Residual Blood of Heart G. Nylin—p. 593  
Resting Peripheral Blood Flow in Anemic State D. I. Abramson S. M. Fierst and K. Flachs—p. 609  
Range of Normal Heart in Athletes J. W. Wilce—p. 613  
Effects of Changes in Venous Pressure on Blood Flow in Limbs C. K. Friedland J. S. Hunt and R. W. Wilkins—p. 631  
Experiments with Calculated Therapeutic and Toxic Doses of Digitalis I Effects on Myocardial Cellular Structure W. H. Dearing A. R. Barnes and H. E. Essex—p. 648  
Id. II Effects on Electrocardiogram W. H. Dearing A. R. Barnes and H. E. Essex—p. 663  
Vasoconstrictor and Angiotonin Neutralizing Properties of Renal Venous Plasma H. Weinstein M. Friedman H. L. Newman and J. Sugarman—p. 682  
Acute Rheumatic Fever and Valvular Damage M. G. Brown—p. 686

**Electrocardiograms in Pulmonary Embolism.**—Murnaghan and his collaborators report 10 cases of acute cor pulmonale without underlying heart disease with five deaths. The electrocardiograms corroborate the observation that there is a typical electrocardiographic pattern in acute cor pulmonale. It is characterized by right axis deviation with a prominent S wave in lead 1, a depressed ST segment in lead 2 and often in lead 1 a Q wave and an inverted T wave in lead 3 and a diphasic or an inverted T wave in lead 4-F. An upward convexity of the ST segment in lead 3 is common, an elevation of the ST take off in this lead occurs in a few cases. The electrocardiographic changes in an additional series of 92 cases of pulmonary embolism are reviewed. Coexistent heart disease was present in 69. In 29 cases symptoms of shock predominated, in 63 signs of pulmonary interction without shock or collapse predominated. Electrocardiographic changes indicative of acute cor pulmonale were present in 16 of the former group and in 17 of the latter. Thus the electrocardiogram gave indication of some degree of acute cor pulmonale in a little more than one half of the cases when shock predominated in a little less than one fourth of the group without shock and in about one third of the entire series, including patients with abnormal electrocardiograms as the result of heart disease. Pulmonary embolism and acute cor pulmonale are not synonymous terms. Varying degrees of acute cor pulmonale occur and the electrocardiogram provides a means of evaluating the status of the heart especially when clinical signs indicative of right-sided heart strain are not obvious. Anoxemia produced by a pulmonary embolus may cause intarction in the cardiac muscle already the seat of a severe coronary artery disease. When this occurs the electrocardiographic changes are atypical and confusing. Death is often caused by a second or third embolus. Prophylactic leg exercises, venography and ligation of the femoral vein should reduce the incidence of fatal pulmonary emboli.

#### American J Digestive Diseases, Fort Wayne, Ind

10 201-240 (June) 1943

Digestion and Nervous System Review of Literature J. E. Thomas—p. 201  
Gallbladder Visualization with Reta (5 diiodo-4-hydroxyphenyl) Alpha Phenyl Propionic Acid (Priodax) I. H. Finzel and T. H. Finzel—p. 206  
Studies on Influence of Various Substances on Color I. Phenol phthalein and Other Latexes F. Steigmann O. Wozisek and Jo.phine M. Dymiewicz—p. 208  
Tired Weak Exhausted Depressed Patient J. A. Turnbull—p. 218  
Pseudo-Calcic Stomach Case Report D. C. Browne and G. McHardy—p. 224  
Pruritus Ani Study of Mucosal and Bacterial Flora Treatment Based on These Findings 105 Case Reports—p. 227

#### American Journal of Surgery, New York

60 309-458 (June) 1943

Surgical Operations with Navy Medical Corps in South Pacific W. M. Johnston—p. 313  
Intra Abdominal Injuries C. Di Lorenzo M. Rothman and C. Howley—p. 319  
Solitary Cyst of Kidney Report of 2 Cases L. E. McCrea—p. 38  
Theory and Therapy of Shock Reduced Temperatures in Shock Treatment F. M. Allen—p. 333  
New Operation for Repair of Crucial Ligaments of Knee F. H. Albee—p. 349  
Control of Acute Thrombophlebitis with Ultraviolet Blood Irradiation Therapy G. Milev—p. 357  
Tobacco Smoking and Cancer of Lung E. J. Grace—p. 361  
Value of Autoclavation of Abdomen in Diagnosis of Acute Appendicitis A. C. Stevens—p. 363  
Experimental Osteomyelitis L. Scheman P. Lewin S. Sideman and Martha Janota—p. 371  
New Treatment for Acute Dilatation of Stomach E. G. Joseph—p. 381  
Dangers of Boric Acid Its Use as Irrigant and Report of Case C. A. Ross and J. F. Conway—p. 386  
Continuous Caudal Anesthesia Preliminary Report of Newly Modified Technique A. Posner and I. M. Buch—p. 396  
Caudal Anesthesia in Obstetrics A. C. Vietus and R. M. Mitchell—p. 399  
Avertin Anesthesia in Gynecology Report on Series of Cases D. B. Dorman—p. 403  
Bacillus Proteus O<sub>15</sub> Agglutinated by Serum of Pregnant Women Preliminary Report I. Gratch—p. 411  
Comparison of Tissue Reactions from New Sutures O. P. Large—p. 415

#### Archives of Ophthalmology, Chicago

29 873-1064 (June) 1943

Fields of Vision in Cases of Tumor of Rathke's Pouch H. P. Wagener and J. G. Love—p. 873  
\*Chemotherapy in Ophthalmology J. G. Bellows—p. 888  
Microspia and Teleopia Limited to Temporal Fields of Vision M. B. Bender and N. Savitsky—p. 904  
Pseudochromatopsia Plate Test of Color Vision Practical Application R. E. Shoemaker—p. 909  
Diabetic Retinosis in Chinese R. H. Bock—p. 919  
Origin and Pathogenesis of Pseudomonas Pyocyanea in Conjunctival Sac J. C. McCulloch—p. 924  
Adie's Syndrome Report of 2 Cases J. T. Rooks—p. 936  
Diplopia in Narcolepsy M. Levin—p. 942  
Riboflavin for Rosacea Keratitis Marginal Corneal Ulcers and Catarrhal Corneal Infiltrates Laboratory and Clinical Studies Carol Ann Connors R. E. Eckardt and L. V. Johnson—p. 956  
Initial and Residual Effects of Ophthalmic Prisms on Visibility and Accommodation M. Luckiesh and F. K. Moss—p. 968  
Marginal Degeneration of Cornea Martha R. Folk—p. 975  
Comparison of Ocular Imagery H. B. Field—p. 981  
Hypersensitiveness of Mucous Membrane III Slit Lamp Studies of Conjunctival Reactions Induced in Normal and in Atopic Persons with Histamine Ethylmorphine and Atropine L. A. Feldman and H. Sherman—p. 989  
Restoration of Binocular Vision After Unilateral Cataract Extraction T. L. McKee—p. 996

**Chemotherapy in Ophthalmology.**—Bellows points out that penicillin tyrothricin and related substances are more potent than the sulfonamides but that the ophthalmologic literature contains practically no reference to these substances. He tried tyrothricin experimentally and found that when it is placed in the conjunctival sac in 0.5 per cent suspension it is non-irritating but when used in high concentration produces considerable irritation and even cloudiness of the cornea. The substance was applied clinically in several cases of acute conjunctivitis with unimpressive results. The present report is limited to the sulfonamide drugs and mainly to sulfanilamide, sulfathiazole, sulfapyridine and sulfadiazine. Sulfanilamide or sulfapyridine given orally, sulfanilamide used topically or any

of the four most commonly used sulfonamide compounds employed with iontophoresis or combined with a wetting agent results in a chemotherapeutically adequate concentration in the ocular fluids and tissues. The action of these drugs is known to be inhibited by the secretion and detritus so commonly associated with ocular infection by local anesthetics and by factors inherent in the avascularity of the cornea. Oral administration of sulfonamide compounds frequently produces ocular indications of systemic toxicity. Topical application of these drugs to the denuded cornea retards epithelial regeneration and promotes scarring. Given orally they are effective in the treatment of ocular complications of erysipelas, gonorrheal ophthalmia, trachoma, inclusion blennorrhoea, ophthalmitis due to lymphogranuloma venereum, serpent ulcer, cellulitis of the lids and orbit endophthalmitis, panophthalmitis and sympathetic ophthalmia. Applied locally they are effective in pyogenic dermatoses, infectious blepharitis and some forms of acute conjunctivitis. Although the sulfonamide compounds have proved to be the most important addition to the armamentarium of the ophthalmologist since the introduction of organic arsenicals, they should not be used indiscriminately or be considered a panacea.

### Archives of Otolaryngology, Chicago

37 609-756 (May) 1943

- Histopathologic Considerations in Treatment of Eustachian Tube J B Linnor —p 609  
Preoperative Detection of Bleeding Tendency in Patients with Otolaryngologic Disorders G N Haffly —p 622  
Diphthong Rod Prosthesis for Middle Ear A G Pohlman —p 628  
Symptomatic and Empiric Treatment of Allergic Nose Follow up Questionnaire in Cases in Which Rhinitis Was Refractory to Treatment E King and J H King —p 645  
Stapes, Fissula Ante Ienestraam and Associated Structures in Man IV From Fetuses 75 to 150 Mm in Length B J Anson and E W Cawdwell —p 650  
Criteria for Selection of Treatment of Cancer of Larynx C L Jackson and J V Brady —p 672  
Lesions of Conduction Apparatus H B Perlman —p 680  
Relation of Hematology and Otolaryngology G B Gilmore —p 691  
Incidence of Vasomotor Rhinitis During Pregnancy M Mohun —p 699  
Unilateral Vasomotor Rhinitis Due to Interference with Cervical Sympathetic System E P Fowler Jr —p 710  
Pyridine Hydrobromide Sulfathiazole Therapy of Infections of Upper Respiratory Tract L D Sulman —p 713

### Archives of Physical Therapy, Chicago

24 327-380 (June) 1943

- Experiments on Theory and Therapy of Shock F M Allen —p 327  
Rapid Rehabilitation Following Certain Shoulder Fractures H Lefkoe —p 336  
Cerebral Birth Palsy with Special Reference to Physical Therapy P R Lipscomb and F H Krusen —p 342  
\*Artificial Fever and Vitamin Therapy in Treatment of Anterior Poliomyelitis Report on Intraspinal Administration of Thiamine Chloride Combined with Artificial Fever Therapy S Stone —p 350

**Artificial Fever and Vitamins in Poliomyelitis**—Eleven patients with severe anterior poliomyelitis were treated by Stone with artificial fever and parenteral and oral vitamin therapy during the acute stage of the disease. Six patients received intramuscular or intravenous injections of thiamine hydrochloride and vitamins B and E orally. Five patients received the thiamine intraspinally in doses of 20 to 50 mg eighteen to twenty-four hours before the next artificial fever treatment. The oldest patient was 17 and the youngest 2½ years. All the children had complete paralysis of one or more extremities, associated with generalized tenderness and pain on motion. Four to ten fever treatments were administered to each patient with a temperature range of 103 to 105 F. The artificial fever was administered by means of an inductopyrexia cabinet. Ascorbic acid in doses of 150 to 200 mg was given to all patients while they were in the fever cabinet, together with fruit juices and saline solutions orally. The artificial fever was well tolerated. Relief of pain and spasm, improvement in circulation and texture of the skin of the affected extremities, prevention of contractures and improvement in strength of the affected muscles were the results from the combined treatment. All the children have continued in excellent health since the completion of the treatment and have shown no evidence of fibrosis or limitation of joint motions. The hospitalization time was greatly reduced in all cases. It is suggested that com-

bined vitamin-artificial fever therapy has all the advantages of the Kenny hot fomentation treatment, besides favorably influencing regeneration of some neurons not completely destroyed by the virus. The action is probably nonspecific and is due to improvement in cell metabolism and relief of local vasospasm in affected extremities. While the number of patients treated so far is comparatively small, the results in those treated in the acute stage suggested that this method is superior to methods used in the past. Its application to other types of paralysis of spinal origin has given promising results.

### Bulletin of Johns Hopkins Hospital, Baltimore

72 309-378 (June) 1943

- Congenital Aneurysmal Dilatation of Aorta Associated with Arachnoid Cyst R W Brier, Helen B Taussig and Ella H Oppenheimer —p 309  
Eversion and Herniation of Corpus Luteum G W Corner —p 333  
\*Relationship of Chemotherapy in Pneumonia to Persistence of Pneumococci W H Harris Jr —p 338  
Nuclein-like Action on White Blood Cells of Ether Insoluble Fraction of Lipoids from Beef Brains Edna H Tompkins —p 347

**Chemotherapy in Pneumonia and Persistence of Pneumococci**—Harris studied the persistence of pneumococci in the upper respiratory passages in 47 cases of lobar pneumonia treated with sulfonamide compounds by repeated throat cultures during the period of hospitalization. Forty-four and seven tenths per cent of the patients lost the pathogenic type pneumococcus during the administration of the drug, 17.0 per cent lost the pathogenic pneumococcus after the drug had been discontinued, but before discharge from the hospital, 38.3 per cent left the hospital carrying the pneumococcus responsible for their disease. Pulmonary complications were frequently associated with a prolonged carrier state. Heterologous type pneumococci were recovered in seven instances following the apparent disappearance of the pneumococcus type isolated on admission to the hospital. Comparison with the findings of the earlier literature reveals that the convalescent carrier rate has not been significantly reduced by the routine use of sulfonamide compounds in the treatment of pneumococcal pneumonia.

### Journal of Neurophysiology, Springfield, Ill

6 155-220 (May) 1943

- Monkey (Macaca Mulatta) After Hemisection and Subsequent Transection of Spinal Cord G P McCouch, J Hughes and W B Stewart —p 155  
Effect of Insulin Hypoglycemia on Conditioned Reflexes E Gellhorn and H Minatoya —p 161  
Cortical Localization of Symbolic Processes in Rat II Effect of Cortical Lesions on Delayed Alternation in Rat C T Morgan and W M Wood —p 173  
Motor Response to Stimulation of Cerebral Cortex in Absences of Areas 4 and 6 (Macaca Mulatta) Margaret A Kennard and W S McCulloch —p 181  
Sweat Gland Responses to Sympathetic Stimulation Studied by Galvanic Skin Reflex Method C P Richter and F Whelan —p 191  
Localization of Salivatory Center in Medulla of Cat S C Wang —p 195  
Localization of Enzymes in Nerves II Respiratory Enzymes D Nachmansohn, H B Steinbach, A L Machado and S Spiegelman —p 203  
Mechanism of Temporal Fusion Effect of Photic Stimulation on Electrical Activity of Visual Structures A E Walker, J I Woolf, W C Halstead and T J Case —p 213

### Journal of Urology, Baltimore

49 601-754 (May) 1943 Partial Index

- Radiologic Findings and Anatomopathologic Results of Experimental Renal Trauma A Trabucco —p 601  
Retrograde Seminal Vesiculography F Gonzales Iman —p 618  
Diverticula of Bladder M A Llanos —p 628  
Experimental Production of Stones in Bladder H A Davalos Jr —p 639  
Nonhormonal Adrenal Adenoma Case Report F N Timoney —p 654  
Removal of Broken Glass Catheter from Female Bladder E Bors —p 658  
Prostatic Resection in Vitro and in Vivo G O Baumrucker —p 660  
End Results of 900 Cases of Transurethral Resection of Prostate O Mercier —p 665  
Sarcoma of Prostate Gland Review of Literature Table of Classification Report of 4 Cases M M Melicow, T H Felton and G W Fish —p 675  
Complete Uterine and Vesical Prolapse with Incarceration Due to Multiple Vesical Calculi L P Thackston —p 708

## New England Journal of Medicine, Boston

228 699-736 (June 3) 1943

- University of a Specialty D Munro—p 699  
Single True Cysts of Spleen Reports of 3 Cases R H Sweet—p 705  
Roentgenographic Surveys for Tuberculosis in Massachusetts and Their Importance to Physician P E Sartwell—p 711  
Skin Changes of Nutritional Origin H Jeghers—p 714

228 737-772 (June 10) 1943

- \*Compound Fractures of Skull Results of Surgical Therapy in 218 Cases D Munro—p 7  
Spina Bifida and Cranium Bifidum III Occult Spinal Disorders F D Ingraham and I I Lowrey—p 745  
Resection of Bladder Neck for Obstruction in Women Report of Case C. Mirabile—p 751  
Epidemiologic Aspects of Food Borne Disease V A Getting—p 754

**Surgical Therapy in Fractures of Skull**—Munro presents an analysis of 218 cases of all types of compound fractures of the skull. Complete debridement should be done within forty-eight hours of the time of infliction of the injury or else no operation until completely healed for six to eight months. Patients should not be operated on until out of surgical shock and until the general condition warrants it. After the diagnosis has been made by palpation through the wound, the first and only dressing prior to debridement must be one that can be applied with an absolute minimum of handling. The debridement should be complete. It must be done in such a way as to avoid the spreading of bacterial contamination throughout the wound and the production of tissue necrosis. It should include the removal of all large foreign bodies. No wound that has been properly debrided should be drained. Irrigation of the wound before and during operation is condemned. Chemotherapy in the form of sulfanilamide or sulfadiazine is recommended both by mouth and in the wound, but only as an adjunct to properly conceived and executed surgery. Sulfathiazole should not be used in cranio-cerebral wounds.

## New York State Journal of Medicine, New York

43 993-1088 (June 1) 1943

- \*Continuous Caudal Anesthesia in Obstetrics Demonstration of Catheter Technique for Administration F R Irving C A Lippincott and F C Meyer—p 1023  
Role of Coronary Arteriosclerosis in Cardiac Hypertrophy H Gross and J R Lisa—p 1050  
Activity as Therapeutic Measure in Parkinsonian Syndromes A M Rabiner and M H Hand—p 1035  
From Civilian Practice to Navy Medicine H J Harris—p 1035  
Modern Spa the Physician and the Patient W Verscher—p 1038

43 1089-1182 (June 15) 1943

- Persistent Tachycardia in Survivor Adrift at Sea for Eighty Three Days V J Horton—p 1119  
Thrombophlebitis Migrans Diseminata Report of Case in Which Gangrene of Breast Occurred Observations on Therapeutic Use of Dicumarol E. P. Flood M H Redish S J Bociek and S Shapiro—p 1121

**Continuous Caudal Anesthesia in Obstetrics**—Irving and his collaborators used continuous caudal anesthesia in over 200 obstetric cases. A malleable needle or fine catheter is left in the caudal canal through which an injection is made at intervals. To derive the full benefit of continuous caudal analgesia it should be withheld until uterine contractions are well established and the cervix is dilated to from 2 to 3 finger-breadths. The greatest dose with metycaine was 9,900 mg, with monocaine 2,250 mg and with pontocaine 572 mg. The longest that the catheter was in position was twenty-nine hours. Several patients have complained of pain over the sacrum the day after delivery and in 5 cases superficial skin infection developed but no abscesses. There was no apparent increase in postpartum morbidity although the second stage was definitely prolonged and there was a significant increase in operative deliveries. There were 29 cases of fetal distress (13.3 per cent) in 218 cases. A sustained fall in blood pressure was observed in 22 of 118 cases (18.6 per cent). Of the 12 instances of fetal distress in the last 118 cases 9 or 75 per cent occurred in cases in which there was a sustained low blood pressure. In each of the remaining 3 cases there was a clear obstetric explanation for the fetal distress. On stillbirth is reported for which there is no apparent obstetric reason and which was

probably a result of the caudal anesthesia. Continuous caudal anesthesia in obstetrics is not yet entirely free of danger to mother or child. Much more experience will be needed before it can be offered to the public. Until such time its use should be restricted to well staffed obstetric services.

## Public Health Reports, Washington, D C

58 825-856 (May 28) 1943

- Plan for Rodent Control in Cities C C Sherrard—p 825  
\*Bacteriologic Action of Sulfadiazine on E Typhosa in Carriers and Cases A V Hardy—p 833  
Relapsing Fever Tick Ornithodoros Turicata as Spirochetal Reservoir C E Davis—p 839  
Tularaemia Spontaneous Occurrence in Shrews G M Kobis and E A Steinhilber—p 842

**Sulfadiazine for Carriers of Eberthella Typhosa**—The favorable results of sulfonamide therapy in Shigella dysenteriae infections encouraged Hardy to extend his observations to typhoid. He used two quantitative tests designed to measure relatively the number of viable Eberthella typhosa in the lower enteric tract and in the feces. In one test fecal specimens were obtained by rectal swabs. In the other, passed fecal specimens were collected in glycerin saline preservative. A third non-quantitative cultural procedure was employed. The rectal swabs after being used for inoculating plates were dropped into tubes containing selenite F enrichment. Following incubation the swabs were again used for plating on agar. Routinely the author sought to obtain three pretreatment cultures from carriers and two from cases of typhoid. During medication and for one week thereafter cultures were taken daily. Sulfadiazine was used in the treatment of 19 chronic carriers, 4 convalescent carriers (including 1 treated as a case), 21 clinical cases and 1 clinical relapse. Quantitative cultural tests clearly demonstrated that this sulfonamide has a definite bacteriostatic effect on E typhosa in the enteric tract. The chronic carrier state was not terminated by this treatment.

## Puerto Rico J Pub Health &amp; Trop Med, San Juan

18 253-386 (March) 1943

- Lymphogranuloma Venereum in Puerto Rico Brief Survey of Its Clinical Manifestations and Treatment in 45 Cases F Hernandez Morales and G M Corra—p 253  
Study of Balantidiasis Coli Report of 2 Cases in Children Successfully Treated with Stovarsol A Diaz Atiles—p 287  
Sprue in Puerto Rico—Ten Years Later R Rodriguez Molina—p 314  
In Vitro Action of Immune Serum on Larvae and Adult Parasites of Trichinella Spiralis J O Gonzalez—p 364  
Ants as Probable Agents of Dissemination of Shigellosis Sophie Dehler Griffiths—p 380

## Radiology, Syracuse, N Y

40 433-438 (May) 1943

- Introduction to History of Carcinoma of Cervix Uteri E H Skinner—p 433  
Experiences in Treatment of Carcinoma of Cervix Uteri L C Scheffey—p 436  
Further Experience with Pneumoperitoneum as Aid in Pelvic Irradiation L R Sante—p 447  
Intravaginal Roentgen Irradiation of Cancer of Cervix W W Wasson—p 454  
Further Study of Supravoltage X Ray Therapy in Carcinoma of Cervix H E Schmitz—p 458  
Tissue Dosage in Control of Carcinoma of Cervix M Garcia—p 463  
\*Fluoride Osteosclerosis from Drinking Water J F Linsman and C A McMurray—p 474  
Infected Lung Cyst L G Rigler—p 485  
Roentgen Diagnosis of Placenta Previa G J Baylin and S S Lambeth—p 497  
Polyostotic Fibrous Dysplasia Review of Literature with 2 Additional Cases V J Furst and R Shapiro—p 501

**Fluoride Osteosclerosis from Drinking Water**—Linsman and McMurray report a case of osteosclerosis with mottled enamel of teeth severe anemia not responding to antanemic therapy and bilateral renal lesions. Diagnosis of fluoride osteosclerosis was proved by the history of a long residence in areas of endemic fluorosis and by fluorine analysis of the patient's bones and teeth. Osteosclerosis may be a dangerous sequel to the chronic ingestion of fluorine-containing water since it may give rise to a secondary anemia due to encroachment on the blood-forming marrow. There is also the possibility of kidney damage due to chronic fluoruremia. Areas in the United States in which dental fluorosis exists and where the fluorine content of the drinking water is over three parts per million should



be systematically studied by the public health authorities to determine the existence of osteosclerosis. All patients with dental fluorosis and minor and/or signs of renal impairment should have x-ray examination of the skeletal system.

### Rocky Mountain Medical Journal, Denver

40 289-360 (May) 1943

- Edward Jackson Student and Teacher W. H. Crisp —p. 307  
Note on Absence of Serologic Evidence of Syphilis Among Population of Small Utah City I. B. Queen and M. I. Morrison —p. 17  
Conditioned Reflex Treatment for Alcoholic Addiction H. R. Carter —p. 18  
Arteriosclerosis T. D. Cunningham —p. 321

40 361-432 (June) 1943

- Traumatic Dislocation of Hip with Fracture of Acetabulum A. M. Okelberry —p. 378  
Heat Stroke L. H. Carlton and A. C. Kummer —p. 381  
The Doctor and New Colorado Fifth Certificate Law Tudochra Bell Smith —p. 390  
Acute Polyradiculoneuritis in Colorado Mariana Gardner and R. P. Forbes —p. 394

### South Carolina Medical Assn Journal, Florence

39 113-142 (May) 1943

- Physician in Social World G. D. Grice —p. 113  
Word to Graduates of Medical College in 1943 R. Wilson —p. 118  
Primary Atypical Pneumonia W. H. Kelley —p. 119  
Review of Recent Studies in Epidemiology of Rheumatic Fever F. M. Ball —p. 122

### Southwestern Medicine, Phoenix, Ariz

27 91-112 (April) 1943

- Allergy Studies in the Tuberculous O. H. Brown —p. 92  
Mumps and Associated Nephritis Complicated by Encephalitis and Blindness M. Frank and M. Pijoan —p. 95  
Treatment of Pneumococcal Meningitis with Sulfadiazine Case Report B. P. Storts Jr —p. 98

27 113-138 (May) 1943

- \*Treatment of Impetigo Contagiosa with Sulfadiazine Plastic Preparations and Exclusion of Dressings M. Pijoan, F. Worman and J. Pijoan —p. 118  
The Doctor of Medicine and His Responsibility A. W. Adson —p. 120

**Treatment of Impetigo**—Pijoan and his collaborators employed a water soluble plastic (methyl cellulose, methocel) and sulfadiazine preparations for bacteriostatic plastic films. The scabs were cleansed with cotton soaked in hydrogen peroxide. As much as possible of the scab was removed without unnecessary trauma to the infected skin area. While the surface was still moist, tincture of sulfadiazine-methocel (solution I) was applied with a cotton applicator. This may be repeated several times until the entire lesion or area is thoroughly impregnated. Sulfadiazine-methocel jelly (solution II) was then applied to the entire area. The coating should be approximately 0.5 mm in thickness. It will dry within three to five minutes and will form a new film over the lesion. One treatment is usually satisfactory. Bacteriologic studies revealed that the impetigo lesions were caused by staphylococci. Bacteriologic counts were done on 0.1 cc of a twenty-four hour broth culture by the plate colony counting system. The results showed characteristic observations including the extremes of pretreatment counts. The more complete the debridement, the more satisfactory were the results. The debridement should be a cautious procedure, as trauma might induce scar formation with possible disfigurement. All lesions showed approximately the same diminution of bacteria.

### War Medicine, Chicago

3 565-700 (June) 1943

- \*Military Malaria Control P. F. Russell —p. 565  
Problem of Herniated Nucleus Pulposus in Military Service W. G. Haynes —p. 585  
Arthropod Borne Diseases With Special Reference to Prevention and Control S. Jarcho —p. 596  
Development of Medical Service for Airline Operations in Africa Medical Department, Pan American Airways—Africa, Ltd —p. 619

**Military Malaria Control**—According to Russell, malaria is the principal disease hazard to troops in hyperendemic areas. Military malaria control involves (a) fixed installations, around which mosquito control measures are feasible and in which individual control measures are subsidiary, and (b) field areas,

in which troops fighting or maneuvering are on guard or sentry detail or are servicing convoys or airplanes, usually without the protection of mosquito control. Here "fighting malaria control" is required and measures of individual malaria prophylaxis are vital, with full use of suppressive antimalaria drugs, bed nets, protective clothing, sprays and repellents, and with intelligent cooperation by all ranks. True or causal prophylaxis is not certain to follow the use of any known drug. Sporozoites do not appear to be destroyed in the body by drugs. Malaria probably cannot be eradicated from a community by the use of drugs. The so-called prophylactic drugs achieve early or, better, suppressive treatment. Under combat conditions of exposure and great fatigue it is perhaps natural that suppressive treatment will be even less effective than it is in peacetime. The three drugs for malaria prophylaxis are plasmoquin, atabrine (quinacrine hydrochloride) and quinine. There appears to be no justification for attempting individual or mass malaria prophylaxis by plasmoquin either alone or supplemented by atabrine or quinine. Plasmoquin is a polyvalent gametocide which destroys the crescents of *Plasmodium falciparum*. Doses of 0.04 Gm of plasmoquin naphthoate or 0.02 Gm of plasmoquin hydrochloride (1/20 grain of plasmoquin) taken on each of two or three days, after meals, will generally clear the blood stream of all gametocytes. This has some value in preventing the infection of mosquitoes. It appears that atabrine in doses of 0.4 Gm of the dihydrochloride per week as suppressive treatment will be as good as or perhaps a little more effective than the use of quinine dihydrochloride in daily 5 gram (0.32 Gm) doses. The atabrine may be taken in 0.1 Gm doses twice a day on two non-successive days a week, with water and after meals. Atabrine causes no discomfort to the majority of persons. In a certain percentage there is some gastrointestinal irritation and a temporary yellowing of the skin. But the tinting of the skin will clear up after the administration is stopped, and the gastric irritation is usually temporary and mild. When severe and repeated reactions occur, quinine should be substituted. It is not clear from published reports that 0.4 Gm of atabrine dihydrochloride a week is sufficient for suppressive treatment in highly endemic areas. Possibly the dose in some areas should be 0.6 Gm a week, 0.1 Gm daily, with a double dose on Sundays. It is not clear how many months of constant atabrine prophylaxis can safely be tolerated. The limit appears to be well over six months. As many and as long intervals of freedom from atabrine as feasible should be allowed. The most important drug in malaria prophylaxis has always been quinine. It will frequently (but not always) prevent clinical symptoms. The usual prophylactic dose of quinine is 5 to 10 grams (0.32 to 0.64 Gm) of quinine daily after the evening meal. Some authorities prefer 10 grams twice a day on two or three days a week. In highly malarious areas even 15 grams (1 Gm) daily may not suppress clinical symptoms in all cases. Under present conditions quinine prophylaxis is to be used only for men who cannot tolerate atabrine.

### Wisconsin Medical Journal, Madison

42 565-656 (June) 1943

- Physiology of Heart and Circulation W. J. Meek —p. 585  
Pathology of Hypertension E. T. Bell —p. 590  
Hypertension I. H. Page —p. 594  
Evaluation of Modern Concept of Hypertension and Its Therapeutic Implications F. D. Murphy —p. 597  
Logical Approach to Diagnosis of Heart Disease A. R. Barnes —p. 601  
Rocky Mountain Spotted Fever B. I. Pippin, R. E. Housner and G. Parke Jr —p. 604  
Comments on Treatment A. J. Quick and A. L. Tatum —p. 608

### Yale Journal of Biology and Medicine, New Haven

15 657-768 (May) 1943

- Dynamic Physical Fitness in Adolescence J. R. Gallagher and L. Brouha —p. 657  
Study of 1942 Fly Population of New Haven M. E. Power, J. L. Melnick and M. B. Bishop —p. 693  
Ecologic Study of Poliomyelitis in Connecticut 1931-1941 H. A. Wenner —p. 707  
Essential Amino Acid Requirements of Man R. J. Block —p. 723  
Diethylstilbestrol Excretion in Tumor Bearing Rabbits A. D. Bays and W. T. Salter —p. 729  
Grafted Eyes of Young and Old Adult Salamanders (*Ambystoma punctatum*) Showing Return of Vision L. S. Stone and C. H. Cole —p. 735

## FOREIGN

An asterisk ( ) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Surgery, Bristol

30 289-396 (April) 1943

- Congenital Dislocation of Hip H Platt—p 291  
New Free Graft Applied to Reconstruction of Nostril H Gillies—p 303  
Repair of Limb Wounds by Use of Direct Skin Flaps D O Brown—p 307  
Sciatica and Mechanism of Production of Clinical Syndrome in Protrusions of Lumbar Intervertebral Discs I E A O'Connell—p 315  
Use of Irrigation Envelopes in Treatment of Lacerated Wounds and Compound Fractures—p 328  
Cysts of Spleen M Paul—p 330  
Excision of Esophagus for Malignant Growth by Abdominocervical Route H A Kidd—p 340  
Fibrous Structure of Cullet of Nineteen Years Duration Feeding by Extrathoracic Rubber Esophagus Throughout Greater Part of That Time Restoration of Normal Swallowing by Bouginage Closure of Caecostomy and Esophagostomy G G Turner—p 344  
Effects of Stretching Nerves After Suture W B Highet and F A Sanders—p 355  
Experimental Study on Nerve Suture with Various Suture Materials L Guttman—p 70

## British Medical Journal, London

1 685-714 (June 5) 1943

- Ophthalmoscope in Clinical Medicine Interior of Living Eye Considered as Biochemical Laboratory A M Ramsay—p 685  
Hematemesis and Melena with Special Reference to Bleeding Peptic Ulcers F A Jones—p 689  
Primary Bronchial Carcinoma at Age of 4 Years 4 Months C Elaine Field and J P Quilliam—p 691  
Nasal Intubation Dangers and Difficulties from Rhinologic Aspect A R Dingley—p 693  
Maintenance Treatment with Digitalis A S Rogen—p 694

1 715-746 (June 12) 1943

- Bridgeheads of Child Health in the Five Ages of Childhood C McNeill—p 715  
Aspects of Chemotherapy of Pneumonia T Anderson—p 717  
Enteric Group Fevers in Prisoners of War from Western Desert With Special Reference to Prophylactic Inoculation January 1941 to February 1943 J S K Boyd—p 719  
Familial Idiopathic Methemoglobinemia with Note on Treatment of 2 Cases with Ascorbic Acid J Deeny E T Murdock and J J Rogan—p 721  
New Method of Grafting P Gabarro—p 723  
Treatment of Fractured Great Toe G N Taylor—p 724

## Edinburgh Medical Journal

50 257-320 (May) 1943

- \*Typhus Rickettsial Agglutination Tests in Middle East Forces and Egypt C E Van Rooyen and W G C Bearcroft—p 257  
Social Psychiatry H Stalker—p 273  
Prognostic Blood Tests in Tuberculosis Comparison of Reliability of Four Methods Based on Clinical and Radiologic Findings J T Paterson—p 288  
Lung Cancer and Early Diagnosis C K Robertson—p 296  
Vitamin B<sub>1</sub> and Toxemia of Pregnancy R Kapeller Adler and J A Cartwright—p 305

**Typhus Rickettsial Agglutination Tests**—Van Rooyen and Bearcroft tested 50 military and 23 civilian typhus patients from the Middle East area for serologic evidence of agglutinins against *Proteus vulgaris* OX19 OX2 and OXK, as well as agglutinins against epidemic and murine rickettsias. Results show close correlation between the Weil-Felix and rickettsial agglutination tests. Experiments to verify the specificity of the rickettsial agglutination test have been performed on 100 normal human serums and on 74 pathologic serums from 25 cases of malaria, 12 of typhoid, 22 of sandfly fever, 4 of spirochetal relapsing fever and other febrile conditions all of which were carefully selected and accurately diagnosed. The results have shown that the rickettsial agglutination test did not give false positive agglutination in the diseases specified. The rickettsial agglutination test is a highly specific and reliable test for typhus equal if not superior to the Weil-Felix test. It possesses the advantage of differentiating between epidemic and murine varieties of infection which the Weil-Felix reaction cannot do. The principal technical disadvantage of the rickettsial agglutination test is that rickettsial agglutination is very fine and liable to be missed whereas agglutination of *Proteus vul-*

*garis* is easily visible. Both reactions become positive from the seventh day of illness on, i.e. usually two days after the rash has appeared. The agglutinin titer reaches its maximum about the fourteenth day of illness and thereafter declines at different rates. *Proteus* agglutinins recede more quickly than those for rickettsias. In a case of epidemic typhus rickettsial agglutination was still present in high titer on the sixty-fourth day after onset of symptoms when the Weil-Felix test was fast disappearing. In severe epidemic Egyptian typhus showing high titer Weil-Felix test reactions epidemic rickettsias are usually agglutinated to similar or greater serum dilutions. Simultaneously low titer cross agglutination for murine rickettsial suspensions occurs and the E R/M R ratio is approximately in the order of 3:1. In both Palestinian and Syrian mild murine typhus, which yield high titer OX19 agglutination the homologous rickettsias are strongly clumped frequently to even higher titer, with some cross agglutination of epidemic rickettsias in lower dilution the M R/E R ratio being roughly 10:1. All serums derived from patients suspected of having typhus should be tested in quintuplicate for presence of agglutinins for *Proteus* OX19, OX2 and OXK and epidemic and murine rickettsias.

## Lancet, London

1 699-728 (June 5) 1943

- Drug Control of Malaria W Hughes and F Murgatroyd—p 699  
\*Tuberculosis Treated with Promin F R G Heaf J V Hurford A Eiser and I M Franklin—p 702  
Naphthylide in Treatment of Early Syphilis A O F Ross—p 704  
\*Strangulated Femoral Hernia Review of 100 Cases J Jens—p 705  
Early Diagnosis of Wound Infection with Special Reference to Mixed Infections D McClean and H J Rogers—p 707  
Outbreak of Typhoid Fever S M Allan—p 708  
Hyperpyrexia Superimposed on an Attack of Acute Tonsillitis T B Snell—p 710  
Histologic Effect of Proflavine Powder on Fresh Wounds F Hawking—p 710

**Promin in Tuberculosis**—Heaf and his associates used sodium p,p'-diaminodiphenylsulfone- $\lambda$ -N-didextrose sulfonate (promin) in the treatment of 19 patients with pulmonary, laryngeal and genitourinary tuberculosis. The drug was given continuously for two weeks, one week's rest followed before the next fortnightly period was started. In calculating the length of treatment these rest weeks are included as the blood concentration of promin was well maintained during that period. The courses varied in length from two to fifteen weeks, the majority lasting more than six weeks and the average being eight and a half weeks. With oral administration, which was employed in 13 cases, the highest blood concentration of promin was 4.4 mg per hundred cubic centimeters, this was reached with a dosage of 0.4 Gm three times a day, the majority averaged 2.5 mg. The hemoglobin value and the erythrocyte count fell in all cases until iron was given as a routine. Toxic symptoms such as cyanosis, headache, nausea, vomiting and giddiness were also observed with oral administration of the drug. There was no tendency toward anemia or toxicity in the 2 cases in which the drug was administered intravenously. The authors think that promin should not be given by mouth to patients with advanced pulmonary tuberculosis who show toxemia and poor resistance. The local application of promin in cases of laryngeal tuberculosis is worthy of further investigation.

**Strangulated Femoral Hernia**—Some 115 patients with strangulated femoral hernia were treated in one institution in five years, according to Jens. A depressing feature of these admissions was the variety of diagnoses which accompanied the patients to the hospital—almost any condition capable of causing abdominal pain being suggested rather than the correct one. The surprisingly large number of 42 patients had no previous history of hernia. Reduction of strangulated femoral hernia should be accomplished by operation. The mortality for the 100 patients was 14 and of the 11 showed gangrene of the contents. Strangulation of the small intestine was found in 86 patients. In this group 20 had gangrenous bowel and the gangrene was sufficiently extensive to require resection in 12 patients, 8 of whom died giving a mortality for resection of 66 per cent for gangrenous small intestine. Of the remaining 66 patients with strangulation of the small intestine 4 died

—all of them having intestine and omentum strangulated. A review of the time factor in the cases in which gangrene was found discloses that the patients who died had a history lasting on an average over six days whereas the patients who lived had been ill on an average for only three days. A reduction in the total mortality can be attained only by earlier diagnosis and earlier operation. Intraperitoneal sulfanilamide therapy offers hope of an improved mortality rate in cases in which resection of the bowel is necessitated by reason of intestinal gangrene.

### New Zealand Medical Journal, Wellington

42 89-142 (June) 1943

New Zealand's Requirements for Doctors. C. L. Herens and H. D. Purves —p. 89

Amputation Under Ice Anesthesia. A. F. Moore and D. W. Guthrie —p. 97

Mortality from Tuberculosis in Maori Race. A. L. Edson —p. 102

Observations on Inguinal Hernia. W. M. Cotter —p. 111

Prefrontal Lobotomy. R. W. Medlicott —p. 113

Punch Card for Neoplastic Diseases. I. P. Allen —p. 121

Death from Secondary Shock. I. M. Diehl —p. 125

Diethylstilbestrol in Control of Transitory Priapism. H. Gaudin —p. 127

General Paralysis. Results of Mental Hospital Treatment and Plan for Prevention. K. R. Stallworthy —p. 129

#### Diethylstilbestrol in Control of Transitory Priapism

—Gaudin applies the term transitory priapism as distinct from true priapism to recurrent nocturnal erections without sexual stimulus, which are frequently the accompaniment of inflammatory lesions of the urogenital tract or are of nervous origin. He reviews 4 cases in which transitory priapism was counteracted by diethylstilbestrol. The first patient was given 0.5 mg of diethylstilbestrol daily. Relief followed on the second night. One week later the dose was dropped to 0.5 mg on alternate nights, and at the end of three weeks it was dropped altogether.

### Archivos Argentinos de Pediatría, Buenos Aires

14 199-262 (March) 1943 Partial Index

\*Early Pulmonary Tuberculous Cavitation in Infant. Case. P. I. Elizalde, P. R. Cervini and R. I. Latendro —p. 209

Simmonds Hypophyseal Syndrome. A. Segers, Maria E. Diaz and A. Russo —p. 218

**Early Tuberculous Cavitation in an Infant.**—Elizalde and his collaborators report the case of an infant 4 months of age. The mother and the child were living with a tuberculous patient for about a month. The infant was fed by the mother and was not given BCG vaccination. Several tuberculin tests gave negative results. When the infant was 3 months old both he and the mother presented clinical and x-ray signs of pulmonary tuberculosis. The roentgenograms of the infant showed signs of a cavity in the right lung. The infant died at the age of 4 months. Postmortem examination revealed acute pneumonitis and atelectasis, a cavity in the right upper lobe and foci of acute inflammation about the cavity. Microscopic examination revealed acid-alcohol resistant bacilli in the tissues near the cavity which stained with Ziehl-Nielsen stain. The cavity had the characteristics of Shmink's type of primary tuberculous cavity. Such cavities are extremely rare in pulmonary tuberculosis of infants.

### Deutsche medizinische Wochenschrift, Leipzig

68 185-203 (Feb 20) 1942 Partial Index

\*Pathologic and Clinical Aspects of Hiatus Hernia. H. Berning —p. 185

Importance of Iron Metabolism for Therapy. H. Albers —p. 188

\*Diagnosis and Treatment of Chronic Carbon Monoxide Poisoning. Symanski —p. 192

Diagnosis and Differential Diagnosis of Multiple Myeloma by Sternal Puncture. F. Kienle —p. 195

**Hiatus Hernia.**—Berning differentiates three forms of hiatus hernia: (1) hiatus hernia in the presence of a congenitally shortened esophagus, (2) paraesophageal hiatus hernias and (3) hernia due to hiatus insufficiency. In the type last mentioned, in which the esophagus is not shortened, the distal end of the esophagus together with adjoining portions of the stomach become herniated. Interest in this form led to anatomic studies on changes brought about by age in the region

of the esophageal hiatus. These studies revealed that hiatus insufficiency is a preliminary stage of this type of hernia. Changes that play a part are the so-called epiphrenal bell, resulting from age involution of the left hepatic lobe and of the subdiaphragmatic ring of fat, also flattening of the diaphragm with age and increase in intra-abdominal pressure due to such conditions as ascites, obesity, chronic constipation and abdominal tumors. Factors that cause hiatus insufficiency later cause true herniation. The author cites an illustrative case history. The clinical symptoms are similar in all three forms. Roentgenologic examination is essential for a correct diagnosis. Hiatus hernia should be thought of in older patients with symptoms of gastric or duodenal ulcer, of cholelithiasis, of gastric or esophageal carcinoma or of coronary sclerosis. Careful clinical and roentgenologic examination should precede the laparotomy. In patients of advanced age medical treatment should be tried first. Increased intra-abdominal pressure is to be avoided. Patients must be cautioned against physical exertion. Meals should be small and more frequent so as to avoid filling the herniated part of the stomach. Surgery is necessary in case of threatening signs of incarceration. Operation is possible by the thoracic and the abdominal route. Harrington of the Mayo Clinic, who has operated in a large number of cases, prefers the abdominal route with reduction of the hernial aperture.

**Chronic Carbon Monoxide Poisoning.**—Symanski maintains that chronic carbon monoxide poisoning exists and that it may result from a succession of numerous mild acute attacks of poisoning. Carbon monoxide poisoning is usually an occupational disease which pursues a mild course. Patients complain generally of headache and nausea. The symptoms are usually absent in the morning but return in the course of the day. Later they persist longer and disappear only when work is stopped for one or several days. Finally they no longer subside. Then there may be pallor, general weakness, vomiting and nervous and neurasthenic disorders. Occasionally the patient states that co-workers have the same complaints. Investigation at the place of work may reveal the source of poisoning. Objective signs are usually slight. Polyglobulism has been observed as well as hyperchromic anemic changes. The quantitative determination of carbon monoxide hemoglobin with the step photometer is decisive in the diagnosis. Chronic carbon monoxide poisoning is chiefly a problem of industrial medicine.

### Klinische Wochenschrift, Berlin

21 401-424 (May 2) 1942 Partial Index

Ulcer Carcinoma and "Ulcer Carcinoma. H. Kurten —p. 401

\*Animal Experiments on Effect of Malnutrition and Vitamin C Deficiency Respectively on Course of Dysentery Infection. W. Dotzer and A. Schuller —p. 405

Statistics on Clinical Picture of Kruse-Sonne (E) Dysentery. K. Roelcke —p. 407

Relations of Vitamin K to Intestinal Bacterial Growth. T. Schmidt and K. H. Busing —p. 411

Determination of Velocity of Pulse Transmission by Means of Short Wave Vasography. L. Roser —p. 415

#### Malnutrition and Vitamin C Deficiency in Dysentery

—Dotzer and Schuller have demonstrated that the resistance of guinea pigs against experimentally produced dysentery of the Flexner-Y or Kruse-Sonne-E strains was reduced by malnutrition or by vitamin C deficiency. The resistance was reduced about equally by quantitative and qualitative malnutrition. The resistance of the animals was increased by early administration of large doses of vitamin C. Guinea pigs on a high qualitative and quantitative diet were better protected against dysentery. Death of animals on a high qualitative and quantitative diet resulted from high infectious doses only. Death even from high infectious doses did not occur when the resistance of the animals on a high qualitative and quantitative diet was increased by large doses of vitamin C. The results of these experiments, as well as clinical observations on patients who are given a quantitatively differentiated diet suggest that the administration of vitamin C may be helpful both as prophylaxis and as a therapeutic measure in epidemic dysentery.

## Book Notices

**Allergy Anaphylaxis and Immunotherapy Basic Principles and Practice** By Bret Ratner M.D. Clinical Professor of Pediatrics New York University College of Medicine New York Cloth Price \$8.70 1 p 334 with 88 illustrations Baltimore Williams & Wilkins Company 1943

The stimulus for writing this book the author says in the preface, came while he was planning a somewhat different work a treatise on allergy in childhood. Parenthetically the reviewer hopes that Ratner may soon complete this latter work. It should be good. The author states that he was impressed by the possibility of clearly presenting the difficult subjects of allergy immunology and anaphylaxis through a comprehensive discussion of serum sickness. And so one or several chapters grew into a book or rather the better part of this volume. Had the author limited himself to this excellent and comprehensive presentation of our knowledge of serum sickness and its relationship to allergy and anaphylaxis he would have published a well organized monograph of about four hundred pages instead of a book of over eight hundred pages. In addition to the presentation of the important subject of serum sickness in a most comprehensive manner he would have succeeded without dilution or distraction in presenting a somewhat simplified but excellent integration of this subject with the principles of general immunology allergy and anaphylaxis.

Following an introductory chapter, the subject would have started on page 375 (book II of this volume) with the author's discussion of allergy to immunotherapeutic agents. Here the principles of hypersensitiveness are clarified. Following this the subject of serum sickness is covered in one hundred and fifty pages. This portion reviews our current knowledge of the condition. It is crammed with valuable information. The author analyzes the significance and the clinical application to allergy of many of the fundamental investigations of serum sickness. Wherever possible the author relates animal experiments to clinical allergy. In this lies the main value of this work. To complete book II a brief but thorough presentation is made of the subject of reactions and accidents due to blood transfusions.

Book III consisting of the final one hundred and fifty pages, deals with many theoretical considerations of allergy its physiologic pathology and its relationship to anaphylaxis. An excellent presentation of the mechanism of the allergic state closes the subject. The adequacy of the bibliography and subject index which follows is indicated by the fact that it covers eighty one additional pages.

And now with regret the reviewer must speak of the first three hundred and seventy-five pages. The material contained in this part (book I) is important. It is excellent material that might have gone well in a treatise on general medicine or on general therapeutics written by a clinical immunologist. Unfortunately the subject matter of book I is not well integrated with that of book II and book III. To divide this volume as the author did into three separate books emphasizes rather than overcomes the lack of unity. In this rather irrelevant book I the author discusses such varied subjects as materials used in diagnosis and therapy of infectious diseases description and methods of preparation of materials (antisera convalescent serum transfusion materials and modes of administration preparation of toxoid and of smallpox vaccine). This is followed by a discussion of sulfonamides and sulfonamide therapy. Apparently the reason for the general discussion of the sulfonamides in this book is their therapeutic importance. While allergic reactions occur following their use a discussion of their structure and use is not relevant to the general subject of drug allergy.

Book I finally and tediously closes with two hundred pages devoted to immunotherapy. This consists of a brief discussion of the treatment of an alphabetically arranged list of diseases beginning with anaerobic infections and ending with yellow fever. This is followed by book II.

**Principles and Techniques of Nursing Procedures As Developed in St. Mary's Group of Hospitals of St. Louis University** [By] Sister Mary Annita Claire B.S.N. B.S. in Nursing Cloth Price \$3.50 1 p 374 with 91 illustrations St. Louis C.V. Mosby Company 1943

This is an exceptionally complete and detailed manual of procedures governing every situation in which a nurse may find herself. This includes a chapter of special interest to Catholic nurses dealing with their religious obligations to Catholic patients. The book is divided into five parts of which part I consists of a single chapter having to do with arrangement of the patient's environment—that is the room the bed the care of flowers and the care of service rooms utility rooms kitchens and linen closets and the removal of stains. In part II are chapters dealing with admission procedures, patient's bath and toilet food service, elimination general comfort measures, psychologic needs and religious needs. The chapter on psychologic needs including diversional therapy flowers letters, radio visitors games handwork and library is especially good. In part II also are five excellent chapters on application of dry heat and cold hydrotherapy radiant energy and massage. Part III has two comprehensive chapters on the nurse's duty in connection with x-ray laboratory and other diagnostic tests, two chapters on surgical technic outside the operating room, four chapters on administration of medicines by various routes, one chapter on aspiration and injection of body cavities three chapters on medication applied to special systems by irrigation digestive genitourinary eye ear nose and throat and a chapter on medical aseptic nursing technic. Part IV deals with orthopedic procedures, such as splints, bandages straps traction and suspension devices, physical therapy and occupational therapy. Part V touches on the nursing care of the psychiatric patient in the general hospital. The plan of the book is to give a general description of the type and purpose of the procedure about to be described. This is followed by general instructions arranged in brief numbered paragraphs. Then follows a list of requisite equipment and a step by step description of technic. Finally a method of recording is described. The book is richly illustrated with photographs charts and diagrams. It should be a valuable textbook or reference book. It contains a chart in which a student can keep a record of each procedure described together with the date when it was demonstrated to her and by whom supervised and how many times practiced. There is an excellent index.

**A Study of Endometriosis Endosalpingiosis Endocervicosis and Peritoneal Ovarian Sclerosis A Clinical and Pathologic Study** By James Robert Goodall O.B.E. B.A. M.D. Consulting Staff in Gynecology and Obstetrics Royal Victoria Montreal Maternity Hospital Montreal Canada Fabrikoid Price \$5.50 Pp 140 with 30 illustrations Philadelphia Montreal & London J. B. Lippincott Company 1943

Since the classic pioneer publications of Sampson beginning in 1921 it cannot be said that there has been any substantial addition to our knowledge of this common and still rather mysterious pathologic entity. Nor can it be said that the monograph of Goodall contributes much toward its elucidation or even that it is a satisfactory review of existing knowledge.

The greater portion of the book is devoted to a discussion of types of endometriosis and the author's grouping will probably be confusing to the average reader. For example he includes among these types what he calls endometrial endometriosis (1) but his description indicates that by this term he refers to the lesion universally spoken of as hyperplasia of the endometrium. While it is possible that this may in some way be related to endometriosis this fact has not been established and there is certainly no justification in considering it a type of the latter. Another variety which would seem questionable on the basis of our knowledge is the endocervicosis referred to throughout the book.

Much of the author's discussion is along philosophic rather than scientific lines. There is scarcely a page which does not contain statements that are either highly questionable or obviously incorrect and these are uttered in a rather irritatingly oracular ipse dixit fashion. A few examples will serve to illustrate this better than many paragraphs of discussion. p 13 the action of estrin is normally limited to the superficial two

blinds of the endometrium', p 14, "acts of lack of response in endometriosis are extremely uncommon but have seldom, if ever, been described" (every trained gynecologic pathologist has long been familiar with these differences in hormonal responsiveness), p 15 "active endometriosis and pregnancy never coexist (more than 60 such cases are available in the literature), p 42 "endometriosis of whatever variety is an expression of vitiated endocrinology", p 61, "it is now clear—and, I think beyond all possibility of doubt—that all cases of endometriosis take their origin from some part of the endometrium" (notwithstanding the work and expressed opinions of men like Meyer and Sampson), p 79, "Endosalpingiosis is the result of subacute salpingitis", p 119 "reactions to abnormal endocrinology are chiefly in the nature of allergy", and so on.

This book is in other words largely a pirading of the author's hypotheses. As far as can be gathered, he believes that the responsible causes of endometriosis are spill and lymphatic dissemination (he constantly compares it with infection and differentiates acute and chronic forms) with such underlying factors as hyperestrinism and 'peritoneal sclerosis'. Illustrations are sparse the best being the reproductions of some of Sampson's original colored plates. The whole tone of this book is in sharp contrast to the original work of Sampson, which was a model of soundly scientific and conservatively presented investigation. One will find in many publications much less pretensions than the one under review, a far more complete survey of the problem of endometriosis without the necessity of following the author's inventive mind through many pages of pseudoscientific verbiage.

**How to Keep Fit and Like It. A Manual for Civilians and a Plan for a Community Approach to Physical Fitness.** By Arthur H. Steinhaus, Ph.D. M.P.I. Professor of Physiology, George Williams College, Chicago. Alma M. Hawkins, A.M. Assistant Professor of Hygiene and Physical Education, George Williams College. Lt. Comdr. Charles D. Glaue, U.S.N.R. and Edward C. Thomas, B.S. Physical Director, South Chicago Y.M.C.A., Chicago. Illustrated by I. J. Waterman. Paper. Price 25 cents. Pp. 64 with illustrations. Chicago: Consolidated Book Publishers, Incorporated, 1943.

This is a manual for persons desiring to guide their own physical fitness programs and a training textbook for instructors in group programs in communities. It is premised on sound policy and based on the experiences of trained physical directors and other experts in this field. These policies have resulted in the recommendation for pleasant and effective exercises for physical fitness. It is a small, concise volume, devoid of all "filler," and abounds in good common sense and advice. It teaches how to grade one's exercises at home, in the gymnasium or in the great outdoors. It is sufficiently illustrated to lend itself to home training and has the proper medical approach in the matter of regular physical examinations and in the development of muscles while losing excess adipose tissue. Adequate nutrition and food values are given full consideration in the fitness program outlined. It is streamlined for war service and if its program is followed systematically the reader will profit both physically and mentally. Selective Service surveys reveal not only that defects, deficiencies, diseases and disorders are present with unexpected numbers in the citizens of this enlightened country but, in addition, people as a whole stand revealed by military experience as soft, flabby, pampered and direfully in need of physical conditioning. Col. Theodore P. Banks, chief of the Athletic and Recreation Branch of the Special Service Division of the War Department, says "Many young men are entering the army today totally unprepared for military life. It takes weeks to bring them into the physical condition for military training. This means weeks of wasted time and effort, which could be avoided if every young man now in high school should engage in physical activities." This is not only true in time of national crisis but equally true in time of peace and is reflected in the lost man-hours in industry due to illness and accident caused by physical unfitness and unpreparedness and inability to carry one's full responsibility. America will profit immeasurably, economically, from a program of health and physical fitness and will derive happiness and peace of mind if disease and physical unfitness are reduced to the minimum, if not entirely eliminated. The fighting forces want only men who are "fit to fight"—young, vigorous, healthy

men in the pink of condition and with a mind to fight and a "will to win." In addition, America has the dual responsibility of supplying our fighting forces on land, in the air and on and under the sea in sufficient quantity to insure victory and, at the same time, as the "arsenal of democracy," of adequately supplying all the sinews of war required by our fighting allies. Therefore the young people of today, the men and women of tomorrow, will do their patriotic duty if they prepare themselves by becoming physically fit. This book directs them how to proceed.

**Medical Jurisprudence. A South African Handbook.** By Dr. W. F. Rhodes, B.A., M.B., Ch.B. Senior Pathologist, Union Health Department, Cape Town. Dr. I. Gordon, M.B., Ch.B. Assistant Pathologist, Union Health Department and Major R. Turner, S.A.M.C., M.B., Ch.B. Senior Assistant Pathologist, Union Health Department. With a foreword by The Hon. Mr. Justice H. S. van Zyl, Judge-President of the Cape Provincial Division of the Supreme Court of South Africa. Cloth. Pp. 218 with illustrations. Cape Town: Stewart Printing Co. (Pty.) Ltd. 1942.

This is a handbook dealing with problems of medical jurisprudence, or legal medicine, in relation to South African conditions. It is a practical manual rather than a comprehensive book of reference and is based on lectures given at the University of Cape Town. As pointed out in the foreword written by the Judge-President of the Cape Provincial Division of the Supreme Court of South Africa, the pains the authors have taken to enumerate and stress the essentials that should be looked for by a medical practitioner when conducting a post-mortem or other important examination should greatly facilitate and add to the thoroughness of the work of district surgeons in South Africa and others entrusted with any such examination and should enable them to assist the court, if called to give evidence, with insight and assurance. In appendices the authors have reproduced the statutory provisions which are of special importance to medical practitioners. Discussions of the duties of magistrates and district surgeons in relation to medicolegal deaths are included by the authors, and chapters deal with the various classifications of deaths of medicolegal importance, such as deaths from burns, suffocation, strangulation, drowning, poisoning and from regional injuries. A special chapter is devoted to firearm wounds and forensic ballistics. While the book was written primarily for South African consumption, it contains much that will be of interest to readers elsewhere whose intellectual curiosity has been aroused in the broad subject of legal medicine.

**Emotions and Memory.** By David Rapaport, Ph.D. Head of the Department of Psychology, the Menninger Clinic, Topeka, Kansas. The Menninger Clinic Monograph Series No. 2. Cloth. Price \$3. Pp. 242. Baltimore: Williams & Wilkins Company, 1942.

David Rapaport is a psychologist, not a medical man, who is closely integrated with medical procedures as the result of his connection with the Menninger group of hospitals, where he has had a chance to observe conduct disorders of varying degrees in both children and adults. He is also an expert on the so-called Rorschach technique and is well versed in the whole problem of psychology as it applies to psychopathology. The present volume is an interesting summary of the problem of emotions which has offered conceptual confusion to the psychiatrist and, even after the present book has been read, has not by any means been oversimplified. Nevertheless the book summarizes the literature extensively and the work of psychiatry and psychology on emotions. Such fields are covered as experimental psychology, psychoanalysis, hypnosis, studies of pathologic memory phenomena and direct experimental evidence such as the Rorschach test. The literature referred to in each chapter is at the end of the chapter and there is no comprehensive bibliography at the end of the book. There is an author index and a rather short subject index. The author points out some implications, some of the problems which have been set up, and the meaning of forgetting and recollection in terms of emotion. There is some discussion in the concluding chapter as to the nature of the forgetting process in terms of emotion and there is some integrating in the various fields of psychology. There is no original experimental material, but as a source book in the field of emotion and memory, the integral relationship of which is so important to psychiatrists, it will supply a much needed source of reference.

**An Introduction to Group Therapy** By S. R. Slavson, Director of Group Therapy, Jewish Board of Guardians, New York. Cloth. Price \$2. Pp. 352. New York: Commonwealth Fund. London: Oxford University Press, 1943.

The treatment of mental disorders by group means has been advanced along many lines recently. The present activity describes the efforts made at a group of schools for the purpose of character education. An excellent discussion tells how groups can be handled for therapeutic purposes, describes technique and processes such as the supervision and the meeting of those carrying out the activity. Then a number of exemplary records are presented followed by a discussion of the selection of clientele from the point of view of types of families accessible, types of children inaccessible and the natural tendencies of grouping within a large group. Such functions of leadership as acceptance or authority, the likelihood of defeat of the therapist by members of the group, authority familiarity and humor are discussed in an interesting fashion. There is a further discussion of the therapeutic process itself and five typical cases are given. The volume ends with a discussion of the variations in group therapy and there are four appendices—a short glossary and a fairly good index. The book is primarily of value to those who have to deal with problem children, particularly those who might be in a juvenile criminal group rather than maladjusted or childhood neuroses. The book is based on the detailed records of seven hundred and fifty children and fifty-five groups which functioned for about two years. The records include follow-up studies of adjustment for those placed in a group with arranged recreational activities. It is a useful adjunct to those who have to deal with this type of child and for the criminal psychopathologist who has a broad view toward therapy, and there should be a number of stimulating leads. It is not a book which needs to be in the general practitioner's library, however.

**Behavior and Neurosis: An Experimental Psychoanalytic Approach to Psychobiologic Principles** By Jules H. Maceraman, M.D., Assistant Professor of Psychiatry, University of Chicago. Chicago: Chicago Cloth. Price \$3. Pp. 264 with 7 illustrations. Chicago: University of Chicago Press, 1943.

The author of this book is a well trained psychiatrist who has had a great deal of experience not only in psychiatry but in psychoanalysis. The present volume is an attempt to give a biogenetic basis for the psychoanalytic interpretation of the neuroses. The author has checked much of his historical material on mental functions as seen in animals in such a way as to point toward his own studies. The processes are carried out with cats. The cats are frustrated in several ways through the feeding technique. There is a summary of the various behavior patterns shown by the animals, and an extensive analysis was made of the conditioned reflex concept of the motivation of behavior and the effect of frustration. A short chapter considers the evaluation of the findings in terms of psychotherapy. An extremely detailed bibliography and an excellent pair of indexes for author and for subject complete the work. The book is suggestive of further procedures and is probably a significant contribution to an experimental verification of psychoanalytic concepts as has thus far been produced.

**Tuberculosis As It Comes and Goes** By Edward W. Hayes, B.S., M.D., F.A.C.P., Associate Professor of Tuberculosis, College of Medical Franciscans, Los Angeles. Cloth. Price \$2. Pp. 157 with illustrations. Monrovia, California: The Author, 1943.

Although written primarily for patients, this book should be read by physicians everywhere. The first chapter consists of a brief but excellent history of the development of our knowledge of tuberculosis. This is followed by several chapters dealing primarily with the tubercle bacillus. What this organism is, how it infects the body, how the body defends itself and the incidence of infection in various parts of the world are clearly presented. The classification of tuberculous lesions is discussed and illustrated by numerous drawings. Under the subject of diagnosis, the author gives the tuberculin test the first place. This is followed by a ray film inspection of the chest. This is then followed by the various steps necessary to determine whether an x-ray shadow represents tuberculosis or some other disease. Several chapters are devoted to treatment in which the author discusses such subjects as the general care of the

patients, sanatorium vs. home treatment, rest, diet, climate, chemotherapy and the various methods of collapsing the lung. Collapse therapy is illustrated by a large number of drawings. Careful consideration is given to the complications of tuberculosis such as pulmonary hemorrhage and pregnancy. Dr. Hayes has had a large experience in dealing with all phases of tuberculosis. His work as a clinician and educator is widely known. His book should be made available to the public everywhere, as it contains a large volume of authentic and thoroughly dependable information which should be used to great advantage in the entire tuberculosis control movement not only in this country but throughout the world.

**Your Arthritis: What You Can Do About It** By Alfred E. Phelps, M.D., with an introduction by R. Garfield Snyder, M.D. Cloth. Price \$2. Pp. 192 with illustrations by James MacDonald. New York: William Morrow and Company, 1943.

This small book is one of the best outlines of the subject of arthritis for the public. It was written by a doctor well qualified to present the subject. The introduction is by R. Garfield Snyder, a clinician who devotes nearly all his time and effort to the study and control of arthritis. Snyder says that in the majority of cases arthritis is curable and practically always can be brought under control. Both statements are wide open for discussion. Most clinicians wish these statements were true. The book was written with a twofold purpose: to tell the patient how to cooperate with his doctor in making life as easy and pleasant as possible while under treatment and to help the busy doctor who has little time especially in these days, and help the patient get the most out of life. A few of the chapters discuss the prevalence of arthritis and some of its causes, the effects of different temperaments on treatment, what makes arthritis hurt, the relation between climate and arthritis, areas of infection, when teeth should be pulled or operations performed in treatment of arthritis, when the body rebels, symptoms of the disease, gouty arthritis, the effect of faulty posture and gait, various effective methods for treatment of arthritis now in use, methods of preventing arthritis deformities and relapses, the myth of 'acid system' factors, necessary in planning a reducing diet and how the patient can cooperate with his doctor to make life pleasanter for himself and to speed effective treatment.

**A Manual of Pulmonary Tuberculosis and an Atlas of Thoracic Roentgenology** By David O. Lindberg, M.D., F.A.C.P., Director of Roentgenology, State Sanatorium, Oakdale, Iowa. Cloth. Price \$6.50. Pp. 233 with 189 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1943.

This book is a valuable contribution to the literature on diseases of the chest. In part I which consists of seventy-two pages, the author has condensed all the important information that the physician needs in the diagnosis, treatment and control of tuberculosis. For many years Dr. Lindberg has devoted a large amount of time to x-ray studies of the various diseases of the chest. In fact, after studying in Brazil, he introduced the 35 millimeter film in the United States. All the diagnostic, therapeutic and preventive procedures in part I are well standardized. With each of them the author has had wide experience. Part II consists of excellent reproductions of 145 roentgenograms. These have been selected with great care and represent practically all the diseases of the chest which the physician encounters in this country. In arriving at final diagnoses in each case represented, the author did not depend entirely on the roentgenograms but employed all the other procedures necessary to make accurate diagnoses. This book should be made available to all physicians. It should also find an important place in the teaching of diseases of the chest to medical students.

**Malaria Quiz for Young Americans** Federal Security Agency U. S. Public Health Service, Community Health Series No. 4. Paper. Pp. 2, with illustrations. Washington, D. C.: Upt. of Doc. Government Printing Office, 1943.

This is one of the most easily readable, wholly educational pamphlets about a single disease thus far made available. It is highly recommended to any one who wants to know about malaria.



## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### Rh FACTOR AND ERYTHROBLASTOSIS

**To the Editor**—Recent articles on erythroblastosis fetalis fail to answer the following questions: 1. What, if any, are the chances of an Rh positive father and an Rh negative mother becoming the parents of an Rh negative infant? Have specific instances been reported? 2. What, if any, are the chances of an Rh negative mother who has previously given birth to an infant suffering from erythroblastosis bearing a normal Rh positive offspring, that is, one showing no stigmas of this disease?

M. D., Minnesota

**To the Editor**—I should like some information concerning the Rh factor, its significance, interpretation and importance in regard to obstetrics. I have a patient who gave birth to an eight month stillborn infant. Examination of both parents revealed absolutely negative findings except for the Rh factor, where one was positive and the other negative. Please explain these findings and advise whether another pregnancy should be undertaken. Is there any therapy that could be undertaken to make this pair the same?

M. D., New York

**ANSWER**—1. An Rh negative mother and an Rh positive father can have Rh negative children provided the father is heterozygous for the Rh factor. It has been demonstrated (Landsteiner, Karl, and Wiener, A. S. Studies on an Agglutininogen [Rh] in Human Blood Reacting with Anti-Rhesus Sera and with Human Isoantibodies, *J. Exper. Med.* 74: 309 [Oct.] 1941; Wiener, A. S. Blood Groups and Transfusion, ed. 3, Springfield, Ill., C. C. Thomas, 1943) that the Rh factor is transmitted as a mendelian dominant by a pair of allelic genes, *Rh* and *rh*. Therefore Rh negative individuals are all homozygous, genotype *rrhh*, while Rh positive individuals can be either homozygous, genotype *RhRh*, or heterozygous *Rh rh*. It is evident that if the Rh positive parent in the mating Rh positive  $\times$  Rh negative is homozygous, then all the children will be Rh positive, while if the Rh positive parent is heterozygous, half of the children will be Rh positive and half will be Rh negative. Ample instances of this can be found in the references cited.

2. If an Rh negative mother has previously had a child with erythroblastosis, the chances are that every future Rh positive child will also have the disease, in fact, usually in progressively severer form. There is, however, always the remote possibility that the mother may suddenly become spontaneously desensitized, just as hay fever sufferers occasionally recover from their disease without treatment.

3. In the case cited in the second letter, it is important to know which of the two parents was Rh negative and which was Rh positive. If it was the mother who was Rh negative and the father Rh positive, the chances are that the eight month stillborn child had erythroblastosis, provided other causes of death, such as syphilis, torsion of the umbilical cord and asphyxia, are excluded. Once an Rh negative mother has had an erythroblastic baby, all future Rh positive children are almost certain to have the disease whereas Rh negative babies will be spared (Levine, Philip, Burnham, Lyman, Katzin, E. M., and Vogel, Peter. The Role of Iso-Immunitization in the Pathogenesis of Erythroblastosis Fetalis, *Am. J. Obst. & Gynec.* 62: 925 [Dec.] 1941). As pointed out, the chance that future children will be Rh positive is either 50 or 100 per cent, depending on whether the Rh positive parent is heterozygous or homozygous.

Before offering any opinion concerning the outlook of future pregnancies, it would first be necessary to repeat the Rh tests in order to exclude the possibility of error in technique. Such errors are not uncommon on account of the delicacy of the tests. If the retests show that the mother is Rh negative and the father Rh positive, the prognosis should be guarded while if the mother proves to be Rh positive the chance for a normal baby in future pregnancies is usually good. If the mother decides that, despite the fact that she is Rh negative she wants to undertake another pregnancy, she must be made to realize that she does so at the risk of having another stillbirth or infant with erythroblastosis fetalis. If the baby is born alive there is a good chance of saving it by judicious transfusions of group O Rh negative blood. There is no therapy which can change the Rh type of any individual, since the type is constitutional and remains constant throughout life.

### USE OF TERMS GRAVIDA AND PARA

**To the Editor**—Recently at our hospital we have had several "heated" discussions among the interns and obstetric staff as to the definition and practical usage of certain obstetric terms. The main substance of the argument was in the proper usage of Para I, Para II, Para III, and so on, with its relationship to primipara, multipara, primigravida, multigravida and other similar terms. It has been the practice on our obstetric sheets to list at the top of the history sheet of a woman who is coming into the hospital to have her first child, this being her first pregnancy, Gravida I, Para 0. Therefore, on her next admission, being admitted in labor, about to have her second child, her admission record would read Gravida II, Para I. There has been no misunderstanding of the term gravida, but several of the men feel that the classification as noted, even though carried out at several surrounding institutions, is wrong and that, since this woman coming in is known universally as a primipara, her chart should read Gravida I, Para I even before the birth of her child. When I was an intern we argued about the same definitions and usage of the terms, and it seems that with the various definitions given in the dictionary it is an endless argument, the dictionary agreeing with both points of view. We should appreciate it greatly if you would help us clarify this subject by advising us of the accepted definitions and the practice and procedures that are carried out in various institutions throughout the country relative to this subject.

M. D., Pennsylvania

**ANSWER**—The terms gravida and para have been subjected to various interpretations. The following definitions have found wide acceptance.

Gravida refers to a pregnancy, regardless of its duration. Parity refers to pregnancies that have continued to the period of viability. A patient is Gravida I during her first pregnancy. She becomes Para I when she delivers a fetus which has been viable whether or not the child is actually dead or alive at birth. During the second pregnancy she is listed as Gravida II, Para I. If she had two abortions and then becomes pregnant, she would be Gravida III, Para 0. The period of viability is reached at the end of twenty-eight weeks' gestation.

To be consistent, a patient during her first pregnancy is a primigravida and during her second and subsequent gestations a multigravida. She is not a multipara unless she has had at least two pregnancies that reached the period of viability. The terms concern themselves with the pregnancy and not with the fetus, for a woman who has delivered twins at the end of her first pregnancy is still Gravida I, Para I.

### DERMATITIS AMONG CANNERS

**To the Editor**—We have a corn canning company in our village, and the manager has approached me for a solution to one of his problems. In the past most of the workers there have worn rubber gloves as a protection from a contact dermatitis which they refer to as "corn itch." I understand that this has been common wherever corn is canned, so I imagine that it has received attention in the literature. Is there any other practicable method known than wearing rubber gloves which will afford suitable protection for the workers? If not, do you know if priorities for the purchase of rubber gloves are obtainable for such industries?

C. T. Bergen, M.D., Briceyn, Minn.

**ANSWER**—Dermatitis among fruit and vegetable canners is quite common. The types of dermatitis in the canning industry are much alike regardless of the material that is being canned.

The best protection against dermatitis in the canning industry is the wearing of rubber gloves, impervious sleeves and impervious aprons. Since the canning of fruit and vegetables is an industry essential to the war effort, priorities for the purchase of rubber gloves to protect workers can be obtained.

The impervious sleeves and aprons are not on priorities. They can be purchased from the West Disinfecting Company, Long Island City, N. Y., the Milburn Company, Detroit, and Don-Ed Fabrics, Inc., New York.

### PHYSICAL EFFICIENCY AND TOBACCO SMOKING

**To the Editor**—In The Journal, July 17, 1943, page 839, the question is asked "Is there any scientific basis for the popular belief that smoking causes shortwindedness?" I have never been in agreement with the statement that the shortness of breath appears to be due to the effect of nicotine on the heart and circulation, nor am I in agreement that the pain on exertion in heavy smokers is due to the coronary contraction resulting from the action of nicotine. It is my personal belief, formed after many years of study of so-called tobacco shortwindedness, that it is due to the habit of "breathing shallow" during extended periods of smoking. That is, the smoker spends a good deal of his time in smoking and therefore gets into the habit of breathing shallow with a narrow respiratory excursion. When the time comes for a wider respiratory excursion because of increased oxygen requirements, the embarrassment is due to calling into play additional lung and muscle tissue that has not previously been functioning. If the smoker who experiences shortwindedness will practice deep breathing when he is not smoking he will not have shortwindedness. This to me is a clear indication that shortwindedness is not due to nicotine per se but is due to habitual shallow breathing.

C. P. Segard, M.D., Leona, N. J.

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## SULFAMERAZINE

CLINICAL EVALUATION IN 116 CASES

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AND

WESLEY W. SPINK, MD  
MINNEAPOLIS

Investigations have continued in a search for more therapeutically effective sulfonamides which at the same time provoke less toxic manifestations. In our experience at the University of Minnesota Hospitals sulfadiazine has proved to be less toxic than sulfathiazole, sulfapyridine and sulfanilamide. Nevertheless it has been found that renal complications are not uncommonly associated with sulfadiazine therapy. For this reason the therapeutic possibilities of the monomethyl derivative of sulfadiazine were investigated. This report presents the results that have been obtained in the treatment of 116 patients with sulfamerazine and its sodium salt.

Sulfamerazine, the monomethyl derivative of sulfadiazine, is 2-sulfanilamido-4-methylpyrimidine. The dimethyl derivative of sulfadiazine is known as sulfamethazine and is 2-sulfanilamido-4,6-dimethylpyrimidine. Sulfamerazine was first described by Robin and his associates.<sup>1</sup> They found that sulfamerazine was two and one half times as soluble in water as sulfadiazine. Its acetylated form had almost the same solubility as free sulfamerazine in water and was almost twice as soluble in water as acetylated sulfadiazine. Robin and his associates<sup>2</sup> also prepared sulfamethazine and observed that it was two and one half times as soluble in water as sulfamerazine. Sulfamerazine and sulfamethazine were also prepared by Sprague, Kissinger and Lincoln.<sup>3</sup> Sulfamethazine has been synthesized by Caldwell, Kornfeld and Donnell.<sup>4</sup> They found that its water solubility at 29 C was twice that reported by Sprague and his associates<sup>3</sup> in water at 37 C.

Robin and his group<sup>1</sup> observed that higher maximum blood levels could be established in white mice with sulfamerazine than with identical doses of sulfadiazine.

The sulfamerazine was generously supplied by Sharp and Dohme Inc.

From the Division of Internal Medicine, University of Minnesota Hospitals and Medical School.

This study was successfully completed because of the cooperation of the staff members in the various departments at the University of Minnesota Hospitals. The sulfamerazine concentrations were carried out under the direction of Dr. G. T. Evans, director of the laboratories. Mrs. Ruth F. Curry, in charge of the bacteriology laboratory, was responsible for most of the bacteriologic data.

1. Robin, R. O., Jr., Williams, I. H., Winick, P. S., and English, J. P. "Chemotherapy. II. Some Sulfanilamido Heterocycles." *J. Am. Chem. Soc.* 62: 200, (Aug.) 1940.

2. Robin, R. O., Jr., Winick, P. S., and English, J. P. "Studies in Chemotherapy. IV. Sulfanilamido-pyrimidine." *J. Am. Chem. Soc.* 64: 567, (March) 1942.

3. Sprague, J. M., Kissinger, L. W., and Lincoln, R. M. "Sulfanilamido Derivatives of Pyrimidine." *J. Am. Chem. Soc.* 63: 3028, (Nov.) 1941.

4. Caldwell, W. T., Kornfeld, E. C., and Donnell, C. K. "Substituted 2-Sulfanilamido-pyrimidines." *J. Am. Chem. Soc.* 63: 2168, (Aug.) 1941.

With equivalent doses of sulfamethazine they obtained the same maximum blood levels as with sulfamerazine.<sup>2</sup>

Welch and his associates<sup>5</sup> studied the pharmacology and toxicology of sulfamerazine in laboratory animals and in man. The minimum lethal dose in white mice was reported to be about the same as for sulfadiazine. In chronic toxicity experiments with dogs and monkeys no tissue changes were found unless the average eight hour concentration in the blood exceeded 30 mg per hundred cubic centimeters. The toxic effects were in the most part dependent on precipitation of the drug in the renal tubules, pelvis or ureters. Free sulfamerazine was found to be more soluble in urine than free sulfadiazine, and acetylated sulfamerazine was more soluble in urine than acetylated sulfadiazine. The solubility of all these compounds in urine was greatly increased when the  $p_H$  of the urine was raised from 6.5 to 7.5. Sulfamerazine was more rapidly and more completely absorbed from the gastrointestinal tract than sulfadiazine. In comparison with sulfadiazine, sulfamerazine was also more slowly excreted in the urine and therefore appeared in lower concentrations. The degree of acetylation was the same as with sulfadiazine. The production of neuropathologic changes in chickens was no greater with sulfamerazine than with sulfadiazine. When sulfamerazine was administered to human subjects it appeared that adequate blood levels could be quickly attained without the necessity of giving the sodium salt intravenously and that such levels could be maintained by giving only one or two doses by mouth daily.

Goodwin, Peterson and Finland<sup>6</sup> reported that after 5 Gm of sulfamerazine was given orally to 3 men the blood levels rose more rapidly and higher levels were reached and were sustained longer than after an equal dose of sulfadiazine. Most of the drug in the blood was found to be in the plasma. More sulfamerazine was excreted in the urine than sulfadiazine, and more of the sulfamerazine in the urine was in the conjugated form.

Robin and his associates<sup>1</sup> concluded that sulfamerazine was more effective than sulfanilamide, sulfapyridine and sulfathiazole in white mice having infections due to streptococci, staphylococci and pneumococci. They believed that the superiority of sulfamerazine was due to the higher blood levels obtained with this compound. Goodwin, Peterson and Finland<sup>6</sup> reported that sulfamerazine was bacteriostatic in vitro against type III pneumococci in low concentrations of the free drug.

5. Welch, A. D., Mathis, P. A., Latven, A. R., Benson, W. M., and Shiel, E. H. "Sulfamerazine (2-Sulfanilamido-4-Methylpyrimidine). I. A Comparison of Sulfamerazine with Sulfadiazine on the Basis of Absorption, Excretion and Toxicity." *J. Pharmacol. & Exper. Ther.* 35: 35, (April) 1941.

6. Goodwin, R. A., Jr., Peterson, O. L., and Finland, M. "Absorption and Excretion of Sulfamethyldiazine (2-Sulfanilamido-4-Methylpyrimidine) in Human Subjects." *Proc. Soc. Exper. Biol. & Med.* 51: 262, (Aug.) 1942.

As yet no reports are available concerning the value of sulfamerazine in the treatment of human infections. McCartney and his associates<sup>7</sup> reported on the pharmacology and clinical trials of sulfamethazine in 88 human infections. They found that sulfamethazine was effective against infections due to pneumococci, meningococci and gonococci. They reported no serious toxic complications. Jennings and Patterson<sup>8</sup> found that sulfamethazine was effective in 27 children when it was used against infections due to pneumococci and meningococci. No serious toxic reactions were encountered.

#### MATERIALS AND METHODS

The various types of clinical conditions in 116 patients treated with sulfamerazine or its sodium salt are presented in table 1. Of the 116 patients, 15 were children under 1 year of age. In every case, attempts were made to isolate the infectious agent responsible for the disease.

The 47 patients with pneumonia made up the largest group treated. The sputum when available was examined in all instances, and if pneumococci were present the Neufeld method of typing was used. Blood cul-

TABLE 1—Summary of Types of Infections in 116 Patients Treated with Sulfamerazine

Disease	No. of Cases
Lobar and atypical pneumonia	47
Pneumococcal bronchitis	8
Staphylococcal sepsis (bacteremia, 2 cases)	11
Influenzal meningitis (type B)	2
Meningococcal meningitis	3
Streptococcal meningitis	2
Streptococcal sepsis (bacteremia, 1 case)	31
Miscellaneous infections	
Chronic brucellosis	3
Urinary tract infections	2
Postoperative (sterile) meningitis	1
Actinomycosis	1
Pneumococcal endocarditis (type I)	1
Acute laryngotracheobronchitis	3
Infectious mononucleosis	1
	116

tures were obtained from all patients with pneumonia before chemotherapy was instituted. Data were obtained from the patients on age, time of onset of illness, extent of the pulmonary involvement, complications, x-ray films of the chest during therapy, frequent blood sulfamerazine levels and effect of the therapy on the clinical course, temperature and blood morphology. The oral dose of sulfamerazine in the treatment of adults and older children consisted of an initial dose of from 3 to 4 Gm followed by 1 Gm every six hours. This dosage was maintained until the temperature had remained normal for forty-eight hours and then was reduced to 0.5 to 1 Gm every eight hours. The drug was discontinued on the fifth to the seventh day. In infants and smaller children the initial dose was 0.05 Gm per pound of body weight (not over 4 Gm) and the maintenance dose was 0.05 Gm daily per pound of body weight given in divided doses until the temperature returned to normal. Then the dose was gradually reduced, and the drug was discontinued on the fifth to the seventh day. We did not administer an alkali with the sulfamerazine to these patients. In 1 instance type specific antipneumococcus rabbit serum was administered in conjunction with the sulfamerazine. To

patients who were nauseated or extremely toxic, the initial dose was given intravenously in the form of the sodium salt. Four Gm of this drug was given as a 5 per cent solution in isotonic solution of sodium chloride. In all instances the patients were then maintained on oral therapy.

Eight patients with acute bronchitis apparently due to pneumococci were treated with sulfamerazine. There was no evidence of involvement of the lung parenchyma in any of these patients. One of these patients had a bacteremia. The dosage of sulfamerazine was the same as used for patients with pneumonia.

Eleven patients with staphylococcal sepsis were given sulfamerazine. Two patients had a bacteremia, 1 in association with osteomyelitis and thyroiditis, the other related to multiple subcutaneous abscesses. The remaining patients were treated because of osteomyelitis, postoperative wound infections, infected burns, carbuncles, decubitus ulcers and perirectal abscess. The dosage employed was the same as with pneumonia but in most cases was given over a longer period of time. Surgical drainage of the abscesses was performed when fluctuation was present.

Two patients with influenzal meningitis (type B), 3 with meningococcal meningitis and 2 with streptococcal meningitis were treated with sulfamerazine. An attempt was made to maintain a blood level of free sulfamerazine between 15 and 20 mg per hundred cubic centimeters. In some of the cases oral therapy was supplemented by intravenous therapy. Type specific serum was given intravenously to the patients with influenzal meningitis. Type specific serum was given intravenously to 1 patient with meningococcal meningitis.

Thirty-one patients were treated for streptococcal sepsis with sulfamerazine. Twenty-three of these patients had acute tonsillitis or pharyngitis due to hemolytic streptococci. These patients were given 3 Gm initially and then 1 Gm every eight hours for forty-eight hours. The other infections included cellulitis, otitis media, sinusitis, scarlet fever and 1 instance of septicemia due to beta hemolytic streptococci.

The concentration of the free sulfamerazine in the blood was determined by the method of Bratton and Marshall.<sup>9</sup> In the patients with meningitis simultaneous determinations were made on the blood and spinal fluid.

#### PNEUMONIA AND ACUTE BRONCHITIS

Table 2 presents the results of therapy with sulfamerazine in 55 patients having lobar pneumonia, atypical pneumonia or acute bronchitis. There were 32 patients with lobar pneumonia or bronchopneumonia, all of whose sputums contained micro-organisms consistent morphologically with pneumococci. The pneumococci were successfully typed in 19 of the 32 patients. Three of these patients died. One of the patients had a type I pneumococcus pneumonia and bacteremia. This person was a chronic alcoholic addict with delirium tremens as a complication and had consolidation of the right middle and lower lobes. There were type I pneumococci in the blood culture. In addition to receiving sulfamerazine, he was given type specific antipneumococcus rabbit serum intravenously. After the slow injection of 60,000 units of serum the patient had a convulsion, became pulseless and died. The

7 McCartney, D. W., Smith, G. S., Luxton, R. W., Ramsay, W. A. and Goldman, J. Sulfamethazine. Clinical Trial of a New Sulfonamide. *Lancet* 1: 639 (May 30) 1942.  
8 Jennings, P. A. and Patterson, W. H. Sulfamethazine. Clinical Trials in Children. *Lancet* 2: 308 (Sept 12) 1942.

9 Bratton, A. C. and Marshall, E. K., Jr. New Coupling Component for Sulfanilamide Determination. *J. Biol. Chem.* 128: 337 (1939).

conjunctival test with 1:10 dilution of the serum was negative. A second patient had a lobar pneumonia of the entire right lung due to type I pneumococci. This patient was given sulfadiazine initially but developed oliguria and nitrogen retention. Sodium sulfamerazine was then administered intravenously. His

TABLE 2.—*Bacteriology in 55 Patients with Lobar Pneumonia, Atypical Pneumonia and Acute Bronchitis Treated with Sulfamerazine*

Bacteriology	No. of Cases	Comment
<b>Pneumonia</b>		
Pneumococcus type I	4	1 necrosis of lung death 1 bacteremia death 1 otitis media
III	2	
IV	1	
V	2	
VI	2	
VII	1	
XI	1	Thyrototoxicosis jaundice
XXII	1	
XXVIII	1	Schüller-Christian disease death
XXIX	1	
XXXIII	2	
Untyped	10	1 bacteremia 1 pleural effusion 1 toxic myocarditis
Hemolytic streptococci	1	
Nonhemolytic streptococci	2	
Unknown etiology	12	1 cardiac failure death 1 otitis media (Staphylococcus albus)
<b>Bronchitis</b>		
Pneumococcus type IV	2	
VIII	1	Sinusitis
XII	1	Bacteremia
Untyped	4	
	55	

urine output increased, but death ensued. Autopsy revealed a carcinoma of the stomach, and the entire right lung was collapsed and necrotic. One child with lobar pneumonia due to type XXIX pneumococci recovered but died later of Schüller-Christian disease. The postmortem examination revealed no evidence of pneumonia.

One patient with thyrototoxicosis developed a lobar pneumonia due to type XI pneumococci after thyroidectomy. Therapy with sulfadiazine was instituted but he developed severe jaundice and delirium. Sulfamerazine was then administered and his jaundice and delirium cleared rapidly. His improvement was striking. Of the 2 patients with lobar pneumonia due to type III pneumococci, 1 had had a bilateral otitis media which improved rapidly following chemotherapy. In both cases the pneumonia responded quickly to sulfamerazine therapy, although in 1 there were frequent recurrences because of an underlying bronchiectasis with cavitation.

The following case is presented in detail because it illustrates well the response seen in the majority of cases of pneumococcal lobar pneumonia.

CASE 1.—S. K., a man aged 23, a student, entered the University Hospitals after an illness of three days duration characterized by chills, fever, cough and sweats. He had had pain in his right upper chest and blood streaked sputum for two days. He had vomited several times. He was dyspneic and moderately cyanotic. Decreased resonance, bronchial breathing, moist rales and increased vocal fremitus were found over the apex of the right lung. X-ray examination of his chest revealed consolidation of the entire right upper lobe. Numerous type I pneumococci were found in his sputum but the blood culture remained sterile. The patient showed an excellent response to sulfamerazine. His temperature fell rapidly and he felt subjectively improved. The physical findings in his chest rapidly disappeared. He was discharged eight days after his admission to the hospital.

Attempts to type pneumococci in 13 of the patients with lobar pneumonia or bronchopneumonia were unsuccessful by both direct and indirect methods. All the 13 patients recovered and responded satisfactorily to sulfamerazine therapy. One of these patients had a bacteremia due to unidentified gram negative bacilli and gram positive diplococci, 1 developed a pleural effusion and another had a transient auricular fibrillation.

One patient with hemolytic streptococcus pneumonia recovered following therapy with sulfamerazine. Two patients with bronchopneumonia had numerous colonies of nonhemolytic streptococcus in the sputum and responded satisfactorily following the administration of sulfamerazine.

Twelve patients with so-called atypical pneumonia of doubtful etiology were treated. As was to be anticipated the therapeutic response was variable, and in most instances the drug did not appear to have any beneficial effect on the clinical course. One of the 12 patients died from cardiac failure. One patient with an otitis media due to *Staphylococcus albus* responded in excellent fashion. Both the otitis media and the pneumonia rapidly subsided coincident with the use of sulfamerazine.

During the past winter 8 patients were seen who had a pneumococcal bronchitis. Physical examination and x-ray films of the chest failed to demonstrate any involvement of the lung parenchyma. All these patients had fever, cough, bloody or purulent sputum and chest pain. All were treated with sulfamerazine with satisfactory results. They were given the same dose as

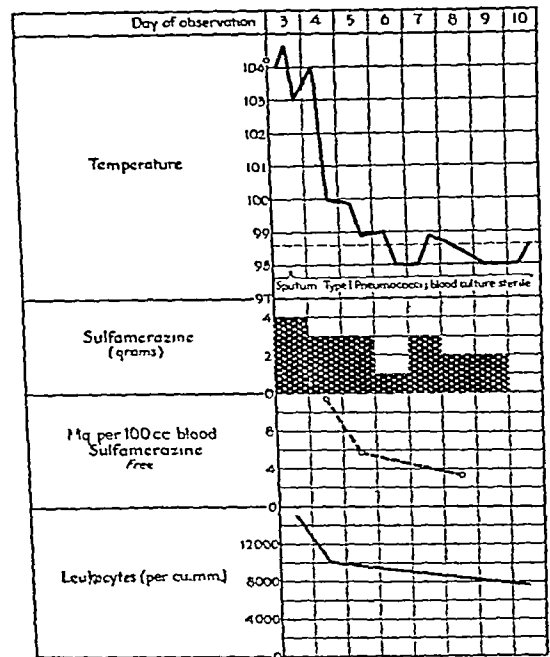


Chart 1.—Result of sulfamerazine therapy in case of type I pneumococcus pneumonia.

used for patients with frank signs of pneumonia. No toxic reactions were observed. One of these patients had a type XII pneumococcus bacteremia with 40 colonies per cubic centimeter of blood. Following therapy with sulfamerazine he recovered readily from his bronchitis and his blood stream was quickly rendered sterile. However, after a lapse of several days he developed

an abscess in the right inguinal region from which type XII pneumococci were recovered. Surgical incision and drainage was necessary. Another patient with an acute pneumococcic sinusitis and bronchitis due to type VIII organisms responded well in all respects.

In general, the effect of sulfamerazine on the clinical course of pneumonia resembled that which we have encountered with sulfadiazine. In most instances of lobar pneumonia the temperature curves approached normal within twenty-four to forty-eight hours. The drug was well tolerated by all the patients. In some cases in which a toxic reaction followed sulfadiazine therapy, sulfamerazine was well tolerated.

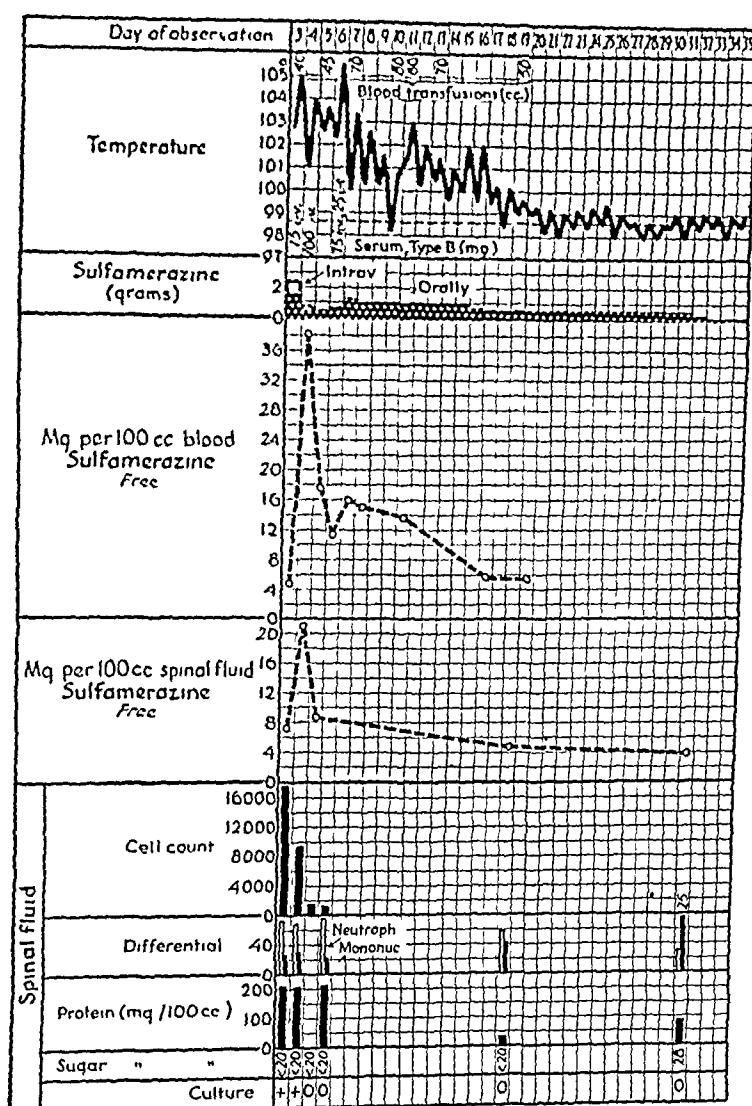


Chart 2—Sulfamerazine therapy of infant aged 2 months with type B influenza bacillus meningitis

#### STAPHYLOCOCCIC SEPSIS

Staphylococcic infections were treated in 11 patients, 2 of whom had a bacteremia. The 9 patients without demonstrable blood stream invasion had localized lesions such as furuncles, carbuncles, postoperative wound infections, osteomyelitis, infected burns and decubitus ulcers. When combined with adequate surgical drainage, satisfactory results were obtained with the majority of these patients. However, at the present time we feel that sulfathiazole is the sulfonamide of choice for staphylococcic infections. In all instances the sulfamerazine was given by mouth. The drug was not applied locally.

One of the patients with bacteremia was hospitalized because of leukemia. Several subcutaneous abscesses developed and were associated with chills, a septic

type of fever and a bacteremia. Sulfamerazine was given orally in the same dosage used in the treatment of pneumonia. The blood culture became sterile and the temperature returned to normal. The subcutaneous abscesses receded very slowly without surgical drainage. The other patient with a staphylococcic bacteremia also had an acute osteomyelitis. The patient was somewhat less febrile while taking sulfamerazine, but the bacteremia persisted and she developed an acute thyroiditis.

#### INFLUENZAL MENINGITIS

Two infants with influenzal meningitis (type B) were treated successfully with sulfamerazine. The first infant was a girl aged 11 months under the care of Dr Erling Platou. Therapy was started with sulfadiazine, and type specific rabbit serum was given intravenously. A good clinical response was obtained, but after six days of therapy she developed oliguria. She was then given sulfamerazine. Her urine output increased and she recovered.

The following is a summary of the clinical course in the second case.

CASE 2—R B, a boy aged 2 months, entered the University Hospitals in the service of Dr Irvine McQuarrie. He had become irritable and cyanotic two days before admission to the hospital. Some opisthotonos had been noted and his temperature had reached 104°F. He had had an upper respiratory infection one and one-half weeks before entry, which had subsided promptly. The child had a moderate opisthotonos on admission to the hospital. He was dehydrated. His neck was rigid and his respirations were irregular. The anterior fontanel was bulging. The ears, throat and lungs were normal. The optic disks were edematous. There was a systolic murmur at the apex of the heart. The abdomen was normal. The upper extremities were flexed and rigid. Turbid spinal fluid was removed under a pressure of 8 mm of mercury. Gram negative pleomorphic bacilli were seen in the spinal fluid on stained smears, and cultures yielded type B influenza bacilli. The child was given sulfamerazine, parenteral fluids, blood transfusions, type specific serum and oxygen. For three days he had clonic convulsions. After eight days his clinical condition appeared improved, and repeated spinal fluid examinations revealed a drop in the leukocyte count. On the seventeenth hospital day the spinal fluid sugar exceeded 20 mg per hundred cubic centimeters. He became afebrile and improved gradually. He gained 1 Kg in weight while in the hospital. No definite evidence of residual cerebral damage was found. Although the infant vomited frequently during the early part of his hospital stay, there was no evidence that this was induced by sulfamerazine.

#### MENINGOCOCCIC MENINGITIS

Three patients with meningococcic meningitis were treated with sulfamerazine. All these patients recovered. One, a male student aged 18, was treated at the Student's Health Service under the care of Dr Ruth Boynton and Dr C A McKinlay. He was given sulfadiazine initially and had a favorable response. On the eighth day of sulfadiazine therapy he developed crystalluria, right flank pain and hematuria. He was then given sulfamerazine. The renal symptoms subsided promptly and he recovered.

The second patient, a man aged 51, received only sulfamerazine and recovered after a prolonged illness. Vomiting occurred frequently during the early part of his illness, but this subsided while he was still receiving sulfamerazine. An indwelling catheter led to a urinary tract infection after the sulfamerazine was discontinued. This infection cleared up after a brief course of sulfathiazole.

The third case was of interest from several aspects and is presented in more detail

CASE 3—M S a woman aged 21, was admitted to the University Hospitals because of recurrent headaches and convulsions of five years duration. The neurologic examination was essentially negative, and a diagnostic lumbar puncture revealed normal spinal fluid. She was discharged but returned to the hospital six days later. She stated that she had had a severe and persistent headache since the lumbar puncture. Four days before her second admission to the hospital she had noted the onset of fever and back pain. One day later her neck became stiff and deafness and tinnitus appeared in her left ear. She appeared dehydrated and very ill. A rotatory nystagmus was present. Her hearing was reduced in her left ear and her neck was rigid. The heart, lungs and abdomen were normal. Kernig's sign was positive bilaterally. The initial lumbar puncture revealed cloudy spinal fluid under a pressure of 20 mm of mercury. Meningococci were found in the spinal fluid by stained smears and culture. She was given 5 Gm of sodium sulfamerazine intravenously initially, and this was followed by 1 Gm of sulfamerazine orally every three hours. Her fever subsided slowly by lysis. Her headache persisted for several days and was associated with nausea and vomiting. These symptoms could not be correlated with the sulfamerazine therapy. Her neck rigidity subsided and the nausea vomiting and headache gradually disappeared. Although she made an excellent recovery a reduction of hearing remained in her left ear.

#### STREPTOCOCCIC MENINGITIS

There were 2 patients in this series who had meningitis which appeared to be due to streptococci. The first patient was a boy aged 10 who presented the picture of an acute meningitis associated with a transient generalized rash. Although no organisms could be isolated from his spinal fluid by smears or cultures, hemolytic streptococci were cultured from his nose and throat. He had an excellent clinical response with sulfamerazine therapy. After thirteen days of chemotherapy his leukocyte count dropped to 2,400 with 37 per cent neutrophils, 56 per cent lymphocytes, 6 per cent monocytes and 1 per cent eosinophils. The sulfamerazine was discontinued, and his leukocyte count promptly rose to 7,400.

The other patient developed an acute meningitis following an operation for a ruptured appendix. The spinal fluid was sterile on culture. His condition gradually grew worse in spite of sulfamerazine therapy, and he died. The postmortem examination revealed a purulent meningitis with abscesses in the brain and liver. Gamma streptococci were cultured from the brain, spinal fluid liver and spleen.

#### STREPTOCOCCIC SEPSIS

The second largest group of patients treated with sulfamerazine had infections due to streptococci. One of these patients had a bacteremia due to beta hemolytic streptococci. There were 600 colonies per cubic centimeter of blood. This infection developed as a result of an infected decubitus ulcer. The patient was given sodium sulfamerazine subcutaneously and the blood cultures became sterile for several days. Hemolytic streptococci again appeared in the blood cultures and the patient died after a prolonged illness. Permission for an autopsy was refused.

One patient with bilateral otitis media, and another with acute sinusitis both due to beta hemolytic streptococci were successfully treated with the drug. One man aged 87 with an extensive cellulitis and lymphangitis due to a hemolytic streptococcus infection of one foot recovered following therapy with sulfamerazine.

Twenty-three patients with acute tonsillitis and pharyngitis due to hemolytic streptococci were treated with sulfamerazine at the Student's Health Service. Most of these patients were given 3 Gm initially followed by 1 Gm every six hours for forty-eight hours. The clinical response was excellent in most of these cases. However, several of these patients continued to have hemolytic streptococci in their throats and had subsequent throat infections after a short interval of time.

Four patients with scarlet fever were given sulfamerazine. One of them was also given 90,000 units of streptococcus antitoxin intramuscularly. All of them had hemolytic streptococci in their throats. Following

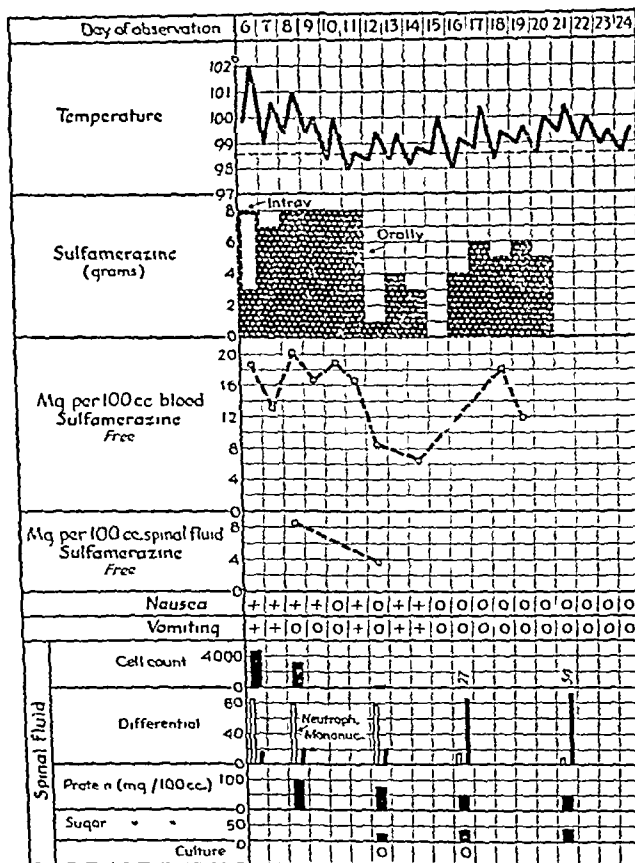


Chart 3—Result of sulfamerazine therapy in case of meningococcal meningitis

therapy with sulfamerazine the fever subsided rapidly, the skin rash diminished within twelve to twenty-four hours and the patients felt subjectively improved. No visceral complications were encountered in any of these patients, and no toxic manifestations occurred as a result of chemotherapy. Repeated throat cultures however, revealed that in some instances streptococci persisted in their throats. The following case illustrates these points well.

CASE 4—B G a man aged 22 a student had a backache, nausea, headache and fever for one day. He had a rash for twelve hours. He did not appear extremely ill. His pharynx was decidedly injected and his cervical nodes were enlarged. His tongue was red and there was a circumoral pallor. There was an erythematous rash on his abdomen, chest, arms and legs. Soon after his admission to the hospital he had a chill and a fever up to 103.8 F. Streptococci were cultured from his throat. His response to sulfamerazine was excellent. His fever subsided promptly, his rash disappeared within twelve



hours and he felt well. No evidence of cardiac or renal complications was found. However, a throat culture revealed beta hemolytic streptococci at the conclusion of the sulfamerazine therapy.

#### MISCELLANEOUS INJECTIONS

Several infections of miscellaneous types were treated. Three patients with chronic brucellosis, including 1 patient with a brucella spondylitis, were given

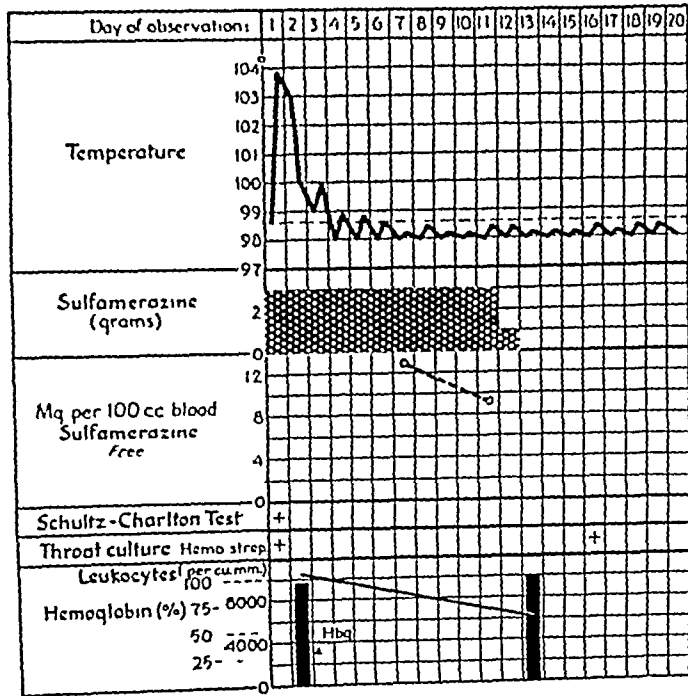


Chart 4—Sulfamerazine therapy in scarlet fever

sulfamerazine. The patient with the spondylitis and 1 patient without a localized lesion responded moderately well, both became afebrile and felt subjectively improved. The third patient showed no benefit. Two patients with urinary tract infections were treated. Both infections were due to hemolytic streptococci and responded satisfactorily. One infant was treated because of clinical evidence of meningitis developing after the surgical removal of a lumbar myelomeningocele. The spinal fluid was sterile and, although the infant recovered, the value of chemotherapy could not be assessed. One patient with abdominal and pulmonary actinomycosis was given sulfamerazine without benefit.

One of the most interesting patients was a middle-aged housewife who had a lobar pneumonia which was controlled after two courses of sulfadiazine. She then developed an acute endocarditis, and type I pneumococci were cultured from her blood. Sulfamerazine was given to her but she died after a stormy course. Autopsy revealed no evidence of pneumonia, but there was a large vegetation on the mitral valve.

Three children with acute laryngotracheobronchitis were treated. Staphylococci and nonhemolytic streptococci were found in their throat cultures. Two of these patients recovered rapidly, the third child gave no response to chemotherapy, and recovery was prolonged. One patient with infectious mononucleosis improved coincident with the use of sulfamerazine.

#### ABSORPTION AND DISTRIBUTION

Our studies have indicated that sulfamerazine when given orally will lead to a higher blood level in a shorter interval of time than equal doses of sulfadiazine. Adequate blood levels could be maintained with sulfamerazine given at longer intervals than with sulfadiazine. The amount of the sulfamerazine appearing in the urine or feces was not quantitated in any of the

patients. When the sodium salt of sulfamerazine was given intravenously, higher blood levels were attained in a shorter time than with equal doses of sulfamerazine given by mouth or sodium sulfamerazine given subcutaneously. In a few instances some difficulty was experienced in maintaining adequate blood levels of free sulfamerazine even with the aid of intravenous injections of sodium sulfamerazine. This appeared to be accounted for in part by excessive conjugation of the drug. The amount of the conjugated drug in the blood was not determined routinely.

In several cases the amounts of the free sulfamerazine in the blood and spinal fluid were determined simultaneously. The amount of free sulfamerazine in the spinal fluid averaged 50 to 60 per cent of the amount in the blood.

#### TOXICITY

The toxic manifestations encountered in the treatment of 116 patients with sulfamerazine and its sodium salt are given in table 3. The most frequent evidence of toxicity was nausea and vomiting. Although this occurred in 5 cases, in most instances we were unable to attribute it definitely to the sulfamerazine. The drug was discontinued in only 1 of these cases because of this complication. In 3 cases secondary fever developed which appeared to be due to sulfamerazine, in 2 of these a rash was associated with the fever. The skin eruption was maculopapular in type and was scattered over the entire trunk and extremities. The fever and rash subsided promptly when the drug was discontinued. In 1 child a transient leukopenia and granulocytopenia occurred.

Because of its increased solubility in urine and slower rate of excretion it was hoped that the occurrence of renal complications would be eliminated by the use of sulfamerazine in the place of sulfadiazine. Two of the patients developed back pain, hematuria, crystalluria and reduced urine output when sulfamerazine was given orally. The first patient was treated because of an atypical pneumonia. He had a duodenal ulcer and was nauseated, consequently his fluid intake was low. After receiving 24 Gm of sulfamerazine by mouth he developed left flank pain, microscopic hematuria, crystalluria and oliguria. He was given parenteral fluids, and therapy with the drug was continued. All his symptoms disappeared promptly. The second patient had

TABLE 3—Toxic Manifestations Encountered in a Group of 116 Patients Treated with Sulfamerazine

Manifestation	No. of Patients
Nausea and vomiting	5
Drug fever	3
Dermatitis	2
Leukopenia and granulopenia	1
Gross hematuria and anuria	1
Oliguria	1

a fluid intake which seemed adequate, but she developed bilateral flank pain, gross hematuria, crystalluria and anuria after she had received 17 Gm of sulfamerazine orally. Cystoscopy was performed and the lower ends of both ureters were found to be occluded by large crystals. Ureteral catheters were left in place, and she was given intravenous sodium bicarbonate solution to insure an alkaline urine. Following this procedure a flow of urine was reestablished. Her urine output was maintained over 3,000 cc a day by forcing fluids parenterally. She was discharged from the hospital six days later without any evidence of renal damage.

It is important to point out that this patient also received ammonium chloride for the treatment of an acute bronchitis. The  $p_H$  of her urine was found to be 4.6. It is not unlikely that the highly acid urine was a major factor in causing a precipitation of crystals along the urinary tract.

No evidence of peripheral neuritis or other neuro-pathologic disturbance was encountered in any of our patients which was attributed to sulfamerazine. This is in distinct contrast to the earlier experience of others with sulfamethylthiazole.

#### COMMENT

During the treatment of 116 patients having a variety of infections an attempt has been made to compare sulfamerazine with sulfadiazine with respect to its pharmacology, therapeutic effectiveness and toxicity. Adequate blood concentrations can be maintained with smaller doses of sulfamerazine than with sulfadiazine. Because sulfamerazine is retained in the body for a longer period of time than sulfadiazine, doses of the former may be given at less frequent intervals. Sulfamerazine appears to be just as effective in the therapy of pneumococcal pneumonia as sulfadiazine. Sulfamerazine usually caused a more abrupt fall in temperature than occurred with sulfadiazine. Sulfamerazine also appeared to be just as effective as sulfadiazine or sulfapyridine in the treatment of meningitis due to type B influenza bacillus or the meningococcus. Infections due to hemolytic streptococci responded quite satisfactorily to sulfamerazine and in this respect the results were similar to those obtained with sulfadiazine. Sulfathiazole is more effective than either sulfamerazine or sulfadiazine in staphylococcal infections. Toxic reactions due to sulfamerazine were no more frequently encountered than with sulfadiazine. Sulfamerazine provoked fewer reactions than we had previously encountered with sulfathiazole, sulfapyridine or sulfanilamide. Although sulfamerazine and its acetylated form are more soluble in urine than the comparable forms of sulfadiazine, two of the patients developed renal complications due to precipitation of the drug in the form of crystals within the urinary tract.

Recent investigations would indicate that crystalluria due to sulfadiazine may be prevented, or at least reduced by administering sufficient quantities of an alkali so that the  $p_H$  of the urine is maintained at 7.5 or higher.<sup>10</sup> To achieve such an alkaline urine when therapeutic doses of sulfadiazine are being utilized, it has been recommended that from 10 to 20 Gm of sodium bicarbonate should be administered in divided doses every twenty-four hours. As a result of a group of preliminary observations, we are in agreement with the foregoing recommendation. It would also appear that alkalinization is a valuable prophylactic procedure for patients receiving sulfamerazine. This is well illustrated in the following example.

A woman aged 33 at the University Hospitals had subacute bacterial endocarditis due to streptococci of the viridans group. Sulfonamide therapy had failed to clear the blood stream of bacteria. It was decided to give a large dose of sodium sulfamerazine in an attempt to control the infection. She was

given 3 Gm of sodium bicarbonate five times a day, and the twenty-four hour fluid intake was maintained around 5 liters. Twenty-five Gm of sodium sulfamerazine was given intravenously. The twenty-four hour fluid intake on this day was 5300 cc and the urinary output was 1,700 cc. The following twenty-four hour intake of fluid was 4,050 cc with an output of 3505 cc of urine. The maximum concentration of sulfamerazine in the blood was 68 mg of the free drug. The hydrogen ion concentration of the urine was maintained above a  $p_H$  of 8. At no time were sulfamerazine crystals observed microscopically in freshly voided specimens of urine. There was no evidence of gross or microscopic hematuria, and the patient had no symptoms referable to the urinary tract. She had several emeses, complained of a headache, and appeared mentally confused and depressed for a short time. The procedure failed to sterilize her blood.

On the basis of this and similar observations, we have recommended at the University Hospitals that in patients receiving sulfadiazine or sulfamerazine a fluid intake should be maintained so that the urinary output during a period of twenty-four hours ranges between 1000 and 2000 cc. At the same time, enough sodium bicarbonate should be administered so that the  $p_H$  of the urine is 7.5 or more. Obviously, such a procedure is carried out in patients whose clinical condition does not contraindicate these procedures. This applies particularly to patients having renal dysfunction or cardiac failure. It should be emphasized that renal complications due to sulfapyridine, sulfathiazole, sulfadiazine and probably sulfamerazine may be due to factors other than the precipitation of crystals. There is considerable evidence that renal failure may be associated with a direct toxic effect of the sulfonamides on the renal parenchyma and also due to hypersensitivity phenomena. It is doubtful that alkalinization would be of much benefit under such circumstances.

Sulfamerazine appears to be tolerated quite well by children and small infants. No toxic reactions were encountered in 15 infants under 1 year of age.

#### CONCLUSIONS

1 Sulfamerazine was administered to 116 patients having a variety of clinical conditions. Fifteen of these patients were infants under 1 year of age.

2 Sulfamerazine appeared to be as effective as sulfadiazine in the therapy of 40 cases of pneumococcal pneumonia or bronchitis. Sulfamerazine was less effective than sulfathiazole in the treatment of staphylococcal sepsis. Thirty-three patients with streptococcal infections responded as well to sulfamerazine as a comparable group did to sulfadiazine.

3 Two cases of meningitis due to type B influenza bacilli and 3 patients with meningococcal meningitis recovered following therapy with sulfamerazine.

4 Compared to sulfadiazine, when sulfamerazine was given orally adequate blood concentrations necessitated smaller doses given less frequently.

5 Sulfamerazine does not appear to be any more toxic than sulfadiazine. The drug did not produce any demonstrable neurologic complications. Sulfamerazine caused less nausea and vomiting than sulfapyridine, and fewer skin eruptions and instances of drug fever than sulfathiazole.

6 Two instances of nonfatal urinary tract complications were produced by sulfamerazine. The complication appeared to be due to the extrarenal precipitation of crystals resulting in the mechanical obstruction of a free flow of urine. There is evidence that an adequate fluid intake and alkalinization of the urine may prevent such complications.

10 Schwartz, Leon, Flippin, H. F., Reinhold, J. G. and Domm, A. H. The Effect of Alkali on Crystalluria from Sulfathiazole and Sulfadiazine. *J. A. M. A.* 121: 14 (April 16) 1941. Jen en, O. J. and Fox, C. L. Hydrogen Ion Concentration and the Solubility of Sulfonamides in Urine. The Relation to Renal Precipitation. *J. Urol.* 19: 14 (Feb.) 1944. Culligan, Doro, R. Carb, Solomon, and H. M. Newman. Prevention of Crystalluria During Sulfadiazine Therapy. Experimental and Clinical Studies. *Proc. Soc. Exper. Biol. Med.* 2: 2 (March) 1941. Fox, C. L., Jr., Jensen, O. J. Jr. and M. Lee, C. H. Prevention of J. renal Obstruction During Sulfadiazine Therapy. *J. A. M. A.* 121: 114 (April) 1944.

THE SIMPLIFIED TREATMENT OF GONOCOCCIC OPHTHALMIA NEONATORUM WITH CHEMOTHERAPY

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Cases of gonococcic ophthalmia neonatorum continue to appear in spite of the routine instillation of silver nitrate into infants' eyes at birth. The records of the New York City Department of Health<sup>1</sup> show that a total of 213 cases of gonococcic ophthalmia were reported from 1938 to 1942 (through October). Evidently, then, the disease is still a serious problem.

Previous to the use of the sulfonamides in the treatment of gonococcic ophthalmia of the newborn, the

amides by Lewis,<sup>6</sup> Wong,<sup>7</sup> Sweet<sup>8</sup> and others. All these investigators also used local instillations of mild protein silver, mercurochrome or other antiseptics, topical application of silver nitrate and frequent irrigations.

A comparative study of three groups of cases of gonococcic ophthalmia neonatorum at Harlem Hospital is presented in order to demonstrate the simplification and efficacy of the new therapy of the disease. In all cases the criteria for diagnosis were edema and inflammation of the lids, purulent discharge and the presence of gram negative intracellular diplococci in the smear of the discharge. The criteria for cure were the disappearance of these symptoms and the absence of gram negative diplococci from smears taken from the conjunctival sac.

In the first group (January 1934 to December 1937 inclusive) there were 30 cases, of which 16 were transferred to other hospitals with special eye services when the diagnosis of gonococcic ophthalmia was made. The remaining cases, treated at this hospital with local and general measures before the advent of chemotherapy, are summarized in table 3. In all the unaffected eye was protected with some such device as a Buller shield, while the infected eye was treated with repeated copious irrigations of boric acid solution and frequent instillations of 10 to 25 per cent mild protein silver. The duration of the illness ranged from six to forty-six days. In 5 cases (35.7 per cent) complications developed. In 1 baby arthritis of the left great toe and of both wrists appeared on the sixth, seventh and eighth days of therapy respectively. The joints were aspirated and gram negative diplococci were found in smears of the pus. Another infant developed a subcutaneous metastatic abscess which had gram negative intracellular diplococci in the aspirated pus. Two babies contracted gonococcic infection of the second eye on the second and fifth days of therapy respectively. The ankles of one became swollen but were not aspirated and so the condition was not proved to be gonococcic arthritis. In a fifth case, in which both eyes were involved at the onset, a corneal ulcer on one eye developed in spite of mild protein silver, boric acid irrigation and silver nitrate applied topically. Two patients were taken home on the fifth day before cure was effected, and 1 patient died of infectious diarrhea of the newborn on the sixteenth day of treatment with the ophthalmia still present.

In the second group (January 1940 to June 1942 inclusive) there were 31 cases, of which complete records were available for only the 14 presented in table 4. These babies were all given sulfonamides orally in divided doses four to six times a day to a total daily dose of 1 to 1½ grams per pound of body weight. Seven infants received sulfapyridine, 4 sulfathiazole, 1 sulfadiazine, 1 sulfanilamide and 1 sulfathiazole for a day followed by sulfapyridine for four days. All were treated with frequent irrigations of the affected eye, 13 with boric acid solution, 1 with isotonic solution of sodium chloride. The unaffected eye was protected with a shield. Ten patients received instillations of 10 to 20 per cent mild protein silver. Only 1 baby (7.1 per cent), treated with sulfanilamide, developed a

TABLE 1—Treatment of Gonococcic Ophthalmia Neonatorum with Sulfathiazole (July 1912 to April 1943 Inclusive)

	Birth Weight		Day of Onset	Number of Days	Duration of Symptoms, Days	Negative Smear Day	Days of Therapy	Complications
	Lbs.	Oz.						
1	6	13	1	1	3	3	6	None
2	2	14	3	1	2	2	9	None
3	7	5	6	2	2	1	2	None
4	6	0	5	2	2	2	2	None
5	5	4	4	1	4	1	4	None
6	5	8	2	1	2	2	2	None
7	8	12½	5	1	2	1	3	None
8	4	11	13	1	4	1	4	None
9	7	12	6	1	2	1	2	None
10	2	0	5	1	1	1	3	None

TABLE 2—Comparative Value of the Three Methods of Therapy

	Group 1	Group 2	Group 3
Number of cases	14	14	10
Duration of symptoms, days	12.2	2.5	1.4
Negative smear day	6.46 (?)	1.7	1.3
Days of therapy	5.42	2.7	2.9
Number of complications	5	1	0

disease was prolonged, treatment was exhausting and complications were frequent, often resulting in blindness. Therapy ranged from repeated copious lavages with various antiseptic solutions to cauterization of the conjunctivas with silver nitrate and even to canthotomy and midtarsal incision. Local measures were occasionally supplemented with intramuscular injections of nonspecific proteins.<sup>2</sup> Sulfanilamide was first used in the treatment of this disease in the form of a weak solution for local irrigation.<sup>3</sup> Mullen<sup>4</sup> used the drug orally as well as locally in solution, while Panneton<sup>5</sup> insufflated powdered sulfanilamide or sulfapyridine into the conjunctival sac. In the past two years effective and rapid cures have been reported with the oral use of sulfon-

From the Department of Pediatrics, Harlem Hospital.  
1 Personal communication from Dr. Theodore Rosenthal, director of Bureau of Social Hygiene, New York City Department of Health.  
2 Duke Elder, W. S. Textbook of Ophthalmology, St. Louis, C. V. Mosby Company, 1938, vol. 2, pp. 1569-1580.  
3 Rein, W. J., and Tibbets, O. B. Am J Ophth 22: 1126 (Oct) 1939.  
4 Mullen, C. R. Treatment of Gonorrheal Diseases of the Eye with Sulfanilamide, Arch Ophth 25: 655 (April) 1941.  
5 Panneton, Philippe. Am J Ophth 24: 314 (March) 1941.

6 Lewis, P. M. Gonococcic Conjunctivitis. A Comparison of Sulfanilamide, Sulfapyridine and Sulfathiazole in the Treatment of 120 Cases, J. A. M. A. 117: 250-252 (July 26) 1941.  
7 Wong, R. T. Chemotherapy in the Treatment of Gonorrheal Ophthalmia. Relative Effectiveness of Sulfanilamide, Sulfapyridine and Sulfathiazole, Arch Ophth 27: 670-687 (April) 1942.  
8 Sweet, L. K. Chemotherapy in Acute Gonococcal Conjunctivitis, Am J Ophth 25: 1487-1492 (Dec) 1942.

complication involvement of the second eye on the second day of treatment, but both eyes cleared up after five more days of the same therapy. The duration of the disease ranged from one to seven days.

In the last group (July 1942 to April 1943 inclusive) there were 10 cases. All were treated uniformly

appeared and the smears from the conjunctival sac showed no gram negative diplococci. The eyes were simply cleansed from without, to remove pus when necessary with a pledget of absorbent cotton moistened with isotonic solution of sodium chloride. No attempt was made to force the eyes open or to irrigate them and

TABLE 3—Treatment of Gonococcal Ophthalmia Neonatorum Without Sulfonamides  
(January 1934 to December 1937 Inclusive)

1	Birth Weight		Day of Onset	Number of Eyes	Treatment	Duration of Symptoms Days	Negative Smear Day	Days of Therapy	Complications
	Lb	Oz							
1	-	12	5	1	2% mild protein silver 2% silver nitrate boric acid irrigation	2	23	2	Arthritis of left great toe and both wrists
2	5	14	3	2	1% mild protein silver boric acid irrigation	17	16	17	Metastatic subcutaneous abscess
3	8	6	3	1	2% mild protein silver boric acid irrigation	Taken home uncured	Unknown	13	Other eye arthritis of ankles
4	6	6	1	2	20% mild protein silver 1% silver nitrate boric acid irrigation	Taken home uncured	Unknown	5	Unknown
5	4	6	2	1	20% mild protein silver 2% silver nitrate boric acid irrigation	17	17	17	None
6	7	0	5	1	20% mild protein silver 2% silver nitrate boric acid irrigation	Taken home uncured	Unknown	5	Unknown
7	4	6	3	1	2% mild protein silver 1% silver nitrate boric acid irrigation	Died before cure (diarrhea)	Not achieved	16	None
8	8	6	3	1	2% mild protein silver boric acid irrigation 1% atropine	Taken home uncured	Unknown	21	Other eye
9	7	15	5	2	1% mild protein silver boric acid irrigation	Taken home with discharge still present	13	16	None
10	5	5	7	2	2% mild protein silver 1% silver nitrate boric acid irrigation 0.5% atropine milk injection (intramuscular)	32	32	40	Corneal ulcer
11	2	14 1/4	1	2	1% mild protein silver boric acid irrigation	15	46 (?)	15	None
12	8	12	9	1	2% mild protein silver boric acid irrigation	12	6	12	None
13	5	8	1	2	20% mild protein silver boric acid irrigation	18	10	18	None
14	6	11	5	1	20% mild protein silver boric acid irrigation	12	11	10	None

TABLE 4—Treatment of Gonococcal Ophthalmia Neonatorum with Sulfonamides and Local Therapy  
(January 1940 to June 1942 Inclusive)

1	Birth Weight		Day of Onset	Number of Eyes	Treatment	Duration of Symptoms Days	Negative Smear Day	Days of Therapy	Complications
	Lb	Oz							
1	2	12	3	1	Sulfapyridine 10% mild protein silver boric acid irrigation	4	1	3	None
2	4	14 1/4	3	1	Sulfapyridine boric acid irrigation	4	2	4	None
3	8	8	10	1	Sulfathiazole 15% mild protein silver boric acid irrigation	4	2	5	None
4	6	2	5	1	Sulfathiazole 15% mild protein silver boric acid irrigation	5	1	5	None
5	3	5	1	1	Sulfanilamide 10% mild protein silver boric acid irrigation 0.5% atropine	5	7	5	Other eye
6	3	11	3	1	Sulfathiazole sulfapyridine boric acid irrigation	2	2	5	None
7	4	14	1	1	Sulfapyridine 15% mild protein silver boric acid irrigation	2	2	3	None
8	7	6	4	1	Sulfapyridine 15% mild protein silver boric acid irrigation	4	4	3	None
9	6	9	2	1	Sulfapyridine 15% mild protein silver boric acid irrigation	3	1	2	None
10	7	14 1/4	2	1	Sulfapyridine 15% mild protein silver boric acid irrigation	4	4	3	None
11	7	21 1/2	2	1	Sulfapyridine boric acid irrigation	2	1	3	None
12	7	8	1	1	Sulfathiazole 20% mild protein silver boric acid irrigation	4	2	5	None
13	4	-	5	1	Sulfadiazine boric acid irrigation	4	3	6	None
14	-	9	3	1	Sulfathiazole 20% mild protein silver saline irrigation	4	1	-	None

regardless of the infant's weight, the severity of the symptoms and whether one or both eyes were involved at the onset. As soon as a case was diagnosed, it was isolated in a separate nursery. Sulfathiazole was given by mouth in the form of an emulsion with acacia 3 grains (0.2 Gm) of the drug initially followed by 1 grain (0.06 Gm) every four hours until symptoms dis-

appeared and the unaffected eye was not protected mechanically. The babies all tolerated the drug well showing no loss of appetite or weight nor any abnormal findings in their urines. Since the duration of symptoms and positive smears was only one to four days the therapy was brief (in 2 cases treatment was continued for six and nine days respectively, through error). Therefore routine

blood counts and drug levels in the blood were not determined. All infants in this group were observed in the hospital for at least one week after being cured. No complications or relapses were noted during this time or in the follow-up clinic. These cases are presented in table 1.

The results of the methods of treatment of the three groups of patients are compared in table 2.

#### SUMMARY AND CONCLUSIONS

1 The sulfonamides used in the treatment of gonococcal ophthalmia neonatorum have greatly decreased the duration of the disease and have practically eliminated complications.

2 Patients are now treated routinely at this hospital only with sulfathiazole by mouth. Local therapy and mechanical protection of the unaffected eye are apparently unnecessary.

3 Sulfathiazole in doses of 1 gram per pound of body weight daily cured our patients and prevented complications.

### THE TREATMENT OF MENINGOCOCCIC INFECTIONS WITH SULFADIAZINE AND SULFAMERAZINE

(SULFAMETHYLDIAZINE, MONOMETHYLSULFADIAZINE)

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Many observers have attested the value of sulfadiazine in meningococcal infections.<sup>1</sup> A previous report from this hospital on the treatment of meningitis with sulfadiazine included 24 patients with meningococcal meningitis. Since then we have continued to treat all patients admitted to the Gallinger Municipal Hospital with sulfadiazine<sup>2</sup> or, since March 1943, alternately with sulfamerazine and sulfadiazine. During this time there has been an increasing incidence of meningococcal infections in the District of Columbia as well as in the country as a whole. Through May 31, 1943 we had treated 118 patients with meningococcal meningitis (including the 24 cases already reported) and 3 patients with meningococcemia.

The present report includes a summary of the results obtained with sulfadiazine and sulfamerazine together with an analysis of the factors which influenced recovery or death. We have also studied the severity of the disease as the epidemic progressed and have attempted to correlate this with the results of therapy.

Miss Ruth Mayer rendered technical assistance.

From the George Washington Medical Division (Drs. Lepper and Dowling) and the Pediatric Service (Dr. Sweet), Gallinger Municipal Hospital, and the Departments of Medicine and Pediatrics, George Washington University School of Medicine.

1 Dingle, J. H., Thomas, Lewis, and Morton, A. R. Treatment of Meningococcal Meningitis and Meningococcemia with Sulfadiazine, *J. A. M. A.* **116**: 2666 (June 14) 1941. Trevett, G. I., Nelson, R. A., and Long, P. H. Studies on Sulfadiazine. II. The Clinical Use of Sulfadiazine in the Therapy of Bacterial Infections Other Than Pneumonia, *Bull. Johns Hopkins Hosp.* **49**: 314 (Oct.) 1941. Finland, Maxwell, Peterson, O. L., and Goodwin, R. A., Jr. Sulfadiazine: Further Clinical Studies of Its Efficacy and Toxic Effects in 460 Patients. *Ann. Int. Med.* **17**: 920 (Dec.) 1942. Hodes and Strong.<sup>3</sup> Rundlett, Gnassi, and Price.<sup>4</sup> Feldman, Sweet, and Dowling.<sup>2</sup>

2 Feldman, H. A., Sweet, L. K., and Dowling, H. F. Sulfadiazine Therapy of Purulent Meningitis, *War Med.* **2**: 995 (Nov.) 1942.

3 Sulfadiazine and sulfamerazine for this study were supplied by the Lederle Laboratories, Inc.

#### PROCEDURE

Routine procedures in the diagnosis and treatment of these patients have been carried out as follows. As soon as a patient believed to have meningitis was admitted to the ward, a lumbar puncture was performed. On the specimen of spinal fluid obtained several examinations were made. A cell count and a Pandy test were done. Smears of the centrifuged sediment were made. They were stained with both methylene blue and Gram's stains. If organisms believed to be meningococci were seen typing by means of the Neufeld technic was attempted. Cultures were planted in tryptose-phosphate or tryptose-phosphate-hemoglobin broth and on chocolate agar slants. A quantitative dextrose determination was made on the clear supernatant fluid by an application of Benedict's modification of the Folin-Wu method.<sup>4</sup> After this study had established a presumptive diagnosis of meningococcal meningitis, a blood culture was obtained and treatment was begun. An initial oral dose of 6 Gm. of sulfadiazine or sulfamerazine was followed by 1 Gm. every four hours in adults. A proportionately smaller dose was given to children. For severely ill patients, especially those too stuporous to swallow, or for those who were vomiting excessively, the initial dose and a varying number of following doses were given as a 0.5 to 1 per cent solution of the sodium salt of the drug intravenously or subcutaneously. The sulfonamide drug was continued until the patient was afebrile for approximately seven days unless some indication for stopping the drug developed sooner. Frequent hemograms, urinalyses and blood urea nitrogen and blood sulfonamide determinations were obtained during the period of drug administration. Follow-up lumbar punctures were done on the second hospital day and again when discharge was contemplated. If the cell count had not fallen to 30 cells per cubic millimeter the puncture was repeated at weekly intervals until that level was reached. At this time the patient was allowed out of bed and was subsequently discharged. Additional lumbar punctures were done only when recovery was not progressing satisfactorily. Each spinal fluid specimen was examined in the same way as the one obtained by the initial lumbar puncture.

Patients who responded poorly to this regimen in the first twenty-four to forty-eight hours were considered candidates for serum therapy. After reevaluation of the clinical status of the patient and the laboratory findings, serum was given intravenously if it was believed indicated.

#### RESULTS

There have been a total of 118 cases of meningitis treated here using this routine. The etiologic agent in every case was established by one or more of the following methods: (1) positive spinal fluid culture, (2) a positive blood culture, (3) a smear containing demonstrable typical gram negative intracellular or extracellular organisms. All cases not fulfilling these criteria were omitted from this series. Whenever possible the organisms were typed.<sup>5</sup> Seventy-three group I and 6 group II (alpha) organisms were found.

In addition there have been 3 cases of meningococcemia in which neither meningeal signs or symptoms nor any increase in cells in the spinal fluid occurred. Meningococci were cultured from the blood of all the e patients.

<sup>4</sup> Benedict, S. R. The Determination of Blood Sugar. *J. Biol. Chem.* **64**: 207 (March) 1925.

<sup>5</sup> Dr. Sara E. Branham of the National Institute of Health typed many organisms.

Among the 118 patients with meningitis 12 (10.1 per cent) died. Several clinical and laboratory features have been found to be related to prognosis. These factors include age, presence and duration of coma before treatment, number of organisms in spinal fluid and concentration of spinal fluid dextrose on admission and on the second day following therapy. We have measured the speed of recovery by the duration of coma, the duration of temperature elevation over 101 F by rectum and the duration of a spinal fluid cell count over 30 cells per cubic millimeter from the beginning of treatment. For these comparisons only the patients receiving sulfadiazine have been studied.

The distribution of patients by age is shown in table 1. Sixteen (13.6 per cent) of the patients were under 10 years of age, 66 (55.9 per cent) from 10 to 39 and 36 (30.5 per cent) were 40 years or over. No one under 10 years died, whereas 4 (6.1 per cent) of the patients in the intermediate age group (10-39 years) and 8 (22.2 per cent) of the patients over 39 years succumbed. The difference between the youngest group and the intermediate group is not

The number of organisms in the spinal fluid has been estimated from smears made in a uniform manner. "Many" organisms were reported when at least one organism was present in practically every field and several organisms were seen in most fields. "Few" organisms were said to be in a smear when approximately one half of the fields contained no organisms and relatively few organisms were present in any individual field. "Rare" organisms were said to be present when they could be demonstrated only after considerable search. When "many" organisms were present 9 patients among 42 (21.4 per cent) died, which is a significantly higher rate than for the patients with "few" organisms, among whom the rate was 5.2 per cent (3 deaths among 58 patients), and also higher than the group of 14 patients with "rare" or "no" organisms, among whom there were no deaths. The averages for the duration of coma, fever and elevated cell count again show a progressive increase the greater the number of organisms.

For the past year we have been doing immediate quantitative dextrose determinations in the spinal fluid

TABLE 1—Factors Influencing Prognosis of Patients with Meningococcic Meningitis Treated with Sulfadiazine and Sulfamerazine

Factor	Group	Number of Patients	Died		Speed of Recovery *		
			Number	Per Cent	Average Duration of Coma	Average Duration of Fever †	Average Duration of Pleocytosis
All cases		118	17	10.1	0.48	2.7	20.6
Age	Less than 10	16	0	0	0.10	1.5	18.6
	10 to 39	66	4	6.1	0.67	2.6	21.9
	40 and over	36	8	22.2	0.89	4.4	22.1
Presence of coma on admission	Yes	44	12	27.3		2.6	26.1
	No	74	0	0.0		4.4	18.1
Number of organisms in initial spinal fluid	Many	47	9	21.4	0.74	3.4	25.2
	Few	58	3	5.2	0.27	3.1	20.5
	Rare or none	14	0	0.0	0.20	2.0	17.0
	Not recorded	4	0	0.0			
Initial spinal fluid dextrose	Less than 10 mg per 100 cc	40	6	15	0.46	3.5	25.7
	10 to 49.9 mg	35	1	2.9	0.39	3.4	19.2
	50 mg per 100 cc and over	7	1	14.3	0.10	1.8	14.0
	Not done	36	4	11.1			
Second day spinal fluid dextrose	No change or decreased	4	1	25.0	2.6	6.4	25.6
	Increased but not normal	31	3	9.7	0.74	4.3	33.0
	Increased to normal	34	1	2.9	0.17	2.2	18.0
	Died before second day	3	3	10.0			
	Not done	46	4	8.7			

Includes only patients treated with sulfadiazine. † Temperatures permanently below 101 F by rectum.

statistically significant but the death rate in the oldest group is significantly greater than the rate in either of the other two groups as well as these two groups combined. It is also of note that the average duration of coma, fever and pleocytosis is progressively longer in each group and significantly so in the oldest group.

The presence of coma on admission shows a high correlation with the outcome. Among the 44 patients admitted in coma 12 (27.3 per cent) died, whereas not 1 of the 74 patients not in coma on admission died. This is highly significant when tested statistically. The average duration of fever for patients who recovered after being admitted in coma was 4.4 days and for those not in coma was 2.6 days. Moreover, the average duration of lymphocytosis was 26.1 and 18.1 days for patients with and without coma respectively. Both of these differences are of definite statistical significance. On the first day of coma 2 (8.3 per cent) died whereas of 20 patients admitted with coma of over 1 day's duration 10 (50 per cent) died. In addition, the average duration of illness before the onset of coma of the patients who died was 2 days, which is significantly greater than the average of 1.2 days for the patients who survived after being admitted in coma.

Forty of these patients had dextrose below 10 mg per hundred cubic centimeters and 6 (15 per cent) died. One (3 per cent) patient among 35 with dextrose between 10 and 49.9 mg per hundred cubic centimeters died and 1 (14.3 per cent) out of 7 with dextrose over 49 mg per hundred cubic centimeters died. Even though suggestive, these figures are not significant. The criteria of rapidity of recovery showed a slight but not significant trend in that the patients with higher dextrose levels responded more rapidly. Dextrose determinations were made on spinal fluids obtained on the second day. The results have been divided into three groups: first those which decreased or did not increase, second those which increased but not to 50 mg per hundred cubic centimeters and, third, those which returned to 50 mg per hundred cubic centimeters and above.

In the first group 1 out of 4 (25 per cent) died. In the second group 3 (9.7 per cent) among 31 died. In the third group 1 (2.9 per cent) of 34 died. None of these differences are statistically significant.

Other factors which were studied but showed no significant relationship to recovery were sex, race, duration of illness before treatment was begun, presence of



neurologic complications on admission, extent of rash, height of initial spinal fluid cell count, group of organisms and the presence of positive blood cultures on admission. Of these, the presence of neurologic complications on admission and the height of the initial spinal fluid cell count show a trend that might become significant when more cases are collected. These trends are that the presence of neurologic complications or of cell counts over 10,000 per cubic millimeter indicates a slower recovery.

Among the patients who recovered, the most frequent complications related to the infection were nerve palsies. These occurred in 21 patients. The majority of them were present on admission or when they could be identified as a comatose patient regained consciousness. They involved both sensory and motor nerves. The only sensory change noted was deafness, which was present in some degree in 8 patients. The motor nerves involved were the cranial third (oculomotor), fourth (trochlear), sixth (abducens), seventh (facial), eleventh (spinal accessory) and twelfth (hypoglossal), which were involved in 14 patients. In 1 boy there was a temporary spinal nerve palsy resulting in a transitory foot drop. More than one nerve was frequently involved, the greatest number in any 1 patient being six. The follow-up on the patients with nerve

The most significant complications of sulfadiazine therapy as well as the most common have been urinary in nature. The criteria which we recognize as diagnostic of urinary lithiasis are renal colic, gross hematuria and pronounced unexplained oliguria or anuria with or without azotemia or any combination of these. There have been 10 cases presenting one or more of these findings. In 6 of these cases symptoms developed at a time at which the drug could be discontinued safely. In all 6 cases an uneventful subsidence of symptoms occurred when this was done and fluids were forced. In cases in which further treatment of the infection was required the sulfonamide dosage was maintained, decreased or temporarily interrupted depending on the blood sulfadiazine level. Fluids were forced and attempts at alkalization were made with prompt and satisfactory recovery from renal symptoms. In only 1 case was cystoscopy needed. This was done on the third day of therapy and the drug was reinstituted in low dosage after a twenty-four hour interval.

Other toxicities from sulfadiazine have included 3 instances of rash with fever, 2 instances of fever alone and 1 instance of rash and conjunctivitis. One patient developed a transient leukopenia.

In addition to the foregoing patients, since March 1943 an attempt has been made to evaluate sulfameraz-

TABLE 2—Severity of Illness and Results of Treatment of Meningococcic Meningitis Treated with Sulfadiazine and Sulfamerazine

Treatment	Number of Patients	Severity of Illness						Results of Treatment					
		Admitted in Coma		Dextrose Less Than 10 Mg. per 100 Cc.		Many Cocci in Initial Spinal Fluid		Died		Recovered			
		Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Average Duration of Coma	Average Duration of Fever*	Average Duration of Pleocytosis	Specific Serum Used
Sulfadiazine in series	22	7	31.7	13	59.2	7	31.7	2	9.1	0.66	3.0	28.0	1
Sulfamerazine in series	22	6	27.3	12	54.5	5	22.7	2	9.1	0.28	2.9	22.9	3
Sulfadiazine all cases	96	8	8.6	28	4.6†	7	3.4‡	10	10.4	0.48	2.7	20.6	8
Total of lines 2 and 3	114	44	37.3	40	48.7§	42	36.8¶	12	10.2	0.44	2.8	21.0	11

\* Temperatures permanently below 101 F. by rectum.  
† Based on 114 patients.

‡ Determined in only 60 patients.

§ Determined in only 82 patients.

¶ Based on 94 patients.

palsies has been too short for an evaluation of the eventual outcome. However, there has been no appreciable recovery to date in 6 of 8 patients who become deaf, whereas there has been some recovery in 12 of 15 patients with motor nerve involvement.

The other complications that we have encountered include 3 patients who had arthritis, 3 with tenosynovitis and 1 with conjunctivitis from which a meningococcus was cultured. All of these complications were of short duration.

#### TREATMENT

As seen in the third line of table 2, the mainstay of treatment in 96 cases was sulfadiazine. There were ten (10.4 per cent) deaths in this group. One half of these deaths occurred within the first twenty-four hours after admission. Eight of these patients received serum in addition to sulfadiazine. Twenty-two cases have been treated with sulfamerazine. There were two deaths (9.1 per cent) in this group, neither within twenty-four hours. In 3 of these cases serum was administered in addition to chemotherapy.

The response to therapy in the sulfadiazine cases in which survival occurred has varied from dramatic to satisfactory. The time taken for the patient to become rational and the temperature to become normal has been spread over a wide range, the extremes being 0.25 to 6.75 and 0.0 to 12.0 days and the averages 0.48 and 2.7 days respectively.

zine by giving alternate patients this drug and sulfadiazine. To date this study is unfinished but, as seen in table 2, 22 cases have been treated with each drug with two (9.1 per cent) deaths in each series. The age distribution was approximately the same in the two groups. The severity of cases as measured by presence of coma, dextrose content of the fluid on admission and the number of organisms in the initial smear showed that those patients who received sulfadiazine were slightly more ill. The somewhat more rapid response in patients who survived after receiving sulfamerazine may be correlated with their being less seriously ill. Only 1 person in the sulfadiazine group received serum. Three sulfamerazine treated patients have also received serum.

Three sulfamerazine treated patients had kidney complications as defined. One required cystoscopy. The others responded favorably to conservative treatment. Two instances of rash and fever, 2 examples of fever alone and 1 instance of leukopenia have occurred with sulfamerazine.

#### SERUM

As shown in table 2, 11 patients received serum. The only patient in the entire series who received serum intraspinally did so in another hospital immediately after the diagnosis. One other patient also received serum before admission. The course of these 2 patients was not different from the course of those who received no

serum One patient who was in diabetic acidosis was given serum as soon as the initial dose of sodium sulfadiazine was completed. However, the patient died within eight hours. Eight other patients received serum after having failed to respond to sulfonamide therapy in the first twenty-four to forty-eight hours. Four of these continued to fail and died. Four of these patients survived. In 2 it was felt that the recovery was definitely related to the administration of the serum in that a prompt improvement followed. In the other patients who recovered the actual value of the part played by the serum in influencing the outcome is questionable. Four of the 6 surviving patients developed mild serum sickness.

Of the 3 cases of meningococcemia without evidence of meningitis, 1 presented an acute onset of petechial rash and high fever and the other 2 showed a maculopapular rash, joint pains and fever. The first patient was treated with sulfadiazine with rapid subsidence of symptoms and no complication. The other 2 patients had recovered spontaneously by the time the diagnosis was established. They were observed for a prolonged period and were discharged in good condition.

Table 3 shows the effect of time of onset of the diseases as the epidemic progressed on the incidence, severity and recovery. From Jan 1, 1942 to June 30, 1942 there were 28 patients; from July 1, 1942 to Dec 31, 1942 there were 22 patients and from Jan 1, 1943 to May 31, 1943 there were 67 patients.

In the first time interval there were three (10.7 per cent) deaths, in the second interval three (13.6 per cent) deaths and in the third period six (8.5 per cent) deaths. It is seen, therefore, that no significant increase or decrease in mortality has occurred. On the other hand, the average duration of coma after treatment and of average time taken for temperature and cell count to return to the standards used have shown a prolongation in the more recent cases. The average duration of coma for the last two periods are both significantly greater than that for the initial interval, but the difference between these two compared with each other is not. The same statistical relationship holds for the average times for the temperature to return below 101 F and the cell count to return below 30 cells per cubic millimeter. There has also been an increase in the percentage of patients admitted in coma. In the first six months 8 (28.6 per cent) patients were admitted in coma. In the next six months there were 10 (43.4 per cent) patients and in the last five months 31 (46.4 per cent).

#### COMMENT

We have reviewed our experience with two drugs, sulfadiazine and sulfamerazine, in the treatment of meningococcic meningitis and analyzed the clinical and laboratory factors which bore a relationship to the outcome.

Our experience with both sulfonamides to the present time has been favorable. The over-all death rate of twelve (10.2 per cent) deaths among 118 patients compares satisfactorily with those in the literature for sulfonamide therapy.<sup>6</sup>

The incidence of neurologic complications has not been high. Only a few have not cleared up and the majority of these are nerve deafness. It is too early at this time to tell how many of these palsies will persist permanently. The incidence of toxicity, especially renal but also rash and fever with or without conjunctivitis is greater than generally reported for

sulfadiazine. Four and two tenths per cent of the sulfadiazine treated patients had fever, rash and conjunctivitis. Ten and four-tenths per cent of patients developed kidney complications. The large doses used as well as the dehydrated state of many of these patients on admission undoubtedly accounted for this high incidence of complications. Certain things must always be done to guard against this danger. The most essential is to secure an adequate fluid intake. At least 3,000 cc per day should be given. Excessively high doses of the drug should not be used unless necessary, and if the patient is showing satisfactory clinical progress in spite of a low blood sulfonamide level the dose should not be increased. Although we have attempted to keep the pH of the urine at or above 7.5 in only a few cases, our results have been similar to those obtained by others and have convinced us that this should be done whenever large doses of the sulfonamides are being given.

It is impossible for us to reach any conclusions about serum therapy as an adjunct to sulfonamides since we have treated too few cases. Occasional patients however, do show definite benefit from the administration of serum and we feel that it should be available at all times in case the response to sulfonamides is not satisfactory.

TABLE 3—Relationship of the Date of Onset to Severity of Illness and Prognosis

Date of Onset	Number of Patients	Admitted in Coma		Died		Average Duration of Coma*	Average Duration of Fever†	Average Duration of Pleocytosis
		Number	Per Cent	Number	Per Cent			
Jan 1, 1942 to June 30, 1942	28	3	10.7	8	28.6	0.24	1.67	14.7
July 1, 1942 to Dec 31, 1942	22	3	13.6	10	43.4	0.75	3.05	20.4
Jan 1, 1943 to May 31, 1943	67	6	8.5	31	46.4	0.56	3.44	25.3

\* Includes only patients who recovered after treatment with sulfadiazine.

† Temperatures permanently below 101 F by rectum.

Several clinical factors have been found to be significant in prognosis following treatment with sulfadiazine.

Age is shown to be a most significant factor in mortality and in rate of recovery among surviving patients. Prior to the use of sulfonamides the prognosis of infants and elderly patients with meningococcic meningitis was extremely grave. Even with sulfonamide therapy results in these groups have been reported as still carrying higher death rates.<sup>7</sup> Although we have had relatively few infants in this series, the response in the few we have had has been highly satisfactory and our group under 10 years of age is the most favorable one. These results are in keeping with those reported by Hodes.<sup>8</sup> From our figures it would seem that by far the most unfavorable group to treat is that including patients of 40 years and over.

As stated no significant differences or definite trends could be brought out relating recovery to duration of illness before therapy. This is almost certainly caused by the pleomorphism of the disease and should not encourage delay in diagnosis and treatment. In any individual case we feel sure that time is an important item. We have data that relate duration in the indi-

<sup>6</sup> Beeson, P. B. and Weserman, Ethel. Cerebrospinal Fever: Analysis of 355 Case Reports with Special Reference to Sulfonamide Therapy. *Brit. M. J.* 1: 497 (April 24) 1953.

<sup>8</sup> Hodes, H. L. and Strong, P. S. Treatment of Meningococcal Meningitis with Sulfonamides. *J. A. M. A.* 119: 691 (June 27) 1942.

vidual case to outcome. Coma has been shown to be definitely detrimental, and any case which is delayed until coma is established certainly has been delayed too long. Furthermore we have shown that the duration of coma before treatment is started as well as the duration of the illness before coma occurred are both significant in the outcome of the case. We have had several patients treatment of whom has been delayed, who have slowly gone into coma and been in coma for as long as two days before treatment was begun. These cases, we feel sure would have been saved by earlier diagnosis and treatment. We feel, therefore, that early diagnosis and treatment are most essential.

Another laboratory manifestation which was found to be of significance in terms of mortality and duration of illness was the number of organisms in the spinal fluid. Apparently one can generalize and say that, the more organisms present, the more severe the illness is likely to be.

Prognostic value of spinal fluid dextrose has been emphasized recently by Rundlett, Gnassi and Price.<sup>9</sup> They feel that a rising spinal fluid dextrose is of utmost significance. We have evidence that in general relatively high initial spinal fluid dextrose or rising spinal fluid dextrose is a good prognostic sign. However, in the individual case we have found it not completely reliable. In 4 of our patients who died there was a higher spinal fluid dextrose on the second day of illness than on admission. In 1 of these it was over 70 mg per hundred cubic centimeters. The duration of illness also did not follow spinal fluid dextrose levels more closely than the several other factors studied.

The time of onset in the epidemic was found to be important in speed of recovery but not in mortality. In considering this factor, all the morbidity measurements show a progressive increase in severity of the disease as the epidemic has progressed to the present time, and most of these trends are statistically significant. We feel safe in stating that there has been a definite increase in the severity of the illness in these cases although it has not been reflected in the mortality rate.

For some time it has been apparent that sulfonamides are effective in the treatment of meningococcic meningitis. However, it is well known that this disease is an extremely variable one in its severity, mortality rates varying from 20 to 90 per cent.<sup>10</sup> It is very difficult, therefore, to evaluate a new therapy without accurately controlled experiments. On the other hand, increasing severity and mortality has been the rule in epidemic times until the peak is reached, and if an agent is effective throughout an epidemic its therapeutic value can be accepted. In our experience the mortality in meningitis treated with sulfadiazine has been both low and stable in a time of increased incidence when the virulence of the disease was increasing. We feel that this gives definite proof of the value of this drug in this disease.

We have begun to evaluate the efficacy of treatment with sulfamerazine as compared with sulfadiazine. Up to the present time the mortality rate is exactly the same in the two groups. The duration of illness and complications in relation to the virulence of the infection have been the same with the two drugs. Sulfamerazine seems to be as effective as sulfadiazine. In our hands it has been slightly more toxic, but the difference is not great.

## SUMMARY

1 We have given sulfadiazine to 96 patients who had meningococcic meningitis, of whom 10 died, and sulfamerazine to 22 patients, of whom 2 died.

2 The presence of coma on admission and the age of the patient were the two most important factors in prognosis. One fourth of all patients admitted in coma died. If coma had been present longer than one day, one half of the patients died. No patients not in coma on admission died. Almost one fourth of patients over 40 years of age died.

3 The presence of numerous organisms or of a very low dextrose level in the initial spinal fluid are other unfavorable prognostic signs.

4 The incidence and severity of the disease treated by us has increased as expected in epidemic times, but the mortality rate has been kept constant.

5 Sulfadiazine is an effective agent in the treatment of meningococcic meningitis.

6 Sulfamerazine is apparently as good a therapeutic agent as sulfadiazine.

TREATMENT OF EPIDEMIC NEONATAL  
DIARRHEA WITH SUCCINYL-  
SULFATHIAZOLEALLAN H. TWYMAN, M.D.  
ANDGEORGE R. HORTON, M.D.  
INDIANAPOLIS

Outbreaks of epidemic diarrhea of newborn infants occurred in the fall of 1942 in Cleveland, Carlisle, Pa., Detroit, Toledo, Ohio, Dayton, Ohio, and Indianapolis.<sup>1</sup> The disease is now appearing again in various parts of the Midwest. The disease is not new. It has occurred many times in the past in Europe as well as in this country.<sup>2</sup> Infants afflicted are usually less than 1 month of age. Those weighing over 7 pounds (3.2 Kg.) are victims as well as smaller and premature infants. The latter suffer the greatest death rate. The onset of the disease may be sudden or insidious. In the former case the baby begins to pass frequent, watery, greenish yellow stools, vomits and has fever. It may be drowsy or irritable. The weight loss may be alarming, and dehydration within a few hours may be severe. Fluid replacement, blood transfusions, changes of feeding formulas or the addition of pectin agar to the formulas have no satisfactory effect on the outcome of the disease. The mortality rate is usually near 50 per cent.<sup>3</sup>

A milder type of the disease has been described.<sup>2</sup> In this the stools are less frequent, the vomiting is not severe, loss of weight is slight or absent, and dehydration and fever may not be present. The recovery usually occurs in a week or ten days.

During the past several months we have observed diarrheal, neonatal deaths the cause for which we could not ascribe to parenteral infection, improper feeding or specific infection of the gastrointestinal tract, such as the colon-typhoid group of organisms. In our hospital the strictest of preventive medicine is being employed. Throat and stool cultures as well as complete physical examination of all nursery employees reveal no positive

<sup>9</sup> Rundlett, Emilie, Gnassi, A. M., and Price, Preston. Meningococcic Meningitis, *J. A. M. A.* **119**: 695 (June 27) 1942.  
<sup>10</sup> Dingle, J. H., and Finland, Maxwell. Diagnosis, Treatment and Prevention of Meningococcic Meningitis, *War Med.* **2**: 1 (Jan.) 1942.

From the pediatric service of Dr. Louis H. Segar.  
<sup>1</sup> Medical News (Ohio), *J. A. M. A.* **120**: 853 (Nov. 14) 1942.  
<sup>2</sup> Orniston, G. Epidemic Neonatal Diarrhea in Maternity Hospitals. *Clinical Aspect*, *Lancet* **2**: 588-590 (Nov. 15) 1941.  
<sup>3</sup> Holt, L. Emmett, Jr., and McIntosh, R. *Diseases of Infants and Childhood*, ed. 11. New York: D. Appleton Century Company, 1940.

factors. We have not found a causative agent for the disease. However we do report good results in a small series of cases using a treatment regimen hubbed about succinylsulfathiazole.

#### CLINICAL PICTURE OF EPIDEMIC DIARRHEA OF THE NEWBORN

The onset of the disease may be sudden and insidious, most of ours being sudden and unmistakably serious from the beginning. The infants rapidly lose weight and become worse as diarrhea and vomiting persist. Dehydration is severe and the infant appears very toxic. Stools number from four to five to fifteen or more in twenty-four hours. They are liquid and usually greenish yellow although other colors may be present. The temperature is usually near normal but may be elevated 2 or 3 degrees. Repeated stool cultures are negative for pathogenic organisms. In our series there was a single exception, in which case a culture of hemolytic streptococci was obtained. The fatal cases are usually terminated within ten days or two weeks often the cause of death being a complicating pneumonia.

The milder type of the disease, usually insidious in onset, has been observed by us. The clinical picture is one of barely discernible constitutional symptoms. The infant gradually begins to have more frequent stools soft in character and usually greenish yellow. Vomiting occurs infrequently. Dehydration and fever are not usually present. Weight remains stationary or there may be a slight loss. Usually after a week or ten days symptoms gradually abate and the infant progresses satisfactorily. There are gradations in severity of the disease and we have observed cases which could be classed with neither of the foregoing.

Succinylsulfathiazole, a comparatively new sulfonamide commercially known as "Sulfasuxidine,"<sup>4</sup> has been used chiefly in the preparation of patients for surgery of the large bowel<sup>5</sup> and for the treatment of bacillary dysentery.<sup>6</sup> We have found no reference in the literature concerning its use in epidemics of neonatal diarrhea.

The original work on this drug by Firor, Poth, Knotts and others resulted from work designed to develop an agent that had powerful antibacterial activity in the bowel.<sup>7</sup> Succinylsulfathiazole is ideal for this purpose. The workers mentioned have shown that the administration of the compound to animals alters the intestinal flora to such an extent that the number of *Escherichia coli* per gram of wet stool is reduced from a normal of ten million to one hundred. They also report that only 5 per cent of the ingested drug is eliminated by the kidneys and that little if any toxicity results from its administration. In fact, no toxic reactions of importance have occurred.<sup>8</sup> The stools are softened and rendered odorless.

The action of the drug is purely local. Poth reports that succinylsulfathiazole is acted on by intestinal bac-

teria to cause hydrolysis and a yield of sulfathiazole locally in the bowel.

The suggested routine dosage consists in the oral administration of 0.25 Gm per kilogram as an initial dose this being followed by 0.25 Gm per kilogram in twenty-four hours. In the preparation of patients for surgery of the bowel, Gatch advises the administration of 0.5 Gm per kilogram as an initial dose followed by 0.5 Gm per kilogram daily, the dosage being divided into six equal daily doses for eight days.<sup>9</sup>

Because of its safety and proved value in reducing the number of coliform organisms, we have incorporated succinylsulfathiazole into the treatment of infectious neonatal diarrhea. We offer no explanation for the success of its employment, since no specific cause for the disease has been found.

#### OUTLINE OF TREATMENT

Treatment consists in (1) succinylsulfathiazole by mouth, (2) opiates by mouth, (3) vitamin K, (4) plasma or whole blood transfusions, (5) parenteral fluids and (6) protein milk formulas.

The newborn infants placed on our treatment routine cannot be classed as a selected group. In the early stages of the epidemic the infants were subject

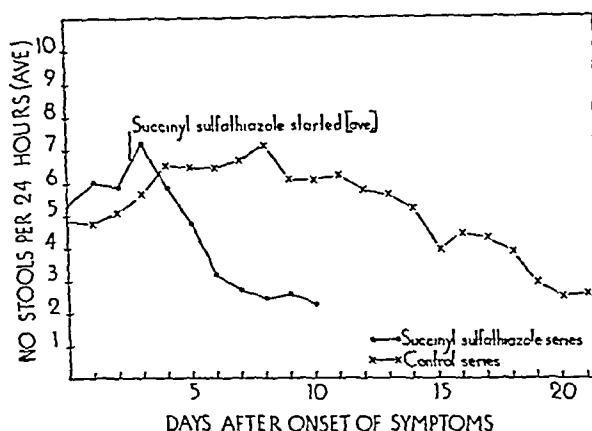


Chart 1—Note sharp drop in number of stools in twenty four hours of infants treated with succinyl sulfathiazole.

to varying modes of therapy, which in most cases were supportive in character. The extreme fluid and electrolyte loss was combated with isotonic solution of sodium chloride, distilled water and dextrose, plasma or whole blood. Superficial veins were exposed for venoclysis and frequently as many as five or six of these procedures were required often with failure to reduce dehydration. Subcutaneous injections of fluids were only a moderate aid. Oral offerings were pushed to tolerance. Some physicians gave sodium sulfathiazole with no apparent relief of symptoms. Whole blood seemed to provide a short lived stimulus in a few cases and was interchanged with plasma and fluids.

Succinylsulfathiazole was first tried on 2 infants who were in advanced states of dehydration and were well below their birth weights. One of these was premature. The judicious administration of camphorated tincture of opium was concurrently instituted in an attempt to reduce diarrheal loss of the drug as well as of fluid. Since the number of stools was decreased soon after treatment was begun (chart 1) fewer injections of parenteral fluids were necessary. Diet was maintained on a protein milk formula for a relatively lengthy time. The response was gratifying.

<sup>4</sup> Succinylsulfathiazole is registered under the proprietary name of Sulfasuxidine by Sharp and Dohme, Philadelphia.

<sup>5</sup> Poth E J. Succinyl sulfathiazole. Adjuvant in Surgery of the Large Bowel. J A M A 120 26 269 (Sep 26) 1942.

<sup>6</sup> Smyth C J, Finkelstein M B, Gould S E, Koppa, T M and Leeder J S. Acute Bacillary Dysentery. Treatment with Sulfaguanidine and Succinyl sulfathiazole. J A M A 121 1525 1530 (April 14) 1942.

<sup>7</sup> Poth E J and Knotts F L. Succinylsulfathiazole, a New Bacteriostatic Agent Locally Active in the Gastrointestinal Tract. Proc. Soc. Exper. Biol. & Med. 48 129 130 (Oct.) 1941. Poth E J, Knotts F L, Lee J T and Inoué F. Bacteriostatic Properties of Sulfanilamide and Some of Its Derivatives. I. Succinylsulfathiazole, a New Chemotherapeutic Agent Locally Active in the Gastrointestinal Tract. Arch. Surg. 41 18 20 (Feb.) 1942. Poth E J and Knotts F L. Clinical Use of Succinylsulfathiazole. Ibid. 44 208 222 (Feb.) 1942.

<sup>8</sup> Welch A D, Mattis J A and Latten A K. A Toxicologic Study of Succinylsulfathiazole. J. Pharmacol. & Exper. Therap. 75 311 6 (July) 1942.

<sup>9</sup> Gatch W D. Personal communication on 10/15/42.

in both instances. Permission was obtained for further use of the drug. A routine of treatment was established and 9 infants subsequently affected were placed on a regular schedule. The most successful routine appeared to be one in which the opiate administration was adjusted to allow not more than three or four stools in twenty-four hours. Succinylsulfathiazole was given in somewhat larger amounts than generally recommended in the literature. Our standard was set at an initial dose of 2 grams per pound of body weight followed by one-sixth the initial dose every four hours. These are conveniently given with the regular feeding schedule and are apparently taken well by the infant. Gavage feeding was necessary in only 1 instance, although isolated instances of vomiting did occur.

It is important to administer vitamin K to infants treated with succinylsulfathiazole, since a reduction in the number of coliform organisms inhibits the absorption of the vitamin and hence promotes bleeding tendencies.

A large weight gain was not expected while the infants were on protein milk formulas. In fact, weight loss may continue for a short time following the institution of treatment and the increase may appear to be

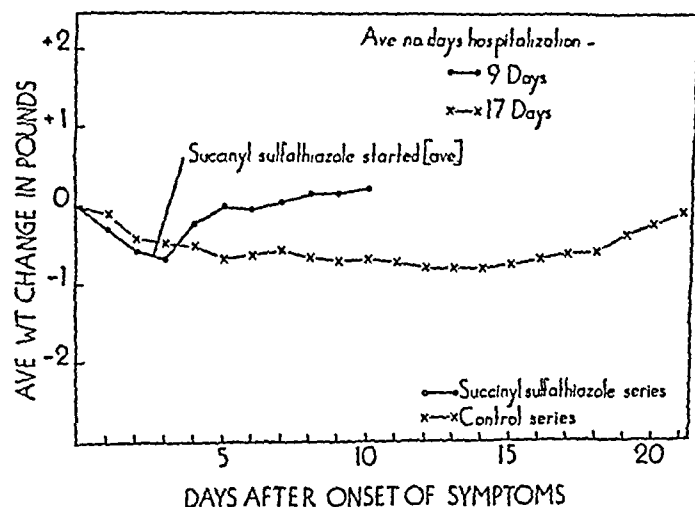


Chart 2—Note the more rapid weight gain and shorter number of days of hospitalization of infants treated with succinylsulfathiazole

slow when the upturn begins. It is at this point that the diet should be bolstered by very gradual addition of carbohydrate to increase the caloric content of the formulas.

Withdrawal of the drug presented a problem, since there was no previous writing to indicate the proper length of time for its administration in this disease. Judgment in this respect was based on three factors: (1) number, color and consistency of the stools, (2) weight gain and (3) the general physical state of the infant. Because of the safety of the drug we attempted to err on the safe side and allowed one or two extra days before discontinuing its use. In 1 instance the drug was mistakenly discontinued for a two day period before the infant was adjudged to be in a satisfactory condition. The weight loss totaled 14 ounces and the stools became fluid and more numerous before the error was rectified. Treatment was then reinstituted as though in a new case and the baby responded satisfactorily.

Two cases were observed in which doses of succinylsulfathiazole were inadequate by our standards. Both infants died, these being the only deaths in our series of infants treated with succinylsulfathiazole.

Eleven control cases with which we compared our results were readily available, owing to the hesitancy

of many practitioners to institute treatment with succinylsulfathiazole. Selection of cases was determined only by permission of the attending physician. None were selected on a basis of severity of the disease.

#### SUMMARY

1 Epidemic neonatal diarrhea is confined chiefly to infants under 1 month of age. The onset may be sudden or insidious. The amount of dehydration, weight loss and toxicity depend on the severity of the disease. Stools are liquid and usually greenish yellow. Vomiting occurs in some cases. Fever is present in proportion to the extent of dehydration.

2 A brief review of the literature on succinylsulfathiazole reveals its proved value as a powerful agent in altering the intestinal flora. Its toxicity is minimal.

3 Of 22 cases of neonatal diarrhea, 11 were treated with succinylsulfathiazole. In the latter group there were only two fatalities, both of which we believe were due to inadequate dosage of the drug.

In the control series there were four deaths. The average number of days of hospitalization for those who recovered was almost twice that of the treated infants.

The weight gain for eight days of infants treated with succinylsulfathiazole was not matched in seventeen days by the untreated infants (chart 2).

There was a rapid reduction in the number of stools in twenty-four hours in those infants treated with succinylsulfathiazole in contrast to a very gradual reduction in the untreated ones (chart 1).

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**Determination of Ovulation**—The presence or absence of ovulation is determined from the microscopic appearance of the endometrium in the premenstrual phase. The tissue is removed with the biopsy curet in the clinic at any time from the seventh day preceding the onset of menstruation to four hours after the establishment of the flow. Ovulation is now assumed to occur in normal ovulating adults on or about the thirteenth to the fifteenth day from the commencement of the cycle, and the changes seen in the normal endometrium from the assumed date of ovulation are quite striking. On the fifteenth day vacuolization of the cytoplasm occurs in the epithelial cells, most prominently in those lining the superficial glands, and the nuclei appear to migrate toward the surface of the cells, leaving a clear zone at the base. This effect is maximal on the seventeenth day, when the nuclei are normally lying in a row, each one toward the center of its own cell. The next nuclear move is toward the base, where they return about the nineteenth day. Secretion begins about the seventeenth day and by the twenty-first is well advanced. As the nuclei migrate toward the base, clearing of the superficial cytoplasm occurs, the cells swell and finally the superficial margins break down and active secretion occurs into the lumina of the glands. These glands dilate, the swollen cells give them a serrated or saw-toothed appearance in cross section, and they become tortuous. The stromal changes are just as distinct. On or about the eighteenth day small patches of edema appear in the more superficial areas, and the stromal nuclei, which hitherto had been closely packed and surrounded by very little cytoplasm, gradually become separated, until by the twenty-first day each is discrete from its fellow. The next change is an increase in the cytoplasm, this first occurs in the cells surrounding the small arterioles on the twenty-third day, and by the twenty-sixth day the edema is replaced by a sheet of stromal cells with large, pale nuclei and abundant cytoplasm. Just before menstruation commences the superficial layer becomes almost solid, and there is a striking resemblance of these stromal cells to decidual cells. The glands at this time are sometimes dilated, contain varying amounts of secretion and are lined by cuboidal epithelium.—Mackey, R. *Anovulatory Menstruation*, *M J Australia*, June 5, 1943.

## CARDIAC DYSRHYTHMIA AND SYNCOPE

FROM THERAPEUTIC INHALATION OF CHLORINATED HYDROCARBONS

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The current wartime expansion in industry has unavoidably introduced some loss of supervision and control of health hazards by industrial health agencies and the exposure of workers to noxious agents is becoming a major public health problem. Prominent among the chemicals concerned in industrial toxicology are trichloroethylene and carbon tetrachloride which, because of their efficiency as lipid solvents, enjoy wide use particularly as degreasers of tools and machinery. Browning<sup>1</sup> listed twelve other major industrial uses for trichloroethylene and seven for carbon tetrachloride. Because of the high degree of volatility of these agents the inhalation of their fumes is a common mode of intoxication.

Although trichloroethylene is much less toxic than carbon tetrachloride,<sup>2</sup> Hamilton<sup>3</sup> a decade ago reviewed the reports of 26 deaths among 284 cases of poisoning from trichloroethylene in German industry. A common factor in the fatalities discussed by both Hamilton<sup>3</sup> and Browning<sup>1</sup> was antecedent loss of consciousness. Death was usually considered due to profound narcosis from excessive exposure, to phosgene poisoning from thermal decomposition products of trichloroethylene or to cerebral vascular damage similar to that more commonly observed in carbon monoxide poisoning.

In contrast to the many reported cases of industrial poisoning are the very few that have apparently followed even improper therapeutic use of trichloroethylene and the administration of this drug by inhalation is generally regarded as safe. Eichert<sup>4</sup> reported 2 instances of toxic psychosis following excessive therapeutic inhalation and referred to only one other existing report. In all 3 instances Eichert commented on the difference in toxic manifestations exhibited by these subjects in contrast with the usual features of industrial intoxication. Several writers have expressed the opinion that the actual cause of industrial poisoning is partly or largely adventitious substances inhaled with the trichloroethylene.

I have recently encountered a remarkable case in which serious toxic manifestations of a character not hitherto described were observed in association with the infrequent therapeutic administration of small doses of medicinal trichloroethylene (and once of carbon tetrachloride) by inhalation. The case seemed noteworthy because of the unique character of the untoward effects induced and because of the new light that the experience may cast on a plausible cause of death not previously considered in acute fatal intoxication from chlorinated hydrocarbons.

## REPORT OF CASE

Mrs. E. P. had always enjoyed unusually good health until her sixty-second year, when increasing, occasional discomfort in the right upper quadrant with mild dyspepsia and periodic vertex headaches with insomnia first appeared. Within eight months she lost 30 pounds (13.6 Kg.) and was admitted to the New Haven Hospital for study.

Examination revealed obvious loss of weight with a current weight of 127 pounds (57.6 Kg.). The admission blood pressure was 155/85. False teeth, palpable kidneys and cystocele and rectocele were the only other abnormalities on physical examination. Gallstones were disclosed by roentgenography. Other laboratory findings, including blood count, urine and stool examinations, Kahn test of the blood, gastric analysis and sigmoidoscopic and roentgenographic examination of the colon were all negative.

Cholecystectomy was performed following which appetite improved, and 14 pounds (6.4 Kg.) was gained in two months but some dyspepsia persisted and the vertex headaches increased gradually in severity and soon became daily occurrences. A peculiarity of the headaches was their prompt appearance on arising each morning and their subsidence during the night but simply lying down during the day had no favorable effect. Optical correction of a refractive error brought no relief. Reexaminations by consulting otorhinolaryngologist and neurologist did not disclose any apparent causes for the distressing headaches.

With the persistence of intractable headache for almost two years the patient became depressed, worried and discouraged. Because the usual variety of analgesic and sedative drugs had



Fig. 1—Control electrocardiogram preceding inhalation of drug.

afforded no relief for the headaches, the dispensary physician ultimately decided to try trichloroethylene by inhalation.<sup>5</sup>

The administration consisted usually of the contents of 1 ampule (1 cc.) of trichloroethylene dropped on a gauze square and placed in an ordinary drinking glass for inhalation by the patient in a reclining position. The procedure was sometimes repeated once within five or ten minutes.

On the occasion of the first inhalation the patient apparently fell asleep for several minutes, which was not unexpected for trichloroethylene is known as a general anesthetic. On awakening, the patient declared that the headache was completely gone. Three and again four days later she returned requesting more treatments, because headache had recurred, and again she obtained complete relief lasting a day or longer. On the latter occasions it was observed that the sleep induced so promptly by the inhalation was actually a profound loss of consciousness, for the patient could not be aroused and did not respond to painful stimuli. Moreover it was noted for the first time that the pulse became rapid and completely irregular during the inhalation but the blood pressure did not change significantly, color remained good and respiration seemed normal. On her regaining consciousness about one minute after the inhalation the heart action was again entirely regular.

The patient kept returning approximately weekly requesting further inhalational treatments and stating with evident gratification that the intervals of freedom from headache were gradually lengthening to about a week. During repeated inhalations of 1 cc. doses of trichloroethylene on six subsequent occasions the same loss of consciousness and transient arrhythmia of the

From the Department of Internal Medicine, Yale University School of Medicine.

<sup>1</sup> Browning, Ethel. Toxicity of Industrial Organic Solvents. Report No. 80. Industrial Health Research Board of the Medical Research Council, London. His Majesty's Stationery Office, 1937.

<sup>2</sup> Barrett, H. M., MacLean, D. L., and Cunningham, J. C. A Comparison of the Toxicity of Carbon Tetrachloride and Trichloroethylene. *Indust. Hyg. & Toxicol.* 20: 360 (May) 1938.

<sup>3</sup> Hamilton, Alice. *Industrial Toxicology*. New York: Harper & Brothers, 1934.

<sup>4</sup> Eichert, Herbert. Trichloroethylene Intoxication. *J. A. M. A.* 106: 162 (May 9) 1936.

<sup>5</sup> Rubinstein, H. S. Use of Trichloroethylene in the Treatment of Migraine. *Arch. Neurol. & Psychiat.* 37: 678 (March) 1937. Geiger, A. I., and Goodman, L. S. Trichloroethylene in Migraine. *J. A. M. A.* 108: 1733 (May 15) 1937.



heart were noted each time and the headache was always promptly relieved.

Because of the patient's remarkable improvement not only in the matter of headache but also in her emotional behavior and general sense of well-being, the possibility was considered that suggestion might be a significant factor in the apparent

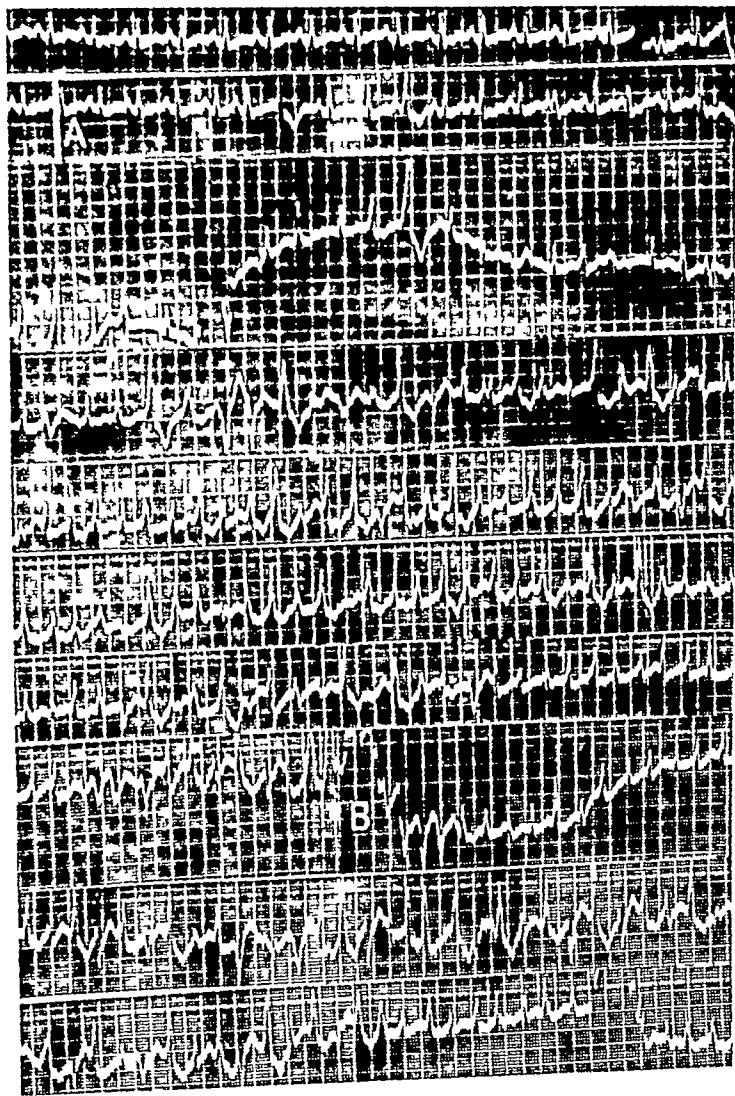


Fig. 2—Continuous recording of lead 2. Each horizontal strip is of about 8.6 seconds duration. At A inhalation was begun, B (continued in figure 3), patient lost consciousness.

success of the treatment. To test this, a gauze square moistened with amyl acetate was substituted for the usual trichloroethylene without the patient's knowledge. No effects were observed on consciousness, heart action or headache. On another occasion a few cubic centimeters of carbon tetrachloride were administered again, partly as a control inhalation but also to see whether another chlorinated hydrocarbon would produce the same bizarre reactions that accompanied trichloroethylene. Inhalation of the carbon tetrachloride was again followed within a few seconds by cardiac arrhythmia and profound loss of consciousness precisely as had occurred previously with trichloroethylene. On this occasion a normal control electrocardiogram was obtained just prior to the inhalation (fig. 1), and then lead 2 was recorded continuously throughout the experiment (figs. 2 and 3). The tracing shows the prompt appearance of ventricular ectopic beats, which rapidly increased to multifocal beats of such profusion that they completely dominated the cardiac rhythm for almost a full minute after the administration of the drug had been terminated. Consciousness and normal rhythm reappeared practically simultaneously and, as usual, the headache was completely gone. The protocol for this experiment, which was typical of the previous experience with trichloroethylene, follows:

"Same old headache"

- 11 00 a m Control electrocardiogram three leads, then continuous lead 2. Blood pressure 160/90, reclining. Pulse 90.
- 11 01 Amyl acetate inhalation three minutes. No loss of consciousness, no pulse irregularity. Blood pressure 180/90. Pulse 120.

- 11 05 Carbon tetrachloride inhalation begun. Within thirty seconds slight irregularity of pulse noted.
- 11 06 Patient has just lost consciousness. Pulse now totally irregular. Blood pressure 184/110. Heart rate about 130. Color good, respirations normal.
- 11 07 Inhalation terminated. Color good.
- 11 08 Patient awakening. Heart still irregular.
- 11 10 Patient fully conscious. Blood pressure 180/110. Pulse 130, irregular.
- 11 15 "No more headache." Blood pressure 160/90. Pulse 90, regular.

Because the cardiac irregularity, as depicted by the electrocardiogram, seemed of ominous character, no subsequent administrations of chlorinated hydrocarbons to this patient were deemed permissible.

#### COMMENT

Loss of consciousness from inhalation of fumes of the chlorinated hydrocarbons is well known.<sup>6</sup> It occurred in 117 of the 284 cases of trichloroethylene

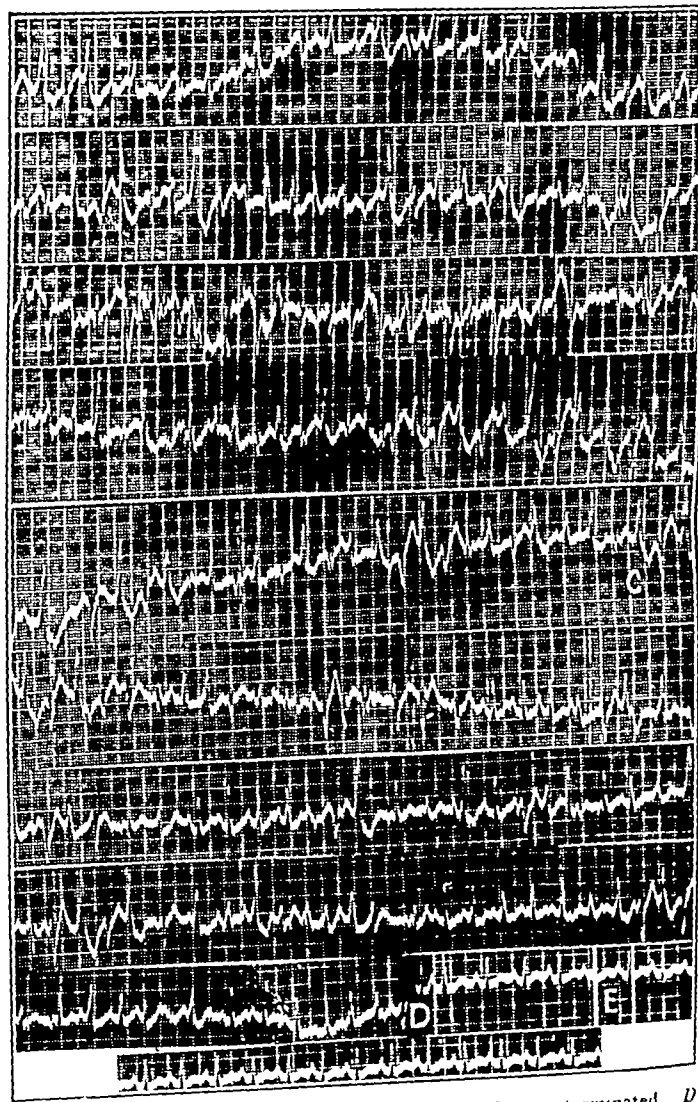


Fig. 3—Continuation of figure 2. C inhalation terminated, D patient regaining consciousness and recording was suspended for twenty-five seconds. E, patient fully conscious.

intoxication reported by Stuber.<sup>7</sup> Indeed, the drug has been given some trial as a general anesthetic<sup>8</sup> and, because it is less volatile than ether, noninflamm-

6 Browning<sup>1</sup> Hamilton.  
7 Stuber K. Gesundheitsschädigungen bei der gewöhnlichen Verwendung des Trichloräthylens und die Möglichkeiten ihrer Verhütung. Arch f. Gewerbepath. u. Gewerbehyg. 2: 398 (July 27) 1931.  
8 Keller, P. Chlorylen als Inhalationsanästhetikum bei Fingergriffen an der Gesichtshaut. Dermat. Wehnschr. 95: 973 (July 2) 1931.  
Jackson D. E. and Herzberg Mortimer. A Study of Analgesics and Anesthetics, with Special Reference to Such Substances as Trichloroethylene and Vinylene. Together with Apparatus for Their Administration. Current Researches in Anesth. & Analg. 12: 198 (Sept. Oct.) 1934.  
Striker, C., Goldblatt, S., Warm, I. S. and Jackson D. F. Clinical Experiences with the Use of Trichloroethylene in the Intravenous Administration of Over 300 Analgesics and Anesthetics. Ibid. 11: 63 (April) 1935.

mable and simple to administer it is being considered as the anesthetic of choice under field conditions in the tropics. Induction of trichloroethylene anesthesia usually takes from four to ten minutes and characteristically includes an obvious excitement stage, recovery is usually rapid and complete within five minutes after the inhalation has been discontinued. However the loss of consciousness repeatedly exhibited by our patient did not appear typical of the induction stage of anesthesia with this drug. The syncope was remarkable for the rapidity with which it developed, for ten to fifteen inhalations from a single crushed ampule usually led suddenly to unconsciousness without any excitement period whatever, and complete consciousness usually returned abruptly within one to two minutes after the inhalation had been discontinued. It seems unlikely that the concentration of the drug in the blood and central nervous system could have reached ordinary anesthetic levels so quickly and from such a small dose. That the patient's behavior was not merely an emotional reaction was apparent from her unresponsiveness to painful stimuli during the coma. There was no pallor, cyanosis or disturbance of respiration to suggest anoxia, nor was the relatively open method of administration by inhalation from a drinking glass likely to exclude a considerable admixture of atmospheric oxygen. Finally, the loss of consciousness was clearly not the result of greatly diminished cardiac output from disordered action of the heart, because the blood pressure never declined. One appears to be left with idiosyncrasy as an explanation although Hamilton<sup>3</sup> stated that idiosyncrasy to the drug was unknown.

As to the mechanism by which the arrhythmia was induced, one can only speculate from the limited data, yet when our observations are viewed in the light of important earlier experiments a reasonably confident statement may be ventured. The current opinion is that the cardiovascular system in the intact animal or man is largely unaffected by both trichloroethylene and carbon tetrachloride,<sup>9</sup> and cardiac arrhythmias have not been described. However, irregular action and fatal arrest of the heart from the inhalation of another chlorinated hydrocarbon, chloroform, have long been known. Levy and Lewis<sup>10</sup> and Levy<sup>11</sup> have clearly demonstrated in cats that the immediate cause of death from chloroform is ventricular fibrillation which is invariably preceded by ectopic ventricular beats arising from multiple foci. They concluded from abundant experimental evidence that light chloroform anesthesia sensitizes the heart to factors (chiefly sensory stimulation and epinephrine) that may precipitate ventricular arrhythmias and fibrillation from the local action of the drug on the heart. Hill<sup>12</sup> supplied the next important link in the chain of evidence by showing that 50 per cent of patients develop multiple focus ventricular tachycardia for brief periods during the induction

stage or irregular conduct of surgical anesthesia under chloroform. The relation of these observations to the case herein reported is that the electrocardiographic picture of multiple focus ventricular ectopic tachycardia illustrated in figures 2 and 3 is indistinguishable from some of the records published by Hill and by Levy and Lewis as examples of ventricular prefibrillation produced by chloroform. The importance of the arrhythmia is obvious from Levy and Lewis's observation that final ventricular fibrillation is the next natural step in the expected train of events.

It seems undeniable that the irregular ventricular tachycardia which we observed represented an ominous prefibrillation arrhythmia, and as such it constitutes the first clear demonstration of a serious cardiac effect from the inhalation of trichloroethylene and of carbon tetrachloride. How common and real is this hazard? It appears rare and remote if judged by the fact that the irregular tachycardia has never been mentioned in connection with the inhalation of either drug. However, moderate acceleration of the heart rate is a common clinical observation, and one may wonder whether in the presence of tachycardia, a relatively slight irregularity may not escape clinical detection. Moreover while fatalities from acute trichloroethylene poisoning are commonly attributed to profound narcosis or ascribed to some other agent or cause yet sporadic instances of fatality or near fatality which might conceivably have been due to ventricular fibrillation induced by trichloroethylene or carbon tetrachloride are not difficult to find in the medical literature. The following may serve as examples.

Browning<sup>1</sup> writes as follows on page 177 of her monograph: "Two cases of death following exposure to trichloroethylene were also reported to the Home Office in 1934, but it was considered by the Senior Medical Inspector that death could not be ascribed to such exposure since in one the result of the post-mortem examination, including an analysis of the stomach contents, was thought to negative the possibility of acute poisoning by trichloroethylene or phosgene and revealed no obvious cause of death."

Veley<sup>13</sup> referred to the case of a young woman who became unconscious and died while receiving a "dry" hair shampoo with carbon tetrachloride and cited another instance in which under similar circumstances the woman lost consciousness and developed a rapid and irregular pulse but recovered.

Chandler<sup>14</sup> described an alarming experience with a 4 year old patient who lay prone while an adhesive tape dressing was being removed from the back with the aid of a sponge soaked in carbon tetrachloride. He wrote "The patient collapsed suddenly, respirations ceased, and the radial pulse became impalpable. Death appeared imminent. Artificial respiration was instituted. In about five minutes the pulse returned, as did active respiration, at first feebly, and then stronger. In about ten minutes the child was quite normal. The subsequent convalescence has been uneventful."

Could mild nasopharyngeal irritation by these vapors have initiated a trigeminocardiac reflex which perhaps together with unusual epinephrine release under slight

<sup>9</sup> Baroum G. S. and Saad K. Relative Toxicity of Certain Chlorine Derivatives of the Aliphatic Series. *Quart. J. Pharm. & Pharmacol.* 7: 205 (April-June) 1934. Browning<sup>1</sup> Hamilton<sup>3</sup>

<sup>10</sup> Levy A. G. and Lewis Thomas. Heart Irregularities Resulting from the Inhalation of Low Percentages of Chloroform Vapor and Their Relationship to Ventricular Fibrillation. *Heart* 3: 99 1911 1912

<sup>11</sup> Levy A. G. The Exciting Causes of Ventricular Fibrillation in Animals Under Chloroform Anesthesia. *Heart* 4: 319 1912 1913

<sup>12</sup> Hill I. C. W. Cardiac Irregularities During Chloroform Anesthesia. *Lancet* 1: 1139 (May 28) 1932. The Human Heart in Anesthesia. *Br. Electrocardiographic Study*. Edinburgh M. J. 39: 33 (Sept.) 1932

<sup>13</sup> Veley A. H. The Recent Fatality at a Hairdressing Establishment from the Use of Carbon Tetrachloride as a Shampoo. *The Inquest and Prosecution for Manlaughter*. *Lancet* 2: 1162 1909

<sup>14</sup> Chandler F. A. The Use of Carbon Tetrachloride in the Removal of Adhesive Tape. Report of a Near Fatal Case. *J. A. M. A.* 107: 2121 (Dec. 26) 1936

excitement, resulted in the production of numerous foci of ventricular hyperexcitability and discharge? Our experiment with amyl acetate, which might be viewed as a control, was negative in this regard, and, while the question probably remains unanswered, it would appear that trichloroethylene and carbon tetrachloride were specifically harmful by virtue of their chemical constitution rather than merely as mild irritants of the nasal mucosa.

If three of the chlorinated hydrocarbons can be incriminated as probable excitants of ventricular fibrillation, one should probably also regard the others of this group with suspicion. In fact, it is not difficult to find suggestive evidence of this effect in the literature on industrial toxicology. Thus, Collier<sup>15</sup> included precordial pain and "attacks of rapid beating of the heart" among the symptoms he had observed in acute industrial intoxication from inhalation of dichloromethane used as a paint remover. Hamilton<sup>3</sup> referred to a case of accidental death in which the victim had gone into a vat that had previously contained rubber dissolved in dichloromethane, the man was later found dead inside the vat. And Carozzi, quoted by Hamilton,<sup>3</sup> remarked that workers in a dry cleaning establishment using mixtures of dichloroethane and trichloroethylene exhibited disturbances of cardiac activity along with other manifestations of intoxication.

In my opinion the inhalation of medicinal trichloroethylene, even in therapeutic doses, is no longer to be regarded as entirely without danger, and self-medication by patients should be permitted only under the direction of a physician who has first assured himself that such inhalation does not disturb the patient's heart action. Moreover, the use of trichloroethylene as a surgical anesthetic offers the threat of sudden death during light or irregular anesthesia by a mechanism precisely like that of chloroform. To the familiar hepatic and renal injury from carbon tetrachloride one must now add the possibility of its inducing ventricular fibrillation. Recognition of such hazards calls for even greater vigilance against industrial exposure to these vapors even in moderate concentrations and for brief periods. The indications in industry are for efficient ventilation or for the use of airline masks when ideal ventilation is not attainable.

#### SUMMARY

Profound loss of consciousness and multiple focus ventricular tachycardia, of an ominous type likely to lead to fatal ventricular fibrillation, developed repeatedly in a patient receiving therapeutic inhalations of medicinal trichloroethylene and also when carbon tetrachloride was experimentally substituted. The demonstrated type of cardiac irregularity probably explains some of the mysterious deaths reported in industrial exposures to vapors of the chlorinated hydrocarbons. Protection from such vapors should be afforded by efficient ventilation.<sup>16</sup>

15 Collier, H. E. Methylene Dichloride Intoxication in Industry, *Lancet* **1** 594 (March 14) 1936.

16 After this manuscript had been prepared the author encountered a recent publication by R. M. Waters, O. S. Orth and N. A. Gillespie (*Anesthesiology* **4** 1 [Jan.] 1943) calling attention to cardiac arrhythmias noted by them in 10 patients and 7 dogs during anesthesia with trichloroethylene. Multiple focal ventricular extrasystoles and ventricular paroxysmal tachycardia were seen several times among 6 patients followed electrocardiographically. These observations confirm the contention that trichloroethylene shares with chloroform the danger of evoking ominous disturbances in the cardiac mechanism.

## HEMANGIOMA OF VERTEBRA WITH COMPRESSION OF CORD

REPORT OF A CASE CURED WITH RADIATION  
FOURTEEN YEARS AGO

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Back pain is a common cause of admission to military hospitals in this country. A possible explanation of an occasional case is compression of the spinal cord by hemangioma of the vertebra. Hemangiomas of the vertebrae have been noted in more than 10 per cent of a large series of routine autopsies, more commonly in older persons and in females (Schmorl, quoted by most of the authors cited). While these hemangiomas rarely result in compression of the cord, when they occur in young males they seem to cause symptoms relatively often. Bailey,<sup>1</sup> in reviewing 26 reported cases with evidence of compression (1929), noted 4 in patients under 20 years of age (Globus and Doshay 13, Trommer 17, Guillaum 18, Gerhardt 18), and Kudryashev<sup>2</sup> more recently has reported one in a youth of 19.

In 1942 Ferber and Lampe<sup>3</sup> assembled from the literature 52 cases of hemangioma of the vertebra with compression of the cord and contributed 1 of their own. To this number are added 12 more (Kudryashev,<sup>2</sup> Stern<sup>4</sup> and 10 from the Mayo Clinic<sup>5</sup>), making a total of 65.

The symptoms resulting from compression of the cord by vertebral hemangioma are like those produced by any other type of extradural tumor, though they "probably resemble more the symptoms produced by a metastatic lesion of the spinal cord" in the opinion of Ghormley and Adson.<sup>5</sup> According to these authors, Gold (1927) and Perman (1928) described the x-ray findings characteristic of the condition, although, as shown by Schmorl, a hemangioma may be present without being demonstrable roentgenographically. Bailey and Bucy<sup>6</sup> said that in the pathognomonic roentgenogram may be seen "a reduction of bone density between parallel trabeculae which are increased in density." This appearance results from the independent growth of the angiomatous tissue which destroys certain trabeculae and causes the remaining ones to thicken.

Bailey and Bucy,<sup>6</sup> in reporting the second case successfully treated by surgical measures (and subsequent irradiation), advocated laminectomy followed by irradiation. Kudryashev<sup>2</sup> operated on his patient but did not resort to roentgenotherapy until required to do so by a recurrence of symptoms six months later. Stern's<sup>4</sup> patient, a woman of 73, died following operation. Surgical attack has carried a high mortality ("in virtually every report authors emphasize the difficulty and seriousness of the operation because of excessive bleeding"<sup>3</sup>), and a number of patients surviving operation have been submitted later to x-ray treatment. Ferber

From Emory University School of Medicine and from the Piedmont Hospital, Atlanta, Ga.

<sup>1</sup> Bailey, Percival. Personal communication to the author June 7, 1929.

<sup>2</sup> Kudryashev, E. I. Hemangioma of Spine with Symptoms of Compression of Spinal Cord, *Neuropsihiat* **9** 94-96 1940.

<sup>3</sup> Ferber, Leon, and Lampe, Isadore. Hemangioma of Vertebra Associated with Compression of the Cord. Response of Radiation Therapy. *Arch. Neurol. & Psychiat.* **47** 19-29 (Jan.) 1942.

<sup>4</sup> Stern, A. Ueber einen ungewöhnlichen extramedullären Rückenmarkstumor, *Monatschr. f. Psychiat. u. Neurol.* **101** 372-377, 1941.

<sup>5</sup> Ghormley, R. K., and Adson, A. W. Hemangioma of Vertebra. *J. Bone & Joint Surg.* **23** 887-895 (Oct.) 1941.

<sup>6</sup> Bailey, Percival and Bucy, P. C. Cavernous Hemangioma of Vertebra, *J. A. M. A.* **92** 1748-1751 (May 25) 1929.

and Lampe<sup>3</sup> maintain therefore that the diagnosis can be established with sufficient surety to warrant roentgenotherapy as "the primary and sole method of treatment" provided improvement is discernible in a short time. This plan was followed in 12 cases reviewed by them and in their own case. Of these 13 recovery was complete in 10 and almost complete in 1 in the other 2 cases a few months after treatment there was "marked improvement" which may have become complete subsequently. In a fourteenth case (one of Freedman's three) complete paraplegia developed under roentgenography so laminectomy was performed in three stages eventually this patient also recovered.

Ghormley and Adson<sup>4</sup> reported 5 cases treated with x-rays only. 1 did not improve, 2 showed great improvement and 2 were well four and six years respectively after irradiation. They advise laminectomy only when paraplegia has developed and often they follow operation with x-rays. They have operated on 5 patients with paraplegia. One died a few weeks after operation with complete paralysis below the level of the lesion. One, who became able to walk again, died six years later, apparently from a cerebral accident. One recovered clinically without the use of x-rays. Of the 2 who were also irradiated, one got much better and the other was well eight years after operation. Ghormley and Adson advise the use of a Taylor brace or corset in most cases.

#### REPORT OF CASE

On Christmas 1928 R. D. P., a college freshman who had "run the hundred in ten seconds" (the timing of this test was not official), encountered an empty cardboard box on the sidewalk. Kicking it enthusiastically, he was seized with a pain in the middle of the back radiating around the short ribs, especially on the right, and downward. When he overtook the box it seemed to him a good idea to repeat the maneuver "to get t' e kink out." He was unsuccessful in this attempt so he spent the rest of the day in bed. After that he suffered "a pretty constant sense of sharp pressure over the lower dorsal vertebrae which kept him in bed most of the time. Baking and massage with various liniments gave no relief. In February he felt a knot over the eleventh dorsal vertebra. Pressure on this caused excruciating pain which radiated around to the right groin. Movement of the back especially extreme flexion caused similar pain. Chronically diseased tonsils were hopelessly removed but there was no improvement.

On March 13 1929 the patient was a healthy looking youth of 18. A faint diastolic murmur was heard in the fourth interspace to the left of the sternum. The blood pressure fluctuated from 160/84 to 140/56. The back was held rigid. Over the right half of the eleventh thoracic vertebra a tumor about 4 cm in diameter protruded 2 or 3 cm. It looked and felt like a mass of tangled veins; neither pulsation nor bruit was observed. Below the eleventh rib to the right of the midline extending down to the ilium there was an area of hyperesthesia which went around and across the abdomen, though it was less noticeable in front. Sensory changes (diminution in touch pain and heat) were detected in the lower extremities. Position sense and vibratory sense however were unimpaired. The patellar reflexes were slightly hyperactive. Ankle clonus, present on the right was sustained for only a few jerks on the left. The bulbocavernosus reflex was absent on each side, and the anal sphincter reflex diminished.

X-ray studies of the spine were not enlightening.

When a needle was inserted into the tumor blood welled out to push back the plunger or the attached syringe. A few days later the Queckenstedt test established the presence of complete intrathecal block; the clear spinal fluid showed a heavy trace of globulin (Pandy and Ross-Jones tests).

To rule out possible spinal metastasis from a hypernephroma Dr. Montague L. Boyd was called in consultation. He found

no evidence of tumor of the genitourinary tract but attributed "an abnormal relaxation of the bladder and lack of sensitivity of the kidney pelvis to a lesion of the spinal cord."

While I suggested that the lesion might be a "vascular tumor originating in a congenital anomaly," it was the consensus that operation was indicated. We thought that, if complete removal of the mass should prove impossible, at least a biopsy might be helpful. Accordingly on March 20, 1929 the late Dr. Charles E. Dowman exposed the tumor. He encountered "tremendous hemorrhage (which) could only be controlled after packing with very hot gauze and eventually placing in a muscle transplant. Several pieces of tumor were curetted away for microscopic study." These bits were vascular and irritable; one contained a spicule of bone.

Dr. Everett L. Bishop rendered the following report:

"Microscopic Sections show two different structures. In some portions there is a moderately dense fibrous stroma in which are numerous small capillaries and numerous giant cells of foreign body type. These cells are somewhat smaller than those usually seen in bone tumors and the spindle cells of the stroma are somewhat hyperchromatic (fig. 1).



Fig. 1.—Section showing fibrous stroma of slightly hyperchromatic spindle cells with interspersed capillaries of giant cells of foreign body type.

Other portions of the tumor show closely packed large and small vessels with poorly formed walls, the separating tissue being cellular and hyperchromatic spindle cells. No giant cells are seen in this area. A small area of newly formed osteoid material is seen (fig. 2).

**Diagnosis.** This is probably an osteogenic sarcoma of telangiectatic type, the diagnosis being based on the structure described in paragraph 2. In any type of malignant bone tumor areas of giant cells of epulis type may be found due to absorbing bone. In any event heavy x-ray is indicated.

In accordance with Dr. Bishop's advice Dr. W. Pope Baker on March 25 administered roentgenotherapy as follows: centered over the eleventh thoracic vertebra, port 20 cm in diameter, target-skin distance 45 cm, filter 0.25 mm copper and 1 mm of aluminum, 150 kilovolt peak, 15 milliamperes, ten minute exposure time. Within twenty-four hours the patient volunteered that he felt better. Roentgenotherapy was repeated using the same factors on the 27th and the 29th. The boy left the hospital a few days later free of symptoms. Dr. Baker gave him similar treatments on April 26, 28, and 30.

Frequent neurologic examinations were made. By June 14 ankle clonus had cleared up, the bulbocavernosus and anal reflexes were active and the boy was encouraged to lead a

normal life. By the end of the year there were no sensory changes, the precordial murmur was gone and the blood pressure determinations were consistently within the normal range. After he was graduated from college, examinations were made but once a year. Only bronzing of the skin with moderate telangiectasis (not present before roentgenotherapy) of the irradiated area remain.

In March 1942 the patient applied for a commission in the armed forces. The commission was awarded after I submitted a detailed report including the photomicrographs. When last heard from (April 24, 1943) he was on active service.

#### COMMENT

The article by Bailey and Bucy in *THE JOURNAL* of May 25, 1929 brought fresh hope to Dr. Boyd and me. The syndrome described in that paper so perfectly fitted this case that independently we jumped to the conclusion that it must be one of benign hemangioma. The roentgenograms were then restudied by me, however, and I was unable to detect the criteria set up

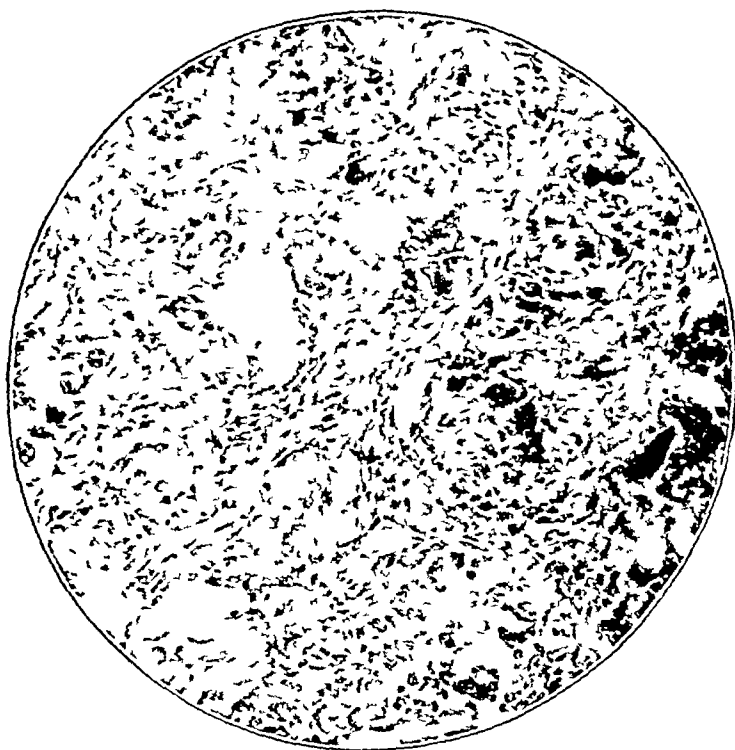


Fig. 2—Section showing predominantly vascular structure with hyperchromatic stroma cells and new osteoid tissue.

for the diagnosis of cavernous hemangioma. I regret that in the intervening years the original plates have disappeared.

On April 5, 1943 Dr. Bishop wrote:

On many occasions before leaving on service I have reviewed my sections of the tumor and each time I found it difficult to get away from the original diagnosis of osteogenic sarcoma. You will remember that I sent a section to [another specialist on neoplastic diseases], who also felt that the tumor was sarcomatous. However, on the basis of my frequent studies of his case and the subsequent developments, I am now inclined to the opinion that this was one of the peculiar hemangiomas of the vertebra rather than a fully malignant tumor. Certainly there is much in the histology of the biopsy fragments to indicate a vascular tumor—poorly formed blood spaces, hyperplastic endothelium—in addition to and in spite of the active and hyperchromatic spindle cell stromal cells. It would be fine to report a "cured" case of osteogenic sarcoma of the vertebra but you cannot do it on this case, the diagnosis would be questioned instantly and rightly so.

He added that he had seen the patient often when he was on duty at that station. "The last time I saw him he was in excellent shape (except for a touch of athlete's foot!)"

It is to be emphasized that the patient was kept under close observation for five months after the biopsy, and a complete neurologic examination was done at intervals of three months for an additional two years and at least once a year until 1942. During all these years he has led a normal, active life, and he has not needed a brace of any kind.

The high arterial pressure observed in 1929 is best explained in my opinion, as the result of worry over a serious illness (he knew that several of the attending physicians considered him doomed) by a boy with the temperament characteristic of a sprinter. The murmur, verified by Dr. R. Hugh Wood in 1929, has not been heard since that year.

Clinically, this is a case of hemangioma of the vertebra.

Since severe backache usually leads in time to x-ray studies of the spine, roentgenologists should bear in mind the possibility of hemangioma of the vertebra. Obviously, if compression of the cord has been great enough over a sufficient length of time, it will result in permanent damage and eventually in complete destruction of function. This, as brought out by Ferber and Lampe,<sup>3</sup> explains the failure of roentgenotherapy in some cases. It must be stressed again that if irradiation alone is employed the patient should be watched carefully and, if improvement is not rapid, more drastic measures should be considered. Certainly surgery should not be attempted until roentgenotherapy has failed or until paraplegia has developed.

#### SUMMARY

Symptoms suggesting tumor of the spinal cord should lead to an investigation of the possibility of hemangioma of the vertebra. If such a diagnosis is made before the cord has been irreparably damaged, roentgenotherapy may be expected to effect a cure.

Sixty-five cases of hemangioma of the vertebrae resulting in compression of the cord have been assembled. In 12 of these cure was reported from the use of roentgenotherapy alone. The patient who is the subject of this report was 18 years old when first examined three months after the onset of symptoms, roentgenotherapy by Dr. W. Pope Baker has given him fourteen years of health and he is now serving in the armed forces of his country.

**Number of Doctors in China**—Out of 12,000 doctors in China, probably over 6,000 are in private practice. An analytic study of these figures will reveal the following interesting points: (a) Only 60 per cent of the total are duly qualified doctors, the balance being apprentice trained practitioners who were permitted to register up to 1937, (b) 75 per cent are concentrated in the main ports of the six coastal provinces, (c) 92 per cent are under the age of 50, and 67 per cent under the age of 40, showing the relatively recent development of medical schools.

Probably one half of the population still believe more in native or herb medicine than in Western medicine. Thinking people, however, do not consider that this is a complicating factor of any permanent importance. As the health education of the masses is developed and as modern medical facilities are improved, the demand for native medicine will undoubtedly decrease. Unfortunately, the native herb doctors have introduced a political element into the problem, being numerically as strong as the Western style practitioners and politically influential in certain government circles. As a result some official recognition has been granted to the status of native medicine by the establishment of a college of native medicine under government auspices and by the local registration of native practitioners—Sze, Sze-ming, *China's Health Problem*, Washington, D. C., Chinese Medical Association, 1941.



## Clinical Notes, Suggestions and New Instruments

### FULMINANT MENINGOCOCCALMIA WITH PURPURA MENINGITIS AND FOCAL NECROSIS OF PITUITARY

WILLIAM H. GORDON, M.D. AND MICHAEL B. SHIMURA, M.D.  
BALTIMORE

This case of fulminant meningococcemia is reported because despite a clinical course typical of acute adrenal failure due to hemorrhage into the adrenals (Waterhouse-Friderichsen syndrome), necropsy revealed focal necrosis of the pituitary and no definite alterations in the adrenal glands.

#### HISTORY OF CASE

A 71-year-old man, a physician, was admitted to the hospital on Dec. 2, 1942, with the chief complaints of malaise and headache of about twenty hours' duration.

During the evening of the preceding day the patient began to have malaise, headache and occasional slight chills. He came to work next morning and performed a necropsy. He did not feel well and vomited after eating lunch. His temperature was 38.5°C (101.3°F). On returning home he felt progressively worse and was sent to the hospital.

On examination the patient appeared acutely but not severely ill. The pulse rate was 96 and the respiratory rate 24 per minute. The pharynx was slightly reddened, the lungs were normal and there was no rigidity of the neck.

The routine urine examination revealed no abnormalities. The white blood count was 20,000 per cubic millimeter. A roentgenogram of the chest was normal.

On the morning following hospitalization (December 3) the temperature rose to 39.7°C (103.4°F) and the skin became covered with numerous petechiae. Large ecchymotic areas appeared rapidly on the legs, elbows, abdomen and back and there were petechial hemorrhages in the conjunctivas. There was no rigidity of the neck and Kernig's sign was negative. Blood for culture was taken. A platelet count showed 80,000 platelets per cubic millimeter, the clotting time was 5 minutes, 15 seconds and the bleeding time was 19 seconds. A spinal puncture showed the fluid to be under a pressure of 280 mm of water. The fluid was clear and contained 4 cells per cubic millimeter and 142 mg of sugar per hundred cubic centimeters.

A tentative diagnosis of meningococcemia was made and the patient was started on 3 Gm of sulfadiazine by mouth. Subsequently both the blood and the spinal fluid cultures were positive for *Neisseria intracellulans*.

At 2:30 p.m. on December 3 the patient was found in collapse, pulseless and with unobtainable blood pressure. There was further extension of the petechial and ecchymotic rash and he was cyanosed. A diagnosis of hemorrhage into the adrenal glands (Waterhouse-Friderichsen syndrome) was made. One thousand cc of isotonic solution of sodium chloride, 1 cc of epinephrine (1:10,000 solution), 0.5 Gm of aminophylline, 10 cc of adrenal cortex extract and 2 Gm of sulfadiazine were administered intravenously. The patient regained consciousness and vomited and the blood pressure rose to 80 systolic and 60 diastolic.

The subsequent course is recorded in the graph. The patient became comatose during the evening of December 3 and had a generalized convulsion. Next day signs of meningitis were present. The spinal fluid was milky and contained 11,100 cells, many of them polymorphonuclears. Intracellular gram-negative diplococci were seen on the smear. He was continued on sulfadiazine, a total of 13 Gm was given and on December 4 the blood level was 9 mg and on December 5 20 mg per hundred cubic centimeters. He also received 60,000 units of meningococcus antitoxin intravenously in two doses and two transfusions, one of plasma and the other of

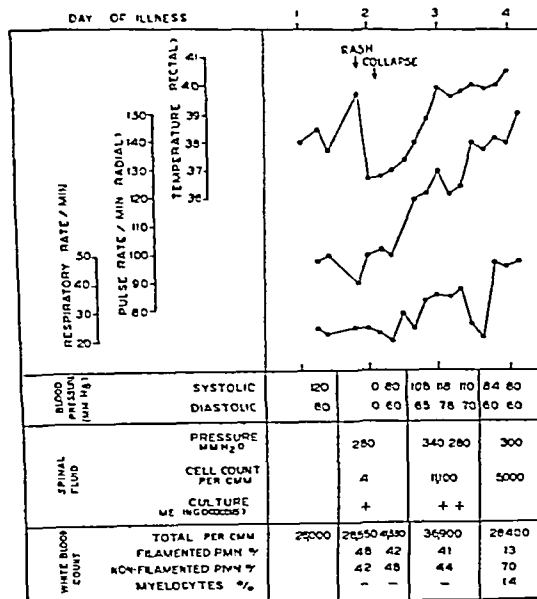
whole blood. Adrenal cortex extract 10 cc every four hours for a total of 100 cc, two additional injections of 1 cc of epinephrine, four intramuscular injections of 5 mg each of dexamethasone acetate in oil and intravenous infusions of saline solution and dextrose were given for the adrenal insufficiency. Sedation by morphine and an oxygen tent were used supportively.

The blood pressure remained at a satisfactory level, but he did not regain consciousness and the pulse increased steadily in rate and became weaker in volume. He had several more generalized convulsions and was cyanosed.

On December 5 the blood pressure began to drop, the respiratory rate rose and coarse moist rales were heard throughout the lungs. The patient died rather suddenly at 4:15 p.m., about ninety hours after the onset of his illness.

**Necropsy.**—There were numerous ecchymotic areas on the skin, particularly on the lower extremities, some areas measured 3 by 4 cm in diameter. A petechial spot was present in each conjunctiva and there was extravasation of blood between the teeth and in the buccal mucosa.

The cerebral hemispheres and the cerebellum were covered with a layer of thin yellow-green exudate lying in the sub-



Course during last four days

arachnoid space and particularly prominent in the sulci and along the course of the blood vessels. Sections of the brain were normal.

The right lung weighed 560 Gm and the left 865 Gm. The left lung was consolidated in a spotty manner, and consolidation was also present at the base of the right lung. Mucopurulent exudate was expressed on cut section from the bronchioles. The heart weighed 280 Gm and the musculature was flabby.

The mucosa of the stomach showed multiple petechial hemorrhages which were also encountered occasionally in the small and large intestine.

The liver weighed 2060 Gm and showed fatty infiltration. The gallbladder contained about fifty small gallstones. The spleen weighed 220 Gm and was firm and tense with slight softening of the pulp on section.

The adrenals were externally normal. On cut section petechiae were seen in the substance, particularly in the medulla of the left organ.

The kidneys weighed 200 Gm each. There were multiple petechial hemorrhages in the mucosa of the pelvis.

Microscopically sections of the brain showed irregularly distributed purulent exudate in the meninges. The cells were usually polymorphonuclears with some macrophages and red blood cells. Lymphocytes and macrophages also were observed.



in some areas of subcortical white matter. There were scattered small perivascular hemorrhages in the cerebral cortex. No organisms were found in the meningeal exudate.

In the glandular portion of the pituitary were three areas of coagulation necrosis, the largest measuring 2 by 5 mm, involving both epithelial and stromal elements. Suppuration and infiltration by polymorphonuclear cells were present in the adjacent meninges.

Sections of the lungs showed extensive patchy bronchopneumonia, congestion and focal hemorrhages. The exudate in the alveoli contained a moderate number of intracellular and extracellular, large gram-positive cocci. Focal necrosis of the mucosa and purulent exudate were encountered in the bronchi.

Sections of the adrenals showed irregular congestion with engorgement of the sinuses, in a few small areas hemorrhage was present. The cytoplasm of the cortical cells was irregularly vacuolized. Focal lymphocytic infiltration involved chiefly the medullary portion.

There were focal hemorrhages in the loose subepithelial connective tissue of the kidney pelvis, and superficially denuded areas in the small intestine. The heart showed a toxic myocarditis, the liver was infiltrated with fat, and there was slight cholecystitis.

The final diagnoses were (1) meningococcic septicemia, (2) meningococcic meningitis, (3) focal necrosis of the pituitary, (4) focal hemorrhages in the brain, meninges, lungs, adrenals and renal pelvis, (5) bronchopneumonia and bronchitis, (6) toxic myocarditis, (7) fatty infiltration of the liver and (8) cholecystitis with cholelithiasis.

## COMMENT

The clinical appearance and the course of the patient were typical of hemorrhagic destruction of the adrenals in the presence of a fulminating septicemia, usually caused by the meningococcus. Ninety-six cases of this so-called Waterhouse-Friderichsen syndrome have been accumulated in the comprehensive reviews by Aegerter, Sacks, Kunststadter and Lindsay, Rice, Selinger and Robins.<sup>1</sup>

The essential necropsy finding in these cases is massive hemorrhage in the adrenal glands, involving particularly the medullary portion. In this case the adrenals showed vascular congestion and a few microscopic areas of extravasation of red blood cells into the medulla. The morphologic alterations certainly were insufficient to account for the symptoms of acute adrenal failure and were merely a manifestation of generalized purpura that also involved the skin, the mucosa of the intestinal tract and the renal pelvis, the lungs and the brain. The focal areas of necrosis in the anterior pituitary were a striking finding. It is possible that the syndrome resulted from the damage to the pituitary, alone or in combination with the minimal adrenal changes and the effects of the septicemia.

Treatment with sulfadiazine, meningococcus antiserum, intravenous saline solution and dextrose, epinephrine and adrenal cortex extract were apparently temporarily effective. The patient recovered from the extreme collapse and the meningitis was improving. Similar measures were undertaken by Carey<sup>2</sup> in a woman aged 27 with meningococcemia who recovered after a clinical course that was compatible with the diagnosis of Waterhouse-Friderichsen syndrome. It seems improbable that this therapy protected the adrenals from massive destruction.

## SUMMARY

A man aged 36 had fulminating meningococcemia with purpura, meningitis and focal necrosis of the pituitary. The clinical course was typical of the Waterhouse-Friderichsen syndrome, but no definite changes were present in the adrenals.

1 Aegerter, E. E. The Waterhouse-Friderichsen Syndrome, a Review of the Literature and a Report of Two Cases. *J. A. M. A.* 106: 1715 (May 16) 1936. Sacks, M. S. Fulminating Septicemia Associated with Purpura and Bilateral Adrenal Hemorrhage—Waterhouse-Friderichsen Syndrome. Report of Two Cases with Review of the Literature. *Ann. Int. Med.* 10: 1105 (Feb.) 1937. Kunststadter, R. H. The Waterhouse-Friderichsen Syndrome. *Arch. Pediat.* 56: 489 (Aug.) 1939. Lindsay, J. W., Rice, L. C., Selinger, M. A. and Robins, Leroy. The Waterhouse-Friderichsen Syndrome. Acute Bilateral Suprarenal Hemorrhage. *Am. J. M. Sc.* 201: 263 (Feb.) 1941. Carey, T. N. Adrenal Hemorrhage with Purpura and Septicemia (Waterhouse-Friderichsen Syndrome) with Recovery. Case Report. *Ann. Int. Med.* 13: 1740 (March) 1940.

# ETIOLOGY OF VARICOSE VEINS FROM AN ANATOMIC ASPECT, BASED ON A DISSECTION OF THIRTY EIGHT ADULT CADAVERS

SHERMAN A. EGER, M.D., AND STEPHEN L. CASPER, M.D.  
PHILADELPHIA

A review of the recent literature relative to the etiology of varicose veins in the lower extremities shows that there is a tendency to accept certain factors as significant. These are chiefly heredity, trauma, increased postural strain, compression or constriction of veins and phlebitis, which may destroy the valves in the venous system (Christopher<sup>1</sup>). With the exception of phlebitis, it was felt that the other factors per se do not play an essential role, as it seemed logical that there might be some basic anatomic factor to explain the development of this condition.

## Valvular Distribution in External Iliac and Femoral Veins Proximal to the Orifice of the Internal Saphenous Vein in 38 Cadavers

	Number	Per Cent
No vein contained more than 1 valve		
Bilateral absence	3	7.9
Unilateral absence		
Right	11	28.9
Left	4	10.4
Total	7	18.3
Total absence on one or both sides	14	36.8
Valve absent in right external iliac but present in femoral	21	55.2
Valve absent in left external iliac but present in femoral	20	52.6
Valves absent bilaterally in external iliac but present in femoral	14	36.8
Valves absent bilaterally in femoral but present in external iliac	0	0
Valve absent in right femoral but present in external iliac	4	10.4
Valve absent in left femoral but present in external iliac	2	5.2

With this in mind, the following hypothesis is offered:

1 Since it is definitely known that there are no valves in the inferior vena cava and common iliac veins, it is the role of the valves in the external iliac veins to support the column of blood when in the upright position.

2 Absence of valves in the external iliac veins imposes a greater burden on the valves in the femoral veins.

3 Absence of valves in both the external iliac and femoral veins, above the orifice of the great saphenous, imposes an even greater burden of support on the valves of the latter vessel, in other words, on the superficial circulation resulting in varicosities.

In order to evaluate this theory, a study was made of 38 adult cadavers. This consisted in determining the respective number of valves in the external iliac and femoral veins to the level of the orifice of the great saphenous veins. The results of this investigation are clearly outlined in the accompanying table.

## CONCLUSIONS

1 On an anatomic basis there is a 36.8 per cent minimal potential incidence of varicose veins in the lower extremities.

2 This potential incidence is further increased by the absence bilaterally in 36.8 per cent and unilaterally in 52 to 55 per cent of the valves in the external iliac veins with only one valve in each of the femoral veins above the orifice of the internal saphenous.

From the Jefferson Medical College and Hospital.  
Dr. J. Parsons Schaeffer, director of the Daniel Brugh Institute of Anatomy, Jefferson Medical College, provided the material used in this study.

<sup>1</sup> Christopher, Frederick. *Textbook of Surgery*, ed. 3 Philadelphia: W. B. Saunders Company, 1942.

3 These varicosities should develop unilaterally in 28.9 per cent and bilaterally in 7.9 per cent

4 The left lower extremity should be involved approximately twice as frequently as the right

5 No vein in this series contained more than one valve

2029 Delaware Street

#### URINARY EXCRETION OF BISMUTH FOLLOWING LARGE BUT NONFATAL DOSE OF BISMUTH SUBSALICYLATE

JOSEPH SEIFTER, M.D., CLEVELAND AND  
CAPTAIN FRANK M. McDONALD

MEDICAL CORPS ARMY OF THE UNITED STATES

A single dose of 9 cc of bismuth subsalicylate in oil containing 675 mg of elementary bismuth was injected into the left buttock of a man aged 47. The injection site was incised on the following day and two cigaret drains were installed. The lack of drainage and the x-ray film indicated that the bismuth suspension had spread along the fasciæ. The subject was released twenty-eight days after the injection. During this period of observation he developed pigmentation and ulceration of the oral and pharyngeal mucosæ, moderate fever, leukocytosis, albuminuria, and high levels of bismuth in the urine.

#### Recovery of Bismuth

Day	Mg Bismuth
1	10.40
2	9.22
3	8.40
4	5.70
5	16.12
6	6.66
7	9.77
8	12.53
9	11.50
10	9.35
11	6.17
12	9.30
13	9.10
14	12.15
15	10.64†
16	
17	
18	8.61†
19	
20	
21	4.83†
22	
23	
24	

‡ Pooled specimens † Daily average for the pool

The bismuth in each of the twenty-four hour urine specimens was estimated by a method already described.<sup>1</sup> A total of 245.89 mg of bismuth was recovered in the sequence recorded in the table.

(The studies terminated when the patient's request for release was granted.)

The patient received a ninefold dose of bismuth subsalicylate and over a period of three and one-half weeks excreted 37 per cent of it in the urine. The maximum rate of excretion was gradually reached in two weeks, and half this value two weeks later. The percentage of bismuth excreted and the curve of excretion resembled those obtained with clinical doses of bismuth subsalicylate in oil<sup>2</sup> except that the daily levels were considerably higher.

From the Department of Pharmacology and the Department of Dermatology and Syphilology, Western Reserve University School of Medicine.  
1 Sollmann, Torald and Seifter, Joseph. Intravenous Injections of Soluble Bismuth Compounds: Their Toxicity and Their Sojourn in the Blood and Organs. I. Pharmacol. & Exper. Therap. 4: 13-19, 1922.  
2 Sollmann, Torald. A Manual of Pharmacology, ed. 6 Philadelphia, W. B. Saunders Company, 1942.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS COFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

#### BISMUTH SUBSALICYLATE (See New and Nonofficial Remedies, 1943, p. 222)

The following dosage forms have been accepted

CHIEPLIN BIOLOGICAL LABORATORIES, SYRACUSE, N. Y.

Ampuls Bismuth Subsalsalicylate in Oil with Chlorobutanol 3%, 0.13 Gm in 1 cc. A suspension of bismuth subsalicylate in olive oil containing in each cubic centimeter 0.13 Gm of bismuth subsalicylate and chlorobutanol 3 per cent.

Bismuth Subsalsalicylate in Oil with Chlorobutanol 3%, 30 cc, 60 cc, 100 cc and 480 cc bottles. A suspension of bismuth subsalicylate in olive oil containing in each cubic centimeter 0.13 Gm of bismuth subsalicylate and chlorobutanol 3 per cent.

SHARP & DOHME, INC., PHILADELPHIA

Bismuth Subsalsalicylate in Oil with Chlorobutanol 3%, 30 cc, 100 cc and 500 cc. A suspension of bismuth subsalicylate in peanut oil containing in each cubic centimeter bismuth subsalicylate 0.13 Gm with 3 per cent of chlorobutanol added.

#### LIVER INJECTION (See New and Nonofficial Remedies, 1943, p. 392)

The following dosage forms have been accepted

JOHN WYETH & BROTHER, INC., PHILADELPHIA

Liver Injection (Crude) (Injectable), 1 U. S. P. Unit per Cc. 10 cc multiple dose ampoules. A sterile aqueous solution of liver preserved with 0.5 per cent phenol.

Liver Injection (Crude) (Injectable), 2 U. S. P. Units per Cc. 10 cc multiple dose ampoules. A sterile aqueous solution of liver preserved with 0.5 per cent phenol.

#### SULFANILAMIDE (See New and Nonofficial Remedies, 1943, p. 175)

The following dosage forms have been accepted

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Tablets Sulfanilamide 0.324 Gm and 0.486 Gm

THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO

Tablets Sulfanilamide 0.33 Gm (5 grains)

#### SULFAPYRIDINE (See New and Nonofficial Remedies, 1943, p. 179)

The following dosage form has been accepted

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Tablets Sulfapyridine 0.5 Gm

#### SULFATHIAZOLE (See New and Nonofficial Remedies, 1943, p. 182)

The following dosage forms have been accepted

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Tablets Sulfathiazole 0.5 Gm

BUFFINGTON'S, INC., WORCESTER, MASS.

Tablets Sulfathiazole 0.5 Gm and 0.25 Gm

#### DIGITALIS (See New and Nonofficial Remedies, 1943, p. 289)

The following dosage form has been accepted

BURROUGHS WELLCOME & CO., INC., NEW YORK

Tincture Digitalis 1 fluidounce, 4 fluidounces and 1 pint bottles

#### NIKETHAMIDE (See New and Nonofficial Remedies, 1943, p. 317)

The following dosage form has been accepted

BUFFINGTON'S, INC., WORCESTER, MASS.

Ampuloids Sterile Solution Nikethamide 25% W/V

on these farms developed thiamine deficiency and died, although their rations when prepared contained a normally adequate amount of the vitamin. The antagonistic substance has not been identified, it may be an enzyme, for it is readily destroyed by cooking the fish. Green<sup>1</sup> and his associates believe that the observations on Chastek paralysis in animals may have some bearing on thiamine deficiency occurring in human beings in certain parts of the Orient. These investigators point out that beriberi is common in those places where raw fish, as well as thiamine poor polished rice, is consumed. However, not all types of fish are equally effective in destroying thiamine.<sup>1</sup> Jolliffe<sup>1</sup> found, on examination of four shipwrecked sailors who had subsisted for several weeks on raw fish and turtle, no clinical evidence of thiamine deficiency.

Still other examples of avitaminoses resulting from interference with an essential food factor are less well characterized. In all cases the diets of the animals were unusual, containing comparatively large amounts of uncooked egg white, raw fish oil, in some instances, drugs, and would not be normally considered as human food by persons in this country. These observations on animals are of considerable interest, nevertheless, for they help to elucidate an unusual type of mechanism involved in the development of some avitaminotic conditions.

## Current Comment

### CAN SELF-APPLIED JIU JITSU CAUSE DEATH?

Newspapers recently reported that a 14 year old school boy in Los Angeles was found dead under circumstances suggesting death from self-applied jiu jitsu, which the boy was in the habit of practicing zealously. Apparently, available medical literature does not contain any reports of death from self-applied jiu jitsu, but the Los Angeles case raises the question whether death can be so caused. Whether voluntary manual compression of the neck in jiu jitsu can cause fatal suffocation seems somewhat doubtful, because the respiratory center in the medulla is so much less sensitive to asphyxia than the motor cortical centers that the muscular contractions of the hands and arms probably would relax or fail of coordination before the cessation of respiratory movements. On the other hand, fatal cardiac syncope may result under various conditions, such as emotional crisis or pleural and other punctures and at times apparently even in the absence of structural, mechanical or toxicologic causes as ordinarily understood. When the cardiac reflexes are especially irritable, sudden death may occur from syncope through the carotid sinus reflex. The late Soma Weiss<sup>1</sup> in a consideration of rapid physiologic death under various conditions mentions a patient who after coronary thrombosis developed such sensitiveness of the carotid sinus reflex that turning the head or gentle

manipulation of the skin caused alarming transit asystole. From these considerations it seems possible that self-applied jiu jitsu may cause sudden death from syncope through the carotid sinus reflex. Certainly that possibility cannot be denied.

### ANTIGENIC DIFFERENCES IN HUMAN SERUM

Unexpected reactions in transfusion with compatible blood as determined by cross matching or by blood grouping of the donor and recipient remain largely unexplained. Such reactions may increase in severity on successive transfusions. Are they due to corpuscular antigens not covered by the customary groupings, to the accidental presence of foreign substances of various kinds or to antigenic differences in the plasma or serum of the persons concerned? By absorption of precipitins in the serum of rabbits immunized with human serum Cumley and Irwin<sup>1</sup> obtained results which lead them to conclude that human serum does contain antigenic substances of such different specificities that it "may eventually be classified in terms of antigenic differences, much the same as has been done with the corpuscles." The genetics of any such constitutional serum antigens and their possible practical significance remain to be determined. In view of the increasing use of pooled human plasma the question arises whether serum and perhaps other antigens are present in plasma and then in that case what their fate is in pooled plasma. Here the effects of dilution as well as the possibilities of neutralization by antibodies (precipitins) will require consideration. In war services transfusion with pooled plasma so far is giving apparently uniformly favorable results. Comprehensive reports on the value and safety of pooled plasma will be of great importance in planning for the best means of transfusion after the war.

### DIGITALOID DRUGS AND COAGULATION OF BLOOD

Some patients taking digitalis or related drugs appear to be excessively liable to coronary thrombosis and other symptoms indicative of increased coagulability of their blood. According to Macht,<sup>1</sup> who worked on cats and guinea pigs, heparinization of these animals prior to intravenous injections of ouabain and digitalis solutions significantly lowers the toxicity of these drugs—a mechanism which is probably correlated with the thromboplastic effect of digitaloid glucosides observed in vitro. Werch,<sup>2</sup> using rabbits, confirms part of Macht's observations. Digitalin given in large amounts intravenously to the rabbit causes a significant decrease in the coagulation time of its blood. These interesting observations have not yet been confirmed in the clinic nor are the therapeutic implications yet clear.

1 Cumley, R. W. and Irwin, M. R. Individual Specificity of Human Serum, *J. Immunol.* **46**: 63 (Feb.) 1943.  
2 Macht, D. I. Experimental Studies on Heparin and Its Influence on Toxicity of Digitaloids, Congo Red, Cobra Venom and Other Drugs, *Ann. Int. Med.* **18**: 772 (May) 1943.  
3 Werch, S. C. Reduction of the Coagulation Time of Rabbit's Blood by Digitalis, *Quart. Bull., Northwestern Univ. M. School* **17**: 50 (Spring Quarter) 1943.

1 Weiss, Soma, Instantaneous Physiologic Death, *New England J. Med.* **223**: 793 (Nov. 14) 1940.

## WAGNER-MURRAY BILL OPPOSED BY AMERICAN BAR ASSOCIATION

At the annual meeting of the American Bar Association held in Chicago August 23-26, both the assembly, which, in effect is the convocation of the membership at large and the house of delegates of the association opposed the enactment of Senate bill 1161 on the grounds that such an eventuality would 'establish federal control of the medical profession and the regimentation of doctors and hospitals. Further, the house of delegates put itself on record as being 'opposed to any legislation decree or mandate that subjects the practice of medicine to federal control and regulation beyond that presently imposed under the American system of free enterprise. The house of delegates then requested the association's board of governors immediately "to appoint a special committee to study, analyze and investigate S 1161 and to give publicity to the recommendations and findings of the special committee and the action of the board of governors thereon." The personnel of this special committee it is understood has already been determined by the board of governors and will be announced in the October issue of the *American Bar Association Journal*.

## IMMUNIZATION AGAINST INFECTIOUS DISEASES IN LARGE CITIES

The exact extent to which preventive inoculations against diphtheria, smallpox, scarlet fever and typhoid are employed is unknown. Recently Collins and Council<sup>1</sup> reported a study of the frequency of immunizations against these diseases based on reports from over two hundred thousand households in twenty-eight cities of 100,000 population or more. The cities were selected as being representative for size and geographic location. Immunizations against scarlet fever and typhoid were negligible in frequency as compared with those against diphtheria and smallpox. Diphtheria immunizations were more frequent than smallpox vaccination during the preschool ages, but after the age of 5 the reverse was true. By the age of 8 61 per cent of the children had been immunized against diphtheria and 85 per cent had been vaccinated against smallpox. Although there was considerable regional variation, in no area were more than 5 per cent immunized to scarlet fever. A similar situation was found for typhoid, though the South was far above any other section in the percentage of immunizations to this disease. The West and North Central areas had the highest percentages of immunizations to scarlet fever. The West had the lowest percentage of diphtheria immunizations from birth through 7 years, but beyond that age the South was lowest. The Northeast intermediate states and South all had smallpox vaccination rates above 90 per cent by the age of 8 but the North Central and West were low, the latter having reached only about 60 per cent, the latter regions too have

the highest smallpox rates. It was concluded that in the preschool ages the percentages of children who had been immunized against diphtheria and smallpox increased definitely with the income. The same was true for diphtheria immunizations during the school ages, but there was little difference in smallpox immunization as between high and low incomes. Scarlet fever and typhoid immunizations increased with income in all age groups, thus indicating that these immunizations are largely the result of individual initiative rather than public programs. Conservative conclusions which might be drawn from this study are that smallpox and diphtheria immunizations have been more thoroughly "sold" to physicians and public health officials than have those against scarlet fever or typhoid, the number of cases of diphtheria and smallpox in the various regions reflect the degree of immunization of the population, the number of cases immunized to scarlet fever and typhoid, however, is insufficient in all communities to affect materially the disease attack rate.

## CARRIÓN'S DISEASE

Carrion's disease refers to both the severe anemic disease called Oroya fever and the less dangerous eruptive condition verruga peruana. The cause of both is infection with *Bartonella bacilliformis*. Calderon Howe<sup>1</sup> has recently investigated Carrion's disease in the valleys of the Santa Eulalia and Rimac rivers, where the disease is endemic, and in hospitals in Lima, Peru. The transmitter of the disease is the sandfly *Phlebotomus verrucarum* being the principal species involved. The disease gets its name from a Peruvian medical student, Daniel A. Carrion, who in 1885 inoculated some blood and tissue from a human verruga nodule into the skin of both his forearms. Some five weeks later he died of typical Oroya fever, this crucial experiment first proved that the eruptive disease and the generalized fever were of identical etiology. Complete protection from the disease can be assured by leaving before nightfall the narrow belt between about 800 and 3,000 meters above sea level where *Phlebotomus* occurs, since this wild sandfly feeds on human beings and animals only at night. Howe's reports are based on observations on 203 residents of the region in which bartonellosis is endemic. Blood cultures on special *Bartonella* medium were made for each person. An agglutination test, using formaldehyde treated suspensions of *B. bacilliformis*, was performed on serum from each patient. Most natives of the endemic areas contract the infection in some form in their earlier years. One attack of Oroya fever or of verruga peruana confers lasting immunity. Preliminary experiments on active immunization are inconclusive. Although the incidence of Carrion's disease is small and its geographic distribution restricted, its interesting features include the two distinct syndromes produced the strict geographic localization and the distinctive habits of the insect vector.

<sup>1</sup> Collins S. D. and Council Clara. Extent of Immunization and Case Histories for Diphtheria, Smallpox, Scarlet Fever and Typhoid Fever in 200,000 Surveyed Families in 28 Large Cities. *Pub. Health Rep.* 58: 1121 (July 22) 1943.

<sup>1</sup> Howe Calderon. Carrion's Disease. *Arch. In. Med.* 72: 1-7 (Aug.) 1943. *Scient. Monthly*, August 1943, p. 1..

# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## ARMY

### DEDICATION OF WOODROW WILSON GENERAL HOSPITAL

The U S Army Woodrow Wilson General Hospital at Staunton Va was formally dedicated on September 1. Among the speakers on the program were Major Gen Norman T Kirk, Surgeon General of the Army, Major Gen Milton A Reckord, commanding general of the Third Service Command, and Hon Major A Willis Robertson, Member of Congress of the Seventh Virginia District. The 1,500 bed hospital, which was named in honor of Staunton's distinguished son Thomas Woodrow Wilson, the twenty-eighth President of the United States, is of brick construction and is located in the Shenandoah Valley, about 6 miles east of Staunton.

The professional staff at the time of the dedication was as follows:

#### ADMINISTRATIVE DIVISION

Col Sidney J Chappell, Commanding officer  
Col Leonard D Henton, Assistant post commander

#### PROFESSIONAL DIVISION

Col John Minor, chief of medical service  
Lieut Col John H Lyons, chief of surgical service  
Lieut Col Karl D MacMillan, chief of F E N T service  
Lieut Col Harlan H Taylor, assistant chief of surgical service  
Lieut Col Arthur J Williams, chief of X-ray service  
Major James I Bunn, chief of outpatient service  
Major Ben L Boynton, chief of physical therapy section of surgical service  
Major Edgar F Cosgrove, chief of section of cardiovascular diseases of medical service  
Major Welch M England, E E N T service  
Major Raymond M Kay, assistant chief of medical service  
Major Julius Newman, chief of plastic surgery  
Major Edwin J Palmer, chief of neuropsychiatric service  
Major Harold H Snyder, chief of urologic service  
Major Terence L Tyson, chief of section of general medicine and chief of officers' section of medical service  
Major Erwin D Zeman, chief of laboratory service  
Capt Howard M Ausherman, surgical service  
Capt Leonard B Barnard, chief of orthopedic section, surgical service  
Capt Margit C Carlisle, medical service  
Capt Ephraim Horland, neuropsychiatric ward medical service  
Capt Ewald M Jaffe, medical service  
Capt John J Malee, surgical service  
Capt Herman L Metzger, medical service  
Capt William E Strecker, surgical service  
Capt Richard L Sutton Jr, medical service  
Capt Norman F Szold, surgical service  
Capt William A Zavod, medical service  
1st Lieut Frank R Boyer, medical service  
1st Lieut William G Carman, medical service  
1st Lieut James R Carroll, surgical service  
1st Lieut Edwin C Faessler, surgical service  
1st Lieut Harvey P Feigley Jr, surgical service  
1st Lieut John S Hooley, surgical service  
1st Lieut George A Hyder, surgical service  
1st Lieut Brooke B Mallory, medical service  
1st Lieut William G Motel, medical service  
1st Lieut William S McCune, N Y J  
1st Lieut Frederick C Reel, E E N T service  
1st Lieut Arnold Royal, surgical service

### MAJOR MOIR JR AWARDED DIS- TINGUISHED SERVICE CROSS

The War Department has announced that Major William Wilmerding Moir Jr, M C, U S Army, has been awarded the Distinguished Service Cross for extraordinary heroism in action in North Africa. Major, then Captain, Moir, together with members of his paratroop unit were shot down in their plane near Oran on November 8, according to an Associated Press report. The citation reads: "During the attack in the air and the ensuing strafing on the ground, Captain Moir distinguished himself by extraordinary heroism against the armed

enemy by inspiring administration of medical attention to wounded personnel before attention to himself, despite severe wounds to his head and back." Major Moir later was awarded the Order of the Purple Heart and is now in the United States serving at Fort Benning, Georgia. Major Moir graduated from the University of Minnesota Medical School in 1939.

### CAPTAIN BUREM AWARDED PURPLE HEART

Capt Henry S Burem, M C, A U S, formerly practicing physician in Kingsport, Tenn, has been decorated with the Purple Heart, according to the Rogersville, Tenn, Review. Captain Burem, who was serving in North Africa with a motorized medical unit, noticed a land mine in the road over which his unit was advancing. He advanced in front of the unit and shot into the mine in order to explode it. He was hit in the shoulder by shrapnel and, according to recent reports, is recovering from the wound in Oran.

### CONFERENCE OF MEDICAL CORPS OFFICERS

A three day conference of medical corps officers from all over the country was held recently at Jefferson Barracks, Missouri. The purpose of this conference was to make them familiar with their newly assigned duties as inspectors for the AAF Convalescent and Rehabilitation Training Program under the direction of Lieut Col Howard A Rusk, Office of the Air Surgeon, Washington, D C. This program is now functioning in the AAF regional hospitals at West Palm Beach and Coral Gables, Fla.

### ARMY PERSONAL

1st Lieut Martin H Rush of Fair Haven, N J, who is on duty with the medical section at the Army Air Field at Rome, N Y, has been promoted to the rank of captain.

Brig Gen Eugen G Reinartz, commandant of the School of Aviation Medicine, Randolph Field, Texas, recently addressed the Medical Society of Milwaukee County in Milwaukee on "Aviation and the Doctor."

A testimonial dinner was given at the Statler Hotel in Washington, May 25, in honor of Major Gen James C Magee, whose term of office as Surgeon General of the Army expired on May 31. About two hundred and fifty officers of the medical department attended.

Lieut Col August H Groeschel, M C, has become assistant commandant of the Medical Administrative Corps Officer Candidate School at Camp Berkeley, Texas replacing Col George E Armstrong, who has received another assignment. Colonel Groeschel, formerly of Sussex, N J, previously was director of the department of training at the Medical Administrative Corps school since its founding in the spring of 1942.

Major Norman C Schroeder, formerly of Kenton, Ohio, was named post surgeon of the Army Air Force Technical Training Command School at Yale University to succeed Lieut Col Carl A Schuck. Major Schroeder graduated from the University of Michigan Medical School, Ann Arbor, in 1924.

## NAVY

PERSONNEL OF A HOSPITAL IN THE  
SOUTH PACIFIC

(The following story was written by Sgt Garth P. James of Ironwood Mich a Marine Corps combat correspondent)

Somewhere in the South Pacific (delayed)—Members of a Navy hospital unit celebrated their first year of overseas service on the Fourth of July at this South Pacific base.

Pictured here is the medical staff. Seated in the front row are (left to right) Comdr John G. Manley, chief of surgery; Capt I. W. Jacobs, chief surgeon of the area; Capt Robert P. Parsons, retiring commanding officer; Capt Franklin F. Murdoch, incoming commanding officer; Capt Richard C. Satterlee, executive officer; and Comdr Arthur C. Webb, dental officer.

Second row: Lieut Comdr William G. Mitchell, chief of medicine; Lieut Edwin I. Madden of the Dental Corps; Lieut (jg) Leslie L. O'Connor of the Chaplain Corps; Pharmacist Paul C. Law, U.S.N.; Lieut Angus M. Brooks (MC) U.S.N.; Lieut Comdr Sidney G. Kennedy Jr (MC) U.S.N.; Lieut

Commander Webb was attached to the medical staff of Bellevue Hospital, New York, before entering the Navy in January 1942. His wife lives at 23 Mayflower Court, Freeport, N.Y.

Lieutenant Commander Mitchell lives at 214 Atlantic Street, Corpus Christi, Texas. He was associated with the Shannon West Texas Memorial Hospital, San Angelo, Texas, before entering the Navy.

Lieutenant Madden is a graduate of the University of Minnesota Medical School. His wife, Harriett M. Madden, lives at 705 Laurie Street, Alliance, Neb.

Lieutenant O'Connor is the chaplain of the unit. He attended the chaplains' school at William and Mary College, Williamsburg, Va., before coming here and is ordained a Presbyterian minister. His home is in Houston, Texas.

Pharmacist Law lives at 411 West 11th Street, Pueblo, Colo.

Lieut. Brooks, son of Mr. I. H. Brooks of St. Johnsbury, Vt., was associated with the Hartford Hospital, Hartford, Conn., before joining the Navy in April 1942. He is an anesthetist.



Members of a Navy hospital unit at a base in the South Pacific

Comdr James D. Hibbard, MC-V(S), U.S.N.R.; Lieut Comdr William A. Coates, MC-V(S), U.S.N.R.; Lieut Comdr Niel E. Eckelberry, MC-V(S), U.S.N.R.

Third row: Lieut (jg) Louis A. Williams, MC-V(S), U.S.N.R.; Lieut George E. Penn, MC-V(S), U.S.N.R.; Lieut Edward E. Hause, MC-V(S), U.S.N.R.; Lieut Robert C. Loigren, MC-V(S), U.S.N.R.; Lieut (jg) Julian P. Breillatt (MC), U.S.N.; Lieut Comdr Leon Bromberg, MC-V(S), U.S.N.R.; Lieut Comdr Bertrand I. Krehbiel, MC-V(S), U.S.N.R.; Lieut Comdr Alfred L. Duncombe, MC-V(S), U.S.N.R.; Lieut (jg) Bernard F. Duwel (MC), U.S.N., the personnel officer; Chief Pharmacist Comer L. Harvill, U.S.N.

Rear row: Lieut Comdr Harry B. Burr, MC-V(S), U.S.N.R.; and Lieut Comdr Paul H. Schraer, MC-V(S), U.S.N.R., the X-ray officer.

Commander Manley was the associate surgeon at St. Agnes Hospital, Philadelphia, before entering the Navy. He lives at 1444 South Bancroft Street in that city.

Captain Jacobs entered the Navy in April 1917. He is a specialist in X-rays and a graduate of Harvard Medical School. His home is in San Diego, Calif.

Captain Parsons also entered the Naval service in May 1917. A graduate of Harvard Medical School, he is a urologist. His home is at 53 West 83d Street, New York.

Captain Murdoch is a specialist in tropical medicine. He lives at 1801 Howard Avenue, San Carlos, Calif.

Captain Satterlee entered the Navy in 1917. He is a graduate of George Washington University Medical School, Washington, D.C., and lives at 1267 28th Avenue, San Francisco.

Lieutenant Commander Kennedy, formerly resident surgeon at the Grady Hospital, Atlanta, Ga., entered the Navy in February 1943. His wife, Elinor E. Kennedy, lives at 2100 East Mallory Street, Pensacola, Fla.

Lieutenant Commander Hibbard was associated with Wesley Hospital and Wichita Hospital, Wichita, Kan. His home is at 1208 North Imperia Street, Wichita, Kan.

Lieutenant Commander Coates is an X-ray specialist and was associated with the South Side Hospital, Bay Shore, N.Y., before he joined the Medical Corps. His home is at 143 East Main Street, Babylon, N.Y.

Lieutenant Commander Eckelberry was the assistant surgeon at Metropolitan Hospital and instructor in surgery at New York Medical College. His wife lives at Weston Road, Georgetown, Conn.

Lieutenant Williams entered the Navy in September 1942. A specialist in orthopedic surgery, he was the resident surgeon in that subject at the University of Iowa Hospital. His home is at 549 Logan Street, Southeast, Grand Rapids, Mich.

Lieutenant Penn was associated with the Flower Fifth Avenue Hospital, New York, as a specialist in diseases of the eye, ear, nose, and throat.

Lieutenant Hause entered the Navy in May 1942. Prior to that time, he was an assistant resident in neuropsychology at the University of California. His home is at 105 18th Avenue, San Francisco.

Lieutenant Loigren, son of Mrs. Ruth E. Loigren of Starkweather, N.D., joined the naval service in December 1941. He was associated with the University of Pennsylvania Hospital, Philadelphia, as a specialist in dermatology and ophthalmology.



Lieutenant Brillant lives at 1326 Nebraska Street, Vallejo, Calif

Lieutenant Commander Bromberg, son of Mr Sol Bromberg of Galveston, Texas, is a specialist in internal medicine. He interned at Robert Koch Hospital and the St Louis City Hospital, St Louis

Lieutenant Commander Krehbiel, a specialist in pediatrics, entered the Navy in April 1942. He interned at Isolation Hospital and City Hospital, St Louis. His wife, Ruth C Krehbiel, lives at 3024 Clark Court, Topeka, Kan

Lieutenant Commander Duncombe was associated with Moore Hospital Brockton, Mass and St Luke's Hospital, Middleboro, Mass. His wife Louise F Duncombe, lives at 38 Winthrop Street, Brockton

Lieutenant Duwel personnel officer here, lives at 128 Lexington Avenue, New York

Chief Pharmacist Harvill lives in San Francisco

Lieutenant Commander Burr, whose wife lives at 6407 Peerless Street Houston Texas joined the Navy in March 1942. He is a specialist in urology and was associated with Memorial Hospital St Joseph's Hospital and Jefferson Davis Hospital, St Louis

Lieutenant Commander Schrier is a specialist in radiology. He entered the Navy in February 1942 and was associated with the Pennsylvania Hospital, Philadelphia, and the Delaware County Hospital Drexel Hill, Pa

#### METHOD OF SELECTING PREMEDICAL AND PRE-DENTAL STUDENTS FOR ENTRANCE IN THE MEDICAL AND DENTAL SCHOOLS

The Bureau of Naval Personnel of the Navy Department has announced that students shall be selected for medical or dental training in the V-12 Program on the basis of their potential professional ability and on their records through the end of their third premedical term. Selection shall be made as early as practicable in the fourth term of the applicant's premedical work with the two following exceptions:

(a) For the first such selection, men who have already advanced beyond their fourth term will be considered on the basis of their work through the last term completed

(b) Former apprentice seamen V-1 and V-7 who were accepted by approved medical schools or accredited dental schools prior to July 1, 1943 will be assigned to the schools which accepted their applications without further review of their credentials by the Committee of Deans referred to

For both medical and dental students there is to be a committee in each naval district composed of deans of the medical or dental schools, or their representatives, in the district and the district training officer as a consultant member, which shall be requested to prepare lists of premedical and pre-dental students for consideration for medical training. The Bureau of Naval Personnel will assign students from these lists to fill available vacancies in approved and accredited dental and medical schools throughout the country on the following basis:

(a) In the case of a nationwide excess of qualified students, the same percentage of qualified students from the top of each list down is to be assigned to medical and dental training from each district

(b) All men selected in accordance with the foregoing procedure who complete premedical work at the end of a given Navy V-12 term are to enter medical or dental school before men finishing their premedical or pre-dental studies at the end of a later term

(c) Men selected for medical or dental training are to be assigned to schools in their districts if possible without violating (b). If not possible to assign men to schools in their districts, they will be assigned to schools in the nearest districts that have vacancies

(d) Men are to be assigned to the school of their choice if possible without violating (b) or (c)

#### SHIPS NAMED IN HONOR OF MEDICAL DEPARTMENT OFFICERS

The Bureau of Medicine and Surgery announced on August 23 that new naval vessels will be named in honor of the following medical officers:

J Douglas Blackwood Commander Blackwood (MC), USN, was killed in action on Aug 9, 1942 in the Solomon Islands

Rall Lieut Richard R Rall (MC), USN, was killed at Pearl Harbor on Dec 7, 1941

Miles Lieut (Jg) Samuel S Miles (MC), USNR, was killed in the battle of the Solomon Islands while serving with the First Marine Division

Bronstein Lieut (Jg) Ben Richard Bronstein (MC), USNR, died as a result of the torpedoing of the U S S *Jacob Jones* off Cape May, N J

Crowley Lieut Comdr Thomas E Crowley (DC), USN, was killed at Pearl Harbor, Dec 7, 1941

O'Reilly Lieut Edward J O'Reilly (DC), USN, was killed in action in the Solomon Islands in 1942

#### SIX NEW DISPENSARY HOSPITAL UNITS IN FLORIDA

Six new independent dispensary hospital units have been completed at six auxiliary airfields in Florida. According to the *Army and Navy Journal* each sickbay will contain ward facilities for 42 patients, including 4 beds for S O Q. The new units are under the control of Capt Bertram Groesbeck Jr (MC), U S Navy, whose headquarters are at the U S Naval Air Station, Pensacola. Each of these units will be provided with portable x-ray equipment, complete laboratory facilities, flight surgeons' instruments, dark room and examining room in addition to the usual medical, surgical and pharmacy facilities. Three medical and two dental officers will be assigned to each of these units which will serve as independent units in liaison with the main dispensary and the School of Aviation Medicine.

#### OFFICER PERSONNEL STUDY IN THE BUREAU OF MEDICINE AND SURGERY

According to the *Army and Navy Journal* of August 21 a study of utilization of officer personnel in the Bureau of Medicine and Surgery was completed by the Navy Management Engineer's Office on August 13. The personnel study was the second survey to be taken by the management engineer, a similar canvass of the Bureau of Aeronautics having been completed recently. Other bureaus will be covered also. The study was confined to one hundred and twenty-four officers of rank of lieutenant commander and below and was designed to search out and indicate appropriate action in cases of misplacement, to discover what billets can be filled by enlisted men or WAVES, and to discover instances in which officers are not fully and appropriately occupied by their duties.

#### LIEUT VICTOR S FALK JR RECEIVES SILVER STAR AWARD

Lieut Victor S Falk Jr (MC), U S Navy, received the Silver Star Award for caring for wounded on Guadalcanal under fire and for traveling aboard a disabled plane the next day while he cared for patients being evacuated. The famed "Bat Out of Hell" squadron of marine dive bombers, of which Lieutenant Falk is a member, fought through the battle of Midway and the Guadalcanal campaign and were the first to bomb the Munda Japanese base. They furnished support for ground troops mopping up on the island and have returned to action in the Solomons with Major Claude J Carlson of Seattle in command.

## MISCELLANEOUS

THE DISTRIBUTING CENTER FOR  
PARASITOLOGIC SPECIMENS

During 1943 the greatly increased expansion in the teaching of tropical medicine in medical schools throughout this continent brought to light a critical scarcity of adequate parasitologic material for instructional purposes. Accordingly a committee formed by the American Association of Medical Colleges and the National Research Council together with other interested agencies conceived a plan whereby such material might be gathered in the field and also exchanged to mutual advantage among teaching institutions. For this purpose a distributing center for parasitologic specimens was established and the Division of Parasitology and Tropical Medicine at the Army Medical School was designated to carry out this plan. The center at the Army Medical School is coordinated with the one recently established at the Army Medical Museum for the collection and distribution of tissue specimens from cases of tropical diseases.

Between Jan 1 and July 1, 1943 the distributing center supplied fifty-six army training centers and ninety-four hospitals, medical and graduate schools in the United States, Canada and Mexico with almost 24,000 specimens. This material consisted of 392 living cultures or protozoa, 1,573 vials of helminth ova and protozoan cysts, 17,775 malaria slides (chiefly supplied by the U S Public Health Service), 222 paraffin blocks of specimens of fixed tissues, 533 vials of entomologic specimens, 3,036 miscellaneous slides including whole mounts, smears from cultures and sections and 307 vials of adult helminths, scolices, segments and so on.

This material was received from fifty-five institutions including medical schools, zoology departments, army hospitals, the U S Public Health Service, various state public health services and other interested individuals. The list of generous contributing agencies follows:

## UNIVERSITIES AND MEDICAL SCHOOLS

University of Alabama	Johns Hopkins University
University of Arkansas	University of Louisiana
Baylor University	University of Michigan
University of California	University of Minnesota
University of California at Los Angeles	University of Missouri
University of Chicago	New York University
Chicago Medical School	University of Pennsylvania
University of Colorado	Queen's University
Columbia University College of P & S	Rice Institute
University of Connecticut	University of Rochester
Cornell University	University of Southern California
Duke University	University of Tennessee
Harvard University	University of Toronto
Indiana University	Tulane University
Iowa State College	Washington University
	Yale University

## ARMY CAMPS AND STATIONS

Army Medical Museum Washington D C	Greenville Army Flying School, Mississippi
Army Medical School Washington D C	Medical Dept 2650
Port Belvoir Virginia	Puerto Rican Dept Lab P R
	Fourth Service Command Laboratory

## GENERAL HOSPITALS

Borden Oklahoma	Percy Jones Michigan
Letterman California	Walter Reed Washington D C
McClellan Texas	

## HEALTH DEPARTMENTS

Florida State Board of Health

## OTHER SOURCES

Bureau of Animal Industry U S D A	National Institute of Health Bethesda Md
Bureau of Ent & Plant Quarantine U S D A Washington D C	New York Public Health Service U S Public Health Service Columbia S C
Bureau of Ent & Plant Quarantine U S D A Florida	Rockefeller Foundation Brazil
Board of Health Lab Ancon C Z	Rockefeller Foundation Colombia
International Hospital Santo Domingo R D	Rockefeller Foundation Tallahassee Fla

Since the functioning of the center depends on a steady influx of such material every institution is urged to continue sending in all parasitologic specimens which can be spared and which

might prove valuable to another school. Both gross and microscopic specimens of parasitic worms and ova, arthropods of medical importance, protozoa, malaria and other blood parasites are particularly desired. Mailing containers, franked labels and shipping directions will be furnished on request. Shipments should be addressed to:

The Director  
Army Medical School      Att Division of Parasitology  
Army Medical Center      and Tropical Medicine  
Washington 12, D C

Cooperation in responding to this appeal will make possible the continuation of this valuable service.

## BLOOD DONOR SERVICE

A Statement on the Functions of the American Red  
Cross Blood Donor Service

Frequent requests are made to the American Red Cross to supply whole blood or blood plasma to individuals, to hospitals and to Army or Navy medical units in this country. The requests are based largely on misunderstandings of the functions of the Red Cross Blood Donor Service. In order to clear up these misunderstandings the following statement is issued with the approval of the Medical Services of the Army and Navy.

1 The Red Cross Blood Donor Service is the only agency through which the people of this country may give their blood to the Army and Navy for the production of dried plasma or serum albumin.

2 No facilities are provided for procuring whole blood from volunteer or paid donors for transfusions to be used either by the public or by Army and Navy medical personnel. The Red Cross Blood Donor Service is not a blood bank service.

3 All blood procured by the Red Cross Blood Donor Service is delivered immediately to processing laboratories, where it becomes the property of the Army or Navy. Most of the blood is processed into dried plasma or serum albumin to be used for the armed forces in foreign service or on naval vessels. Some of the blood however is processed into liquid plasma for use in military hospitals in this country. The Red Cross has no jurisdiction over the distribution of these blood substitutes and therefore cannot furnish them to any one.

4 The Medical Services of the Army and Navy have adequate supplies of liquid plasma for use in their hospitals in this country, which may be obtained by medical officers through regular channels as follows:

The source of supply for the Army has been set forth in an army circular letter which reads:

Thawed blood plasma (liquid plasma) is available to all army station and general hospitals within the continental United States. Liquid plasma will be supplied by processing centers as follows:

- (a) Army Medical School Washington D C will supply the first second and third service commands.
- (b) LaGarde General Hospital New Orleans will supply the fourth and fifth service commands.
- (c) Fitzsimons General Hospital Denver will supply the sixth seventh and ninth service commands.
- (d) The Eighth Service Command Laboratory Fort Sam Houston Texas will supply the eighth service command.

A supply of blood plasma for naval hospitals may be obtained by applying to the Commanding Officer U S Naval Medical School Naval Medical Center Bethesda Md.

5 All inquiries to the Red Cross from medical officers of the Army or Navy should be answered with the foregoing information.

6 All military units on foreign service or naval units on sea duty are being provided with adequate supplies of blood plasma or serum albumin as determined by the representatives of the Surgeon General's.

7 The Army and Navy have agreed to use blood plasma obtained only through regular military channels.

G CANBY ROBINSON, M D  
National Director  
Blood Donor Service

August 23 1943

**Medical News**

(PHYSICIANS WILL CONTRIBUTE A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

**ARKANSAS**

**Dr Hearn Resigns as Director of Industrial Hygiene**—Dr Robert A Hearn, assigned by the U S Public Health Service as director of industrial hygiene, state board of health, has resigned to become medical director of the Indiana Division of the Republic Aviation Corporation, it is reported. His successor on the Arkansas board has not been named.

**CALIFORNIA**

**Dr Ballard Joins Industrial Department at Los Angeles**—Dr Francis E C Ballard, San Francisco, medical officer of the state bureau of industrial health, has been placed in charge of the industrial hygiene division of the Los Angeles City Department of Health.

**Fund for Prevention and Cure of Disease**—Science reports that the will of the late John H Eagle, Philadelphia silk manufacturer who died last month, bequeaths his estate, estimated at \$7,000,000 after a bequest of \$1,000,000 to Mrs Eagle, to the California Institute of Technology, Pasadena, and the Salvation Army. The fund for the institute will be used in the prevention and cure of disease and will be known as the John H Eagle Endowment. It provides for prizes for distinguished service to humanity in the fields of chemistry, physics, medicine and other scientific endeavor.

**Changes in Health Officers**—Dr Clifford V Mason assistant superintendent of the Fairmont Hospital of Alameda County, San Leandro, has been appointed health officer of San Leandro and Alameda County to succeed Dr Stanford F Farnsworth, who resigned to become health officer of Oakland. —Dr Stanley E Coffey was recently appointed health officer of the city of Orland, succeeding Dr Thomas H Brown, Dr Zerah P King was appointed health officer of the city of Sanger, succeeding Dr Benjamin H Viau, Carl W Clark succeeds Dr David C Cleave as health officer of Belvedere, Dr John L Vaught was appointed health officer of Dos Palos, succeeding Dr Paul A Lum.

**INDIANA**

**New Professor of Ophthalmology**—Dr Robert J Masters has been appointed professor and head of the department of ophthalmology at the Indiana University School of Medicine, Indianapolis. Dr William F Hughes, who has been chairman of the department since 1934, will continue teaching in the department. Dr Masters graduated from Indiana in 1918 and is secretary of the Section on Ophthalmology of the American Medical Association.

**KANSAS**

**School Physicians Named**—Dr Dale D Veimillion was elected president of the Goodland School Board, August 3. Dr Arthur C Gulick was recently elected a new member of the board. Dr James A Butin was elected vice president of the Chanute Board of Education, August 2.

**Henry Asher Resigns from State Board**—Dr Henry H Asher, Topeka, has resigned as director of the division of local health of the Kansas State Board of Health to become health officer of Alger and Schoolcraft counties, Mich. Prior to his appointment with the Kansas board, Dr Asher was health officer of Sedgwick County for two years.

**Roster of Kansas Physicians**—The Kansas State Board of Health recently released a new roster of physicians in the state as a substitute for the usual release printed by the state board of medical registration and examination and which was not published this year. The booklet of eighty-five pages contains the list of members of the Kansas State Board of Medical Registration and Examination, the list of members of the Kansas State Board of Health, a foreword by Dr Floyd C Beelman, Topeka, secretary of the board of health, a copy of G S 65-1004a (the Kansas licensure law), a list of states with which Kansas has reciprocity, a list of the health officers in Kansas by counties and towns, and a list of the physicians in Kansas both by counties and alphabetically, giving the license number of each physician.

**MASSACHUSETTS**

**The Brigham Bulletin**—In July the first issue of the *Brigham Bulletin* made its appearance under the editorship of Dr Robert S Myers, Boston. The bulletin is intended to be a medium between the Peter Bent Brigham Hospital, Boston, and members of its staff who are now in the armed forces.

**The Warren Triennial Prize**—Competitive essays for the Warren Triennial Prize will be received until November 15. The prize was set up in a fund by the late Dr J Mason Warren in honor of his father, Dr John C Warren. The accumulated interest is awarded every three years to the best dissertation considered worthy of a premium on some subject in physiology, surgery or pathologic anatomy, the arbitrators being the general executive committee of the Massachusetts General Hospital.

**African Fever Studied at Harvard**—Eight guinea pigs inoculated with a germ of African fever in the laboratories of the Firestone Tire and Rubber Company plantation in Liberia have been turned over to Dr David Weinman, instructor in comparative pathology and tropical medicine, Harvard Medical School, Boston, for study of the fever to find an effective antidote or preventive. It was stated that the immediate purpose of the study of the fever is to check its effect on troops in Africa and to plan postwar experiments of African diseases, newspapers reported.

**Portraits Presented to Massachusetts Hospital**—A portrait of the late Dr Reginald H Fitz executed by Margaret Fitzhugh Browne was unveiled by Mrs Reginald Fitz, daughter-in-law of the physician, during special ceremonies in the medical staff room of the Massachusetts General Hospital. Mrs Henry B Bigelow unveiled a portrait of her father, the late Dr Frederick Cheever Shattuck, the work of Mrs David Linn Edsall. Mrs Carol Lord Butler also unveiled a portrait of her father, the late Dr Frederick Taylor Lord, also the work of Margaret Fitzhugh Browne. Dr Nathaniel W Faxon, medical director of the hospital, accepted the portraits for the hospital. The three portraits were the gift of an alumnus of the medical service who wishes to remain anonymous.

**MICHIGAN**

**Dr Whitehorn Lectures in Detroit**—Dr John C Whitehorn, Henry Phipps professor of psychiatry, Johns Hopkins University School of Medicine and psychiatrist in chief, Johns Hopkins Hospital, Baltimore, will address the Michigan Society of Neurology and Psychiatry on September 23. His subject will be "Individual Issues in Postmilitary Psychotherapy."

**Medical Conference**—The department of postgraduate medicine at the University Hospital, Ann Arbor, announces a postgraduate medical conference, October 8. Subjects to be discussed include diabetic acidosis, diffuse vascular diseases, medical and surgical treatment of hypertension, management of chronic sinus disease, medical and surgical treatment of peptic ulcer, thymicolymphatic constitution, endometriosis and low back pain.

**Two Bids Received for Mental Hygiene Clinic**—News paper reports, August 12, indicated that Escanaba and Marquette submitted the only bids for the establishment of an upper peninsula mental hygiene clinic, allowed by an act of the legislature this year. The state will contribute about \$12,000 in professional salaries to the clinic, while the host county will be expected to provide about \$3,000 worth of quarters, equipment and secretarial services.

**Collection of Blood for Civilian Use**—The state department of health will sponsor a traveling clinic to begin about September 20 to collect blood plasma in Michigan cities to meet the needs of the state's civilian population, it was reported on August 24. The program will be financed out of \$20,000 appropriated by the legislature. Communities which donate blood to the program will establish their own plasma reserve from which physicians may obtain free plasma for their patients.

**Course in Electrocardiographic Diagnosis**—The department of postgraduate medicine of the University of Michigan Medical School, Ann Arbor, announces a postgraduate course in electrocardiographic diagnosis to be held November 8-13. Investigation consists of lectures, lantern slides and demonstrations as well as the examination under supervision of electrocardiograms from the files of the laboratory. There will be a fee of \$50. Additional information may be obtained from the department of postgraduate medicine, University Hospital, Ann Arbor.

## MISSOURI

**Kansas City Fall Conference**—The twenty-first annual fall clinical conference of the Kansas City Southwest Clinical Society will be held at the Little Theater, Kansas City, October 4-6. Among the out-of-state speakers will be:

Dr. Harry A. L. Hyman, Philadelphia: The Present Status of Sulfonamide Therapy.  
Dr. T. M. D. Sique, Philadelphia: The Common Unrecognized Vitamin Deficiency.  
Dr. Frank H. Lyles, Boston: Peptic Ulcer from the Standpoint of the Surgeon.  
Dr. Edward H. Rinehart, Rochester, Minn.: The Diagnosis and Treatment of Actual Endocrine Disturbance.  
Dr. Cyril C. Sturgis, Ann Arbor, Mich.: A Discussion of the Commoner Type of Anemia.  
Dr. J. L. D. White, Boston: Newer Concepts Concerning the Course and Management of Coronary Heart Disease.  
Dr. Charles Gordon Heyd, New York: Gallbladder Disease in Its Relationship to Liver Function.  
Dr. William E. Menck, Iowa City: Prevention and Treatment of Toxicosis of Pregnancy.

In addition there will be a round table discussion on 'Tomorrow's Results of Today's Research'. On Tuesday and Wednesday mornings a series of refresher courses will be held covering the various specialties. A military program has also been planned.

## NEW YORK

**Cancer Teaching Day**—On October 7 a cancer teaching day will be observed at the Homer Folks Tuberculosis Hospital, Oneonta, under the auspices of the Medical Society of the County of Otsego, the Sixth District Branch of the state medical society, the Tumor Clinic Association of the State of New York, the division of cancer control of the state department of health and the state medical society. Speakers will include Drs. Norman Treves, Hempstead; on 'The Care of the Incurable Cancer Case'; Gray H. Twombly, New York, 'Cancer of the Cervix'; and Chevalier L. Jackson, Philadelphia, 'Cancer of the Larynx, Bronchi and Esophagus'. At the evening session Drs. Andrew H. Dowdy, Rochester, and George N. Scatchard, Buffalo, will discuss 'Cancer of Face and Lip' and 'X-Ray Aspects of Bronchogenic Carcinoma' respectively.

## New York City

**Hospital News**—Direction of all medical teaching in the New York Eye and Ear Infirmary was taken over by the Columbia University College of Physicians and Surgeons on July 1.

**Faculty Changes at Long Island College**—Dr. Howard W. Potter, clinical professor of neurology and psychiatry, and Nicholas B. Drever, M. A., associate professor of pharmacology, have been granted full professorships at Long Island College of Medicine, Brooklyn. Dr. Dorothy Loomis has been named assistant professor of pathology; this appointment is said to be the first in the history of the medical school in which a woman has been named an assistant professor. Dr. Loomis has held the Van Cott Fellowship in pathology at the school since 1936 and has been an instructor since 1938.

**Facial Reconstruction Clinics Urged for Civilians**—In discussing a new facial reconstruction program under army sponsorship, Nathaniel A. Olinger, DDS, in charge of the maxillofacial and surgical prosthesis department, School of Dental and Oral Surgery, Columbia University, advocated the immediate establishment of publicly supported clinics throughout the country to care for facial rehabilitation work. For the past six years Columbia University has been operating the only clinic of this kind, he said. New patients there are usually referred to psychiatrists who try to restore their confidence.

## NORTH CAROLINA

**Changes in Health Officers**—Dr. Douglas H. Fryer, Leaksville, has resigned as the first full time health officer of Rockingham County to take over the city and county health activities in Bay City, Mich. He will be succeeded by Dr. Benjamin M. Drake, Carthage.—Dr. Phares Y. Greene, Graham, has resigned as health officer of Alamance County, effective August 1, to devote his full time to private practice.

**Second Treatment Center for Venereal Disease Planned**—Arrangements are under way for the opening of a rapid treatment center in Durham, the second of its kind in the state (THE JOURNAL, August 7, p. 1024). Admissions are now being made at the first clinic in Charlotte, which will receive white and colored women only. Men will be admitted at Durham and those patients with treatment-resistant gonorrhea. At Charlotte preference will be given patients who are prostitutes, transients or uncooperative or who for other reasons cannot be satisfactorily treated in local clinics. All admissions will be channeled through county health officers. Patients will be admitted from all sections of the state at no cost to them.

## OKLAHOMA

**Wards for Poliomyelitis**—Two wards of the University of Oklahoma School of Medicine Crippled Children's Hospital, Oklahoma City, have been set aside for the use of poliomyelitis patients. Dr. Charles M. Bickstein, formerly resident in pediatrics, University Hospitals, medical adviser of the Oklahoma Commission for Crippled Children, is working with Dr. Carroll M. Pounders and Dr. Don H. O'Donoghue, who are in direct charge of the poliomyelitis patients in the hospital.

**Personal**—Donald B. McMullen, Sc.D., associate professor and head of the department of hygiene and public health and associate professor of bacteriology, University of Oklahoma School of Medicine, Oklahoma City, was selected by the committee on the teaching of tropical medicine of the Association of American Medical Colleges to go to Central America during the month of September to observe methods of tropical disease control. Dr. McMullen was to spend about three weeks at a United Fruit Company Hospital and at least a week with the local field unit of the Office of the Coordinator of Inter-American Affairs.—Dr. James D. Osborn Frederick has been appointed a member of the National Board of Medical Examiners for a term of six years.

## PENNSYLVANIA

**Dr. J. Moore Campbell Named Deputy State Secretary of Health**—Dr. John Moore Campbell, Jr., former director of health conservation, has been appointed deputy state secretary of health in charge of medical affairs. Dr. Campbell has been a member of the state health department for many years. In 1911 he became pathologist in the state department's Philadelphia laboratory and three years later moved to Harrisburg to be in charge of communicable disease control work.

**District Meeting**—The Second Council District of the Medical Society of the State of Pennsylvania held its annual meeting at the Berkshire Hotel, Reading, September 8. A feature of the meeting was the presentation of fifty-year testimonial certificates to Drs. Harvey F. Scholl, Prospect Park, George C. Webster, Chester, Charles H. Schoff, Media, and George F. Seiberling, Allentown. The speakers on the program included:

Dr. George P. Muller, Philadelphia: Surgical Treatment of Bronchiectasis.  
Dr. Robert L. Underon, Pittsburgh: Our State Medical Society During Wartime.  
Dr. Augustus S. Keck, Altoona: Is Medicine Drifting Toward a Socialistic System?  
Dr. Walter F. Donald, on Pittsburgh: Balancing Available Medical Service Between Armed Forces and Civilian Population.  
Dr. Chauncey L. Palmer, Pittsburgh: Recent and Pending Health Legislation.

The county medical societies of Berks, Bucks, Chester, Delaware, Lehigh and Montgomery are included in the second district.

## Philadelphia

**Hospital Award for Staff Members**—Dr. Rudolph Winston recently received the first annual award as the outstanding member of the staff of Mercy Hospital. The award, consisting of a scroll, was established by the hospital staff to honor a member who in their estimation had been the most outstanding during the previous year. Dr. Winston was selected for the first award on the basis of the fact that for the past two years he sacrificed his lucrative practice to give full time in study at the Graduate School of the University of Pennsylvania. According to Dr. Henry M. Minton, director of the hospital, it was felt that the sacrifice which he made in order to improve his medical knowledge felt to be of great benefit to Mercy Hospital was worthy of commendation and public approval.

**Changes at Woman's Medical College**—New appointments to the faculty of Woman's Medical College of Pennsylvania include those of Dr. Calvin M. Smyth, Jr., as clinical professor of surgery; Dr. Rubin M. Lewis, clinical assistant professor of surgery; and Dr. Miriam Bell Mount, Lebanon, Pa., clinical assistant professor of medicine. Promotions at the school include:

Reberta Hafke, B.S., Ph.D., professor of physiology.  
Dr. Eunice L. Stockwell, M.D., professor of obstetrics and gynecology.  
Dr. William T. Lemmon, M.D., clinical professor of surgery.  
E. Frances Stilwell, Ph.D., associate professor of anatomy.  
Dr. Charles F. Bule, M.D., clinical assistant professor of surgery.  
Dr. Margaret DeRonde, M.D., assistant professor of pediatrics.  
Dr. Margaret K. Hard, M.D., assistant professor of dermatology.  
Dr. Dorcas M. Kilian, M.D., assistant professor of therapeutics.  
Dr. Marion West, M.D., assistant professor of medicine.

## TEXAS

**Rockefeller Foundation Sponsors Lectures on Psychosomatic Medicine**—Dr. Jacob S. Kasanin, assistant clinical professor of psychiatry, University of California Medical School, San Francisco, recently lectured on psychosomatic medicine at the various U. S. Army hospitals of the Eighth Service Command, under the auspices of the Rockefeller Foundation.

**Personal**—Dr. Edward H. Cary, Dallas, was recently chosen president of Group Hospital Service, Inc., of Texas to succeed the late J. H. Grosedose, D.D. Dr. Cary was formerly treasurer—The Woman's Auxiliary to the Smith County Medical Society gave a dinner in honor of Dr. Albert Woldert on July 21, observing his fiftieth anniversary in the practice of medicine in Tyler—Dr. Laurie Mackelchney, Fort Worth, was appointed July 20 as superintendent of the Wichita Falls State Hospital, succeeding Dr. Barton W. Dorbandt.

**Clinical Staff Named for Cancer Hospital**—According to the *Texas State Journal of Medicine* the board of regents of the University of Texas recently announced the appointment of the following Houston physicians, all of whom will serve without salary, as members of the clinical staff of the M. D. Anderson Hospital for Cancer Research: Drs. Judson L. Taylor, surgeon, John H. Foster, otolaryngologist, Everett L. Goar, ophthalmologist, Herbert T. Hayes, proctologist, Joseph B. Foster, orthopedic surgeon, Robert A. Johnston, obstetrician, Benjamin Weems Turner, urologist, James Greenwood, neurosurgeon, Culver M. Griswold, dermatologist, Moise D. Levy, physician, David Greer, pediatrician, Ernst W. Bertner, gynecologist, and Fred C. Elliott, D.D.S., stomatologist. Experimental work has been under way at the old Baker Home, 2310 Baldwin Avenue, Houston. New clinic buildings are now under construction on the site (*THE JOURNAL*, August 21, p. 1197).

## GENERAL

**Board of Pediatrics**—The American Board of Pediatrics will hold its written examination locally under a monitor, Feb. 4, 1944. The oral examination will be held in Philadelphia on March 25-26 and in San Francisco on May 6-7.

**Fire Prevention Week**—The week starting October 3 has been designated by President Roosevelt as "Fire Prevention Week." In a statement to the press the President is reported to have said that the war program is menaced by an alarming increase in preventable fire losses. "These preventable fires," he said, "are being measured in thousands of workers killed and disabled, vast destruction of critical raw materials, food and other vital supplies for our armed forces and civilian population, the ruin of war plants, factories, homes and machinery—in many cases for the duration of the war."

**Mrs. Milligan Named to Head Women's Field Army**—Mrs. Lucy R. Milligan, New York, formerly director of the women's division of the National Association of Manufacturers, has been appointed national commander of the Women's Field Army of the American Society for the Control of Cancer, 350 Madison Avenue, New York. Mrs. Milligan, who has been a member of the national advisory board of the Women's Field Army since its organization in 1935, is president of the National Council of Women. Dr. Florence Rena Sabin, Denver, who was recently elected a director of the American Society for the Control of Cancer, was chosen an honorary national commander of the Women's Field Army.

**Accidental Deaths Increase**—A total of 3,991 accidental deaths for twenty-one reporting states was reported during the first six months of 1943. The National Safety Council states that this indicates only a 3 per cent increase despite increased employment and high speed production. Of the fourteen states showing increases the four recording increases of more than 50 per cent were Alabama, Arizona, Texas and Missouri. Increases ranged from 3 per cent in New York and Oregon to 78 per cent in Arizona. The largest decrease in accidental deaths for the half year period were reported by Illinois and North Carolina, both of which had checked accidental deaths 22 per cent over last year's record.

**New Sustaining Members of Nutrition Foundation**—Abbotts Davies of Philadelphia and the American Lecithin Company of New York have become sustaining members of the Nutrition Foundation, New York, and Mr. C. R. Lindback and Mr. Adrian D. Joyce, president and chairman respectively of the two groups, have become members of the board of trustees. In a release, August 31, the Nutrition Foundation stated that it is now receiving \$237,000 annually from thirty-seven food and related manufacturers to support basic research in the science of nutrition. The foundation is supporting seventy

basic studies in thirty-eight institutions in the United States and Canada. Grants-in-aid amounting to \$302,840 have been paid to these institutions since the organization of the foundation, March 12, 1942.

**Regional Meetings of Chest Physicians**—The Pennsylvania chapter of the American College of Chest Physicians will hold its annual meeting at the Bellevue-Stratford Hotel in connection with the meeting of the Pennsylvania State Medical Society in Philadelphia, October 6. The New York State chapter will hold its fall meeting at the Hotel Biltmore, New York, October 15, with the following speakers among others:

Dr. Chevalier I. Jackson, Philadelphia, A Simple Bronchopulmonary Nomenclature and Its Clinical Application  
Dr. Richard H. Overholt, Brookline, Mass., Experiences with Pulmonary Resections in Pulmonary Tuberculosis  
Brig. Gen. Shelley P. Marietta, assistant surgeon general, U. S. Army, Washington, D. C., Rehabilitation of Military Personnel as Carried Out in the Army  
Dr. George G. Ornstein, New York, Idiopathic Spontaneous Pneumothorax, Incidence and Pathogenesis

Dr. J. Winthrop Peabody, Washington, D. C., president of the college, will be the guest speaker at a luncheon meeting. The Indiana chapter will hold its meeting in connection with the annual session of the Indiana State Medical Association at the Claypool Hotel, September 28. Herman E. Hilleboe, senior surgeon, U. S. Public Health Service, will speak on "Tuberculosis Control in Industry."

**Resolution Urges Abolishment of Communion Cup**—Announcement has just been received of a resolution adopted by the National Tuberculosis Association at its annual meeting in May recommending that the governing heads of church organizations that use the common communion cup adopt some method of "administering the sacrament that is in conformity with our knowledge of good hygiene and public health practice." The resolution was adopted unanimously and submitted to Bishop Tucker of the Episcopal Church for presentation at its annual convention in October. The resolution follows:

WHEREAS, It is a well established fact that one case of tuberculosis comes from another that the infectious agent, the tubercle bacillus, is contained in the sputum of those who have the disease and that this bacillus may be conveyed from mouth to mouth through the use of a common drinking cup,

WHEREAS, This menace to health has been recognized in most if not all, of the states by legislation prohibiting the use of the common drinking cup but notwithstanding certain church organizations continue to use the common communion cup in their services, therefore be it

Resolved That the Board of Directors of the National Tuberculosis Association at the annual business meeting held in St. Louis May 6, 1943 respectfully calls the attention of the governing heads of the church organizations that use the common communion cup to the danger of transmitting communicable diseases in this way and recommends that they adopt some method of administering the sacrament that is in conformity with our knowledge of good hygiene and public health practice.

**B Complex Award**—Nominations are solicited for the 1944 award of \$1,000 established by Mead Johnson and Company to promote researches dealing with the B complex vitamins. The recipient of this award will be chosen by a committee of judges of the American Institute of Nutrition. The award will be given to the laboratory (nonclinical) or clinical research worker in the United States or Canada who, in the opinion of the judges, has published during the previous calendar year January 1 to December 31 the most meritorious scientific report dealing with the field of the B complex vitamins. While the award will be given primarily for publication of specific papers, the judges are given considerable latitude in the exercise of their function. If in their judgment circumstances and justice so dictate, it may be recommended that the prize be divided between two or more persons. It may also be recommended that the award be made to a worker for valuable contributions over an extended period but not necessarily representative of a given year. Membership in the American Institute of Nutrition is not a requisite of eligibility for the award. To be considered by the committee of judges, nominations for this award for work published in 1943 must be received by the secretary, Arthur H. Smith, Ph.D., Wayne University College of Medicine, Detroit, by Jan. 10, 1944. The nominations should be accompanied by such data relative to the nominee and his research as will facilitate the task of the committee of judges in its consideration of the nomination.

## CANADA

**Honored for Study of Medical Care**—Science reports that Dr. Alfred Hardisty Sellers, medical statistician, department of health, Toronto, squadron leader, Royal Canadian Air Force, has been awarded the Professional Institute Medal of the Professional Institute of the Civil Service of Canada in recognition of the important contribution made by him in the study of hospital statistics in Ontario in connection with the cost of medical care.



## LATIN AMERICA

**Inter-American Congress of Radiology**—The first Inter-American Congress of Radiology will be held in Buenos Aires October 17-22 under the auspices of the Argentine Society of Radiology (Sociedad Argentina de Radiología). A tentative program includes the following speakers:

Drs. Sabina Di Rienzo Cordova, Argentina, and Dr. Luis Opazo, Chile. A Ray Diagrams of Spinal Injuries.

Drs. Carlos Butler, Montevideo, Uruguay, Leonardo Curziani, Chile, and Dr. Nelson Carvallo, Brazil. Cancer of the Breasts: Treatment and Results.

Drs. Pedro A. Múnera, Argentina, and Carlos Gomez, Colombia. Acute and Chronic Diseases of the Gastrointestinal Tract: Inflammation of the Jejunum, Dr. Muñoz, and Inflammation of the Colon, Dr. Gomez. Dr. Oscar Sofo, Peru. The Teaching of Radiology in America.

Dr. Quirino Codras Thompson, Paraguay, will present an exhibition of roentgenograms on stenosis of the duodenum and Dr. Cassio M. Vilhena, Brazil, a similar exhibition on stomach ulcer. Dr. José F. Merlo Gomez is president of the Argentine Society of Radiology.

**Health Activities in Latin America**—A mobile dispensary for workers of the Pan American Highway has been provided. The first unit was placed in operation during June under the direction of Dr. Carlos Portillo and has been serving chiefly the area around Cholutepec. Eventually three mobile units will be necessary for the entire highway in Honduras. The highway enters Honduras near the town of Goiscoran and passes from there through Nacaome, Jicaro Galán, Cholutepec and San Marcos de Colon, leaving Honduras to enter Nicaragua shortly after passing through this last town. The work of construction is being carried on by North Americans and Hondurans under the direction of various construction agencies.

**Society News**—Dr. Ruy Rolim was recently elected president of the Brazilian Society of Ophthalmology. Other officers are Drs. Paiva Gonçalves and Jonas Arruda, vice presidents, Lincoln Caere, secretary, and José Alves Ferreira, treasurer. At the annual meeting of the Medical Association of San Juan, P. R., recently Drs. José A. Seim and Guillermo Ruiz-Cestero were elected president and secretary, respectively, for the ensuing year.

**Hospital News**—The eleven story Hospital Militar Central was recently opened in Buenos Aires. It has a large capacity and modern equipment in the different departments of all branches of modern medicine.

**Scholarships**—*Reader's Digest* has awarded three scholarships for study on the Kennel method in poliomyelitis in the University of Minnesota to Miss H. Rodriguez Brizuela, Miss J. E. Stella and Dr. Julio R. Calcamari. The scholarships were awarded through the Department of Public Health of Argentina and the Instituto Cultural Argentino.

**Personal**—Dr. Bernardo A. Houssay, head of the Instituto de Fisiología of Buenos Aires, has been made a member of the Royal Medical Society of London. Dr. José de Filippi has been awarded the 1942 prize of the Academia Argentina de Cirugía for his article on "Surgery on Heart Infarct", the prize is given annually. Dr. Rogelio E. Carratal of Buenos Aires was recently appointed honorary member of the Academia Latino-Americana de Neurología, Psiquiatría y Medicina Legal of Brazil.

**Disease Control**—The discovery of 460 cases of yaws in Guapi, Colombia, launched the idea for a campaign against the disease. A drive on malaria is also under way.

**Social Security and Public Welfare Program Proposed**—At the first National Congress on Public Welfare in Mexico City recently Dr. Gustavo Baz, secretary of public welfare, stressed the importance of raising medical standards in the republic by the careful selection of students and adequate facilities for study and research. He also recommended greater specialization among graduates of medical schools and announced that the department of public welfare was studying plans for a medical center in Mexico City with facilities for specialized research and practice in certain diseases. Dr. Baz stated that the objectives of the program would include the modernization of existing hospitals and construction of new hospitals throughout Mexico making medical care available to small communities now lacking such services; the control of malnutrition and the award of scholarships and fellowships to medical students and doctors. In the field of child and medical care Dr. Rodríguez Cabo proposed a unified child welfare code to coordinate existing child welfare laws; organization of a Central Technical Council to draw up a child welfare plan on a national

scale; complete maternity care, wider instruction in dietetics and providing needy children with free milk and meals. She also recommended a national drive to make the country more conscious of child welfare problems and needs. Dr. Juan Comas urged the congress to adopt measures necessary to meet the specialized needs of Mexico's Indians. Resolutions approved by the congress include coordination of public welfare services federally administered through an amendment to the federal constitution if possible, creation of facilities for substantiating need for welfare services and keeping pertinent records, planning of antenatal care to reduce infant mortality rate, creation of a central medical committee, as part of the department of public welfare, and establishment of suburban and rural medical centers to instruct mothers and prospective mothers in child care and antenatal care, an active campaign against tuberculosis, creation of visiting nursing and obstetric services, and pediatric and child welfare instruction to midwives and nurses attached to the department of public welfare.

## FOREIGN

**Clinics for New Zealand**—The New Zealand government plans to establish health clinics in regions where groups of physicians are willing to operate such service, it was announced by Health Minister Arthur M. Nordmeyer, in the *New York Times*, July 1. It was stated that a salaried state medical service would be established if doctors wish to operate on that basis. Sixty-seven refugee doctors have received permits to enter the country and thirty-one are now practicing in New Zealand. It was reported that the government also proposes to establish a home nursing service and domestic aid service at the first opportunity.

**Health and Sanitation in Vichy**—A shortage of medical supplies in Vichy, France, are indicated in statements to the press, August 4. Castor oil, bismuth, horse serum, quinine and absorbent cotton are not available, bandages are mere improvisations; layers of absorbent paper supplanting the usual cotton. Several hundred thousand units of insulin donated by the United States in November 1942 served to lessen the critical need of the 30,000 diabetic persons in France. The increase in tuberculosis is attributed to the presence of the disease in repatriated prisoners, who, in view of inadequate hospital facilities are left in their homes thereby infecting their families. Lack of soap is a factor in the spread of certain diseases. Sheets in hotels are rinsed only in cold water and allowed to dry. Irons are not used because of need for fuel economy. At the Edward Heriot Hospital in Lyons it was decided to use mutton tallow as a substitute for grease, after more than two months' delay because of red tape it was delivered to the hospital in the form of a "huge lump of dirty crude suet." Hospitals through necessity must refuse admittance to all but the most critically ill; even fracture patients are reluctantly accepted because limited food resources do not meet the length of stay of the average fracture patient. The Swiss people have been caring for many of the undernourished children who have been able to take advantage of their offer of summer vacations.

## CORRECTION

**Toxic Eruption Due to Amphetamine Sulfate**—In the summary of the article with this title by Kauvar, Henschel and Ravin in *THE JOURNAL* August 14 page 1073 it was stated in the summary that "an atopic dermatitis eruption resulted from the ingestion of amphetamine sulfate and its analogue dextroamphetamine sulfate." This sentence should have read "an atopic dermatitis-like eruption resulted from the ingestion of amphetamine sulfate and its analogue dextroamphetamine sulfate."

## Government Services

### Dr. Heller Named in Charge of Division of Venereal Diseases

John R. Heller, Jr., P. A. Surgeon with the States Relations Division, U. S. Public Health Service, Washington, D. C. since April 1941, has been assigned in charge of the division of venereal diseases in the Office of the Surgeon General. He succeeds Dr. Raymond A. Vonderlehr, who has been named director of district number 6 of the public health service covering Puerto Rico and the Virgin Islands (*THE JOURNAL*, August 14, p. 1138).



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

July 22, 1943

#### Centenary of the Fellowship of the Royal College of Surgeons

The centenary of the foundation of the fellowship of the Royal College of Surgeons has been celebrated by a reception given by the president and the council. The distinguished company included ambassadors of the allied nations, members of the government and many foreign surgeons whom the war has brought to our shores. The award of the honorary fellowship to the following foreign surgeons was announced: Sir Hugh Deane, Melbourne, Prof A T A Jurasz, Poland, Prof N Burdenko, chief surgeon of the Soviet army, Prof S S Yudin, Moscow, Col E C Cutler, Harvard, Prof W G Penfield, McGill, Prof E A Graham, St Louis, Prof R B Osgood, Harvard, Prof N S Shenstone, Toronto, Prof N Mahfouz Pasha, Cairo, Prof I W Brubner, Witwatersrand. Admitted to honorary fellowship at the reception were Col J M Holst, Norwegian army, Col J A Macfarlane, consulting surgeon to the Canadian army, Prof H C Naffziger, San Francisco.

In his address the president, Sir Alfred Webb-Johnson, said that the amenities of the college had been destroyed by the enemy and they were grateful for the great hall of Lincoln's Inn being placed at their disposal. He then turned to "praise famous men and our fathers that begot us." Of such were John of Arderne, Thomas Morstede, Wiseman, Vicary, Ranby, Cheselden, Pott, Abernethy, Astley Cooper, Bell, Hilton and Paget. Towering above all were John Hunter, the founder of scientific surgery, and the immortal Lister. Benjamin Brodie founded the fellowship, and the by-laws governing it were so well laid that they needed little revision during the hundred years. Referring to the prime minister, Winston Churchill, on whom the honorary fellowship had recently been conferred, he said that when the history of our time comes to be written he will be judged worthy of the tribute paid to Lister by the American ambassador, Mr Bayard: "It is not a profession, it is not a nation, it is humanity itself which, with uncovered head, salutes you."

A message was received from the king as visitor of the college. He sent congratulations and expressed satisfaction on the conferring of the honorary fellowship on distinguished surgeons from the dominions and allied countries. He trusted that the plans for the restoration of the unique museum will be carried out soon after the war. In his reply the president assured the king that the fellows will be untiring in their efforts to restore the museum, toward which they have received the most generous promises of help from all parts of the empire. The steps already taken to restore this greatest museum of anatomy and pathology in the world have been described in previous letters. Some of the losses due to bombing are irreparable.

#### War Troubles of the British Medical Journal

In the annual report of the council of the British Medical Association it is stated that the *Journal* has continued to appear regularly though the difficulties of production and distribution increase as the war goes on. Paper is severely rationed, and because the main part of each weekly issue of nearly forty-five thousand copies has to be sent to members, whose numbers are steadily growing, it is impossible to make any substantial economy by cutting the circulation. The only way to eke out

the ration is to use paper of less weight, to cut down advertisements and text and to print in smaller ranges of type. All these methods have been adopted and little more can be done except to trim the paper margins. The varied needs of the profession in wartime cannot be covered adequately in a journal with a large obligatory circulation by much less than half its peacetime number of pages. This seems to be understood by members, who have noticed other newspapers and periodicals shrinking in size year by year and employing every device to save paper and get more print on a page. It is perhaps less well realized that the number of articles submitted to the *Journal* is now as large as before the war and that the inflow of weekly correspondence has surpassed all previous experience. The task of selection is therefore harder and more invidious than ever. Meanwhile the Ministry of National Service has drawn away experienced workers from the editorial and business departments and from the printing works, and further staffing difficulties must be expected. The most that the council can promise is that everything possible will be done to produce a journal which maintains its place among the leading medical periodicals of the world and promotes the profession's war effort.

#### Food Changes Due to the War

Dehydrated cheese, mixed with potato flour and compressed into blocks, was among the new forms of food mentioned by Sir John Bodinnar, commercial secretary to the Ministry of Food, in describing the saving of precious shipping space by "putting food into battle dress." Last year we saved 41 million cubic feet of space by importing boned, molded and telescoped carcasses of meat, 22½ million cubic feet by importing dried instead of shell eggs, 1 million cubic feet by importing milk powder instead of canned condensed milk. These figures represent a saving of 750,000 ship tons. Other developments were a more compact form of importing bacon from the United States by using bales instead of wooden boxes, and using chests made of jute fiber instead of plywood for importing tea.

This season for the first time peas are being dehydrated. They keep well and are less bulky than canned peas and therefore more economical to transport. When water is added they appear like freshly gathered peas. Like dehydrated cheese, their production so far is earmarked for the fighting forces. So also are dehydrated potatoes prepared by a new process. All these new methods of treating foods have been introduced as part of the war effort but have considerable postwar possibilities.

#### Streptococcic Myositis

Gas gangrene is regarded as due to anaerobic spore bearing bacilli, which infect and destroy muscle. The war wounds in the Middle East have brought to light a rare condition, streptococcic infection of muscle in wounds, which has to be distinguished from ordinary gas gangrene as the treatment is quite different. Attention to this condition is drawn in the *Army Medical Department Bulletin* for June. From the autumn of 1941 to the autumn of 1942, not including the second battle of El Alamein, 19 cases were observed. The distinction of streptococcic myositis from ordinary gas gangrene rests on the following points: 1 Cutaneous erythema is usually well defined and there is more discoloration of skin than of muscle, in gas gangrene the opposite generally holds. 2 The discolored muscle is of coppery color but does not have the boiled and congealed appearance of typical gas gangrene, further, the muscle is alive and will react to stimuli. 3 The smell is neither so pungent nor so sweet as in gas gangrene. 4 Films of muscle stained by Gram's method show many streptococci and pus cells. In gas gangrene a few cocci may be found among the bacilli associated with clostridial gas gangrene, but the picture in streptococcic

myositis is quite different in that the streptococci are either present alone or in much greater numbers than any other organisms. The anaerobic streptococci appeared to be an essential factor, but the accompanying organisms determined the exact clinical picture. These were found in every case, most often either ordinary aerobic *Streptococcus pyogenes* or *Staphylococcus pyogenes*. The *Streptococcus pyogenes* infections were the most acute and cutaneous erythema was a prominent feature. The *Staphylococcus pyogenes* infections were somewhat insidious, and a white boggy edema was often found. Five of the 19 patients died from a progressive toxemia, sometimes accompanied by streptococcal septicemia.

The essentials of successful treatment are large doses of sulfonamides locally and by mouth combined with conservative surgery, such as skin incisions and exposure of the affected muscle. Bad results have followed more radical treatment. Hence the great importance of distinguishing the condition from ordinary gas gangrene.

#### A Charter for Midwives

The concern felt at the falling birth rate has directed attention to the importance of skilled service in childbirth. There is a shortage of midwives. A Midwives Salaries Committee appointed by the Ministry of Health has presented its report which recommends that national scales of salary shall apply to certified midwives employed in hospitals, maternity homes or domiciliary service. Important proposals are also made as to uniform, accommodation, hours of duty, holidays with pay and sick pay. At present midwives deliver two thirds of the 600,000 babies born in England and Wales and act as maternity nurses under a doctor's direction at most of the remaining cases. Legislation during the present century has placed midwifery on a sound professional basis and has done much to improve the status of the midwife. Notwithstanding this the midwife has no protected uniform of her own. The provision of a national uniform would contribute to her public standing. On the whole the prospects of midwifery as a profession compare unfavorably with those of nursing. For some years there has been a shortage of midwives, and this has been aggravated by the war creating a vastly increased demand for nurses which has caused many midwives also qualified as nurses to take up this occupation. The committee recommended national scales of increased salaries which have been accepted. A pupil midwife will receive a salary of \$200 for the first year, \$225 for the second year and until she has passed her first examination, and \$300 after she has passed until she has completed her training. A trained midwife will receive a salary which with emoluments will be worth \$1050 and will rise annually by increments of \$25 to \$1250. The higher positions of superintendent midwife, assistant matron and matron will receive more culminating in \$2750.

#### Vitaminized Chocolate for Freed Europe

There is less chocolate for the public because a large part of the manufacturers have gone over to making vitaminized chocolate for distribution in Europe when freed. It will be specially for children from 7 to 14 years of age. It is being made in bars of 1 ounce weight which will provide the greater part of the day's requirements of vitamins A, B, C and D. Their efficacy has already been proved in Malta. When Dr J. C. Drummond, scientific adviser to the Ministry of Food visited Malta after its resistance to siege and bombing he found the nutrition of the children such that he recommended that supplies of vitaminized chocolate be sent. During the war many experiments have been made to discover the best medium for vitamin. Biscuits, sweets and spreads of all kinds have been tried and chocolate has been found the best for providing vitamins in a palatable and acceptable form. Vitaminized chocolate will not be on sale here but the War Office has ordered large quantities.

#### BUENOS AIRES

(From Our Regular Correspondent)

July 25, 1943

#### Attempt at Antiplague Vaccination with Living Bacteria

An outbreak ofylvatic plague appeared in Cordoba in the fall of 1940. Rodents were found to play an important part in the spread of the epidemic, which up to now has not been entirely controlled. Well organized brigades appointed by the National Department of Hygiene are carrying on an active campaign against plague. Dr J. K. Goobar vaccinated 30 persons of both sexes against plague (29 adults and a child aged 8 years). He used a vaccine of the Girard type, the same as that which was tried in Java and Madagascar. The vaccine used in Java and Madagascar did not cause any accidents, whereas both morbidity and mortality from plague were greatly diminished. The vaccine is prepared with a strain of *Pasteurella pestis* which was isolated by Girard from a patient with ganglionic plague in Madagascar. The virulence of the strain was attenuated by successive passages in nutrient agar at 22 C. A suspension of the living attenuated strain in isotonic solution of sodium chloride with a concentration of 1 billion bacteria for each cubic centimeter of the suspension was prepared and maintained at a constant temperature above 4 C and administered at a dose of 1 cc for adults and 0.5 cc for the child. The vaccine was well tolerated and followed by a mild local reaction with mild fever and, in some cases, mild axillary adenopathy. The president of the Provincial Department of Hygiene ordered the appropriate provincial and medical authorities to undertake a mass vaccination on the persons living in the endemic districts in the near future.

#### Conference on Tuberculosis in Peru

The first National Conference of Tuberculosis was recently held in Lima, Peru. Dr M. Espinoza Galarza, the president of the Peruvian Society of Phthisiology, presided. Topics discussed were indexes of infection, morbidity and mortality of tuberculosis in different regions of Peru, social factors involved in the development of the disease, clinical forms of tuberculosis in patients in dispensaries and hospitals, and surgery in pulmonary tuberculosis.

The incidence of infection was discussed in fourteen articles which were prepared with the reports of observation of 170,000 persons. The average index of tuberculous infection was 60 per cent for adults of either sex and 53 per cent for children from birth to the age of 16 years. The partial indexes of the three geographic zones of Peru are similar which shows that the Peruvian population is in a progressive and massive stage of the infection. There was an index of from 3 to 5 per cent of active tuberculosis in apparently normal persons. An average index of tuberculosis mortality could not be determined on account of local difficulties in obtaining the data. One can conclude from the reports of the three geographic zones of the country that the various factors of nutrition, housing, local crowding of the population, salary migration of the people and the local condition of hygiene and sanitation in the different zones are the causes of the degree of tubercularization in the country. The attention of the Peruvian phthisiologists was directed to the advisability of accepting the classification of the clinical forms of pulmonary tuberculosis presented by the members of the chair of phthisiology of the Faculty of Medicine of Lima. Resolutions were adopted (1) to establish a general board in charge of the national antituberculosis crusade with autonomic authority for the necessary technique and administrative steps (2) to organize centers for carrying on national x-ray photographic and tuberculin censuses for an early diagnosis of tuberculosis (3) to ask the proper authorities to

increase construction of hygienic and inexpensive houses using the fund which has been built up by the workers and employees, (4) to consider alcoholism a social scourge and a factor of importance in the development of tuberculosis, (5) to prepare some laws for improving both the quality and the quantity of milk, for controlling the sanitary conditions of stables and for supervising the health of cows, (6) to increase the functions of antituberculosis organizations for protecting children and the number of nutritional centers and antituberculosis hospitals, clinics and dispensaries, (7) to establish maternity hospitals for tuberculous mothers and nurseries for their children, (8) to increase the number of beds available for tuberculous patients in hospitals, (9) to establish the use of record books to be presented for the patients when medical care and medicine from dispensaries are wanted (10) to create new postgraduate courses of specialization in antituberculosis medical and surgical fields and to improve those which are already functioning, (11) to create an institute for phthisiologic researches, improving social work and giving dental care to those in need of it, (12) to ask for laws through which parents who abandon their children shall face punishment for social delinquency, (13) to improve the personnel concerned with the preparation of tuberculosis statistics, (14) to establish an insurance against tuberculosis, as it was advised to do it in the 1940 national antituberculosis week, and (15) to obtain the philanthropic, economic and moral aid of the people

#### Reticuloendothelial System in Malaria

Drs M A Maldonado and J R Monasterio recently lectured before the Society of Legal Medicine and Psychiatry of La Plata. They were mainly concerned with the role of the reticuloendothelial system in the result of malarial therapy. Malaria stimulates a reaction of defense of the reticuloendothelial system, which is shown by the appearance of monocytosis and the results of the congo red test and other similar tests. The results of malaria therapy depend on the degree of reticuloendothelial reaction. The authors carried on observations on several patients in the course of malarial therapy. They believe that the modifications of the blood constitution, the microscopic changes of Kupffer's cells and the microglial reaction on the one hand and the results of the red congo test and other similar tests allow one to evaluate the degree of defensive reticuloendothelial reaction in malarial therapy. They also discussed the possibilities of therapeutic application of the reticuloendothelial reaction in other diseases, such as leprosy and leukemia.

#### Cancer Mortality in Buenos Aires

Dr Angel H Roffo, head of the Instituto de Medicina Experimental para el Estudio y Tratamiento del Cancer, recently published statistics on mortality from cancer in Buenos Aires in relation to morbidity. There were 4,084 deaths from cancer in 1941, which represents 162.80 for each hundred thousand persons in the city. Cancer of the respiratory tract increased from 148 cases in 1926 to 742 in 1941. Dr Roffo believes that the increase depends on the atmospheric changes due to exhaust gases from cars and smoke from industrial plants. Cancer is more frequent in parts of the body exposed to the sun than in those which are protected by clothing. The highest figures are those for cancer of the nose (37.43), those for cancer of the forearm were 0.25.

#### New Hospital

The 750 bed Juan A Fernandez Hospital was recently opened in Buenos Aires at a cost of 4,000,000 Argentine pesos. There are sixteen operating wards. It is air conditioned. Portable microphones and amplifiers are available. There are several halls with a room accommodating 200 persons waiting for consultation.

#### Tuberculosis in Uruguay

Dr Armando Sarno is head of the Servicio de Lucha y Preservacion Antituberculosa of Uruguay. X-ray examinations of the thorax were carried out on 134,209 persons in Montevideo. Tuberculous shadows were seen in 13.4 per cent of the films. The frequency of tuberculosis in various districts of the city varied between 8 and 20.9 per cent. There are several antituberculosis centers, hospitals, clinics and colonies for tuberculous patients in the country, yet the distribution is uneven. Dr Sarno believes that in Montevideo no less than 3,000 beds for tuberculous patients should be available.

#### Congress of Industrial Physicians

The convention of industrial physicians which was organized by the Instituto Argentino de Seguridad took place recently at the headquarters of the Liga Argentina contra la Tuberculosis. The topics discussed were brucellosis, prevention of brucellosis, dermatosis in oil workers, importance of dermatology in industrial medicine, hypodermotrichosis, dermatitis caused by carrot juice and by pancreatic enzymes, heart diseases in relation to selection of workers and mercurialism.

#### Personals

Dr Ramon Carrillo was recently appointed to the chair of neurosurgery at the Faculty of Medicine of the University of Buenos Aires to fill the vacancy left by Dr M Balado, who died.—Dr Charles E Oberling of the Public Health Service of New York recently visited Buenos Aires.—Dr Rogelio Carratala was recently appointed president of the chapter of legal medicine of the Academia Latino-Americana de Neurologia, a member of the same academy in Brazil and a member of the American Council for Research on Problems of Alcohol.

#### Brief Items

The first Inter-American Congress of Roentgenology will be held in Buenos Aires during one of the last two weeks of October. The headquarters of the Committee on Organization is Calle Alsina 3317, Buenos Aires, Argentina.

### Marriages

RANSOM RUSSELL BUCHHOLZ, Georgetown, Texas to Miss Virginia Barrere of Nashville, Tenn., at Columbia, S C, August 2

HENRY BAKER PERRY JR., Baltimore to Miss Lillie A Brown of High Point, N C, at Boone, N C, August 6

MAX K MOULDER, Nashville, Tenn., to Miss Marcella Grace Castle of Kansas City, Mo., at Dallas, Texas, June 27

CHARLES GORDON SMITH III, Rocky Mount, N C, to Miss Ethel Mervyn Jarvis at Lansdown, England, July 17

JULIUS KATZ, Grafton, Ill., to Miss Kathryn Kuhn of Fort Wayne, Ind., at Columbus, Ohio, August 11

RICHARD CULLER HORGER, Eutawville, S C, to Miss Mary Elizabeth Smith in Greenwood recently

BRODIE C NALLE JR., Charlotte, N C, to Miss Carolyn J Woolley in Maplewood, N J, June 26

HORACE MILTON DALTON, Norton, Va., to Miss Lalla Lee Laffitte of Estill, S C, August 10

LENORE VIRGIE LEE PATRICK to Mr Everett Chipman, both of Williamstown, Ky., August 21

CHARLES L TINKER to Mrs Mary B Sharp, both of New Philadelphia, Ohio, August 12

JEAN TODD STOOPS, Wabash, Ind., to Miss Margaret E Mohrley of Cincinnati, June 26

FRANK SMITH LOVINGOOD, Maryville, Tenn., to Miss Martha Ijams at Knoxville, July 17

ELLIS D PARKER, Laurel, Miss., to Miss Antoinette Marie Rivard of Detroit, July 18

THOMAS J McDONNELL, Sterling, Ill., to Miss Eileen O'Donnell of Chicago, August 7

## Deaths

**Aleš F Hrdlicka**, noted anthropologist died at his home in Washington D C September 5, of heart disease.

Dr Hrdlicka was born in Humpolec, Bohemia March 30 1859. He graduated at the Eclectic Medical College of the City of New York in 1892 and the New York Homoeopathic Medical College and Hospital in 1894. Subsequently he carried on surveys among the insane and other classes and made anthropologic expeditions to many countries.

In the interim of his service as associate in anthropology at the New York State Pathological Institute from 1896 to 1899, Dr Hrdlicka spent a year in the study of anthropology at the Sorbonne in Paris. In 1903 he was appointed assistant curator of the division of physical anthropology at the National Museum or the Smithsonian Institution in Washington. From 1910 to his retirement in 1942 Dr Hrdlicka was curator.

Many awards went to Dr Hrdlicka during his career. Among his activities were his service as secretary of the committee on anthropology for the National Research Council 1917-1918. He was a life member of the American Academy of Arts and Sciences. In 1925-1926 he served as president of the American Anthropology Association and during 1928-1929 as president of the Washington Academy of Sciences. He was founder, president and life member of the American Association of Physical Anthropology and corresponding member of many European anthropologic societies. In 1927 he was Huxley medal lecturer in London on anthropology and related subjects.

Dr Hrdlicka had written extensively on his specialty. He was the founder of the *American Journal of Physical Anthropology*, serving as editor at the time of his death.

**John Lincoln Rothrock** of St Paul University of Pennsylvania Department of Medicine Philadelphia 1888 professor emeritus of obstetrics and gynecology at the University of Minnesota Medical School Minneapolis where he had been clinical instructor in pathology, clinical instructor in pathology and gynecology, assistant professor of gynecology, associate professor of obstetrics and gynecology and professor, formerly professor of obstetrics and gynecology at the University of Minnesota Graduate School specialist certified by the American Board of Obstetrics and Gynecology Inc member of the House of Delegates of the American Medical Association in 1921, from 1923 through 1926 and in 1928 member of the Central Association of Obstetricians and Gynecologists a founder and fellow of the American College of Surgeons assistant health commissioner in St Paul from 1896 to 1899 author of 'Ten Years of Obstetrics and Gynecology in Private Practice,' 1933 received the doctor of science from Gettysburg College in 1934 for many years on the staffs of St. Joseph's Hospital St. Luke's Hospital, Bethesda Hospital and the Ancker hospitals from 1921 to 1931 chief of the department of obstetrics and gynecology at the Wilder Dispensary and the Charles T Miller Hospital, where he died July 5 of periarteritis nodosa and acute atrophy of the liver aged 79.

**Morrow Duncan Brown** of Denver Northwestern University Medical School Chicago 1900 member of the American Academy of Ophthalmology and Otolaryngology and the American Laryngological Rhinological and Otolological Society major in the medical reserve corps of the U S Army not on active duty and served with the same rank during World War I on the staffs of the Childrens Mercy Presbyterian St. Joseph's and St. Anthony hospitals, Denver, and the Evangelical Lutheran Sanitarium Wheat Ridge, Colo, and the Porter Sanitarium and Hospital at one time physician for the Denver and Rio Grande Railroad aged 65 died July 1 of coronary disease.

**Stephen Hulbert Ackerman** of Major, U S Army retired Hollis N Y Columbia University College of Physicians and Surgeons New York 1911, served during World War I entered the medical corps of the U S Army as a captain in July 1920 retired in October 1928 under a special act was retired as a major in June 1930 formerly medical superintendent of the Fordham Hospital New York superintendent of the Coney Island Hospital Brooklyn, at one time associated with the U S Veterans Bureau Washington D C aged 57 died in the Brooklyn Hospital, July 2, of pituitary adenoma.

**Reed Brinsmade Bontecou**, Clifton Springs N Y College of Physicians and Surgeons New York, 1889, member of the Medical Society of the State of New York at one time secretary of the Rensselaer County Medical Society, served in the medical corps of the U S Army during World

War I formerly on the staff of the Marshall Sanitarium Troy at one time associated with the U S Veterans Bureau later known as the Veterans Administration in Boston and the U S Veterans Bureau in Springfield, Mass., aged 78, died, June 18, of cerebral hemorrhage.

**Rufus Eldridge Applewhite**, Winnsboro La Memphis (Tenn) Hospital Medical College 1913 member of the Louisiana State Medical Society formerly secretary of the Franklin Parish Medical Society served during World War I director of the Franklin Parish Health Unit and acting director of the Concordia Parish Health Unit, aged 55 died, May 3, in the Winnsboro Sanitarium of coronary occlusion.

**Clarence John Bell**, Wellfleet Mass College of Physicians and Surgeons Baltimore 1902 member of the Massachusetts Medical Society, chairman of the board of health for many years a member of the school board trustee of the Wellfleet Savings Bank, acting assistant surgeon U S Public Health Service on the staff of the Cape Cod Hospital, Hyannis, aged 66, died June 6, of angina pectoris.

**Frank W Braley**, Saranac Mich Detroit College of Medicine, 1897 member of the Michigan State Medical Society, formerly president of the school board and health officer, aged 81 died June 15 in the Blodgett Memorial Hospital Grand Rapids, of arteriosclerosis.

**Laura Jane Brown**, Glendale Calif Hahnemann Medical College and Hospital Chicago 1903 aged 78, died July 1, of carcinoma.

**William A Bryant**, Antonito, Colo Kansas City (Mo) College of Medicine and Surgery, 1921 member of the Colorado State Medical Society on the staff of the Community Hospital, Alamosa aged 51 died May 31, in St. Joseph's Hospital Denver of congestive heart disease.

**Viola May Coe**, Portland Ore Woman's Medical College Chicago 1890 aged 80 died May 27, of cerebral hemorrhage and heart disease.

**Ernest Lee Collins**, Tyro Miss (licensed in Mississippi in 1911) member of the Mississippi State Medical Association, aged 67 died June 13 of cerebral hemorrhage.

**William M Copenhagen Jr**, of Helena Mont. University of Minnesota Medical School Minneapolis 1932 diplomate of the National Board of Medical Examiners formerly city health officer served on the staffs of St Peter's St. John and Shodair Crippled Children's hospitals aged 37 died May 23 as the result of an automobile accident in November 1941.

**John Christian De Fries**, Thawville Ill Rush Medical College Chicago 1894 member of the Illinois State Medical Society aged 81 died recently of coronary heart disease and arteriosclerosis.

**John Wesley Ferman** Emlenton Pa Jefferson Medical College of Philadelphia 1904 aged 63 died June 18 of cerebral hemorrhage.

**Samuel Isaac Fine** of New York Long Island College Hospital Brooklyn 1915 member of the staffs of the Bronx and Lincoln hospitals aged 54 died June 24 of myocarditis.

**Cary Breckinridge Gamble Jr** of Baltimore University of Maryland School of Medicine Baltimore 1887 formerly professor of medicine at his alma mater served in France during World War I formerly medical referee for several insurance companies aged 80 a member of the staff of the Union Memorial Hospital where he died June 1 of arteriosclerotic heart disease and chronic bronchitis.

**Henry Larkin Green** of Shreveport, La University of Pennsylvania School of Medicine Philadelphia 1914 medical examiner for the draft board on the staff of the Tri-State Hospital aged 63 died June 22 of coronary occlusion.

**J Glenn Hemington**, Uniontown Pa Cleveland Homeopathic Medical College 1901 member of the Medical Society of the State of Pennsylvania formerly medical director of Fayette County aged 69 died May 22 in the Uniontown Hospital of cerebral hemorrhage.

**Wiley Calvin Kennedy** Talmo Ga Atlanta Medical College, 1894 member of the Medical Association of Georgia aged 71 died May 20 of heart disease.

**Edward J Konop Sawyer** Wis Marquette University School of Medicine Milwaukee 1924 served during World War I recently resigned as an examiner for the Selective Service System aged 48 died in Sturgeon Bay, June 17, of acute yellow atrophy of the liver.

**Ruth Almina Kreitz** of Cambridge Springs Pa Woman's Medical College of Pennsylvania Philadelphia 1933 school medical inspector member of the board of the Crawford

County Tuberculosis Society, member of the staff of the Merdville City Hospital, aged 34, died, June 15, of myocardial failure and chronic glomerulonephritis

**John Milton Luther**, New Florence, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1908, served on the staffs of the Passavant Hospital, Pittsburgh, and the Ecc Homeopathic Hospital, Johnstown, aged 63, died, June 14, of coronary thrombosis

**Reginald E. Macdonald**, Virginia City, Nev., California Medical College Oakland, 1885, aged 81, died, June 13, in the Washoe County General Hospital, Reno, of myocarditis

**Donald R. MacLeod**, Wichita, Kan., Kansas City (Mo.) Homeopathic Medical College, 1899, aged 68, died, June 15, of carcinoma of the spinal cord

**William John Nicholson**, Centerville, Ala., Vanderbilt University School of Medicine, Nashville, Tenn., 1884, member of the Medical Association of the State of Alabama, president of the Bibb County Medical Society in 1887, served as probate judge of Bibb County for many years, aged 82, died June 18, of cerebral hemorrhage

**Henry Clyde O'Roark**, Portsmouth, Ohio, University of Louisville (Ky.) School of Medicine, 1926, member of the Ohio State Medical Association, served during World War I, on the staff of the Mercy Hospital, a member of the Portsmouth Rotary Club, aged 45, died, July 9, in the Veterans Administration Facility, Bay Pines, Fla.

**Charles Oliver Rainey**, Camilla, Ga., Atlanta School of Medicine, 1910, member of the Medical Association of Georgia, served as president of the Georgia Public Health Association, county health commissioner, aged 59, died, May 14, of cerebral hemorrhage

**Alice Mary Ridge**, Ogden, Utah, University of Michigan Homeopathic Medical School, Ann Arbor, 1909, member of the Utah State Medical Association, on the staff of the Thomas D. Dee Memorial Hospital, aged 66, died, June 9, of carcinoma of the pancreas

**George Jacob Rubelman**, Tecumseh, Neb., Rush Medical College, Chicago, 1880, member of the Nebraska State Medical Association, served as mayor of Tecumseh, county coroner, city physician, physician for the insanity commission and as a member of the school board, aged 89, died, June 2, of mitral insufficiency

**John Francis Sabbia**, Brooklyn, Fordham University School of Medicine, New York, 1918, member of the staffs of the Kings County, Shore Road and Victory Memorial hospitals, aged 47, died, June 19, of coronary thrombosis

**Sylvester Wright Saunders**, San Diego, Calif., American Medical College, St. Louis, 1877, aged 91, died, June 22, of senility

**Josiah P. Saye**, Ball Ground, Ga., University of Georgia Medical Department, Augusta, 1883, aged 83, died, May 21, of a fractured hip received in a fall

**Walter Gustav Adolph Schulte**, Salt Lake City, University of Colorado School of Medicine, Denver, 1907, member of the House of Delegates of the American Medical Association in 1934, member of the American Urological Association, fellow of the American College of Surgeons, specialist certified by the American Board of Urology, Inc., on the staff of the Holy Cross Hospital, aged 64, died, June 8, of coronary occlusion

**Alonzo Covert Smith**, Wooster, Ohio, University of Michigan Medical School, Ann Arbor, 1915, a charter member of the Rotary Club, past president of the Wayne County Medical Society, president and chief surgeon at the Kinney Memorial Emergency Hospital, aged 55, died, July 10, of coronary thrombosis

**Simon Harris Smith**, Atlanta, Ga., Emory University School of Medicine, Atlanta, 1928, aged 41, served on the staffs of the Georgia Baptist Hospital, Piedmont Hospital and the Emory University Hospital, where he died, June 3, of Hodgkin's disease

**Harry Clifford Stillwell**, Rahway, N. J., Jefferson Medical College of Philadelphia, 1925, specialist certified by the American Board of Radiology, Inc., medical examiner for

the public schools of Rahway, formerly city physician, president of the staff of the Rahway Hospital, aged 40, died, June 15, in Macon, Ga., of a self-inflicted bullet wound

**Eugene Finch Talbott**, Grinnell, Iowa, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1895, member of the Iowa State Medical Society, fellow of the American College of Surgeons, served on the staff of St. Francis Hospital, aged 69, died, June 24, of coronary thrombosis at his summer home near Jenkins, Minn.

**William De Alton Towsley**, Syracuse, N. Y., University of the City of New York Medical Department, 1881, member of the Medical Society of the State of New York, at one time coroner of Oswego County, member of the staff of the Crouse-Ingers Hospital, aged 86, died in the Marcy Hospital, June 9, of arteriosclerotic heart disease

**John Cox Wall**, Eastman, Ga., Atlanta College of Physicians and Surgeons, 1907, member of the Medical Association of Georgia and formerly councilor of the Third District, member of the Southeastern Surgical Congress and the American College of Chest Physicians, fellow of the American College of Physicians, also a pharmacist, owner of the Clinic Hospital, aged 60, died, May 18, of heart disease

**Harry Hugh Wilson**, Norman, Okla., Fort Worth School of Medicine, Medical Department of Fort Worth University, 1896, formerly medical superintendent of the Western Oklahoma Tuberculosis Sanatorium, Clinton, aged 76, died, June 4, in a hospital at McLester of pneumonia

**William Townes Wimbish**, Petersburg, Va., University of Virginia Department of Medicine, Charlottesville, 1896, aged 68, for many years on the staff of the Central State Hospital, where he died, June 4, of arteriosclerotic heart disease

**Isaac Dix Winston**, Sturgis, Ky., University of Nashville (Tenn.) Medical Department, 1900, member of the Kentucky State Medical Association, formerly local surgeon to the Illinois Central Railroad Company, a director of the Farmers State Bank, aged 69, died, June 25

**Charles B. Woodley**, Kinston, N. C., Bellevue Hospital Medical College, New York, 1886, aged 82, on the staff of the Memorial General Hospital, where he died, June 19, of myocarditis

**Willis George Youens**, Columbus, Texas, University of Texas School of Medicine, Galveston, 1907, served in the medical corps of the U. S. Army during World War I, health officer of Colorado

County for many years, formerly camp physician for the Civilian Conservation Corps stationed at Phoenix, Ariz., for many years local surgeon for the Southern Pacific Railroad, aged 59, died recently of coronary thrombosis



CAPT. ELPHEGE A. M. GENDREAU  
1888-1943, M. C., U. S. NAVY

#### KILLED IN ACTION

**Elphege Alfred Mailliot Gendreau**, Medical Director, Captain, U. S. Navy, Washington, D. C., Georgetown University School of Medicine, Washington, 1914, Navy Medical School, 1916, commissioned a lieutenant, junior grade, in the medical corps of the U. S. Navy in April 1916, with a previous service of eight months in the medical reserve corps, advanced through the various grades to that of captain in August 1939, had served aboard the U. S. ships *Sacramento*, *Boreas*, *West Virginia*, *Glacier*, *Charleston* and the *Relief*, served in the Philippine Islands and in Haiti with the Public Health Service, and at many naval stations including the Naval Medical School, Washington, D. C., Receiving Station, San Francisco, Receiving Station, Hampton Roads, Va., and the Navy Yards at New York and Norfolk, Va., fleet surgeon on the staff of the Commander-in-Chief, Pacific Fleet, since June 1941, fellow of the American College of Surgeons, held the Mexican Service Medal, the Victory Medal with Atlantic Fleet Clasp, the Navy Expeditionary Medal, 1931 and a decoration from Haiti, the Bureau of Medicine and Surgery named Gendreau Circle on the reservation of the new U. S. Naval Hospital, Dublin, Ga., in honor of his memory, killed in action in the South Pacific, July 21, aged 55

## Bureau of Investigation

### MISBRANDED PRODUCTS

#### Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE.—The notices of judgment are issued under the Food Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D D A I and foods F A I. The abstracts that follow are given in the briefest possible form: (1) the name of the product (2) the name of the manufacturer, shipper or consigner (3) the date of shipment (4) the composition (5) the type of nostrum (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

**A B D G Capsules Improved** (After repackaged in part and labeled *Hain Abdege Improved Vitamins*).—International Vitamin Corporation Brooklyn. Shipped July 11 1941. Adulterated and misbranded because the each represented to contain 200 U S P units of vitamin B<sub>1</sub> per capsule it contained not more than 1 1/3 such units per capsule. Also branded for the same reason. Also adulterated and misbranded under the provisions of the law applicable to food as reported in F A J 3721—[D D A J F D C 566 November 1942]

**Acetandyn Pain Tablets**—W. B. Goebel trading as Botanical Medicine Company Kannapolis N C. Shipped between June 7 and 10 1940. Composition no more than 0.99 grain of acetanilid and no less than 279 grains of aspirin per tablet. Adulterated because their strength differed from or their quality fell below the representation that each tablet contained 2 grains of acetanilid and 1 grain of aspirin. Also misbranded for this reason and because label failed to bear adequate warnings against unsafe dosage or methods or duration of administration necessary for protection of users and because wording on label *Pain Tablets* pains caused by menstrual disturbances men strual pains was false and misleading in representing the product to be efficacious in treating pains caused by menstrual disturbances whereas they were not—[D D A J F D C 476 September 1942]

**Adiron**—Lawrence Laboratories Chicago. Shipped between Feb 5 and March 7 1941. Composition each tablet contained an iron compound equivalent to approximately 0.7 grain of metallic iron and 67 U S P units of vitamin A. Adulterated because its strength differed from and quality fell below that which it was represented to possess namely 1200 U S P A units of vitamin A per tablet. Misbranded because of label misrepresentations of vitamin strength and false claim. This core is the concentrate of the vitamins equivalent in vitamins A and D to one-half tea spoonful of fresh U S P Standard cod liver oil. Also misbranded because of false and misleading label representations that the product would be efficacious in treating nutritional (secondary) anemia make new blood and improve and maintain the health. Further misbranded and adulterated under the law applicable to foods as reported in F A J 2986—[D D A J F D C 567 November 1942]

**Cravex**—Plant Products Company Inc. Burbank Calif. Shipped Feb 21 1941. Composition essentially calcium and manganese compound including phosphates with caffeine and milk sugar. Misbranded because labeling did not give proper directions for use since those that the package did bear were not adequate for the treatment of alcoholism for which the product was advertised. Further misbranded because labeling was false and misleading since the name *Cravex* was interpreted to mean treatment for craving for alcohol whereas the preparation did not constitute adequate treatment for that condition—[D D A J F D C 559 November 1942]

**Crawford's Formula 53 with Vitamin E**—Walter Bopp Eagle Rock Calif. and Crawford Foods Inc. Los Angeles. Shipped July 18 1940. Composition tablets containing plant materials largely alfalfa (lucerne) leaf and stem tissues with smaller amounts of other plant materials including tomato seed anise fennel capsicum celery seed a leafy material such as parsley and yeast. Misbranded because false representation in labeling to be efficacious in building blood supplying the necessary vitamins and minerals to the blood stream for restoring normal functions of the body mechanism maintaining tone of sacral nervous system helping preserve the sex power and high vitality through building up the entire glandular system benefiting cases of pale and livid complexion dry skin discolored gums transparent and waxy ears habitually cold feet decaying teeth pyorrhea and some other things besides relieving arthritis heart disease degenerative disorders and bladder liver and kidney troubles—[D D A J F D C 441 September 1942]

**DPS Formula No 54**—Dartell Laboratories Los Angeles. Shipped between July 7 and Aug 20 1941. Adulterated because its strength differed from and quality fell below that which it was represented to possess namely 1000 International Units of vitamin A 700 U S P A units of vitamin D and 100 International Units of vitamin C. Also misbranded for that reason and because of misrepresentations on

label that product would be useful in treating hyperacidity nervousness low blood calcium most types of indigestion pregnancy lactation of teeth and bones respiratory disorders asthma sinusitis and tuberculosis. Also adulterated and misbranded under provisions of law applicable to food as reported in F A J 2978—[D D A J F D C 606 November 1942]

**Germania Herb Tea**—Germania Tea Company Minneapolis and Consolidated Drug Trade Product Inc. Chicago. Shipped between Jan 15 and 22 1941. Composition senega leaves about 40 per cent and smaller proportions of other leaves bil seed stems and flowers including arnica flowers uva ursi leaves anise seed and cyanus flowers. Misbranded because direction in accompanying booklet to drink this tea with meals as needed for a few weeks were not appropriate for an article of its composition and hence inadequate because aforementioned bile and a separate leaflet represented that use of the tea would give the consumer a normal healthy and beautiful figure and that the product would be effective for relieving many bodily aches and pains would give regular elimination for a healthy stomach would be efficacious for stomach heartburns sour stomach vomiting loss of appetite and restlessness among many other conditions. Further misbranded because label did not give the common or usual name of each active ingredient or indicate which of the plant materials that it mentioned are physiologically or therapeutically active—[D D A J F D C 442 September 1942]

**Gid Granules—No 1 and No 2**—Eberly Williams Manufacturing Company Chicago. Shipped between April 9 and 17 1941. Composition No 1—essentially the mucilaginous part of psyllium seed with karaya gum sodium bicarbonate in proportions varying from 1.2 per cent to 8.2 per cent calcium carbonate in proportions varying from 0.79 per cent to 9.2 per cent a phosphate a sulfate and sugar. No 2—essentially the mucilaginous part of psyllium seed with karaya gum yeast and sugar. The No 1 was misbranded because label falsely claimed that 5 per cent of the product was calcium carbonate and another 9 per cent was sodium bicarbonate that the mixture was scientifically prepared so as to be of value in treating minor irritations of the stomach and upper intestines. The No 2 was declared misbranded because of false label claims for its alleged value in treating inflammation of the lower intestine and anal canal constipation. Both products misbranded because represented in accompanying circular as efficacious for relieving distressing symptoms in many cases of stomach disorders headache people nervous colitis and liver and gall deficiencies no due to infection—[D D A J F D C 443 September 1942]

**Gly Cas**—Gly Cas Medicine Company Muncie Ind. Shipped Nov 25 1940. Composition capsules each containing about 4.5 grains of plant material including aloe with a small amount of glycerin. Misbranded because label failed to warn sufficiently against unsafe dosage or methods or duration of administration such as are necessary for protecting the users or to caution the purchaser that continual or frequent use of the product might result in dependence on laxatives to move the bowels. Further misbranded because label falsely represented it as efficacious in treating muscular aches and pains poor digestion night terrors dizziness spells nervousness loss of pep and energy and some other conditions. Also misbranded because accompanying circular falsely claimed that Gly Cas contained no harmful drugs whereas the government contended that it was capable of causing harm. Misbranded finally because represented to have been on the market for twenty five years or more whereas it was essentially a preparation of aloe—a drug whose properties had been known for centuries and because the label statement *Compound of cinnamon aloe glycerin and licorice* did not indicate what was really the active ingredient—[D D A J F D C 444 September 1942]

**Shores Special Formula Tablets**—Shores Company Inc. Cedar Rapids Iowa. Shipped between Dec. 12 1939 and April 14 1940. These tablets were sold under three separate designation C T C T and S C Pink. Tablets in each group adulterated and misbranded in that their strength differed from or quality fell below that which they purported to possess namely C T was represented to contain 10 grains each of calcined magnesia and bismuth subnitrate whereas the actual amounts were respectively not more than 8.86 and 8.48 grains each. C T tablet was represented to contain kamala and extract of kamala equivalent to 9 grains of kamala and to contain 1/2 grain of nicotine, whereas the correct figures were respectively 8.81 grains of kamala and only 0.21 grain of nicotine. The S C Pink tablets purported to contain 1 grain of calcium iodized per tablet whereas the actual amount was no less than 1.95 grain—[D D A J F D C 606 November 1942]

**Williams Formulas (Regular and Strengthened)**—Williams S. L. K. Laboratories Milwaukee. Shipped July 26 1940. Composition Regular—essentially Rochelle salt (21.5 grains per fluid ounce) methanamine (5.2 grains per fluid ounce) iron and ammonium citrate (2.4 grains per fluid ounce) alcohol (3 per cent) water and extracts of plant drugs including a laxative one with nuxvomica and capsicum. Strengthened—essentially the same as the Regular except that the three ingredients named were given respectively as 0.2 grains of each and 3.8 grains per fluid ounce and the alcohol was given as 2 per cent. Misbranded because label directions were too general and hence unsuitable for articles of such composition in that they left too much to be left to the judgment. Further misbranded because label failed to warn sufficiently against unsafe dosage in that they did not caution the user against frequent or continued use of the article might result in dependence on laxatives. Misbranded further because label of the Regular form represented that the product would provide iron for the blood and an alkaline for excess stomach acid would be efficacious in treating constipation dizziness nausea and some other things and would help in bringing the user to a greater enjoyment of life and that the "Strengthened" form was a greater energy source—[D D A J F D C 444 September 1942]



## DANGEROUS TO HEALTH

## Because of Inadequate Warnings on Labels

[EDITORIAL NOTE—These abstracts differ from other abstracts of Notices of Judgment issued by the Food and Drug Administration of the Federal Security Agency which have appeared in these pages in that they deal with nostrums which were misbranded because their labels failed to carry adequate warnings against giving them to children or using them in those pathologic conditions in which they might be dangerous to health, or caution against unsafe dosages or methods or duration of administration or application, for the protection of the user. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

**Floracubes**—Eugene H. Hunter trading as Floracube Company, Los Angeles. Shipped March 9, 1940. Composition (claimed): "Floracubes contain per average dose (16 boxes) less than 2 grains each of calcium carbonate, sodium bicarbonate chlorides, podophyllum magnesium, phenolphthalein oil of juniper, boron buchu, sodium benzoate creosote iron and dextrin. Also mineral oil and jelly, agar and celluloses sugar, artificial color and flavor combined with free oxygen hydrogen and Ultra Violet. The above ingredients are combined with water under a special process to change their form and action to meet the requirements of Floracubes. (Additional ingredients present, less 1 Gr.) Manganese atom nitrates florides, sarsaparilla sulphates, calcium and silica." Misbranded because foregoing claims give false impression that the product "derived its physiological activity in important respects by reason of its lubrication bulk alkaline and germicidal qualities that it was nonirritating in action and might safely be used over a long period of time and that it contained the ingredients listed in significant amounts and that these ingredients were combined with water under a special process which changed their form and action whereas it derived its physiological activity practically if not entirely, from the ingredient phenolphthalein, which is irritating, it was not germicidal and could not be used over a long period of time without risk of injury and it did not contain the ingredients listed in significant amounts, since it contained no appreciable amount of any of the ingredients iron boron manganese, fluoride, sodium bicarbonate calcium as calcium carbonate, or sodium benzoate, and the ingredients were not combined with water under a special process which changed their form and action." Also misbranded because label did not give name and place of business of manufacturer, packer or distributor, or an accurate statement of the quantity of the contents prominently placed thereon. Further misbranded because fabricated from two or more ingredients and these were not listed under their common names on the label, which likewise did not indicate that phenolphthalein was the only important active ingredient. Finally, it was misbranded because label failed to give adequate directions for use and caution against giving it to children or using it in those pathologic conditions wherein it might be dangerous to health, or to warn against unsafe dosage or methods or duration of administration, for protection of users, since labels did not inform purchasers that employment of this treatment in cases of abdominal pain, nausea, vomiting or other symptoms of appendicitis might result in serious injury and that frequent or continued use might cause dependence on a laxative.—[D D N J, F D C 552, November 1942]

**Heads Up Headache Powders**—Smith Brothers Drug Company, Greensboro, N. C. Shipped Dec 10, 1940. Composition: the average powder contained 4.68 grains of aspirin, 6.62 grains of sodium bromide and 0.57 grain of phenolphthalein. Adulterated because strength differed from that represented, since each powder contained materially more of the several ingredients than amounts declared on label. Misbranded for the same reason and because of false and misleading label representations that use of this product would enable one to brace up or "go smiling thru" when suffering from any of the various disorders mentioned on label. Misbranded further because label claim, "contains no acetanilid, harmful or habit forming drugs," was false and misleading, since the mixture might cause potentially harmful effects and was not essentially different from or safer than various other products on the market or safe under all conditions, and actually did contain potentially harmful and habit forming drugs. Misbranded, also, because the term "Acidum Acetylsalicylic" is not the common name for aspirin and because label did not give adequate directions for use. Finally, misbranded because label did not adequately warn against use in those conditions wherein it might be dangerous to health or caution the user that it should not be taken when symptoms of appendicitis, such as nausea, vomiting or abdominal pain, were present, or that frequent or continued use might result in dependence on laxatives.—[D D N J, F D C 446, September 1942]

**Mackenzie Cold and Grippe Tablets**—C. E. Jamieson and Company, Detroit. Repackaged by Guy, Inc., Seattle. Shipped March 19, 1941. Composition: essentially acetanilid (0.94 grain per tablet), caffeine, aloin, atropine sulfate and capsicum. Misbranded because labeling failed to warn sufficiently against use by children or in those pathologic conditions wherein it might be dangerous to health, such as cases involving nausea,

vomiting, abdominal pain or other symptoms of appendicitis, and to caution against unsafe dosage or methods or duration of administration, for protection of users, since frequent or continued use of this acetanilid containing product might cause serious blood disturbances, anemia or collapse and its use might result in dependence on a laxative. Further misbranded because label recommendation as a treatment for a feverish condition, cough, hay fever, rhinitis, influenza and some other things was false and misleading because it was not an adequate treatment for those conditions. Misbranded also because each tablet did not contain 2 grains of acetanilid as claimed.—[D D N J, F D C 553, November 1942]

**Pieridine**—C. F. Breitenbach (Mucine Company), Chicago. Composition: essentially picric acid and eucalyptus oil incorporated in wool wax (lanum). Misbranded because label failed to bear name and place of business of manufacturer, packer or distributor, since designation "Ainsworth Specialty Co., Kansas City, Mo.," did not make clear this concern's connection with the product. Further misbranded because label did not give the common or usual names of active ingredients or the quantity of each. Also misbranded because labeling failed to warn against use by children, or in those pathologic conditions in which its employment might be dangerous to health, or caution against unsafe dosage or methods or duration of administration, for protection of user.—[D D N J, F D C 436, September 1942]

**Rogers Headache Soda**—Rogers Drug Company, Memphis, Tenn. Shipped Nov 7, 1940, and Feb 4, 1941. Composition: chiefly acetanilid and not soda as name suggested. Misbranded because of false label statement that each powder contained 2½ grains of acetanilid, whereas the amount of this drug was not more than 1.9 grains per tablet. Further misbranded because label did not bear adequate directions for taking and sufficient warning against use by children, or in those pathologic conditions wherein it might be dangerous to health, or caution against unsafe dosage or methods or duration of administration for protection of users.—[D D N J, F D C 453, September 1942]

**Sunshine Brand Powders**—Lavoine Drug Company, Worcester, Mass. Shipped Oct 5, 1940. Composition: acetanilid only ingredient reported. Adulterated because each powder purported to contain 2 grains of this substance, whereas the actual amount was approximately 3.158 grains. Misbranded because of absence of label warning against unsafe dosage or methods or duration of administration in a manner necessary for protection of users, since frequent or continued use might cause serious blood disturbances, anemia or collapse. Further misbranded because potentially dangerous if administered to children, though label did not so warn. Also misbranded because package did not bear a label giving accurate statement of quantity of contents in terms of weight or numerical count.—[D D N J, F D C 551, November 1942]

Council on Medical Education  
and HospitalsINTERN TRAINING FOR JUNIOR AND  
SENIOR MEDICAL STUDENTS

Hospitals approved for intern training will not lose their approved status if they accept for internships medical students who are now in the junior or senior classes at the following medical schools:

Bowman Gray School of Medicine, Winston-Salem, N. C.  
University of Utah School of Medicine, Salt Lake City  
Medical School of Southwestern Medical Foundation, Dallas, Texas

Bowman Gray and Utah have long been approved schools of basic medical sciences. Recently they have expanded into four year schools. Bowman Gray now has junior and senior classes in session, and Utah will soon start a senior class. Both these schools will be visited by representatives of the Council in the near future to consider transfer of these schools from the list of approved schools in the basic sciences to the list of approved four year medical schools.

The Council has ruled that, on graduation, present juniors and seniors at the Medical School of Southwestern Medical Foundation shall be considered as if they had graduated from an approved medical school. This school will also be visited by the Council's representatives before the end of the year to consider possible full approval of the entire four year program. Should the school be included on the Council's approved list, the work of all students in good standing at the school at the time of the visit will be fully accredited.

In the meantime it is entirely satisfactory for approved hospitals to accept interns from these schools. Graduates of schools now on the approved list will in no way injure their records by accepting internships in such hospitals.

VICTOR JOHNSON, M.D., Secretary

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Sept 11, page 114

#### BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery June 20-22 Sec Dr B F Austin 519 Dexter Ave Montgomery

ARIZONA \* Phoenix Oct 5-6 Sec Dr J H Patterson 8-6 Security Bldg Phoenix

ARKANSAS Medical Nov 3-4 Sec Dr D I Owens Harrison

Cal Little Rock Nov 4 Sec C H Young 1415 Main St Little Rock

CALIFORNIA Written Sacramento Oct 18-1 Sec Dr Frederick V Scaten 1020 N Street Sacramento

COLORADO \* Denver Oct 5<sup>th</sup> Final date for filing application is Sept. 20 Sec Dr J B Davis, 831 Republic Bldg Denver

CONNECTICUT \* Hartford Nov 9-10 Endorsement New Haven Nov 23 Sec to the Board Dr Creighton Barker 258 Church St New Haven

DELAWARE Written Dover Jan 11-13 Endorsement Dover Jan 1<sup>st</sup> Sec Medical Council of Delaware Dr Joseph S McDaniel 229 S State St Dover

DISTRICT OF COLUMBIA \* Washington Nov 8<sup>th</sup> Sec Commission on Licensure, Dr G C. Ruhland 6150 E. Municipal Bldg Washington

FLORIDA \* Jacksonville Nov 22-23 Sec Dr William M Rowlett Box 786 Tampa

GEORGIA October or November Sec State Examining Board Mr R. C. Coleman 111 State Capitol Atlanta

IDaho Boise Jan 11 Dir Bureau of Occupational Licenses Mrs Lela D Painter 555 State Capitol Bldg Boise

ILLINOIS Chicago Oct 12-14 Superintendent of Registration Department of Registration and Education Mr Philip M Harman Springfield

Iowa \* Iowa City Dec 27-29 Dir Division of Licensure and Registration Mr H W Grefe Capitol Bldg Des Moines

KANSAS Kansas City Feb 23 Sec Dr J F Hassig 905 N Seventh St Kansas City

KENTUCKY Louisville, Dec 6-8 Sec Dr Philip E. Blackerby 620 S Third St Louisville

MAINE Portland Nov 9-10 Sec, Dr Adam P Leighton 192 State St Portland

MARYLAND Medical Baltimore Dec 14-17 Sec Dr J T O Mara 1215 Cathedral St Baltimore. Homeopathic Baltimore Dec. 14-15 Sec Dr J A Evans 612 W 40th St Baltimore

MASSACHUSETTS Boston Nov 16-19 Sec. Board of Registration in Medicine Dr H Q Gallupe 413 F State House Boston

MICHIGAN \* Ann Arbor Oct 13-15 Sec. Board of Registration in Medicine Dr J Earl McIntyre 100 W Allegan St Lansing

MINNESOTA \* Minneapolis Oct. 19-21 Sec Dr J F DuBois 230 Lowry Medical Arts Bldg St Paul

MISSISSIPPI Jackson September Asst. Sec State Board of Health Dr R N Whitfield Jackson

MISSOURI St Louis Nov 15-17 Sec State Board of Health Dr James Stewart State Capitol Bldg Jefferson City

MONTANA Helena Oct 5-6 Sec Dr O G Klein First Nat'l Bank Bldg Helena

NEW JERSEY Trenton Oct. 19-20 Sec. Dr E S Hallinger 28 W State St Trenton

NEW MEXICO \* Endorsement Santa Fe Oct. 11-12 Sec. Dr LeGrand Ward 141 Palace Ave Santa Fe

NEW YORK Albany Buffalo New York and Syracuse Sept 20-23 Chief Bureau of Professional Examinations Mr H L. Field Education Bldg Albany

NORTH DAKOTA Grand Forks Jan 4<sup>th</sup> Sec Dr G M Williamson 4 1/2 S Third St Grand Forks

OHIO Endorsement Columbus Oct. 7 Written Columbus Dec. 4 Sec Dr H M Platter 21 W Broad St Columbus

PENNSYLVANIA Philadelphia and Pittsburgh January Act. Sec., Bureau of Professional Licensing Department of Public Instruction Mrs Marguerite G Steiner 358 Education Bldg., Harrisburg

RHODE ISLAND \* Providence Oct 7-8 Chief Division of Examiners Mr Thomas B Casey 366 State Office Bldg Providence

SOUTH CAROLINA Charleston Dec. 20-22 Sec. Dr N B Heyward 1379 Blanding St Columbia

SOUTH DAKOTA \* Pierre Jan 18-19 Dir Medical Licensure State Board of Health Dr Gilbert Cottam Pierre

TENNESSEE \* Memphis and Nashville Sept 29-Oct 1 Sec Dr H W Qualls 1635 Exchange Bldg Memphis

VERMONT Burlington Dec. 15-17 Sec Dr F J Lawless Richford

VIRGINIA Richmond Dec 14-17 Sec Dr J W Preston, 300 Franklin Road Roanoke

WEST VIRGINIA Charleston Oct 25-27 Commissioner Public Health Council Dr John E Offner State Capitol Charleston

WYOMING Oct. 4-5 Sec. Dr M C Keith Capitol Bldg Cheyenne

\* Basic Science Certificate required

#### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA Tucson Sept 21 Sec. Dr Robert L Nugent Science Hall University of Arizona Tucson

CALIFORNIA Oct 9 Address State Board of Healing Arts 250 Church St New Haven

DISTRICT OF COLUMBIA Washington Oct 18-19 Sec Dr G C. Ruhland 6150 E. Municipal Bldg Washington

FLORIDA DeLand Nov 6 Sec Dr John F Conn John B Stetson University Deland

IOWA Des Moines Oct 12 Dir Division of Licensure & Registration Mr H W Grefe Capitol Bldg Des Moines

MINNESOTA Minneapolis Oct 5-6 Sec Dr J C McKinley, 126 Millard Hall Univ of Minnesota Minneapolis

NEBRASKA Lincoln Oct 5-6 Dir Bureau of Examining Boards, Mr Oscar F Humble 1009 State Capitol Bldg Lincoln

NEW MEXICO Feb 7 Sec Miss Pia Joerger State Capitol Santa Fe

OREGON Portland Oct 30 Sec State Board of Higher Education Mr C D Byrne University of Oregon Eugene

SOUTH DAKOTA Vermillion December Sec. Dr G M Evans Yankton

TENNESSEE Nashville and Memphis Dec 10-11 Sec Dr O W Hyman 874 Union Ave Memphis

WISCONSIN Madison Sept 18 Sec Prof R N Bauer 152 W Wisconsin Ave Milwaukee

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Malpractice Alleged Negligence in Treatment of Eye Injury**—In the course of his employment the plaintiff suffered an eye injury, the exact nature of which the reported opinion does not make clear. He was attended by the defendant an eye, ear, nose and throat physician for about three months. The treatment administered by the physician 'at first consisted of atropine to dilate the pupil, hot applications, and injections of French protein. During the latter stages of the treatment butyn was prescribed for the relief of pain. Treatments were administered either by the physician by his office assistant under his directions and occasionally in his absence, and by the patient himself at intervals and in quantities prescribed by the physician. About three months after the industrial accident, the plaintiff's physical condition suddenly grew worse. He lost weight rapidly, his eye pained him severely, sores appeared over his face, his ear became abscessed and he developed stomach trouble. He consulted another physician who enucleated the eye. Subsequently the patient brought suit against the defendant physician, contending that his eye should have been enucleated immediately after the accident and that the treatment administered to him by the physician was not in the exercise of reasonable care and skill, and caused the subsequent ailments and suffering that befell him. He also alleged that the physician was guilty of malpractice (1) in authorizing and permitting his assistant who was neither a physician nor a registered nurse to treat him by probing his eye and giving him injections and (2) in prescribing medicines for self administration. The trial court directed a verdict for the physician, and the patient appealed to the circuit court of appeals fifth circuit.

It is the law in Georgia, said the circuit court of appeals, the state in which the treatment in question was administered that a practicing physician must bring to the exercise of his profession a reasonable degree of care and skill, and any injury resulting from a failure to exercise such care and skill is a tort. The record in this case is wholly lacking in evidence, expert or otherwise, to the effect that the treatment administered by the defendant physician was not in the exercise of reasonable care and skill and was not in accordance with approved medical practice. There is no evidence of any kind indicating that the patient's varied physical ailments were, or were likely to be, the result of the course of treatment undertaken by the physician. The sense of the testimony of the physician on examination in the trial court as an adverse witness was that the treatment given to the patient conformed in all respects to standard medical practice and that none of the ailments from which the patient suffered before the eye was

enacted could or did result from the treatment administered to him by the physician. This testimony was not contradicted, and it is the only evidence in the record relating to whether or not reasonable care and skill was exercised and whether or not a standard course of treatment was pursued. The evidence indicates that the physician's assistant was permitted to give the patient injections of French protein, to place hot applications on his eye and to administer atropine under the direction of the physician or in his absence, but it is clear that these ministrations were not such as required greater professional training than the assistant, by virtue of seventeen years of experience in the employ of the physician, was fully competent to administer.

The judgment in favor of the physician was affirmed—*Slack v Crawford*, *Crawford v Slack*, 131 P (2d) 101 (1942).

**Malpractice Statute of Limitation Does Not Begin to Run Until Cessation of Treatment**—The defendant dentist on July 15, 1938 attempted to extract one of the plaintiff's lower third molars. After the extraction the socket of the extracted tooth bothered the patient, and about ten days later the patient returned to the dentist for treatment, as the socket was infected and exuded "much greenish pus." The dentist flushed out the infected area, but the socket continued to bother the patient and his condition became progressively worse. He returned for further treatments two or three times monthly until Oct 20, 1939. The dentist continued to flush out the infected area but never had a roentgenogram taken to ascertain the cause of the trouble. A roentgenogram taken by another dentist about Oct 20, 1939 disclosed two roots of the extracted tooth in a highly infected area surrounding the tooth socket. The roots were subsequently extracted by another dentist. Later, on Sept 30, 1940, the patient sued the dentist for malpractice. An Oregon statute (the state in which the tooth was extracted) requires a suit for malpractice to be instituted within two years after "the cause of action shall have accrued." Agreeing at first with a contention of the dentist that the cause of action, if any, accrued at the time of the extraction of the tooth, July 15, 1938, and that the statute required suit to be instituted within two years thereafter, the trial court, in effect, dismissed the action on the ground that it had not been timely instituted. Later, however, the court on more mature reflection granted a new trial because it concluded that the negligence, if any, of the dentist was a continuing tort, that the cause of action did not accrue and the statute of limitations did not begin to run until the dentist ceased his treatment, namely, on Oct 20, 1939, and that the suit having been started in September 1940 had been started timely. The dentist then appealed to the Supreme Court of Oregon.

The sole question involved in this appeal, said the Supreme Court, is whether the action has been commenced within two years after the accrual of the cause of action. The dentist argues that the cause of action accrued July 15, 1938, when the tooth was extracted, but the fallacy in his contention lies in an assumption that no continuing tort is involved. The duty and obligation of the dentist to his patient did not end on the partial extraction of the tooth. True, the mere fact in itself that the lower third molar was broken or crushed in extraction is not evidence of negligence. Dentists, like physicians and surgeons, are not guarantors of good results. A dentist is obliged only to exercise reasonable care and skill in the treatment of his patient. As to what constitutes reasonable care and skill—that is determined by the degree of care and skill ordinarily exercised by members of his own profession in similar places. The evidence in this case fails to disclose negligence in the original extraction of the tooth. It is common knowledge that an impacted wisdom tooth is difficult to extract and the operation often results in breaking parts of the roots. A dentist's work is not completed, however, by a partial extraction. The negligence here is really predicated on the failure to exercise due care and skill in diagnosing the cause of the plaintiff's trouble and in permitting the broken parts of the roots to remain in the tooth socket. Had the dentist taken or procured a roentgenogram it is reasonable to assume that there would have been no difficulty in diagnosing the case. That the negligence of the dentist, if any, constituted a continuing tort the court regarded as a settled question by reason

of *Shivers v Chamberlain*, 126 P (2d) 28, which it had decided earlier in the year. In that case the gravamen of the plaintiff's cause of action was the alleged failure of the defendant specialist to diagnose and treat a case of glaucoma. The treatment extended over a year's time from month to month. It was urged there, as here, that the action was barred by the statute of limitations, but the court said:

This continued treatment, when shown to have been based upon a mistaken diagnosis and not of a character employed by the medical profession in dealing with cases of glaucoma, constituted a continuing tort causing the statute of limitations to start only when such treatment ceased.

The alleged negligent treatment of the dentist, continued the court, must be considered as a whole. The patient was not obliged to split his cause of action. The continued negligent treatment constituted but a single cause of action. Where the tort is continuing, the right of action is continuing. In the instant case there was a continuing duty of the dentist to exercise due care and skill in diagnosing the cause of the infection surrounding the tooth socket. As was said by the Supreme Court of Utah in *Petcler v Robison*, 81 Utah 535, 17 P (2d) 244:

Here the defendant undertook to treat the plaintiff for a throat infection. From the time he undertook to treat the case until he ceased to treat it he, as alleged, did so in a negligent and unskillful manner. As alleged, the treatments were not separate and distinct acts, separate and distinct causes of action. They constituted an entire course of treatment of a case undertaken by defendant to be treated by him, and the whole thereof constituted but one cause of action. *Green v Michigan Cent R Co*, 168 Mich 104, 133, N W 956 Ann Cas 1913C, 98, and notes on page 101. From the averments of the complaint, we think it should here be said, as was said in the case of *Sly v Van Lengen*, supra, that the tort was a continuing one, and, where the tort is continuing, the right of action is also continuing.

The rule that the statute of limitation runs from the last date of the continuous negligent treatment is just and equitable. A rule to the contrary would often result in miscarriage of justice and would penalize a patient who, under continuous treatment, assumes that due care and skill will be exercised. Some courts hold that it is a harsh rule which precludes an injured patient from maintaining an action at a time when it was impossible to know that any existed. *Huysman v Kirsch*, 6 Cal (2d) 302, 57 P (2d) 908.

The court accordingly affirmed the order granting a new trial to the patient—*Hotelling v Walther*, 130 P (2d) 944 (Or., 1942).

## Society Proceedings

### COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology, Chicago, Oct 10-13. Dr W L Benedict, 102 Second Ave S W, Rochester, Minn., Secretary.
- American Public Health Association, New York, Oct 12-14. Dr Reginald M Atwater, 1790 Broadway, New York, Executive Secretary.
- Association of Military Surgeons of the United States, Philadelphia, Oct 21-23. Colonel James M Phalen, Army Medical Museum, Washington, D C, Secretary.
- Delaware Medical Society of, Wilmington, Oct 12-13. Dr W O La Motte, 601 Delaware Ave, Wilmington, Secretary.
- District of Columbia Medical Society of the, Washington, Sept 30-Oct 2. Mr Theodore Wiprud, 1718 M St N W, Washington, Secretary.
- Indiana State Medical Association, Indianapolis, Sept 28-30. Mr T A Hendricks, 23 East Ohio St, Indianapolis, Executive Secretary.
- Inter State Postgraduate Medical Association of North America, Chicago, Oct 26-29. Dr Arthur G Sullivan, 16 North Carroll St, Madison Wis., Managing Director.
- Kansas City Southwest Clinical Society, Kansas City, Mo., Oct 4-6. Dr William M Korth, 1115 Grand Ave, Kansas City, Mo., Secretary.
- Kentucky State Medical Association, Louisville, Oct 4-6. Dr P E Blackerby, 620 South Third St, Louisville, Acting Secretary.
- Michigan State Medical Society, Detroit, Sept 22-24. Dr L Fernald Foster, 2020 Olds Tower, Lansing, Secretary.
- Mississippi Valley Medical Society, Quincy, Ill, Sept 29-30. Dr Harold Swenberg, 510 Maine St, Quincy, Ill, Secretary.
- Oklahoma City Clinical Society, Oklahoma City, Oct 18-21. Dr Clark H Hall, 117 North Broadway, Oklahoma City, Secretary.
- Omaha Mid West Clinical Society, Omaha, Oct 25-29. Dr J D McCarthy, 1036 Medical Arts Bldg, Omaha, Secretary.
- Pennsylvania Medical Society of the State of, Philadelphia, Oct 27. Dr Walter F Donaldson, 500 Penn Ave, Pittsburgh, Secretary.
- Virginia Medical Society of, Roanoke, Oct 25-27. Miss A res Edwards, 1200 East Clay St, Richmond, Secretary.

## Current Medical Literature

### AMERICAN

The American Library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1944 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Periodicals as a rule are the property of author and can be obtained for permanent possession only from them.

Title marked with an asterisk (\*) are abstracted below.

### American Journal of Medical Sciences, Philadelphia

205 765-900 (June) 1943

- \*Pneumonia Due to *Streptococcus Viridans* S. Solomon and M. Kalkstein—p. 76
- \*Pneumococcal Pneumonia: Selection and Control of Serum and Chemotherapy in Sputum Examination A. W. Frisch, A. E. Price and G. B. Myer—p. 77
- \*Anthraxosis—Hand Schuller-Christian Type: Report of Case with Pulmonary Filtrates J. H. Currens and W. C. Popp—p. 780
- Antibacterial Action of Lactic Acid and Volatile Fatty Acids of Sweat O. Berger and T. Cornbleet—p. 785
- Pre-ent Potency of Gastric Contents in Diagnosis of Gastric Disease M. Paul—p. 792
- Malignant Tumors in Persons with Cirrhosis of Liver S. Peller—p. 798
- Cause of Toothpick Perforation of Intestines W. O. Coehring—p. 807
- Studies on Prothrombin II Effects of Single Small Dose of Dicumarol (3-Methyl-5-ethyl-4-hydroxycoumarin) in Liver Disease S. Shapiro, M. H. Redish and H. A. Campbell—p. 808
- Production of Cyst Following Intramuscular Injection of Vegetable Oils R. C. Page and E. J. De Beer—p. 812
- Gallop Rhythm—Incidence and Influence of Age, Race and Sex C. F. Garvin—p. 814
- Studies on Effect and Mechanism of Amphetamine Sulfate on Weight Reduction R. H. Kunstadter and H. Necheles, assisted by M. Weiner—p. 820
- Vacuum Dried Human Serums in Prevention and Treatment of Certain of Common Communicable Diseases—An Eight Year Study A. C. McGuinnis, J. Stokes Jr. and Janet G. Armstrong—p. 826
- Toxic Effects of Promin (Sodium P-P-Diaminodiphenyl Sulfonate) on Erythrocytes of Guinea Pigs G. M. Higgin—p. 834
- Febrile Reactions Resulting from Readministration of Sulfadiazine T. R. Talbot Jr. and J. D. Adcock—p. 841
- Studies on 2-Sulfamylamido-4-Methyl Pyrimidine (Sulfamerazine Sulfamethyldiazine) in Man II Toxic Manifestations J. K. Clark, H. F. Flippin and F. D. Murphy—p. 846
- Relationship Between Riboflavin Intake and Thiamine Excretion in Man C. T. Klopff, J. C. Abels and C. P. Rhoads—p. 852

**Pneumonia Due to *Streptococcus Viridans***—Solomon and Kalkstein describe 5 cases of atypical pneumonia in which *Streptococcus viridans* appears to have been the etiologic agent since it was recovered from sources other than the sputum. The following features suggest that pneumonia was due to *S. viridans*: (a) a prolonged severe course with a high mortality rate; (b) severe pleuritic reaction with serous effusion; and (c) failure of response to chemotherapy. Atypical pneumonia not responding to chemotherapy may be caused by *S. viridans*. A careful search for this organism should be instituted from the blood and pleural fluid as well as the sputum.

**Pneumococcal Pneumonia Sputum Examination**—Frisch and his associates present data concerning the sputum count as a means of selecting therapy and a means of evaluating control of dosage of both serum and the sulfonamide drugs in patients with pneumonia. The treatment of pneumococcal pneumonia was individualized by dividing the cases into three major prognostic groups according to the number of pneumococci in Wright stained smears of rusty sputum. The cases in the first group represented approximately 50 per cent of the total admissions and were classed as relatively mild on the basis of sputum counts of 10 or less during the course of the disease. Over 95 per cent of these recovered with supportive therapy and with small doses of serum or with sulfonamides. Although the low fatality rate of 2 per cent was not appreciably altered by sulfonamides the pneumococci were more effectively prevented from multiplying and a more rapid defervescence was induced. The patients in the second group represented approximately 35 per cent of the total admissions and were classed as moderately ill on the basis of sputum counts between 11 and 35 per field. By decreasing the dosage when

a therapeutic response was elicited in the sputum, the total amount of sulfonamide administered was significantly reduced without affecting the final fatality rate. The last group with sputum counts over 35 included only 15 per cent of the total cases but was responsible for 70 per cent of the deaths. The sodium salts of the sulfonamides in large doses intravenously were the most effective therapeutic agents. Supplementary serum proved to be of no additional value in the most severe cases with sputum counts exceeding 50 per field.

### American J Obstetrics and Gynecology, St Louis

45 915-1094 (June) 1943

- Status of Artificial Insemination: Critical Review C. E. Folsome—p. 915
- \*Contractions of Human Uterus During Menstrual Cycle: Effect of Progesterone and Posterior Pituitary Extract on Motility of Human Uterus J. S. Henry and J. S. L. Browne—p. 927
- Weight Gain in Pregnancy and Its Relation to Weight of Infants and to Length of Labor A. Kerr Jr.—p. 950
- Study of Salt Restriction and of Fluid Intake in Prophylaxis Against Preeclampsia in Patients with Water Retention L. C. Chesley and J. E. Amnito—p. 961
- Low Dosage Irradiation to Pituitary Gland and Ovaries in Amenorrhea and Dysfunctional Uterine Bleeding: Long Term Survey L. Reidenberg—p. 971
- Use of Heroin (Diacetylmorphine) in Labor: Report of 434 Deliveries C. J. Lund and J. W. Harris—p. 980
- Relation of Cerebral Dysrhythmia to Eclampsia M. Rosenbaum and G. L. Maltby—p. 992
- Breech Presentations Treated by Cephalic Versions in Consecutive Deliveries of 1700 Women G. H. Rider—p. 1004
- Carcinoma and Sarcoma in Same Uterus B. P. Wat on—p. 1025
- Reconstruction of Oviducts in Humans: Results Obtained with Use of New Technique J. R. Gelfert—p. 1031
- New Treatment for Intractable Pruritus Vulvae W. J. Reich, Helen Button and M. J. Nechtow—p. 1036
- Uterus Didelphys with Endometriosis R. E. McDonald—p. 1038
- Bilateral Adenocarcinoma of Fallopian Tubes D. F. Mullins and K. Mosteller—p. 1042
- Vasa Previa W. H. Vogt Jr.—p. 1044
- Intestinal Tissue in Umbilical Cord C. J. Bartlett and I. J. Marshall—p. 1046
- Cornual Pregnancy H. M. Radman—p. 1048
- New Abdominal Binder for Intrapartum Use: Preliminary Report O. H. Bloom—p. 1050

**Contractions of Human Uterus During Menstrual Cycle**—Henry and Browne studied one or more cycles in 4 women with normal ovarian and uterine function. The studies included pregnandiol assays, endometrial biopsies and uterine tracings. A fifth woman was completely studied except that urinary assays were not done every day, a sixth whose cycles were abnormal to the extent that she was unable to conceive was also studied and a seventh had tracings and biopsies done in one cycle but no pregnandiol assays were made. In each the uterus contracted more strongly and was much more greatly affected by posterior pituitary injection in the presence of the corpus luteum than during the follicle phase. An artificially produced cycle showed a similar increase in spontaneous activity and response to posterior pituitary injection after the injection of 20 mg of progesterone. Two cases of anovulatory cycles showed spontaneous activity and response to posterior pituitary injection characteristic of the follicle phase. The authors conclude that the uterus of the sexually mature woman is spontaneously active and responds to posterior pituitary injection throughout the entire cycle. Its spontaneous activity and sensitivity to posterior pituitary injection are greatest in the luteal phase, both reach their maximum just before the onset of menstruation or during its first day. The weight of experimental evidence and of experience is against the claims made for the use of progesterone in treating dysmenorrhea and after-pains. If it is of value in the therapy of abortion it must be because of its action in maintaining the decidua and so making possible the vital maternal-fetal connections.

### American Journal of Ophthalmology, Cincinnati

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- New Cross Cylinder Test for Astigmatic Axis Without Use of Test Type W. H. Crisp—p. 571
- Malingering Tests J. O. Wetzel—p. 577
- Surgery of Inferior Oblique At or Near Insertion I. W. White—p. 586
- Ocular Rosacea G. W. Lee—p. 591

## American Journal of Physiology, Baltimore

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- Changes in Serum Phosphate and Calcium and Their Relation to Manifestations of Traumatic Shock L Mylon, M C Winternitz and G J de Sütö Nagy—p 299

## Archives of Dermatology and Syphilology, Chicago

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- Ichthyosiform Atrophy of Skin in Hodgkin's Disease F Ronchese—p 778
- Chronic Scarring Pseudofolliculitis of Negro Beard H Pinkus—p 782
- Demodex Folliculorum Its Incidence in Routine Histologic Study of Skin L Nichols—p 793
- \*Dermatitis Venenata Caused by Manzanillo Tree Further Observations and Report of 60 Cases L M Satulsky and C A Wirts—p 797
- Sensitivity to Tuberculin in Acne and in Other Nontuberculous Diseases of Skin K Loewenthal—p 799
- Lentigines Their Possible Significance E E Brown—p 804
- Bacteriology of Feet and Incidence of Dermatophytosis of Feet of High School Students G I Wallace and H E Moorman—p 816
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- Histamine Test With Particular Reference to Diagnosis of Leprosy V Pardo Castello and F R Tiant—p 826
- Combating Lymphogranuloma Venereum W Frei—p 830
- Incidence of Dermatoses in Twenty Thousand Army Induction Examinations With Note on Syphilis with Negative Serologic Reactions E S Bereston and E M Ceccolini—p 844
- \*Chlorophyll in Treatment of Ulcers E Gahan P R Kline and T H Finkle—p 849

## Dermatitis Venenata Caused by Manzanillo Tree—

Satulsky and Wirts direct attention to the hazards of contact with the manzanillo tree, which is found on beaches in the republic of Panama and the Canal Zone. It caused dermatitis in soldiers who were establishing a beach defense. The first patient had been awakened by severe burning and pain of his face and shortly after opening his eyes he noted that they too began to burn. There were numerous erythematous macules on the face and neck. The conjunctivas were red and edematous. The edema became so severe that on the left side part of the palpebral conjunctiva overhung the lower lid. Morphine sulfate  $\frac{1}{4}$  grain (16 mg) was given subcutaneously, warm saline compresses were applied to the face and neck and an ointment containing boric acid in 5 per cent concentration was applied before evacuating the patient to a hospital. During the next four hours 60 men had to be evacuated because they were unfit for combat duty. At least 50 per cent were temporarily blinded because of severe conjunctivitis and edema of the eyelids. Daylight revealed numerous manzanillo trees in the areas where the men had slept. All the patients recovered without sequelae, and most of them were returned to duty in seven to eight days.

**Chlorophyll for Ulcers**—Chlorophyll in the form of an ointment or of an aqueous solution was used by Gahan and his collaborators in the treatment of 25 patients with ulcers of various origins. The ointment consisted of oil soluble derivatives of chlorophyll mixed with hydrous wool fat in the proportion of 1 to 28. The aqueous solution was made by

dissolving 2 Gm of a water soluble derivative of chlorophyll in a liter of distilled isotonic solution of sodium chloride. The ointment was used topically, the solution was used for wet dressings for ulcers which were surrounded by severe inflammatory zones. Among the 25 patients there were 19 who responded favorably to local treatment with chlorophyll. It appeared to have a stimulating effect on the supportive tissues. In some cases the production of granulation tissue in a torpid ulcer was rapid.

## Archives of Surgery, Chicago

46 793-952 (June) 1943

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- Mistakes and Misunderstandings in Roentgenologic Diagnosis of Gastric Cancer B R Kirklin—p 861
- Gastroscopic Diagnosis of Gastric Cancer L Schiff—p 865
- Surgical Care of Patients with Gastric Cancer Before and After Operation I S Ravdin, H P Royster, Cecilia Riegel and J E Rhoads—p 871
- Surgical Problem of Gastric Cancer With Special Reference to (1) Closed Method of Gastric Resection, (2) Coincidental Hepatic Resection and (3) Preoperative and Postoperative Management O H Wangenstein—p 879
- Total Gastrectomy for Carcinoma of Stomach R R Graham—p 907
- Transthoracic Resection for Cancer of Cardiac End of Stomach D B Phemister—p 915
- Transthoracic Subtotal Gastrectomy and Esophagectomy for Cancer Report of Case G T Pack and W L Watson—p 930
- \*Prognosis and End Results in Treatment of Cancer of Stomach W Walters, H K Gray and J T Priestley—p 939

## Prognosis and End Results in Treatment of Cancer of

Stomach—Walters and his co-workers report that from 1907 to 1938 inclusive the diagnosis of carcinoma of the stomach was made at the Mayo Clinic in 10,890 cases. The lesions in 4,648 (42.7 per cent) were considered to be inoperable, and only palliative medical treatment was given. The remaining 6,242 (57.3 per cent) patients underwent exploratory operation in the hope that gastric resection might be accomplished. Among this group, inoperable lesions were found in 2,431 cases (22.3 per cent of the entire series of 10,890 cases). In an additional group of 1,039 cases (9.5 per cent of the original series of 10,890 cases) the lesion could not be removed but some palliative procedure was performed. In 2,772 (25.5 per cent) of the 10,890 cases in which the diagnosis was established, gastric resection was accomplished. Thus approximately 1 of 4 persons had the lesions removed surgically and thereby, provided they survived the operation, had some chance of cure. The resectability rate (calculated on all patients) was 25.5 per cent. When the resectability rate is calculated from only the number of patients on whom operation was performed, it is found to be 44.4 per cent. The resectability rate is important because, even though the surgical rate may be high or may gradually increase as time goes on, this change does not mean that the ultimate results are being improved unless the resectability rate continues to be high. The mortality rate for all types of gastric resection was 16.2 per cent. With improvement in operative technique this mortality rate was reduced to 10.9 per cent for the years 1940 and 1941 together. Of the patients who underwent resection and who survived the operation, 28.9 per cent lived five years or longer and 6.3 per cent lived twenty-five years or longer. The lower the grade of malignancy according to Broders, the better was the prognosis and, conversely, the higher the grade of malignancy the worse the prognosis. Eighty-six and two tenths per cent of the patients who had carcinoma of grade 1 were alive five years after resection, whereas only 23.3 per cent of patients with carcinoma grade 4 were living after a comparable period. From the prognostic standpoint the presence or absence of involvement of the regional lymph nodes was of the greatest significance. In cases in which the regional lymph nodes were not involved the five year survival rate was 43.1 per cent, as contrasted with only 16.5 per cent in cases in which the regional lymph nodes were involved. If a patient lived five or more

years after resection of a carcinoma of the stomach the chance of survival during the ensuing years was found to be about the same as it is for any person of comparable age in the general population

## Illinois Medical Journal, Chicago

83 365-430 (June) 1943

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## Journal of Infectious Diseases, Chicago

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Effect of Various Stages of Vitamin A Deficiency in White Rat on Resistance to *Neurospora* Muris E G Kiley—p 130  
Production of Experimental Influenza in Mice by Inhalation of Aerosols Containing Influenza Virus Dispersed as Fine Droplets C G Looch O H Reiser and T T Puck—p 142  
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Aerogenic Variant of *Salmonella Enteritidis* (Gaertner) Isolated from an Enzootic Among Domestic and Wild Rats R A Bruce and H E Dasecomb—p 157  
Some Observations on Decline of Pneumonic Plague Epidemic R Politzer and C C Li—p 160  
Studies on Transmission of Western Strain Virus of Equine Encephalomyelitis by American Dog Tick *Dermacentor Variabilis* Say and by *Triatoma sanguinosa* (LeConte) A W Grundmann C M Hutsel Brian L M Roderick and R C Smith—p 163  
Protective Action of a Bacteriophage in *Eberthella Typhi* Infections in Mice W E Ward—p 172

**Action of Tyrothricin on Fecal Streptococci**—According to Rodaniche and Palmer *Streptococcus fecalis* has been shown to possess strong resistance against sulfonamide compounds and penicillin. It seemed of interest, therefore to test its resistance in vitro and in vivo against tyrothricin. Thirty strains of fecal streptococci including only types showing alpha or gamma hemolysis were tested together with five strains of throat streptococci. The latter were included for purposes of comparison. A similar technique to that employed by Rammelkamp for the study of the action of tyrothricin on *Staphylococcus aureus* was adopted. The in vivo tests were made on albino mice. The authors found that tyrothricin is highly bactericidal and bacteriostatic to *Streptococcus fecalis* and related fecal streptococci in vitro. Considerable variation in susceptibility occurs from strain to strain. Oral administration of tyrothricin may produce inhibition of the growth of streptococci in the intestine of mice. This inhibition is most readily demonstrated when succinylsulfathiazole is administered together with tyrothricin.

## Journal of Nutrition, Philadelphia

25 511-620 (June) 1943

- Effects of Inanition and Riboflavin Deficiency on Blood Picture of Rat C F Shukers and P L Day—p 511  
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Role of Folic Acid and Biotin in Nutrition of Rat A D Welch and L D Wright with technical assistance of K L Sprague—p 555  
Biologic Assay of Pyridoxine (Vitamin B<sub>6</sub>) Miriam F Clarke and Marie Lechey—p 571  
Contribution of Non Fat Milk Solids to Nutritive Value of Wheat Breads H H Mitchell T S Hamilton and J B Shields with technical assistance of T R Beadles—p 585  
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## Journal Pharmacology & Exper Therap, Baltimore

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Flavacin An Antibacterial Substance Produced by an *Aspergillus Flavus* W T Bush and A Goth—p 164  
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Potency of New Extract of *Commelina Maritima* Leaves III Assays by Papillary Muscle Procedure and U S P VII Cat Method J B Weeks and H C O Holst—p 180  
Overt and Masked Manifestations of Folliculoid Hormones Eleanor Clarke and H Selve—p 187  
Dosage Relationships in Augmentation of Pituitary Gonadotropic Extract by Blood and Hemin W H McShan L E Casida and R K Meyer—p 197

**Flavacin, an Antibacterial Substance Produced by *Aspergillus Flavus***—While studying the production of penicillin, Bush and Goth isolated a mold belonging to the *Aspergillus flavus* group which produced a powerful antibacterial substance. This mold appeared as a contaminant on one of their cultures of *Penicillium notatum*. It was able to dissolve *Staphylococcus aureus* and *Staphylococcus albus*. On further study the authors found that the aspergillus released in the culture medium an inhibitory substance which was active against a large number of bacterial species. They have succeeded in partially purifying this substance to such an extent that its activity per milligram is comparable to that of therapeutic penicillin against gram positive cocci. Flavacin like penicillin is a water soluble and ether soluble organic acid which has a powerful antibacterial activity. It differs from gramicidin tyrocidin and penicillin B which are protein or polypeptide in nature. Flavacin resembles penicillin in another respect it is unstable in an acid environment particularly on shaking with air. Although both penicillin and flavacin inhibit especially gram positive cocci, flavacin is more active against *Corynebacterium diphtheriae*, *Bacillus anthracis*, *Staphylococcus albus* and *Brucella abortus* than is penicillin. The available evidence suggests that flavacin is a powerful antibacterial agent against a wide variety of bacterial species.

## Journal of Thoracic Surgery, St Louis

12 397-502 (June) 1943

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## Journal of Nervous and Mental Disease, New York

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## Michigan State Medical Society Journal, Lansing

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## New Orleans Medical and Surgical Journal

95 493-530 (May) 1943

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## Radiology, Syracuse, N Y

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## Surgery, St Louis

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\*Experimental Studies of Value of Sulfathiazole in Peritonitis E J Poth and E B Fernandez —p 847  
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Prolonged Dependent Drainage with "Lucite" Drains in Treatment of Chronic Osteomyelitis C Dennis —p 900  
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Gastric Acidity Following Gastric Resection C W Holman and B McSwain —p 916  
\*Acute Abdominal Symptoms in Arachnoidism Black Widow Spider Bite H Wilson —p 924  
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**Effects on Nutrition and Hemopoiesis of Total Gastrectomy**—Of twenty-nine total gastrectomies performed at the University of Michigan Hospital, 24 patients survived the operation. The mortality rate following total gastrectomy is not prohibitive. The stomach does not play an essential role

in the digestion of fats and protein. There is no experimental evidence that removal of the stomach will produce pernicious anemia. Primary anemia is rarely encountered following various gastric operations. Gastrectomy interferes with the metabolism of iron. The absorption of dextrose is more rapid than normal. This results in a transient hyperglycemia phase that is followed by hypoglycemia. The latter phase may produce characteristic symptoms. A high protein, low carbohydrate diet is efficacious in preventing these abnormalities. A woman aged 40 is living and well four years and seven months after a total gastrectomy. Intestinal motility is decreased rather than increased. This may be due to intra-abdominal section of the vagus nerves.

**Sulfathiazole in Peritonitis**—Poth and Fernandez produced peritonitis in 60 animals by sectioning the duodenum 2 cm distal to the main pancreatic duct and the jejunum distal to the Treitz ligament at a point permitting an end to end anastomosis to reestablish continuity of the gastrointestinal tract. The isolated loop was washed with 10 cc of isotonic solution of sodium chloride and the washings were studied bacteriologically. The loop was dropped into the peritoneal cavity with its distal end open. Water was always available to the animals, but food was withheld for four days. Ten animals subjected to this operation served as controls. The average length of survival was two days. The remaining 50 animals were divided in five groups of 10 to determine the differential advantage of administering sulfathiazole by different routes. The survival of the animals in the different groups demonstrated the importance and therapeutic value of maintaining a high local concentration of sulfathiazole in the area of infection. The value of sulfathiazole when applied locally to the peritoneal cavity is assessed as compared to its usefulness when administered so as to maintain a relatively high general tissue concentration. A suspension of sulfathiazole may be more suitable than the dry powder for intraperitoneal administration, and repeated intraperitoneal injections may be advisable in generalized peritonitis. The results of this study indicate that the intraperitoneal administration of sulfathiazole should be fortified by maintaining a high systemic concentration of the drug by other therapeutic routes when necessary. The combined use of succinylsulfathiazole as an adjuvant to surgery of the large bowel is advocated.

**Acute Abdominal Symptoms from Bite of Black Widow Spider**—The pain produced by the bite is often described as resembling the pain from a pin prick or a small splinter. Frequently patients may pay little or no attention to the bite and may not give the incident in reciting the history of their illness unless specifically questioned. Usually in from one-half to two hours the patient complains of cramping pains which have their origin in the muscle groups near the location of the bite. When the bite is on a lower extremity or the genitalia the cramps are first noted in the thighs and hips. In a short time the pain is apt to spread to the abdomen and to be excruciating, comparable in severity to that caused by renal colic, perforated ulcer or coronary occlusion. Examination of the abdomen reveals a boardlike rigidity, although the abdomen usually moves with respiration. There is less tenderness than one would expect to be present in peritonitis producing such extreme rigidity. The temperature is apt to be normal when the patient is first seen, but fever is likely to develop a few hours later. The great majority of patients recover completely in from one to three days. Specific antiserum given early after the bite seems to be the most rational therapy. The author reviews 56 cases which were seen in the John Gaston Hospital, Memphis, Tenn., between 1933 and 1942 inclusive. Severe abdominal pain was the most important symptom and boardlike rigidity of the abdominal wall was usually present. There was no fatality.

## West Virginia Medical Journal, Charleston

39 185-232 (June) 1943

- Operative Wound Healing Its Management and Evaluation of Tension and Suture Material Employed R K Puford, H A Bledsoe, J C Condy —p 191  
Phenomena of Normal Senescence W E Vest —p 193

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Study of the reports and trials of new drugs are usually omitted.

## British Journal of Experimental Pathology, London

24 41-80 (April) 1943

- Artificial Antigen with Blood Group A Specificity W. T. J. Morgan —p. 41  
Production and Treatment of Experimental Pneumococcal Hypopyon Ulcers in Rabbit J. M. Kolon and C. I. Scott —p. 50  
Pure Strain of Rous Sarcoma Cells I. Tenebrum —p. 56  
Mechanism of Red Blood Cell Destruction B. G. Macgrath, A. H. Martin and G. M. Findlay —p. 58  
Salivococcus Enterococcus—with Special Reference to Kitten Test F. Filton —p. 65  
Study of Morphology and Development of Megakaryocytes J. Jara —p. 7

## Journal of Mental Science, London

89 161-362 (April) 1943 Partial Index

- Indications for Prefrontal Leukotomy T. P. Rees —p. 161  
Results of Prefrontal Leukotomy in 9 Cases of Mental Disorder R. Ström-Olén, S. I. Lait and M. B. Brody, with Observations on Surgical Technique by G. C. Knight —p. 16  
Early Effect of Prefrontal Leukotomy on Disturbed Patients with Mental Illness of Long Duration E. C. Dax and E. J. R. Smith —p. 18  
Range and Technique of Prefrontal Leukotomy F. L. Golla —p. 189  
Technique of Prefrontal Leukotomy F. W. Willway —p. 192  
Technique of Prefrontal Leukotomy W. McKusick —p. 194  
Analysis of Matrix (Progressive Matrices) Test Results on 700 Neurotic (Military) Subjects and a Comparison with Shipley Vocabulary Test H. Halstead —p. 202  
Objective Study of Mental Imagery I. Physiologic Concomitant F. Golla, E. L. Hutter and W. G. Walter —p. 216  
Etiologic Factors and Reaction Types in Psychoses Following Child Birth Betty Jacobs —p. 222  
Maintenance Treatment of Chronic Psychotics by Electrically Induced Convulsions N. P. Moore —p. 237  
Observations on Occurrence of Ethnic Element in Involutional Melancholia R. Gibbon —p. 274  
Involutional Melancholia Study of 20 Cases Treated with Theelin R. Gibbon —p. 278  
Pitresin Diagnosis of Idiopathic Epilepsy W. Bluth —p. 284  
One Hundred Depressive Psychoses Treated with Electrically Induced Convulsions J. C. Batt —p. 289  
Use of Modified Takata Reaction in Examination of Cerebrospinal Fluid of Certain Psychoses H. H. Fleichacker —p. 297

**Estrone in Involutional Melancholia**—Gibbon reports observations on 20 patients treated with estrone (theelin). The effect could be regarded as an important factor in the recovery of 5 patients, all of whom showed evidence of ovarian dysfunction. Signs of endocrine upset were present in 4 and fewer additional factors were ascertainable in this group than in the others. Estrone appeared to have a specific quality. There were 8 patients in whom it seemed to accelerate a convalescence already in evidence, and it produced a sense of increased confidence. The improvement could not be compared with that seen in the first group. At the time of treatment the physical concomitants of the menopause had passed off in 5 of the 8 and were in process of subsiding in 2. Additional factors were more pronounced in this second group and included adverse childhood conditions in 3 patients and abnormal heredity in 6. Four patients were not improved even though they were given much larger doses than the patients who recovered. Endocrine factors were prominent but adverse factors other than those of an endocrine nature reached their maximum in this group and it appeared possible that the lack of response to estrogen was due to the malignancy of these factors. Conversely those patients who responded well belonged to the group in which the minimal number of such factors could be ascertained. Three patients were worse after treatment and here an endocrine mechanism appeared implicated. Polyglandular insufficiency was present and it seemed that estrogen by upsetting still further the endocrine balance brought about the deterioration. The administration of thyroid led to recovery in one and improvement in another while adrenal cortex extract produced transient improvement in the third. This study further illustrates the complex causation of involutional melancholia. Where an element of endocrine dysfunction was present the glandular disturbance seemed of importance in the development of the psychosis. Other factors were also present. Through-

out the personality of these patients there kept recurring a tendency to be easily worried, sensitiveness, pronounced conscientiousness, lack of sociability and timidity so that these seemed characteristic of the usual pre-psychotic personality. Heredity and environment played a part.

## Lancet, London

1 729-760 (June 12) 1943

- Treatment of Injured Workman H. E. Griffiths —p. 729  
Peptic Ulcer Prognosis in Royal Air Force Patients A. F. Rook —p. 733  
Slide Test for Coagulable Positive Staphylococci Bessie Cadness Graves R. Williams, G. J. Harper and A. A. Miles —p. 736  
Infiltrator for Regional Analgesia N. B. James —p. 738  
Agglutination Titers of Normal Sera H. Schwabacher, M. Ross and H. I. Carruthers —p. 739

**Prognosis of Peptic Ulcer in Air Force**—Peptic ulcer is a bar to service in the armed forces. In all three British services most men with proved ulceration have been invalided. The proportion returning to duty is probably largest in the Royal Air Force, mainly because the proportion of skilled technicians is high and every attempt is made to keep valuable men. The medical records of over 1300 persons whose illness was diagnosed as peptic ulceration and reported during the first eighteen months of the war have been examined. Many of these were invalided but a number were retained. The rate as regards service in the Royal Air Force of the 194 with peptic ulceration who were allowed to return to duty has been followed for about two years. After this time just two thirds of the group were still serving and about a third had been invalided. About half of the patients who were fliers returned to flying duties. With regard to this group selected as being worthy of retention in the service the subsequent history suggests that help in disposal may be obtained from the rank for the higher the rank the more likely will the patient be able to carry on. Neither the length of history nor any of the various criteria of diagnosis appears to offer any guidance as to whether or not an airman after treatment for peptic ulceration is likely to withstand service life.

1 761-792 (June 19) 1943

- Primary Atypical Pneumonia W. R. M. Drew, E. Samuel and Margaret Ball —p. 761  
Relation of Cold Agglutinins to Atypical Pneumonia J. C. Turner, S. Wisniewitz, Elizabeth B. Jackson and R. Berne —p. 765  
Pulmonary Complications of the Common Cold and Sinusitis Findings in Mammograms J. A. Kennedy —p. 769  
Meningococcal Adrenal Syndromes and Lesions H. S. Banks and I. E. McCartney —p. 771  
Treatment of Osteoclastoma I. F. Brailford —p. 776

**Meningococcal Adrenal Syndromes and Lesions**—Banks and McCartney submit evidence that the meningococcal adrenal syndrome is a composite entity. It can be differentiated into a pure adrenal syndrome in which the main organic lesion is confined to the adrenal glands and a mixed or encephalitic adrenal syndrome in which significant lesions are present in both the brain and the adrenal glands. The pure adrenal syndrome does not seem to be invariably fatal. With modern treatment a recovery adrenal syndrome is being developed which is specific only in its evolution, happy termination and absence of direct pathologic proof. Evidence is also submitted as to various adrenal lesions which may be present in meningococcal disease. They do not all consist of pure adrenal hemorrhage. Thrombotic necrosis affecting the greater part of the gland is not uncommon. One case is described in which the main lesion appears to be a gross edema of the gland accompanied by focal areas of inflammatory adrenitis and in another case composite lesions are described including hemorrhagic thrombosis, edema and focal adrenitis. There seems to be no justification for the term Waterhouse-Friderichsen syndrome. Eleven cases of meningococcal adrenal disease are described 8 of which were fatal. Meningococci were isolated from 6 of the patients who died and from 2 of those who recovered. In 4 of those who died no significant organic lesion other than meningitis was found in the brain or the cord, but in the remaining 4 there was evidence of diffuse or focal encephalomyelitis (capillary thrombosis, hemorrhages and peri-

vascular cuffing) or of very gross edema. The former group and also the 3 patients who recovered showed relatively clear consciousness and normal rapid noiseless or acidotic breathing, while those with a cerebral lesion were deeply comatose and had rapid stertorous breathing. Prompt diagnosis and immediate treatment of the infection with sulfonamide compounds, with vigorous replacement therapy for the adrenal crisis, may lead to recovery at least from the pure adrenal syndrome.

**Schweizerische medizinische Wochenschrift, Basel**  
72 1341-1368 (Dec 5) 1942

- Calcium in Treatment of Renal Diseases. O. Spühler—p. 1341  
 \*Lymphatic Reaction in Hepatitis Epidemica. R. I. Landolt—p. 1346  
 Value of Roentgenograms of Neck in Tumors of Thyroid and Hypopharynx. I. Ufer—p. 1353  
 Innervation of Blood Vessels. E. Landau—p. 1355  
 Simple and Sensitive Method of Determination of Carbon Monoxide in Atmospheric Air. A. Gigon and M. Novazzi—p. 1356

**Lymphatic Reaction in Epidemic Hepatitis**—Landolt differentiates Weil's disease, the icterogenic spirochytosis, from a more benign form of jaundice. Hepatitis epidemica is the term that has been applied to the latter. The author describes the symptomatology of this condition on the basis of 12 clinical cases. The sedimentation speed of the erythrocytes is moderately accelerated and this acceleration often persists into the convalescence. The red blood picture shows no essential changes. The white blood picture presents a leukopenia or normal leukocyte values. The differential count discloses a typical lymphatic reaction with a predominantly plasmacellular metamorphosis. Differentiation of hepatitis epidemica from icterus simplex is extremely difficult. The latter condition cannot be regarded as an etiologic unit and some cases of icterus simplex may be sporadic cases of hepatitis epidemica. The lymphatic reaction observed in hepatitis epidemica suggests a relationship to infectious mononucleosis, particularly because the latter condition is often associated with a hepatic swelling and the presence of urobilin and urobilinogen in the urine. Swelling of the spleen is also observed in both diseases. Although these disorders have several points in common, their identity is not likely.

**Semana Médica, Buenos Aires**

50 739-790 (April 8) 1943 Partial Index

- Carbuncle by Inhalation. Case. F. F. Inda, I. Natin and Cornelia da Rin—p. 754  
 \*Auricular Fibrillation Due to Sulfathiazole Therapy in Case of Mitral Stenosis. J. Opizzi—p. 762

**Auricular Fibrillation Due to Sulfathiazole**—Opizzi reports 3 cases of auricular fibrillation developing in adults with mitral stenosis while on sulfathiazole therapy for acute tonsillitis. The patients had rheumatic fever years before the occurrence of the acute attack of tonsillitis. The existence of the cardiac lesion was either unknown or it was well compensated. The total dose of sulfathiazole the patients had received in the course of the treatment varied between 5 and 7 Gm.

50 791-850 (April 15) 1943 Partial Index

- Cervicitis and Its Therapy. R. Araya—p. 791  
 \*Hyperglycemic Dyspituitarism. A. D'Angelo Rodriguez and J. M. Puebla—p. 807  
 Intravenous Injection of Colloidal Electric Copper in Bronchial Asthma. J. J. Clusellas—p. 816  
 \*Prophylaxis of Measles. F. Bazán and E. Sujoy—p. 825

**Hyperglycemic Dyspituitarism**—D'Angelo Rodriguez and Puebla describe a syndrome of hyperglycemia observed in patients with diabetes. It is caused by dysfunction of the pituitary gland due to diminution or absence of gonadal hormones. The symptoms of the syndrome are dizziness, headache, rapid increase in weight, eczema, pruritus, loss of appetite, meteorism, diminished libido, menstrual disorders, nervousness, hepatomegaly, increased cholesterolemia, moderate arterial hypertension and enlargement of the dextrose tolerance curve. The therapy consists of estrogens and androgens alone or alternating. Six cases of the syndrome are reported. The patients have been observed for more than two years after discontinuation of successful hormone therapy.

**Prophylaxis of Measles**—Bazán and Sujoy studied two groups of 37 children who had been given intramuscular injections of either placental extract or blood serum from patients convalescent after measles and who then were exposed to the contagion. The age of the children varied from 6 months to 10 years. The dose of the extract varied from 2 to 8 cc, the dose of blood serum from 3 to 10 cc. The authors found that placental extract and convalescent serum when administered in proper dose produce passive immunity in 81 and 90 per cent respectively of the treated children. The percentage of immunity increases to 90 and 95 respectively if cases of primary measles are disregarded.

**Deutsche medizinische Wochenschrift, Leipzig**  
68 261-288 (March 13) 1942 Partial Index

- \*Hypoglycemia in General Practice. F. Umber—p. 261  
 Prevention of Postanesthetic Pneumonia with Intubation Anesthesia According to Felgner. H. Denhardt—p. 264  
 Pervitin Addiction and Intoxication. F. Dittmar—p. 266  
 \*Prevalence of Rheumatism in Tropical and Subtropical Countries. W. Büngeler—p. 268  
 Combined Action of Nicotinic Acid Amide and Cortigan on Porphyrinuria During Lead Poisoning. A. Benkó—p. 271  
 Hypoglycemia After Depot Insulin. C. Brentano—p. 275

**Hypoglycemia in General Practice**—According to Umber, hypoglycemia is characterized by neurosympathetic symptoms such as tremor, weakness, accelerated pulse, palpitation, sweating and hunger and by cerebral psychotic symptoms. The latter as a rule do not appear as suddenly as those of the first group. They develop more gradually and may be preceded by headache, depression and visual disturbances. There may develop aphasia, confusion, temporary unconsciousness, stupor, jactitation, temporary psychosis, compulsive laughing or crying and prolonged loss of consciousness. There may also be pupillary rigidity and a positive Babinski sign. Hypoglycemic attacks often begin with impudent, mischievous and obstinate behavior in otherwise well behaving children. The character of the psychotic reactions in hypoglycemia may be determined by individual psychotic predisposition. Treatment with protamine zinc insulin is more likely to provoke the insidious cerebral symptoms than the sudden neurosympathetic symptoms. Such latent hypoglycemia is not desirable, and great care is necessary in estimating the proper dose of depot insulin. There is a spontaneous hypoglycemia in which insulin medication plays no part. This he further differentiates into that caused by direct insulinism and that caused by indirect insulinism. Hypoglycemia developing in the presence of insulinomas or of simple functional hyperplasia of the islands of Langerhans belongs to the first group, whereas that in which hypophyseal functions are involved belongs to the second group. In the treatment of hypoglycemia dextrose or levulose is effective. Suitable diet will prevent the attacks. Calcium and atropine derivatives will counteract the sympathetic irritability. In cases in which insular tumors are the cause of the hypoglycemia, surgical treatment may obtain a cure. The patient's constitution, his endocrine and central nervous makeup, is of great importance in the development of hypoglycemia.

**Rheumatism in Tropical and Subtropical Countries**—Büngeler points out that variable climatic conditions may prevail in the same latitude as the result of differences in altitude and other factors. This is exemplified by the different climatic regions in the state of São Paulo, which is partly tropical and partly subtropical. Büngeler based his study of the incidence of rheumatic disease in São Paulo on more than 600 postmortem examinations. He recognized as cases of rheumatic disease only those which showed in the heart or the joints or in both the characteristic Aschoff-Geipel nodes, typical nodule-like scars or signs of rheumatic endocarditis or its sequels. Signs of rheumatic disease were present in 54. The incidence of rheumatism is not dependent on climatic factors. Büngeler thinks that rheumatism is just as frequent in the tropics as elsewhere. Rheumatism everywhere is a problem of focal infection. The high incidence of rheumatism in tropical Brazil suggests that the tropical climate has no therapeutic effect on the disease. Elimination of foci of infection is of primary importance in the treatment of rheumatism.

## Book Notices

**A Manual of Clinical Therapeutics. A Guide for Students and Practitioners.** By Windsor C. Cutting, M.D., Associate Professor of Therapeutics, Stanford University School of Medicine, San Francisco. Cloth Price \$4. 1p 609 Philadelphia & London W. B. Saunders Company 1943.

The introductory chapter in this compendium is on general problems in therapeutics; then there are terse statements of what to do for amazingly large lists of diseases in the following classifications: the various types of infections; other diseases, probably infectious; nutritional diseases; vitamin deficiencies; endocrine diseases; metabolic diseases; diseases due to allergic states; diseases due to physical agents; diseases of the gastrointestinal tract and the peritoneum; diseases of the pancreas, liver and bile passages; the heart; the peripheral circulation; the blood and spleen; the respiratory system and mediastinum; the genitourinary system; the muscles, bones and joints; the skin; the peripheral nerves; the central nervous system and the mind. Then come appendices on special procedures, physical therapy, symptoms and treatment of poisoning, diet lists, metric and English equivalents, tables and charts for weight, height and age, abbreviations, and other aids in prescribing clinical physiologic data, quantitative methods for controlling the therapeutic use of drugs, lists of prescriptions, drugs and doses, a list of works of reference, and an adequate index. Nearly everything is here; in fact, nothing of importance seems to have been omitted save that intangible something which marks the difference between a contribution to medical literature and a mere medical book. This is just a medical book, no one, having once paged through it, would ever think of opening it again merely for the pleasure of reading or for contact with the mind and experience of its author. But the book is filled with dogmatically phrased statements of what to do for what your patient "has" and they may be quickly got at; it will probably enjoy a large sale.

**Elements of Food Biochemistry.** By William H. Peterson, Ph.D., Professor of Biochemistry, University of Wisconsin, Madison; John T. Skinner, Ph.D., Assistant Chemist, Kentucky Agricultural Experiment Station, Lexington; and Frank M. Strong, Ph.D., Associate Professor of Biochemistry, University of Wisconsin, Madison. Cloth Price \$3. 1p 291 with 34 illustrations. New York: Prentice Hall Inc. 1943.

The authors state that the purpose of this book is to emphasize the chemistry of the constituents of food and the chemical changes that these constituents undergo in the process of metabolism. Written to serve primarily as a textbook in food biochemistry for college undergraduates, the book will no doubt prove useful to many other persons as well. The presentation of the various topics of interest is about as elementary as is possible when one considers the numerous chemical formulas necessarily involved in the discussion of any phase of biochemistry. The nine chapters cover carbohydrates, fermentation, food products, acidity, lipides, proteins, mineral elements in nutrition, water, vitamins and enzymes. Attempts are made to show the relation of many of the topics to industry and economic life in general. For example, in the chapter on carbohydrates, one finds a table setting forth the economic importance of some industries based on carbohydrates elsewhere; other tables deal in similar fashion with fats and proteins. Thirty-four illustrations aid in arousing interest. Important substances like vitamins and pepsin that have been isolated in pure form are discussed and photographs of their crystals presented. Other photographs illustrate some of the vitamin and mineral deficiencies. In the appendix will be found several tables of interest. One gives the proximate composition of many foods, whereas another deals with the occurrence of mineral elements in representative foods; a third with trace elements and a fourth with vitamin content. The usefulness of the volume is further enhanced by an index. For the reader who has had only an introductory course in organic chemistry, this book can undoubtedly be recommended. More advanced students, however, will desire a more extended and detailed treatment of the subject than is offered in this volume.

**The Pharmaceutical Recipe Book (R. B. III).** By Authority of the American Pharmaceutical Association. Prepared by the Committee on Recipe Book of the American Pharmaceutical Association. Third edition. Cloth Price \$5. 1p 71. Easton, Pa. Mack Printing Company 1943.

As stated in the preface, the Recipe Book represents the outcome of an effort of the American Pharmaceutical Association to place in the hands of the practicing pharmacist a reliable and comprehensive book of recipes applicable to his business. The book is divided into several parts relative to the various types of formulas. The edition represents a complete revision of this formulary with a view of effectiveness of the preparations included and new ones gleaned from the medical literature, hospital formularies and foreign compilations. The sections on podiatry (chiropodologic), dental and veterinary products and cosmetic preparations have been revised. Many new features have been introduced, such as a table of Latin terms and equivalents, a glossary of synonyms, a table of acceptable coal tar dyes, a vitamin synopsis, and sections devoted to diabetic and ophthalmic preparations. However, the section on photographic formulas has been deleted. The book lends little value to the physician but a hand to medical quackery. Nevertheless, it is an advancement over the usual polypharmaceutic mixtures or imitation "patent medicines" heretofore exploited by the publishers of pseudoscientific magazines. The volume is to be recommended in that it does not make any claims for remedial action, assuming no responsibility for the therapeutic uses. The text contains some fourteen hundred formulas.

**Victories of Army Medicine. Scientific Accomplishments of the Medical Department of the United States Army.** By Edgar Erskine Hume, Colonel, Medical Corps, United States Army. Cloth Price \$3. 1p 20 with 79 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company 1943.

Colonel Hume is at this writing in charge of the medical aspects of government in Sicily. His book is largely based on lectures delivered in 1942 at the College of Physicians of Philadelphia and the Johns Hopkins University, also the 1943 Beaumont Lecture before the Wayne County Medical Society in Detroit. The great scope of interest is indicated by sections on anthropology, ornithology and surgery. These considerations are followed by advances that developed with each of the great wars in our history. There are chapters on the various divisions of the Army Medical Department, lists of men who have served as librarians in the Army Medical Library, commanders in the Army Medical School, lists of general hospitals and much other valuable material. There are also great numbers of portraits of men who have contributed greatly to the work of the Army Medical Department. The volume is an excellent compilation of exceedingly useful material relative to the medical services of our armed forces. The useful information that it makes available should cause its addition to every medical library.

**Chemistry and Methods of Enzymes.** By James B. Sumner, Professor of Biochemistry, Cornell University, Ithaca, New York, and G. Fred Somers, Instructor in Biochemistry, Cornell University. Cloth Price \$5. 1p 365 with illustrations. New York: Academic Press Inc. 1943.

Since each of the countless chemical reactions which take place in living cells are catalyzed by enzymes, these substances may properly be considered as the most important constituents of cells. Enzymatic reactions are, moreover, generally specific in nature so that each cell must contain a great many enzymes. It is estimated, for example, that liver cells carry out over a thousand chemical reactions involving oxidation, hydrolysis and synthesis and that each of these reactions is catalyzed by a specific enzyme. Only a small fraction of these enzymes have thus far been isolated and studied but new ones are constantly being discovered and the literature on enzyme chemistry is growing rapidly. In the present book the authors present a general survey of modern enzyme chemistry without describing in detail any particular enzyme or class of enzymes. The subject matter is divided into four parts. Part 1 deals with the general properties of enzymes. Part 2 contains seven chapters dealing with such hydrolytic enzymes as esterases, carbohydrases, nucleases, amidases and proteases. Part 3 consists of nine chapters dealing with various classes of oxidative enzymes.

Part 4 contains a chapter on hydrases and mutases and a final chapter on carbohydrate metabolism in which the authors show how individual enzymes fit into the general picture of carbohydrate utilization in cells. Throughout the book important members of each class of enzymes are discussed briefly from the standpoint of history, occurrence, action, specificity, activity measurements, activation and inactivation, preparation and properties. These brief descriptions of the important properties of individual enzymes, together with the many hundreds of references to the original literature, serve to make this a very useful book for students and workers in this important field.

**Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1942 with the Comments That Have Appeared in The Journal** (Cloth Price, \$1) Pp 207 (Chicago: American Medical Association 1941)

Through the years the size of this volume has grown with the increased work of the Council on Pharmacy and Chemistry until the present edition has the same number of pages as the book published in 1908 which covered the Council's first four years of activity. This volume epitomizes that phase of the Council's work which may be said to be collateral to the 'acceptance' of drugs—the informative consideration of current medical problems in the interest of rational therapeutics. It contains reports of studies by private investigators which were originally published in *THE JOURNAL* under the sponsorship of the Council, such as preliminary discussions of new developments in therapeutics and timely articles on the status of recognized agents as well as reports of omission or rejection of products from New and Nonofficial Remedies. It also offers a record of current decisions on matters of Council policy.

Several of the reports are of particular interest for various branches of medical science: the use of bulk ether in anesthesia, the absorption of surgical gut (catgut), the higher types of antipneumococcus rabbit serum, the surgical and medical treatment of animals with experimental hypertension and the status of racemic epinephrine solutions for oral administration. The reports in this small compact volume represent expert medical consensus and are proffered to aid in the consideration of the value of therapeutic agents.

**Methods for Diagnostic Bacteriology. A Complete Guide for the Isolation and Identification of Pathogenic Bacteria for Medical Bacteriology Laboratories** By Isabelle G. Schaub, A.B., Instructor in Bacteriology, Department of Pathology and Bacteriology, Johns Hopkins University School of Medicine, Baltimore, and M. Kathleen Foles, A.B., Bacteriologist in Charge of the Diagnostic Bacteriological Laboratory of the Medical Clinic, Johns Hopkins Hospital, Baltimore. Second edition. Cloth Price, \$3.50. Pp 430. St. Louis: C.V. Mosby Company, 1943.

In the second edition of this laboratory guide in bacteriology there has been added a new section on laboratory procedure in outline form and methods for the quick identification of microscopic organisms based chiefly on their colony characteristics. The format of the manual is so arranged that a blank page faces each printed page, allowing for the addition of notes to meet the bacteriology worker's specific needs. In a sense there is no "routine" bacteriologic procedure, as the methods used depend more often than not on the diagnostic acumen of the worker. What this manual attempts to present is a specific detailed outline of bacteriologic laboratory methods to suit a large number of the more usual clinical cases. The methods presented are entirely modern and have the advantage of being the procedure actually used at the Johns Hopkins Hospital Laboratory. This is not an elementary textbook. It is intended as a guide for the fairly experienced worker and as such probably has considerable usefulness.

**Rehabilitation of the Tuberculous** By H. A. Pattison, M.D., F.A.C.P. Cloth Price \$2.50. Pp 186 with illustrations. Livingston, Columbia County, New York: Livingston Press, 1942.

The author has been for twenty-five years concerned in the field of rehabilitation of the tuberculous. Hence this book is among the most authoritative works available in the field concerned. Sanatorium treatment, vocational training, family relief, marriage, mental aspects, allergy and the human constitution are discussed. There are also, in the second part of the book, excellent descriptions of special projects such as those at Saranac Lake, Papworth Village and many another center of rehabilitation and sheltered workshops here and abroad.

**Emotional Hygiene: The Art of Understanding** By Camilla M. Anderson, A.B., M.D., Consulting Psychiatrist for the American Red Cross. Cartoons by Dorothy G. Stevenson. Third edition. Cloth Price \$2. Pp 253, with illustrations. Philadelphia: New York & Montreal: J.B. Lippincott Company, 1943.

This is a much improved edition of a book which has been definitely successful in aiding individuals to adjust themselves. The author is a practicing psychiatrist with an excellent background, and, as we said in the review of the first edition, 'This is one of the few books on mental hygiene sufficiently well written and widely enough applicable so that it might be given to the interested reader without medical training who requests a book on this subject. There are many chuckles and pertinent illustrations, both verbal and pictorial, and practical cases are taken up and discussed in an intelligent manner.' It deals with the need of the patient to be aware that he should grow up, that he should not run away from problems, and there is also a discussion of psychiatric nursing, as the book is one as much for the psychiatric nurse as it is for the layman who would like to read something enlightening with regard to minor problems. It is a safe book to give to readers who are interested in their own problems, provided these problems are not so serious that the reader is likely to get numerous disorders, as is so common in medical students, that is, identification of a wholesome personality with the unwholesome picture described in the volume. Certainly no book can supplant the therapist, but, in this day and age of reading on every subject, when the patient demands a book, this is one which can be given to him.

**Diagnosis of Uterine Cancer by the Vaginal Smear** By George A. Papinicolaou, M.D., Ph.D., Department of Anatomy, Cornell University Medical College, New York, and Herbert F. Traut, M.D., Department of Obstetrics and Gynecology, Cornell University Medical College and New York Hospital. Cloth Price, \$5. Pp 47 with 11 colored plates. New York: Commonwealth Fund, London: Oxford University Press, 1943.

This is a descriptive atlas of the cells in vaginal smears under various conditions, normal and pathologic, with special emphasis on the diagnostic value of such smears in carcinoma of the cervix and the fundus of the uterus. The preparation and staining of vaginal smears is described in detail. The procedure appears to be simple and suitable for routine use. The morphologic appearances on smears are excellently illustrated in eleven plates of drawings and photomicrographs, all in colors. "Patient and repeated search of multiple preparations by well trained microscopists is essential to success." It is pointed out by the authors that the vaginal smear cannot be depended on for the ultimate diagnosis of uterine carcinoma in the place of biopsy and microscopic sections. The evaluation of individual cells or small groups of cells is more difficult than of carcinoma in tissue sections. But recognition of carcinomatous cells in vaginal smears may lead to the diagnosis of carcinoma while it is still in the early and superficial stage. The atlas is based on the examination of specimens from some 3,000 women and will be of valuable help to all who are interested in the systematic study of vaginal smears.

**Urine and Urinalysis** By Louis Gershenfeld, Ph.D., Ph.M., D.Sc., Professor of Bacteriology and Hygiene and Director of the Bacteriological and Clinical Chemistry Laboratories at the Philadelphia College of Pharmacy and Science. Second edition. Cloth Price \$3.25. Pp 304 with 42 illustrations. Philadelphia: Lea & Febiger, 1943.

This publication will be welcomed by practitioners and others who are especially interested in the analysis of the urine. Much new material has been added for this edition and the book has been thoroughly revised. The author covers the subject ably and completely. First he discusses the structure and function of the kidney, the definition of urine and the collection of samples. He continues with the physical and chemical characteristics of the urine, its pathologic constituents and its qualitative, quantitative and microscopic analysis. The book is completed with a section of special urinary tests and tests of kidney function. The discussions of the practical importance of the various tests are excellent. However, the book will be found to be too detailed for the average laboratory worker who is interested usually in but one good test for any particular constituent of urine. For workers interested in this subject the book is unqualifiedly recommended.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### SAFETY LENSES FOR INDUSTRIAL USE

To the Editor—In one of our plants we have a ruling that all employees must wear safety lenses. We have had some criticism from some members who state that certain local physicians and opticians have advised them that the wearing of such lenses could injure their eyes permanently. 1. Has thickness of safety glass any bearing on prescription glasses? 2. Is there any corrective effect or magnification in the clear lens glasses? 3. Will clear lens safety glasses injure the eyes of a person not now requiring correction or hasten the day when they may need correction? 4. Is there any advantage of a flat clear lens over a curved clear lens? 5. Must curved lens glasses be fitted more exactly in relation to the eye than a flat lens? 6. Could clear lens safety glasses cause blood-shot eyes or nauseate a person not requiring glasses? 7. What are the allowable limits in grinding regular prescription lenses? 8. What are the allowable limits for clear safety glasses lenses?

H W Garton MD Fort Wayne Ind

ANSWER—1 For all practical purposes, no. Even clear white glass absorbs a certain proportion of visible rays of light (6 per cent or more, depending on its thickness). Objects never appear exactly the same through glass as they do without the glass because of this factor of energy absorption by the glass. Indeed, physicians as well as lighting engineers should take this factor into consideration when advising regarding the amount of light workmen need on the job. Occasionally a person is found who is annoyed by the almost negligible difference in apparent size of objects seen through curved glasses or appreciable thickness, especially if there is a notable difference in the prescription for the two eyes. Indeed, it is on this principle that differences in size are corrected—the so-called aniseikonic lenses. The aniseikonic factor does exist, but undoubtedly it is almost negligible. Of far greater importance is the exact correction of the refractive error. If the glasses have no correction or if the correction is approximately the same for the two eyes and if the glasses are of the same curvature and thickness, the difference of appearance of objects with and without goggles is the same as the difference in viewing an object in space through a pane of glass and without the pane or glass interposed.

2 See answers to 1, 7 and 8.

3 No. On the contrary, many eyes are saved by wearing goggles. Industrial surgeons always ask workmen whose eyes are injured "Where were your goggles?" And almost invariably there is a sheepish answer such as "I thought I wouldn't need them at the moment."

4 No. The curved clear glass will resist impact better than the flat glass. Also, because of the eyelashes the curved glass goggles can be fitted closer to the eyes and give a greater field of vision. See also answer to 1. Mr C A Partenhimer of the American Optical Company says: "In very few cases we find some workmen prefer a flat lens to a curved lens, but 95 per cent of our customers are more than anxious to have us furnish the curved clear lens, due to the fact that today's production is not sufficient to permit us to supply the demand for curved clear lenses much to the dissatisfaction of our Safety trade. We might state that a curved lens is an approximation of the curve of the eyeball—is capable of rendering more space for eyelashes, thus permitting the goggle to be fitted close to exclude foreign matter. It deflects flying objects much more readily than a flat lens and is capable of withstanding much more severe impact and last but not least it does not permit annoying reflections that are often present when flat lenses are mounted in Safety goggle frames."

5 Care should be taken to fit all goggles so that they are comfortable, are held in the proper position before the eyes and give clear vision for the job. If the worker has eyes which see objects of different size or if he has pronounced inequality in the strength or the prescription for the two eyes, special care should be given to filling the order for curved glass goggles.

6 Probably not. Many people depend on the air to dry the normal tear supply. Such may find that any glasses and espe-

cially goggles interfere with nature somewhat. Many people perspire easily and the sweat often collects in the goggle cup and may be slightly irritating at first. After a few days, however, nature usually adapts itself if the goggles are well fitted and well ventilated. Otherwise the workman may be compelled to take them off occasionally to wipe his brow and his eyes and to clean the goggles. If he wipes his eyes with a dirty handkerchief he is apt to get red eyes. The nuisance is immaterial as compared to the loss of an eye. Nausea may develop in a workman for any one of many reasons—the boss, the foreman, the working hours, the job, his fellow workmen and the like.

7 and 8 In the 1938 edition of the National Bureau of Standards Handbook H 24 "American Standard Safety Code for the Protection of Heads, Eyes and Respiratory Organs," issued by the U S Department of Commerce, National Bureau of Standards page 6 paragraph 16 appears the following:

#### General Requirements for Glass

'(a) All Glass—Glass for lenses and windows of protectors shall be hard, substantially free from striae, air bubbles, waves and other flaws. Except when the lens is ground to provide proper optical correction for defective vision, the front and rear surfaces of lens and windows shall be smooth and parallel within the following limits:

'Windows and end cover glasses for same, 35 minutes of arc ( $\frac{1}{2}$  prism diopter)

Lenses and cover glasses for lenses 9 minutes of arc ( $\frac{1}{3}$  prism diopter)

"The glass shall not be negative in refractive power in any meridian, shall not have a positive refractive power in any meridian greater than 0.12 diopter, and shall not have a greater difference in refractive power between any two meridians than 0.06 diopter.

"(b) Goggle Lenses—All lenses shall have dimensions not less than  $1\frac{1}{2}$  inches (38 mm) in the vertical direction and  $1\frac{3}{4}$  inches (44.5 mm) in one horizontal direction. It is recommended that circular lenses not involving optical correction be of a uniform diameter of  $1\frac{9}{100}$  inches (50 mm)."

As a matter of fact, during wartime we often have to be content with prescription lenses within  $\frac{1}{8}$  diopter (0.12 diopter) and a few degrees off axis if the prescription calls for a cylinder under 1 diopter.

### UNUSUAL TYPE OF PARALYSIS OF FACIAL NERVE

To the Editor—A locomotive engineer aged 54 became suddenly ill with a paralysis of the right side of his face. When I saw the patient three days later I made a diagnosis of Bell's palsy of rheumatic origin due to exposure to drafts on the locomotive. There was obliteration of the nasolabial fold, inability to whistle to raise the right eyebrow and to wrinkle the right forehead and the mouth drooped but the right eye could be closed. No disturbance of taste was present. There was periauricular pain and tinnitus of the right ear. Except for a blood pressure of 160/90 and large tender lymph nodes (the right larger than the left) at the angle of the lower jaw and swelling of the right side of the face (especially around the eye) the physical examination was negative. The following day the systolic blood pressure dropped to 136 and has since remained normal. Application of moist heat has reduced the swelling of the face. The lymph nodes have decreased in size and are much softer. The temperature has remained normal. Is this a case of Bell's palsy (all textbooks stress the fact that inability to close the eye—Bell's phenomenon—is invariably present)? Will tonsillectomy have a beneficial effect on this condition and if so how soon could it be done? What other measures are indicated? Is there any substitute for faradization which is not available in a town of the size of this? Any suggestion will be appreciated.

Mauro Rosenberg MD Auburn N Y

ANSWER—The onset of the weakness of the right side of the face was indeed similar to that found in Bell's palsy, ordinarily due to exposure. There are however various types of paralysis of the facial nerve and a considerable number of variants have been observed particularly in the last few years. These variants have been in all probability due to neurotropic virus infection and are not of the same type ordinarily associated with the clinical syndrome known as Bell's palsy. In the type described by Bell it is indeed true that the inability to close the eye on the affected side is almost inevitably present although it cannot be said that this is a fixed rule. Because the eye could be closed does not preclude a diagnosis of paralysis of the facial nerve of some type. When there is associated with this tenderness of the lymph nodes at the angle of the lower jaw and a swelling of the right side of the face the symptoms are suggestive of more than an ordinary Bell's palsy.

Tonsillectomy during the acute stage of the disease should not be advised. In a patient of 54 moreover care should be exercised with regard to ascertaining the degree of infection in the tonsils before they are taken out.



There are no other measures indicated except the ordinary care of a facial paralysis. As long as the right eye can be closed there is little danger of ulceration of the cornea. This is fortunate as it avoids one of the more serious complications of Bell's palsy. If the paralysis is severe and lasts more than a week or two it is unlikely that the muscles supplied by the facial nerve on the right side would respond to faradism, and galvanism would be the only kind of electricity capable of moving the muscles. If the condition does not clear up after two or three weeks and the faradic response has not returned, galvanic treatment of the muscles is advised, as it allows the muscles to move and thus helps to keep them in their normal physiologic state. It has no effect on the regeneration of the nerve. If the proper galvanic battery is not available, usually one can be rented from a suitable source in a large city.

#### SURGERY OF PERIPHERAL BRANCHES OF TRIGEMINAL NERVE

**To the Editor**—I have observed a number of cases of chronic antrum infection with extensive bone destruction involving the roof of the antrum in which the infraorbital nerve was embedded in dense granulation tissue and had to be removed, in other cases the infraorbital nerve was removed to treat infraorbital neuralgia. In some of the cases the upper teeth were missing before operation. What is known about the harmful effects on the teeth and other structures after removing this nerve? I found only a few unsatisfactory references in the literature. Is anything known about trophic changes in the skin of the cheek following the isolated removal of this nerve? In some cases of infraorbital pain long after previous Caldwell-Luc operations, revision of the antrum showed the infraorbital nerve fibers to be surrounded by dense scar tissue (microscopic examination). In one of the cases we removed part of the infraorbital nerve and left a stump of it exposed, after which the pain in the infraorbital region reappeared. We found at a latter operation that this stump again was embedded in thick scar tissue and only after removing the entire length of the nerve beyond the posterior antral wall did the pain disappear entirely. In this particular case there was a very annoying burning painful sensation in the region of the nasolabial fold and upper lip. Is such a case similar to what is otherwise known as causalgia?

M D, New York

**ANSWER**—Various branches of the trigeminal nerve, including the maxillary, have been repeatedly sectioned without causing any "trophic" change in or harmful effects on the skin or the teeth. Destruction of these peripheral branches of the trigeminal nerve was once commonly practiced for the relief of trigeminal neuralgia. The relief so obtained is always temporary, because the amputation neuroma which forms on the end of the nerve and the scar tissue about it soon again supply the peripheral stimuli usually requisite for the development of the painful paroxysms of this disease. It is accordingly not surprising that in the instance cited in the query similar scar tissue irritated this sensory nerve, causing pain which was referred to the peripheral distribution of the involved nerve. The situation was comparable to that seen with amputation neuromas in the extremities. It is not similar to causalgia, which develops with partial lesions of the peripheral nerves, principally the median in the upper extremities. Causalgia is characterized by a most disagreeable burning pain which is commonly associated with emotional reactions on the part of the patient. In addition there are changes in the skin, which becomes cyanotic, light and glossy. The nails curve and grow irregularly. The skin is commonly very sensitive to touch and to drying. The joints become stiff.

#### BIFOCALS FOR YOUNG PEOPLE

**To the Editor**—A local optometrist prescribes bifocal lenses for a large number of young people and children, some of whom are as young as 7 years. The ones who have come to me for subsequent examination show no disturbance of muscle function and no weakness of accommodation. I cannot help but think that this is a harmful procedure yet can find nothing in the literature regarding it. Kindly advise if I am correct in this assumption and also what the immediate and remote effects of this would be on the eye.

M D, Iowa

**ANSWER**—It is certainly not considered good practice to prescribe bifocals for young people except in the presence of a convergent squint which becomes greater when the eyes are used for near vision. Other than this there is no indication for the procedure except in paralysis of accommodation. The use of bifocals by such young persons would possibly have a tendency to relax accommodation to an extent which would favor the early onset of presbyopia. The physiologic relationship between convergence and accommodation would also be prevented or interfered with and a divergent squint might possibly develop in some of these cases as a later result. One would certainly feel like condemning the procedure entirely except under the conditions previously mentioned.

#### ANESTHESIA FOR TONSILLECTOMY AND RESUSCITATION IN CHILDREN

**To the Editor**—Please advise what the safest and best general anesthetic is for tonsillectomies in children, what precautions to take to prevent sudden respiratory failure in children under ether and the best methods of resuscitation.

M D, Illinois

**ANSWER**—The safest and best method of general anesthesia for performance of tonsillectomy on children is to give ether by insufflation. Anesthesia may be induced with nitrous oxide, oxygen and ether, it can be maintained by drop ether for a short time, followed by insufflation with ether vapor delivered through a hollow metal hook placed in the corner of the mouth or through a tube connected with a mouth gag.

Precautions that tend to prevent sudden respiratory failure are to avoid too deep a plane of anesthesia, to have the patient's head a little lower than his hips, to keep the throat cleared of blood by using suction, to avoid obstruction of the airway with sponges, to depress the tongue in such a way as not to obstruct respiration, to use pressure in the tonsillar fossae, to control hemorrhage or to tie off bleeding vessels definitely and then, as soon as the operation is over, to discontinue administration of the anesthetic agent and to turn the patient to the prone position so that blood and mucus will drain from the mouth and not accumulate in the throat.

The best method for resuscitation is to insert an intratracheal tube and inflate the lungs with oxygen or air. If a tube is not available, the oxygen will have to be administered, probably under some pressure, usually by pressing the bag on the gas machine by hand. However, when a tube is not available, accumulation of blood in the throat creates a hazard, as blood may be forced into the trachea while forcing oxygen into the lungs. Thus this danger also obtains when an alternate method of artificial respiration is used, wherein one person presses on the patient's chest and then while he releases his pressure another person presses on the bag of the gas machine to force oxygen back into the chest. This is continued rhythmically and the patient can be kept in moderate Trendelenburg position during the resuscitation. Respiratory stimulant drugs may be used, but it is most important to give artificial pulmonary ventilation immediately.

#### VITAMIN K TO PREVENT HEMORRHAGIC DISEASE OF NEWBORN

**To the Editor**—A patient has a baby due early in June 1943. Her last child was born in July 1941 and lived only ten hours. She was under the care of a doctor who is now in military service, but the death certificate and the mother state that the baby died from hemorrhagic disease of the newborn. The patient says the doctor told her that "the blood would not clot." The woman is a sextipara. Her periods are irregular, she sometimes skips one or two or even three periods. That is the reason I cannot fix the date of her confinement accurately. I should like to know the best way to use vitamin K (and the best form) in order to prevent hemorrhagic disease in this coming baby.

Persis Straight Robbins, M D, Bradford, Pa

**ANSWER**—It has been recommended by competent investigators that, for prophylaxis, vitamin K in such instances as mentioned in the communication be administered as follows: The mother should be given a daily dose of 1 to 2 mg of menadione or a similarly potent vitamin K substance in capsules or tablets beginning not more than one month before the estimated date of confinement and continuing up to delivery. If the mother is not seen until labor has begun, she should be given an immediate intravenous injection of 4 mg of a water soluble preparation. Elevation of the infant's prothrombin level occurs quickly after parenteral injection of a water soluble vitamin K substance in the mother. If more than fifteen hours elapse between the injection of the drug and delivery, it should be repeated. As an added precaution the infant should be given 1 mg of vitamin K substance intramuscularly soon after delivery. It may be advisable to repeat this dosage twelve hours later to afford added protection.

#### PROPHYLAXIS OF POLIOMYELITIS

**To the Editor**—We are having a slight epidemic of poliomyelitis. Is there anything of value to use prophylactically?

R. L. Johnson, M D, Pittsburg, Texas

**ANSWER**—At the present time there is no agent that can be used successfully for prophylactic use against poliomyelitis. Several agents have been tried in the past, namely picric acid and aluminum sulfate as nasal sprays, without any significant value in the prevention of the disease. Such measures as avoidance of crowds and needless contact exposures, good environmental sanitation measures with proper disposal of excreta, control, pure milk, water and food supplies and good personal hygiene are still the only available procedures.

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## CAUSES OF REJECTION AND THE INCIDENCE OF DEFECTS

AMONG 18 AND 19 YEAR OLD SELECTIVE  
SERVICE REGISTRANTS

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MEDICAL RESERVE CORPS, UNITED STATES ARMY

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AND

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WASHINGTON, D C

Data on rates of rejection, causes of rejection and the incidence of physical and mental defects among 18 and 19 year old registrants are being presented here in response to numerous requests for information on the physical status of this age group. The information has been taken from a sample of 45,585 reports of physical examination and induction, D S S Form 221, received at National Headquarters of the Selective Service System. They represent physical examinations of 42,273 white and 3,312 Negro registrants made at local boards and induction stations during December 1942 and January and February 1943.<sup>1</sup>

Registrants born on or after Jan 1, 1922 and on or before June 30, 1924 were required to register at Selective Service local boards on June 30 1942 in the fifth registration but they did not become liable for training and service until the Selective Training and Service Act of 1940 was amended effective Nov 14 1942. Several factors limit the population under discussion here. Large numbers of physically fit 18 and 19 year old youths entered the armed forces by direct enlistment up to Dec 12, 1942, when induction by enlistment was discontinued. The Selective Service System was notified when registrants enlisted in the armed forces but was not advised of the physical findings of either accepted or rejected volunteers. During the period represented by these data many youths remained in school or college under programs supported by the Army and the Navy which permitted them to finish a course of study before being called up for examination. Young men who had entered war industries or who were needed on farms and had been deferred because of occupation were not examined physically. The remaining 18 and 19 year olds whose order numbers were reached during December 1942 and January and February 1943 were called up for physical examination unless grounds for deferment existed and it is

this group of 18 and 19 year old registrants whose records are available for sampling and for study.

At local board physical examination the physician was instructed to note whether or not certain manifestly disqualifying defects were present. At this time a blood sample was drawn for serologic test for syphilis. If one or more of the defects listed on D S S Form 220 List of Defects was present the registrant was rejected by the local board, if none of the listed defects were present the registrant was forwarded to an induction station, where Army physicians and civilian specialists gave him a complete physical examination. Each defect noted was recorded and the important ones were listed at the foot of the physical examination form in the space labeled "Summary of defects in order of significance." Each defect listed in this space was coded and tabulated in the last three columns of figures in table 2. If the registrant was rejected at the induction station the cause or causes of rejection was stated. If two or more defects were present the one listed first was used as the cause of rejection unless this was clearly misleading, and such defects and causes of rejection at local boards have been tabulated in the first three columns of figures in table 2.

In this paper, registrants have been counted as rejected if they were not accepted for general military service. However, a substantial number of registrants who were not acceptable for general military service were inducted for limited service. If these men accepted for limited service only had been counted as inducted for the purposes of this paper the rejection rates would have been lower, particularly for rejections due to defective vision and musculoskeletal defects.

### REJECTION RATES

Table 1 shows the local board and induction station rejection rates for white and for Negro registrants born in 1923 and 1924. Of the white youths called up for physical examination, 23.8 per cent were rejected either at local boards or at induction stations. The corresponding rejection rate for Negro youths was almost twice as high, 45.5 per cent.

The rejection rates for 18 and 19 year old registrants are only slightly lower than the rejection rates for older registrants, but caution should be exercised in drawing conclusions from this since as noted previously a large proportion of physically fit youths were not liable for examination either (a) because of previous enlistment in the armed forces (b) because of programs that postponed examination and induction until a course of training has been completed or (c) because of employment in war industry or agriculture.

<sup>1</sup> From the Medical Division and the Division of Research and Statistics, National Headquarters, Selective Service System.  
<sup>2</sup> A previous article (Rowntree, L. G., McGill, K. H., and Folk, O. H., Health of Selective Service Registrants, J. A. M. A. 115: 1223-1227 [April 4] 1942) summarized data on 19,423 Reports of Physical Examination, D S S Form 200 for registrants and volunteers 18 to 30 years of age made during the period November 1941 through May 1942.

<sup>2</sup> Standards of Physical Examination During Mobilization, MR 19 Oct 1, 1942, supplemented by Change 1, dated Jan 22, 1943, and by instructions issued by the Office of the Adjutant General, SPA 324-71 (1,224-1) PRI Joint Induction Procedure of the Army, Navy, Marine Corps and Coast Guard defined the physical standards in force at induction stations during the period represented by these data.

LEADING CAUSES OF REJECTION

The chart is based on the data of table 2 and shows, by the lengths of horizontal bars, the relative importance of the ten leading causes of rejection among white and among Negro 18 and 19 year old registrants. Later sections of this paper will discuss each of these defect

TABLE 1—Rejection Rates of 18 and 19 Year Old Registrants\*  
Rejections per Hundred Examined

	Rejection Rate		
	White and Negro	White †	Negro
Local board	5.2	1.3	16.5
Induction Station ‡	21.3	20.4	14.8
Combined rate §	25.4	21.8	45.6

\*Based on a sample of 4,385 reports of physical examination and induction D S S Form 221 for 18 and 19 year old registrants. Registrants deferred at local board for reasons other than physical or mental defect are not included.

†Includes all races other than Negro.  
‡Based on the number of registrants who passed a local board physical examination and were forwarded to an induction station for examination.  
§Based on the number of registrants examined at local board who were rejected at local board or induction station.

groups in detail. The following discussion is concerned only with certain general relationships.

The most striking difference between the two racial groups concerns the high rate of rejections among Negroes for educational deficiency and for syphilis. Educational deficiency accounted for 121.7 rejections per thousand Negro youths examined, or for 26.7 per cent of all Negro rejections. Syphilis accounted for 112.0 rejections per thousand examined, or for 24.6 per cent of all Negro rejections. The two conditions together accounted for slightly more than half of all rejections of Negro youths. Eye defects and mental disease, the leading causes of rejection among white youths, ranked seventh and fourth respectively among Negro youths.

Other defects appear on each of the two lists of ten leading causes of rejection but with different rank among white youths and Negroes. Thus, musculoskeletal defects are in third place among white youths and in fifth place among Negroes, and cardiovascular defects are fourth in importance among white youths and third among Negroes. Ear defects and underweight appear on the list of ten leading causes of rejection among white youths but are not important as causes of rejection among Negroes. Conversely, syphilis and tuberculosis, listed among the first ten causes of rejection for Negroes, are lower in order of importance among white youths. Further comparative data may be found in table 2 and in the discussion which follows.

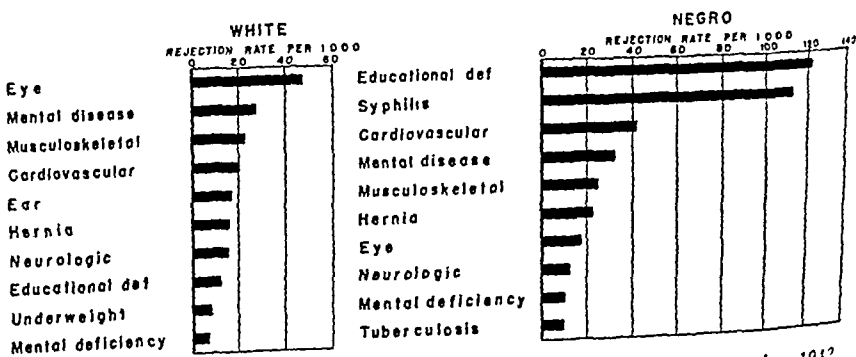
Similar lists are obtained by ranking the ten leading causes of rejection among registrants 20 years of age and older as shown on D S S Form 221 representing examinations made in the same period. Tuberculosis stands in ninth place and syphilis in tenth among white youths 20 years of age and older, displacing underweight and mental deficiency. Among Negroes, tuberculosis is in ninth place and mental deficiency in tenth, reversing their order in the 18-19 year age group. Among older Negroes syphilis is the leading cause of rejection, accounting for 28.7 per cent of all rejections. The other differences in rank of causes of rejection between the two age groups of each race are of minor importance.

During peacetime examinations made November 1940 through May 1941, when different physical standards were in force, the ten leading causes of rejection for white and Negro registrants combined, aged 21 to 36, were, in order, teeth, eyes, cardiovascular defects, musculoskeletal defects, venereal diseases, mental and nervous defects, hernia, ears, feet, and tuberculosis and other lung defects.<sup>3</sup> Since that time the standards affecting vision, teeth and educational qualifications have been revised, and increased attention has been devoted to the psychiatric examination.

CAUSE OF REJECTION AND INCIDENCE OF DEFECTS

Table 2 shows how frequently each of ninety-six diseases and defects was listed as cause of rejection and how frequently each was listed as present among all registrants examined, among white registrants and among Negro registrants. Data are expressed both in terms of the number of rejections and in terms of the number of cases per thousand registrants examined. The following discussion of the data of table 2 is largely limited to defects which are important as causes of rejection and to diseases or conditions whose occurrence can be prevented or controlled.

Eye defects, and in particular defective vision, have been a leading cause of rejection throughout the entire period of administration of the Selective Training and Service Act of 1940. The visual standards for general military service that became effective on Oct. 15, 1942 specified visual acuity of "not less than 20/200 in each eye without glasses if correctable to at least 20/40 in each eye." On Feb. 1, 1943, when joint Army-Navy induction stations began operation, the visual standards for general service were changed to "minimum vision of 20/70 in one eye and in the other eye at least 20/25 without glasses or acuity of vision of 20/25 with both eyes open without glasses, provided the vision in the worse eye is not less than 20/70."<sup>3</sup> These data represent examinations made under both sets of standards. Some of the youths shown here as rejected for general military service because of eye defects were inducted for limited military service. Eye defects were cause of rejection of 44.9 registrants per thousand examined and were noted as present in 101.5 registrants per thousand examined. They were much more important as causes of rejection and in total incidence among white youths than among Negroes.



Ten leading causes of rejection by race, 18-19 year old registrants. December 1942, February 1943

Ear defects, most of them specified as otitis media or as defects of the tympanic membranes (presented in table 2 under "other ear defects") were more prevalent and were more important as causes of rejection among white youths than among Negroes. This agrees with data for older registrants in this and other time period.

3 Instructions issued by the Office of the Adjutant General. 324 71 (1 22 43) PR 1

Most of the rejections for ear defects occurred at induction station examination.

Dental defects were numerous particularly in white registrants but they were unimportant as cause of rejection during this time period. Before February 1942 when the standards for general military service

good musculature, are free from gross dental infections and have a minimum requirement of an edentulous upper jaw and/or an edentulous lower jaw, corrected or correctable by a full denture or dentures."

Tuberculosis is one of the defect groups in which Negroes have higher rates of incidence and higher

TABLE 2—Causes of Rejection and Incidence of Defects of 18 and 19 Year Old Registrants Examined at Local Boards and Induction Stations\*

Defect or Defect Group	Number of Registrants Rejected per 1,000 Examined			Number of Cases Found per 1,000 Examined		
	Total	White	Negro	Total	White	Negro
Total all causes	237.8	48.0	63.9	612	60.5	0
Eyes	44.9	47.1	1.2	101	106.4	0
Blindness bilateral	0.1	0.1	0	0	0.1	0
Blindness unilateral	1.8	1.8	1	2.2	2.2	0
Eye diseases	18.5	19.1	11.1	8.1	17.3	0
Defective vision	24.4	26.0	4.3	71.0	73.1	18.4
Ear	15.0	10.0	1.8	0.1	0.9	4.2
Deafness bilateral	0.3	0.3	0	0	0.3	0
Deafness unilateral	0.1	0.1	0	0.1	0.1	0
Otitis media	10	11.0	0.9	10.9	11.7	0.9
Ear defects other	3.7	4.0	0.3	10.7	11.0	1.3
Defective hearing	0.6	0.6	0.3	6	3.7	1.3
Teeth	0.8	0.8	0.9	10.0	10.0	0.0
Dentures	0	0	0	0	0	0
Missing teeth	0	0	0	4.7	5.4	7.8
Caries	0.2	0.2	0	2.1	2.4	2.1
Dental defects other	0.4	0.4	0.9	11.3	11.9	0.0
Mouth and gums	0.6	0.6	0.9	7.5	7.8	0.0
Nose	2.6	2.8	0.9	21.2	20.6	0.0
Sinusitis	0.6	0.6	0.3	1.9	1.2	0.3
Vasomotor rhinitis	0.8	0.8	0.3	0	0	0.9
Nasal diseases and deformities	0.3	0.4	0	1.6	1.7	0.1
Nasal obstruction	0.9	1.0	0	15.1	14.0	0.1
Throat	0.3	0.3	0.6	7.3	7.6	3.0
Tonsil defects	0.1	0.1	0.6	6.7	7.0	3.0
Throat defects other	0.2	0.2	0	0.6	0.6	0.0
Lungs	6.0	6.0	6.7	10.7	10.7	0.7
Asthma	3.7	3.6	3.1	5.3	5.2	6.7
Lung defects other than tuberculosis	2.3	2.4	1.2	5.4	5.5	3.0
Tuberculosis	6.8	6.6	9.7	8.0	7.7	11.3
Tuberculosis active pulmonary	1.4	1.4	1.8	1.5	1.4	1.8
Tuberculosis other	0.2	0.2	0	0.2	0.3	0
Tuberculosis arrested pulmonary	3.2	3.0	5.5	3.7	3.4	0
Tuberculosis suspected or unspecified pulmonary	2.0	2.0	2.1	2.6	2.6	2.7
Cardiovascular	21.4	19.8	41.7	31.7	30.6	46.2
Cardiovascular diseases other than rheumatic or valvular	1.1	1.1	0.6	1.1	1.2	0.6
Rheumatic heart disease	2.9	3.1	0.6	3.1	3.3	0.6
Valvular heart disease	12.0	10.8	22.2	12.8	11.6	22.2
Cardiac hypertrophy	0.7	0.5	2.4	0.9	0.7	2.7
Hypertension arterial	2.6	2.2	8.3	3.4	2.9	9.4
Cardiovascular defects other	0.9	0.8	1.3	2.3	2.4	1.8
Tachycardia	1.2	1.2	0.9	2.1	2.2	1.2
Cardiac arrhythmia	0	0	0	0.7	0.8	0
Functional murmurs	0	0	0	5.3	5.5	2.1
Blood and blood forming organs	0.2	0.2	0	0.2	0.2	0
Hernia and relaxed rings	10.3	10.9	22.3	25.7	25.2	24.8
Inguinal hernia	14.8	14.6	18.4	16.7	16.0	19.1
Abdominal hernia	1.0	0.8	3.6	1.6	1.3	3.1
Hernia other and unspecified	0.4	0.4	0.3	2.2	2.3	0.3
Relaxed inguinal ring	0.1	0.1	0	0.2	0.6	0.3
Kidneys and urinary system	4.2	4.4	1.8	8.6	9.0	3.6
Nephritis and pyelonephritis	1.2	1.2	0	1.3	1.4	0
Kidney and bladder defects other	0.7	0.8	0	1.1	1.2	0
Urinary findings abnormal	2.3	2.4	1.8	6.2	6.4	3.6
Abdominal viscera	1.3	1.3	1.3	2.3	2.3	2.4
Gastric ulcer	0.6	0.6	0.6	0.7	0.7	0.6
Gastrointestinal defects other	0.7	0.7	0.9	1.6	1.6	1.8
Genitalia	4.2	3.8	9.1	33.7	34.0	29.3
Testicle atrophy or atrophy of	0.1	0.1	0	2.6	2.7	1.2
Testicle undescended	2.6	2.6	3.0	4.0	3.9	3.9
Varicocele	0.2	0.1	0.6	15.3	19.3	0.4
Genital defects other	1.3	1.0	5.5	8.8	8.1	17.8

Defect or Defect Group	Number of Registrants Rejected per 1,000 Examined			Number of Cases Found per 1,000 Examined		
	Total	White	Negro	Total	White	Negro
Syphilis	10.2	2.2	112.0	12.2	3.2	176.5
Neurosyphilis	0.1	0.1	0	0.1	0.1	0
Cardiovascular syphilis	3.2	0.6	76.5	4.1	1.1	49.9
Syphilis other	6.9	1.5	75.5	8.0	2.0	83.6
Positive serologic reaction	0.8	0.2	8.8	2.7	1.1	25.3
Gonorrhea and other venereal diseases	0.6	0.1	7.0	2.5	1.1	20.6
Gonorrhea	0.2	0.1	1.8	0.2	0.2	2.7
Veneral infection other	2.5	2.3	5.1	15.7	16.2	8.8
Skin diseases and conditions	0.2	0.3	0	3.7	3.8	2.4
Hemorrhoids and other rectal defects	0.7	0.7	0.9	3.7	3.8	1.8
Varicose veins	19.5	11.5	121.7	28.4	19.8	139.2
Educational deficiency	7.0	6.8	10.0	5.5	8.2	12.4
Mental deficiency	3.7	3.6	5.5	4.1	3.9	6.4
Moron idiot and imbecile	3.3	3.2	4.5	4.4	4.3	6.0
Mental deficiency unspecified	27.6	27.2	32.0	33.2	33.1	35.3
Mental diseases	3.5	3.5	2.4	7.6	3.7	2.4
Grave mental or personality disorders	0.7	0.7	0.3	0.8	0.9	0.3
Major abnormalities of mood	7.5	7.2	17.1	8.2	7.9	13.3
Psychopathic personality	15.2	15.1	16.3	19.7	19.8	18.1
Psychoneurotic disorders	0.7	0.6	0.9	0.8	0.8	0.9
Chronic inebriety and drug addiction	0.7	0.6	0.9	0.8	0.8	0.9
Mental disease not classifiable elsewhere	14.8	15.0	12.1	17.5	17.8	14.2
Neurologic	3.2	3.1	5.2	3.4	3.3	5.5
Epilepsy	0.3	0.3	0	0.4	0.4	0
Chronic encephalitic syndrome	2.0	1.9	2.1	2.1	2.1	2.4
Posttraumatic cerebral syndrome	4.2	4.4	2.1	4.7	4.8	2.7
Polio myelitis residuals of Neurologic defects other	5.1	5.3	2.7	6.9	7.2	3.6
Musculoskeletal	2.7	2.6	2.2	50.0	60.6	33.3
Amputation	2.8	2.7	3.9	5.0	4.9	6.3
Osteomyelitis	2.4	2.5	0.6	2.6	2.8	0.6
Ankylosis	0.9	0.9	0.9	1.2	1.2	2.1
Arthritis	0.5	0.5	0.6	0.8	0.8	0.6
Atrophy	1.4	1.4	1.5	1.8	1.8	1.8
Injury residuals of	7.1	6.9	10.3	11.8	11.7	13.0
Spinal malformations	1.7	1.6	2.1	13.1	13.6	6.4
Musculoskeletal defects congenital and other	5.9	6.1	4.3	22.7	23.8	8.5
Feet	4.8	4.9	3.6	49.6	51.2	29.9
Pes planus	3.5	3.5	3.6	45.0	46.7	28.7
Foot defects other	1.3	1.4	0	4.6	4.9	1.2
Endocrine disturbances	3.9	4.1	0.6	6.2	6.6	0.9
Diabetes mellitus	1.6	1.7	0.3	1.6	1.7	0.3
Fröhlich's syndrome	1.1	1.1	0	2.6	2.8	0
Thyroid disturbances	0.2	0.6	0.3	1.0	1.0	0.3
Endocrine disturbances other	0.7	0.7	0	1.0	1.1	0.2
Neoplasms	1.0	1.5	1.8	5.7	6.0	3.0
Malignant growths	0.7	0.6	1.8	2.4	2.7	3.0
Neoplasms other	0.8	0.9	0	3.3	3.6	0
Pilonidal cysts	0.4	0.3	1.2	0.5	0.4	1.2
Infectious and parasitic diseases	10.9	11.2	6.6	60.0	62.0	34.1
Other diseases and defects	0.9	0.9	0.3	29.2	30.0	15.4
Overweight	7.1	7.5	2.4	25.9	27.2	9.1
Underweight	0.1	0.1	0.6	0.2	0.1	0.6
Underheight	0.9	0.8	1.2	1.0	1.0	1.5
Diseases and defects other	1.9	1.9	2.1	2.7	3.7	4.5
Nonmedical reasons	1.3	1.4	0	2.0	2.1	0
Total number examined	40,000	47,773	37,112	40,000	47,773	37,112

\* Based on a sample of 40,000 reports of physical examination and induction D S S Form 221 for 18 and 19 year old registrants.  
† Includes all races other than Negro. Less than 0.05 per thousand.

specified that a man must have three pairs of opposing natural masticators and three pairs of opposing natural incisors, the number of men disqualified because of missing teeth was so large as to make dental defects the leading cause of rejection. The standards in effect during the time period under discussion authorized induction of "individuals who are well nourished of

rejection rates than white registrants. When tuberculosis was present it was usually entered as the cause of rejection. It accounted for the rejection of 97 Negroes per thousand examined and of 66 white registrants per thousand examined. At induction stations where most of the tuberculosis rejections occurred, diagnoses could be based on the chest x-ray examina-

tions made routinely of all registrants. Local boards were authorized to reject registrants with an authentic history of active tuberculosis of any part of the body or treatment therefor within the preceding five years.

Cardiovascular disorders were also more frequently found in Negro youths than in white youths in particular valvular heart diseases and hypertension. This is in agreement with experience with older groups of registrants. Most of the rejections for cardiovascular conditions took place at induction stations.

Hernia was more often a cause of rejection among Negroes than among white persons. A part of this difference was due to the more frequent occurrence of umbilical hernias in Negroes. The physical standards provided that relaxed inguinal rings in themselves were not to be considered as a cause of rejection unless there was a definite protrusion of an abdominal viscus into a hernial sac. Relaxed inguinal rings were more frequently noted in white registrants than among Negroes.

In September 1942 the War Department announced that the Army would accept men with uncomplicated gonorrhea in a number not to exceed 2 per cent of the daily induction at each induction station for each

TABLE 3—Rejection Rates by Broad Occupational Group, of 18 and 19 Year Old Registrants

Occupational Group	Rate per Hundred Examined		
	White and Negro	White *	Negro
All occupations	25.4	23.8	45.5
Professional and semiprofessional workers	20.5	20.5	†
Farmers	11.1	36.4	58.0
Proprietors, clerical, sales and kindred workers	21.0	20.9	26.9
Craftsmen, foremen and kindred workers	20.4	19.9	39.6
Operatives and kindred workers	22.2	21.6	39.6
Service workers	28.9	25.8	35.9
Laborers except farm and mine	28.2	25.1	46.0
Emergency workers and unemployed	37.7	37.2	44.9
Students	23.1	23.0	31.6

\* Includes all races other than Negro

† Insufficient data for calculation of rate

race, the proportion to be determined by available hospital facilities. During February 1943 the induction of registrants with uncomplicated syphilis began. Previously these diseases had been cause for rejection. Syphilis was recognized in the majority of cases by the result of serologic test of the blood sample drawn by the local board physician. The striking difference between rejection rates for white registrants and for Negroes has already been commented on. The increase in incidence of syphilis with advancing age is brought out in the tabulations of serologic test report forms compiled and published by the U S Public Health Service in cooperation with the Selective Service System.<sup>4</sup> A large proportion of the registrants found to have gonorrhea were inducted. Gonorrhea was more prevalent and accounted for more rejections among Negroes than among white registrants.

Determination of educational deficiency and of mental deficiency was made at induction stations on the basis of psychometric tests designed to measure the individual's capacity to absorb basic training. Large numbers of registrants with meager schooling or with

language difficulties have been inducted and given special training. Because facilities for special training are limited, quotas had to be set on the number of educationally deficient registrants who could be inducted.

Mention has already been made of the importance of mental disease as a cause of rejection. Although as a cause of rejection among Negroes it is outranked by educational deficiency and by syphilis, the rejection rate and the incidence for Negroes is slightly higher than the corresponding rates for white persons. The title "grave mental and personality disorders" includes schizophrenia or dementia precox, paranoia and related psychoses. The title "major abnormalities of mood" includes manic-depressive psychosis and cyclothymic disorders. "Psychopathic personality" includes constitutional psychopathic inferiority, criminal record and sexual psychopathy. "Psychoneurotic disorders" includes the various manifestations of psychoneurosis and certain psychosomatic disorders, including neurocirculatory asthenia, functional gastrointestinal syndrome, stuttering, stammering and tics. Inebriety and drug addiction are rarely recorded in this age group but increase in prevalence with advancing age.

A large proportion of the registrants with neurologic defects were rejected at local board physical examination, in part because a number of neurologic defects appear on the list of manifestly disqualifying defects and in part because of the use of information available in the registrant's community for establishing or confirming diagnoses of epilepsy or other disease of the nervous system.

Somewhat less than half of the rejections for musculoskeletal defects took place at local board examination. Many terms descriptive of bone, muscle and joint disorders appear in the list of manifestly disqualifying defects. Defects resulting from injury are more numerous than other categories of musculoskeletal defects. They include limited motion of joints, malunion of a fracture with bowing, shortening or deformity, and scars that result in contracture.

Underweight and overweight were more common among white youths than among Negro youths. No data were recorded on the examination form to show how frequently this or any other defect could be presumed to be the result of malnutrition. Entries on the physical examination form were usually restricted to objective findings with only infrequent references to history or to the cause of the condition under discussion.

#### REJECTION RATES BY OCCUPATION

Table 3 permits comparison of the rejection rates in nine broad occupation groups. Among white youths, craftsmen, foremen and kindred workers (comprising skilled workers) had the lowest rejection rate, 19.9 rejections per hundred examined, farmers, with 36.4, and emergency workers, with 37.2 rejections per hundred examined, had the highest rates of rejection. Among Negroes, proprietors, clerical, sales and kindred workers, with 26.9 rejections per hundred, and students with 31.6 per hundred examined, had the lowest rejection rates, farmers, with 58.0 rejections per hundred, had the highest rejection rates. Data on causes of rejection in the various occupation groups have not as yet been tabulated for this age group.

#### SUMMARY

The ten leading causes of rejection among white 18 and 19 year old Selective Service registrants were in decreasing order of occurrence eye defects, mental

<sup>4</sup> U S Public Health Service. Results of Serological Blood Tests for Syphilis on Selective Service Registrants, 2 volumes multilithed. Venereal Disease Division, U S P H S, 1942. Volume 1 is based on the first million reports received during the period Nov 1, 1940 to April 15, 1941, volume 2 is based on the second million reports received during the period April 16, 1941 to Aug 31, 1941 for registrants examined in accordance with the Selective Training and Service Act of 1940.

disease musculoskeletal defects cardiovascular defects, ear defects hernia neurologic defects educational deficiency underweight and mental deficiency. For 18 and 19 year old Negroes the ten leading causes of rejection were educational deficiency syphilis cardiovascular defects mental disease musculoskeletal defects hernia eye defects neurologic defects mental deficiency and tuberculosis. Half of the rejections of Negro youths resulted from educational deficiency or from syphilis. These data are based on local board and induction station examinations made during December 1942 and January and February 1943.

In the following broad groups of defects white youths had higher rejection rates than Negroes eyes, ears, nose, kidneys, nervous system, feet, endocrines, overweight and underweight.

In the following broad groups of defects, Negro youths had higher rejection rates than white youths tuberculosis cardiovascular disease hernia genital disease syphilis gonorrhea skin disease educational deficiency mental deficiency and mental disease.

## POLIOMYELITIS AND PREGNANCY

WITH SPECIAL REFERENCE TO THE FAILURE  
OF FETAL INFECTION

TWO HITHERTO UNREPORTED CASES IN ONE OF  
WHICH THE HUMAN FETAL SPINAL CORD  
WAS EXAMINED FOR THE VIRUS

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This report will add further evidence to the thesis that now appears to be well established that pregnancy has little if any, influence on the course of poliomyelitis in a paralyzed mother and conversely, that in utero infection of the fetus occurs with rarity if at all. The corollary that acute poliomyelitis in the mother has no effect on the fetus is questioned by one of our cases in which fetal death occurred in utero presumably as a result of asphyxia associated with faulty oxygenation of the maternal blood during the acute course of bulbar poliomyelitis. In the past several years several reports and studies of this question have been published which have established the two facts first mentioned almost beyond doubt. The reason for the report of one of the cases described is that an opportunity was present to examine the fetal spinal cord for virus. The results of this examination were negative, which would add further evidence in favor of the contention that the virus of poliomyelitis under the natural occurrence of these events simultaneously in man does not pass from mother to child. There are probably several reasons to explain this phenomenon. As is generally agreed by many investigators<sup>1</sup> the

virus of poliomyelitis is found with rarity if at all in the circulating blood stream of a victim of this disease. Presumably, to favor transmission of a virus through the placenta the infectious agent should gain ready access to the blood stream. There is ample evidence both clinical and experimental to show that, in other conditions in which it is known that a submicroscopic virus is present in the blood stream the related virus passes through the placenta and may infect the fetus. These experimental data include the observation of Levaditi, Harvier and Nicolau<sup>2</sup> who demonstrated that one of the viruses from encephalitis in man can when inoculated into rabbits pass the placenta and localize in the fetal nervous system. Goodpasture<sup>3</sup> has also demonstrated passage of vaccinia through the placenta and in the same review considers the evidence to have conclusively shown that the viruses of measles, chickenpox and lymphocytic choriomeningitis can regularly pass the placenta. Hirano<sup>4</sup> demonstrated that vaccine virus can penetrate the placental barrier. Traub<sup>5</sup> has shown that the virus of lymphocytic choriomeningitis can pass readily from the mother to the in utero young and the latter can harbor the infection acquired congenitally for a prolonged time.

In the clinical literature Welz<sup>6</sup> reported a fetal mortality of 66 per cent in his series of 21 cases of maternal influenza. Abt and Townsend<sup>7</sup> each reported single cases of premature infants born of mothers suffering from influenza who showed signs of the disease at birth. Kosmak<sup>8</sup> likewise reported fetal deaths in cases of maternal influenza. In the total child cases just referred to no autopsies which included virus studies were reported. Marinesco<sup>9</sup> and Kononowa<sup>10</sup> each reported fatalities in infants born of mothers suffering from epidemic encephalitis. Each of these 2 latter cases were instances in which microscopic lesions of encephalitis were demonstrated in the brain of the fetus but no virus studies were reported. There are many other reports in the literature of fatalities and cases in the fetus issuing from women the victims of epidemic encephalitis, but the latter cases do not contain data indicating that examination of the central nervous system of the fetus was made and therefore are not valuable to corroborate the point at issue. The virus of encephalitis at least of the equine and related types which are probably responsible for much of the 'sporadic' and epidemic encephalitis in man differ in two important respects from poliomyelitis virus: the former occurring in the blood stream of at least the animal intermediate hosts and in the cerebrospinal fluid in man.<sup>11</sup>

2 Levaditi C, Harvier P and Nicolau S. Transmission expérimentale du virus de l'encephalite. *Compt rend Soc de biol* 84: 95-1921.

3 Goodpasture E W. Virus Infection of the Mammalian Fetus. *Science* 95: 391 1942.

4 Hirano T. Placental Permeation by Vaccinia Virus and Viral Substances. *Sei Kai M J (Abstr Sec)* 55: 1 1936.

5 Traub E. Epidemiology of Lymphocytic Choriomeningitis in Mouse Stock Observed for Four Years. *J Exper Med* 69: 801 1939.

6 Welz W E. Influenza Complicating Late Pregnancy and Labor. *J Obst* 9: 247 1919.

7 Abt I A. Influenza in a Newly Born Infant. *J A M A* 72: 980 (April 1) 1919. Townsend C W. A Case of Congenital Influenza. *Arch Pediatr* 5: 26 1891.

8 Kosmak C W. Influenza in Pregnancy. *Am J Obst* 9: 235 1919.

9 Marinesco G. L'encephalite epidémique et la grossesse. *Rev neur* 37: 1033 1921.

10 Kononowa cited in Epidemic Encephalitis. Second report of the Mathe or Commission. New York University Press 1932 p. 10.

11 Meiklejohn Gordon and Hammon W M. Epidemic of Encephalitis Predominantly St Louis Type in Pinal County, Arizona. *J A M A* 115: 661 (March 21) 1942.

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1. Reviewed in Poliomyelitis. A Survey. Made Possible by a Grant from the International Committee for the Study of Infantile Paralysis. Baltimore: Williams & Wilkins Company, 1952. p. 1. Thompson R. Experiments with the Virus of Poliomyelitis. *J Exper Med* 51: 1930. Cordon F B and Lennette E. The Blood Stream in Experimental Poliomyelitis. *Infect Dis* 64: 97 1939.



Two thorough studies of the obstetric experience of women in whom poliomyelitis occurred during pregnancy have been reported in recent years. The antecedent literature bearing on questions pertinent under this topic were thoroughly reviewed in both these reports, and thus no attempt will be made to summarize the literature bearing on this question here. The first of these reports was written by Brahdly and Lenarsky,<sup>12</sup> the subjects being 2 normal infants, 1 at term and the other premature, born of mothers suffering from acute poliomyelitis. These authors reported 1 case of their own and summarized others in the literature which showed that poliomyelitis may occur early in pregnancy as well as later. Their own case and others quoted from the literature showed that poliomyelitis had no influence on pregnancy and that as a result a normal issue was to be expected from mothers who developed this disease during the latter months of pregnancy. The most recent study is that of Klemberg and Horwitz<sup>13</sup> who studied all aspects of this topic, including the types of pelvic deformity resulting in women previously paralyzed by acute poliomyelitis and the obstetric histories of pregnancy in women previously paralyzed by poliomyelitis. In addition to summarizing cases of pregnancy complicated by an acute attack of anterior poliomyelitis from the literature they added 13 hitherto unreported cases. A review of the total of 29 such cases demonstrates that a normal child was obtained in 24 instances (82.8 per cent). The causes of stillbirth and of early fetal death which were recorded in 4 cases (13.8 per cent) were associated with prematurity. There was no evidence of postpoliomyelitic paralysis in any of the premature offspring or the children who died shortly after birth. In 1 case (Miller<sup>14</sup>) to be found in the literature a child with bilateral clubbed feet was delivered. The appearance of these feet was that of bilateral congenital clubbed feet the occurrence of which was probably unrelated to poliomyelitis in pregnancy. Klemberg and Horwitz conclude that, "notwithstanding severe paralysis involving the abdominal and extremity muscles and occurring during gestation, a normal course of pregnancy and labor and normal offspring may be anticipated."

#### REPORT OF CASES

CASE 1—R B, a woman aged 30, admitted to the Chicago Municipal Contagious Disease Hospital on Aug 29, 1936, had first become ill five days previously with "cold and fever," according to the history obtained on admission. Two days later the left arm was paralyzed and the patient first experienced dyspnea. The patient was said to have been afebrile since the onset of paralysis three days prior to admission. The family physician had no opportunity to examine the patient until the morning of the day of admission, on which occasion he made a diagnosis of a six months pregnancy and stated that the fetal heart tones were then present.

On admission the patient was dyspneic and cyanotic, respirations being carried out by the abdominal and accessory respiratory muscles. The alae nasi dilated on inspiration. The patient was obviously fatigued. There was extensive paralysis in the left arm, and no reflexes were elicited in this member. The neck was rigid and the voice hoarse. Examination of the spinal fluid on admission showed a clear fluid under a

moderate increase in pressure. Eighty cells per cubic millimeter were counted and the Ross-Jones test showed a moderate increase in globulin. On the day following admission the patient exhibited more exhaustion and was then placed in the respirator with some betterment in the cyanosis. On the third and fourth days of hospitalization the fetal heart tones were still heard and the patient was in and out of the respirator.

From the fifth hospital day a uterine souffle was heard but no fetal heart tones could be detected. On the sixth hospital day no fetal heart tones were detected and the patient was beginning to exhibit some abdominal pains. These, however, quickly subsided and the patient remained about the same until the tenth day, when she began to have frequent abdominal pains, exhibited some slight bloody vaginal discharge and during the course of the day began to have labor pains, which increased in severity and intensity. The cervix dilated during the day and delivery of a stillborn fetus occurred during the evening. As far as could be told from the examination of the fetus, which was slightly macerated, it had been dead for at least forty-eight hours and possibly longer. On the twelfth hospital day it was noted that the mother was breathing more easily on the occasions when she was out of the respirator, and on the twenty-first hospital day she was allowed out of the respirator the greater part of the day. From this point she pursued an uneventful course but continued to exhibit residual paralysis in the left upper extremity. Postmortem examination of the child was carried out on the same day as the stillbirth. The spinal cord was removed and preserved in 50 per cent glycerin.

Intracerebral inoculation of a *Macacus rhesus* monkey with the supernatant fluid from the ground emulsion of 0.3 Gm of the fetal spinal cord was performed after preservation of the cord at 5 C for forty days in 50 per cent glycerin. Daily observations were made of the rectal temperature of this animal for the ensuing twenty-six days. On four single observations a rise of almost 2 degrees was noted from a previous average normal of 101.6 F, but the animal showed no consistent signs which might be attributable to poliomyelitic infection. On the twenty-sixth day the monkey was killed and the cord removed for microscopic study. Sections prepared at four levels of the spinal cord failed to show any lesions characteristic of the disease. An attempt at further passage of the latter material into a second monkey produced no symptoms.

CASE 2—R C, a woman aged 32, was in good health until during the eighth month of pregnancy, when on Sept 3, 1942 she was seized with nausea and vomiting, which continued for three days. The attending physician did not consider the possibility of poliomyelitis until the fourth day of illness, when the patient suddenly noticed that she could not elevate the right leg and at the same time noted weakness in the right arm. She also experienced a "choking sensation" in the throat and at the same time dysarthria and dysphagia were present. For the ensuing several days she experienced severe backache. This disappeared with back strapping and did not subsequently return. The patient was subsequently referred to another hospital, where she received the hot moist pack treatments for paralysis (Kenny method). The results from this treatment were considered to be only partially successful. Symptomatic relief could not be credited to the treatment, as the patient was free from pain at the time when the packs were begun. She was admitted to the Guthrie Clinic and Robert Pricker Hospital on Dec 26, 1942, at which time a residual paralysis was noted in the muscles of the right shoulder girdle, in the left leg and in the entire lower right extremity. Extensive muscle atrophy was noted in the right shoulder girdle and throughout the entire lower extremity. The paralysis in the right upper extremity included the rhomboideus major and minor muscles, the trapezius, latissimus dorsi and a portion of the serratus anterior, which resulted in definite winging and dropping of the scapula on attempts to move the upper extremity. Contractures were present in the trapezius. Clawing of the toes was noted in the left foot on attempts at dorsiflexion, and contractures were present in the short flexors of this foot, producing a pes cavus. The anterior and posterior

12 Brahdly, M B and Lenarsky, Maurice. Acute Epidemic Poliomyelitis Complicating Pregnancy, J A M A 101 195 (July 15) 1933.

13 Klemberg, Samuel, and Horwitz, Thomas. The Obstetrical Experience of Women Paralyzed by Acute Anterior Poliomyelitis, Surg, Gynec & Obst 72 58 (Jan) 1941.

14 Miller, N F. Anterior Poliomyelitis Complicating Pregnancy with Report of Two Cases, J Michigan M Soc 23 58, 1924.

tibial muscles were functioning in this foot but were weak since the foot went into valgus on attempts at dorsiflexion. The right lower extremity was completely flail except for moderate action of the gluteus maximus and a faint trace of action in the short flexors of the arm.

Regarding the patient's obstetric experience, induction of labor was performed on Sept. 7, 1942 and delivery of a normal viable child resulted. To date ten months after birth the child is progressing well and is apparently normal. There is no evidence of paralysis in the offspring.

#### COMMENT

CASE 2 illustrates the usual and average experience of the pregnant patient who requires acute poliomyelitis. There is a normal issue assisted by a minimum of operative intervention which is of the same type as required in nonparalyzed gravid patients. Both this case and the previous one lend weight to the accumulating mass of evidence in the literature that congenital poliomyelitis does not occur. The summary of the experience of other physicians with this complication is related in the reports of Brahm and Lenarsky and Kleinberg and Horwitz are in agreement on this point. In this connection Kleinberg and Horwitz say:

We conclude that pregnancy complicated by acute anterior poliomyelitis may be anticipated to progress normally with a normal termination of labor and with a normal offspring. The involuntary contractions of the uterus and the ability of the uterus to expel its contents spontaneously observed also in patients paralyzed by cord tumors, spondylitis and vertebral fracture are due to the fact known to physiologists that the uterus has an independent nerve supply and will contract not only after the spinal cord is transected but even after its sympathetic nerve supply is extirpated. There was no instance of intrauterine poliomyelitis in these 29 cases. The passive immunity of the offspring derived from the mother does not persist for long since a number of cases of acute anterior poliomyelitis under the age of 1 month (earliest 9 days) have been reported. An analysis of 243 patients who became pregnant one year or more subsequent to an acute attack of anterior poliomyelitis indicates that a normal and uneventful pregnancy and labor with a normal offspring may be anticipated in these cases. There is no indication for interruption of the pregnancy at any stage except for those reasons that would be operative also in nonparalytic females. The complications prior to and following delivery in paralytic females are, on the percentage basis almost identical with those in nonparalytic females.

The outcome in case 1 does demonstrate that death of the fetus may occur under certain circumstances during the course of acute poliomyelitis. The cause of fetal death in this instance was not ascertained with certainty but it is highly probable from the clinical course of this case, during which time the mother definitely demonstrated anoxia in association with nonfatal bulbar poliomyelitis that it was an asphyxial death. The problems raised in this connection are of considerable weight. Owing to the average excellent outcome in most cases of poliomyelitis one is reluctant to recommend operative delivery since it is apparent from a perusal of the literature that it has been unnecessarily employed in the past.

However, it would appear that delivery by cesarean section (preferably laparotrachelotomy under local anesthesia and without giving drugs which might create further maternal and fetal anoxia e. g. morphine) would be indicated in a restricted number of cases in which the outcome as regards the mother is in doubt

but where there is great desire to secure a viable fetus. Such cases would be those of the general type as illustrated by our case 1. However, if such a procedure had been adopted it is even somewhat questionable as to whether the outcome would have been different in our case, as fetal death occurred shortly after hospitalization and occurred at a time when the condition of the mother, although critical was not unduly alarming.

The importance of our case 1 lies in the attempt which was made to demonstrate the presence of virus in the fetal spinal cord. The conditions under which this attempt was made were as ideal as possible under the circumstances. It is improbable that the delay between removal of the cord and the inoculation of the monkey (forty days) had any bearing on the negative result obtained as it is known that poliomyelitis virus remains viable in the spinal cord preserved in 50 per cent glycerin for many years.

The fact that virus is not found in the fetal spinal cord is to be expected rather than the reverse as several events would have to be postulated concerning which facts are in disagreement. The virus is not found in the blood with any regularity, if at all, in either human patients or in simians in which the disease is experimentally induced. Even if it should be assumed that the virus could pass the placenta which is indicated as a possibility, provided the virus could gain access to the blood stream (analogy to other viruses) it would still have to be assumed that some irritative process was at work in the central nervous system of the fetus in order for infection to occur since it is known that large quantities of the virus of poliomyelitis may be present in the blood stream in the absence of central nervous system irritation without causing subsequent infection. This situation results because of the impermeability of the blood cerebrospinal fluid barrier to the poliomyelitis virus. This barrier can be upset under certain experimental conditions and possibly in human patients (e. g., a spinal puncture performed on some rare occasions when virus is present in the blood stream). The special experimental conditions include the production of sterile abscesses in the brain (e. g., by starch) the inflammation of an aseptic meningitis (as produced by the intraspinal injection of horse serum) and other circumstances that result in disturbed equilibrium in the barrier.

#### CONCLUSIONS

Our case 2 demonstrated an outcome which is usual and to be expected in this complicated situation, i. e. apparently little or no effect by pregnancy on the extent of paralysis in the mother (?) and a viable nonparalyzed fetus. This case and those previously reported in the literature would tend to demonstrate that congenital poliomyelitis does not occur.

Our case 1 demonstrates that under certain circumstances death of the fetus may occur presumably from asphyxia. Whether operative delivery in our case 1 would have resulted in a different outcome is problematic, but the case of impending respiratory paralysis in the mother resulting in maternal and fetal anoxia is apparently the only situation which would indicate operative delivery. An attempt to isolate the virus of poliomyelitis from the fetal spinal cord in case 1 resulted negatively. This outcome although not proof positive that virus was not present in the fetal spinal cord could be interpreted in that way.

# CONCEPTS OF MUSCLE DYSFUNCTION IN POLIOMYELITIS

BASED ON ELECTROMYOGRAPHIC STUDIES

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BOSTON

AND

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The importance of muscle "spasm" as a symptom of acute poliomyelitis has received emphasis since the Kenny<sup>1</sup> concepts of the symptomatology and treatment of this disease have come into prominence. Muscular pain, tenderness and shortening have been recognized for many years as characteristic features of acute poliomyelitis and have been described by different authors, particularly by Lovett<sup>2</sup> and by Ober,<sup>3</sup> who have advocated treatment with local heat in the form of hot fomentations and by gentle passive movements followed by active muscle reeducation. In recent studies of "spasm" Schwartz and his associates<sup>4</sup> have recorded electrical potentials from muscles in cases of acute poliomyelitis with a cathode ray oscillograph and found widespread hyperirritability to stretching not only in muscles which appeared to be in "spasm" but also in their antagonists and in those clinically unaffected.

In addition to muscular "spasm," Kenny has emphasized functional paralyses of the antagonistic muscles, which she believes may not be truly affected by the disease but "mentally alienated." Kenny also describes another disorder of muscular function in poliomyelitis, "incoordination," which she ascribes to a "condition arising in the central nervous system in which the regulation and direction of nerve impulses is upset so that the natural rhythmic and cooperative action of associated muscles is disturbed."<sup>5</sup>

In order further to elucidate these concepts of muscle "spasm," "mental alienation" and "incoordination" we have studied the electrical discharges of muscles while at rest, during passive stretching and during voluntary contraction both in the early and in the late stages of poliomyelitis. The observations have been compared with similar studies on normal controls and on patients having traumatic lesions of peripheral nerves. These investigations have yielded information on the disorder of muscle function in poliomyelitis and have led us to conclude that the Kenny concepts of muscle involvement in this disease, although the basis of an excellent type of treatment, are inadequate as a physiologic explanation of the dysfunction present.

## METHODS OF STUDY

Electromyograms were recorded by a standard ink-writing Grass electroencephalographic apparatus. The full details of the methods employed have been described elsewhere.<sup>6</sup>

Two different electrode techniques have been used in this work. These consisted of: 1. Surface electrodes, made from solder disks approximately 1 cm in diameter, applied to the skin over the muscle with electrode paste and adhesive tape. A third electrode is placed on a neutral point to act as a ground. 2. Coaxial needle electrodes made by inserting an insulated core into a hypodermic needle (gauge 24). These are placed in the substance of the muscle and the outside of the needle is grounded. In some experiments synchronous recordings were made from the same muscle by the two electrode techniques.

Insulated copper wire from the electrodes feeds the current through shielded leads into the preamplifier stage of a standard electroencephalographic apparatus. In the second stage of the apparatus the filters are arranged so as to pass high frequency potential changes, and the degree of amplification is varied according to the amount of electrical discharge. Calibrations with a standard input are made with every recording so that at any moment an exact assessment can be made of the actual voltages elicited from the muscle. The degree of amplification used was never greater than 1 cm deflection for 100 microvolts, at which setting no electrical activity is recordable from normal muscles in relaxation.

The final recording is made with an ink-writing oscillograph on paper, which is usually run through at a speed of 6 cm per second, this speed of paper has been found to give a satisfactory recording of the range of frequencies found in muscle activity.

## CASE MATERIAL

Eleven cases of poliomyelitis were studied in various stages of the disease process over a period of two years. The results were compared with recordings from normal controls from patients with peripheral nerve injuries including war wounds from patients with infectious polyneuritis and from patients with muscle spasm secondary to fractures. The electrical activity of muscles was studied in positions of maximum relaxation during passive stretching and during voluntary contraction. In some cases correlative studies were done of the electrical excitability as measured by voltage-capacity curves and of work performance as recorded by an ergograph, following methods previously described.<sup>7</sup>

## RESULTS

*Spontaneous Electrical Discharges in Resting Muscles*—In normal cooperative persons we have observed as has Hofer,<sup>7</sup> that when efforts are made to relax completely the musculature of an extremity by comfortable positioning and support, no action potentials are recorded. Hofer's technique was similar to the one used in our investigations. The occurrence then of spontaneous discharges from relaxed muscles examined by this technique indicates some abnormality and forms a point of study in cases of poliomyelitis.

6. Watkins A. L., Brazier M. A. B. and Schwab R. S. Technique for Quantitating Muscle Function in Poliomyelitis and Other Motor Nerve Lesions. *Arch. Neurol. & Psychiat.* to be published.  
7. Hofer P. F. A. and Putnam T. J. Action Potentials in Normal Subjects. *Arch. Neurol. & Psychiat.* 16: 241 (Aug.) 1939. Hofer P. F. A. Innervation and Tonus of the Muscle in Man. *ibid.* 46: 947-971 (Dec.) 1941.

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1. Kenny, Elizabeth. *Treatment of Infantile Paralysis in Acute Stage*, Minneapolis: Bruce Publishing Company, 1941.

2. Lovett, R. W. *The Treatment of Infantile Paralysis*, ed. 2, Philadelphia, P. Blakiston's Son & Co., 1917.

3. Ober, F. R. *Treatment and Rehabilitation of the Poliomyelitic Patient in Infantile Paralysis*. A Symposium Delivered at Vanderbilt University, New York, National Foundation for Infantile Paralysis, Inc., 1941, pp. 159-189. Pain and Tenderness During the Acute Stage of Poliomyelitis, *J. A. M. A.* 120: 514-515 (Oct. 17) 1942.

4. Schwartz, R. P. and Bouman, H. D. Muscle Spasm in the Acute Stage of Infantile Paralysis, *J. A. M. A.* 119: 923-926 (July 18) 1942.

5. Pohl, J. F. and Kenny, Elizabeth. *Kenny Concept of Infantile Paralysis and Its Treatment*, Minneapolis, Bruce Publishing Company, 1943, p. 55.

Electromyograms were therefore recorded from muscles which were tender and painful on palpation or stretching (clinically in spasm) and also from weak muscles not showing "spasm." In some instances the antagonists of the muscles exhibiting clinical evidence of "spasm" were the weaker muscles although this was not uniformly true.

In the acute stage of the disease some low voltage discharges were found at rest but only from the most weakened muscles and frequently not at all from the posterior muscles of the trunk and lower extremities although clinically these muscles were quite tender and painful on stretching (fig 1 A).

In the later stages of the disease particularly beginning about the third month in cases with considerable paresis we have noted in the resting muscles the onset of spontaneous electrical discharges of a more striking character (fig 1 B). These potentials were of higher voltage and were somewhat suggestive of motor unit activity as described by Weddell, Feinstein and Pattle.<sup>5</sup> The muscles which clinically showed the most loss of power gave rise to these discharges more frequently than

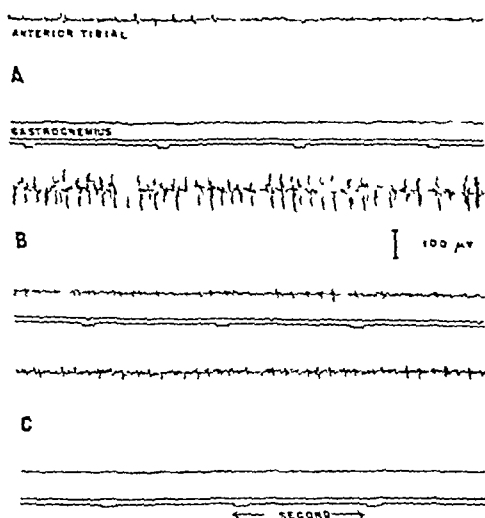


Fig 1—Spontaneous discharges in two resting muscles in poliomyelitis: the anterior tibial is the weaker muscle whereas the gastrocnemius shows the most spasm clinically. A three days after onset; B three months later; C five months after onset. Ink writing, a cellophane surface electrode technique and calibration the same in all tracings.

did their antagonists which usually showed clinical "spasm." This electrical activity appeared to be an index of weakness and could not be correlated with clinical "spasm." Similar spontaneous discharges have been found to persist for many months particularly in muscles with continuous improvement in function. In one case followed for a year and a half with good restoration of muscle power (as indicated by ergographic studies and manual tests of strength) the discharges were still present on the final examination although there was no pain, tenderness or other evidence of "spasm" clinically (fig 2). In other cases, with only slight restoration of function electrical discharges gradually lessened in incidence (fig 1 C) and finally disappeared when the improvement ceased.

From these observations we conclude that the foregoing examples of electrical discharge are manifestations of a recovery process. This hypothesis is further substantiated by muscle studies during regeneration of traumatized peripheral nerves. From these muscles we

have recorded similar electrical discharges. They appeared as an early sign of regeneration and persisted throughout the period of improving function (fig 3).

**Response of Muscles to Passive Stretching**—The response of muscles to passive stretching during the

#### BICEPS

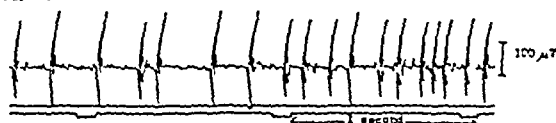


Fig 2—Spontaneous discharges in resting muscle with good recovery of strength one and one half years after onset of poliomyelitis.

#### RESTING MUSCLE

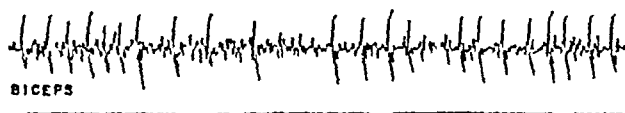
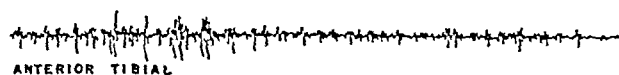


Fig 3—Spontaneous discharge from resting muscle during regenerative period after brachial plexus injury.

early and late stages of poliomyelitis was studied by electromyography. In these tests the muscles were stretched through the full arc of motion by a quick passive movement. During the acute stage this frequently brought out electrical discharges of a voltage higher than any which can be elicited from normal muscle by such a manipulation (fig 4). Moreover these discharges would persist for some time after the passive stretching had been released. In many instances a similar response was obtained by placing muscles under a slight increase of tension through adjusting the position of the limb. The appearance of these discharges was similar to those which we have recorded in patients with muscle spasm associated with painful joint motion following a recent fracture (fig 5).

Although the voltage of the discharges gave an indication of the degree of irritability to passive stretching we found that this abnormality occurred primarily in the partially paralyzed muscles and only minimally in

#### PASSIVE PLANTAR FLEXION



ANTERIOR TIBIAL

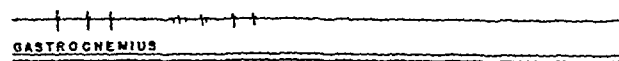
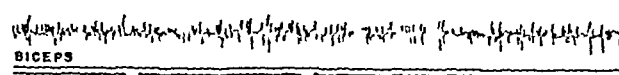


Fig 4—Electrical response to passive stretching in acute poliomyelitis.

#### SPONTANEOUS DISCHARGE IN RESTING MUSCLE



BICEPS

Fig 5—Muscle spasm in case of fractured elbow.

unparalyzed muscles which showed clinical "spasm." When there was equal degree of weakness in a pair of antagonistic muscles we found equal irritability on stretching as recorded electrically even though clinically one muscle showed more "spasm." We conclude therefore that when one muscle is functionally weaker than its antagonist the weaker muscle will show the greater

<sup>5</sup> Weddell, Graham, Feinstein, Bertram, and Pattle, R. E. Clinical Application of Electromyography. *Lancet* 1: 26-239 (Feb. 20) 1947.

abnormality electromyographically. That this weakness is not due to "alienation," as suggested by Kenny,<sup>1</sup> but to greater involvement by the disease process was further substantiated by loss of electrical excitability in the weak muscles as measured by voltage-capacity curves.<sup>11</sup>

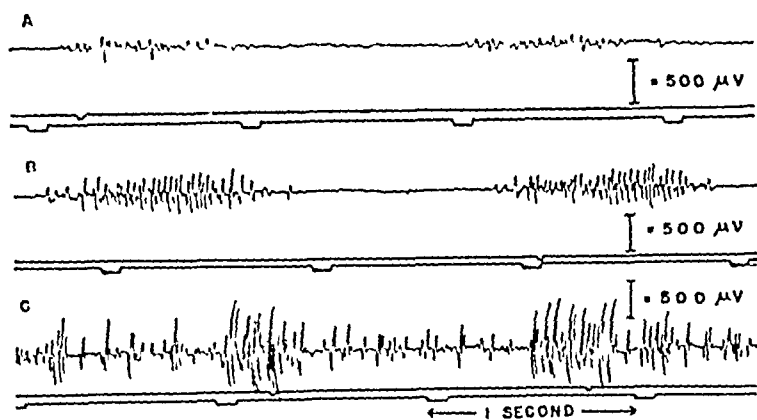


Fig 6—Action potentials during ergographic tests. Recordings from biceps: A, four months after onset of poliomyelitis; B, seven months; C, fifteen months.

In the later stages during improvement of motor power, passive stretching accentuated the spontaneous discharges present in the weak muscles at rest. Again, the irritability was correlated with the degree of weakness and not with the degree of shortening, tenderness or other clinical sign of "spasm."

In the long-standing cases, several years after the onset, no abnormal response to stretching was obtained in paralyzed muscles or in those which were shortened by contracture but still functioning.

**Electromyograms During Voluntary Contractions.**—Action potentials were studied during voluntary contractions such as are required in an ergographic test.<sup>12</sup> The voltage of these discharges was found to be proportional to the degree of strength and gave indication of the rate of restoration of function (fig 6). There was, however, no constant correlation between the voltage of spontaneous discharges at rest and that of the action potentials.

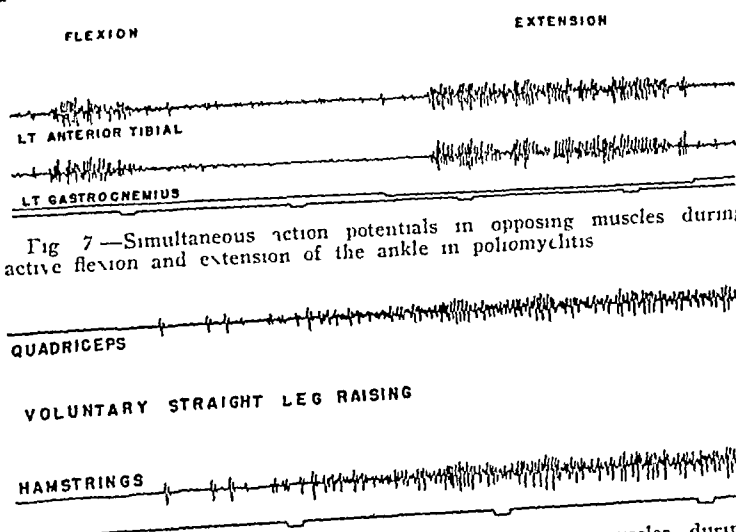


Fig 7—Simultaneous action potentials in opposing muscles during active flexion and extension of the ankle in poliomyelitis.

Fig 8—Synchronous action potentials in opposing muscles during active knee extension in poliomyelitis.

Observations were made during active movement, with simultaneous recording from antagonist and protagonist. By reciprocal innervation, inhibition of antagonists occurs during coordinated voluntary movements. Studying pairs of muscles, such as the anterior tibialis and gastrocnemius, or the quadriceps and hamstrings, we found in our patients with poliomyelitis that, on flexion or extension of the knee or ankle, the two

opposing muscles were activated simultaneously (fig 7). This phenomenon occurred in patients who were receiving muscle reeducation and were being specifically trained to avoid such "incoordination." In these cases simultaneous contraction of opposing muscles could be detected electrically, although not suspected on observation of the muscles in action.

In addition to the simultaneous action of opposing muscles we have observed in many instances that individual diphasic spikes were discharged synchronously in the pair of opposing muscles. This synchrony was apparent in the spontaneous discharges from resting muscles at times but was not consistently present. During a single examination, periods of synchronous discharges would come and go, being most frequently elicited by voluntary contractions (fig 8). These synchronous action potentials have been found in

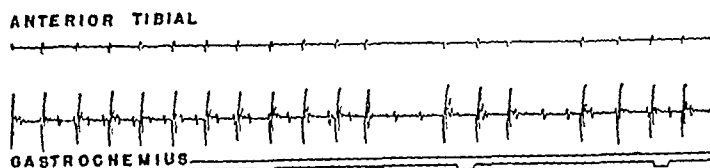


Fig 9—Synchronous action potentials in opposing weak muscles during active dorsiflexion fifteen years after onset of poliomyelitis.

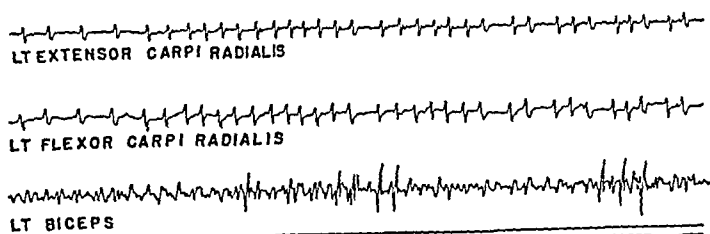


Fig 10—Spontaneous discharges in resting muscles during regeneration in brachial plexus injury. Note synchrony of individual spikes in upper two records.

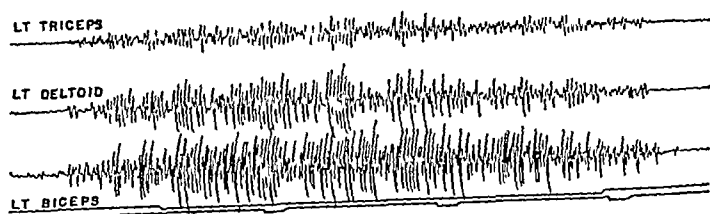


Fig 11—Simultaneous discharges in opposing muscles during active flexion of elbow after regeneration from brachial plexus injury.

patients whose poliomyelitis had occurred ten or fifteen years previously, as well as in patients in the early convalescent stage, and seem unrelated to the presence or absence of "spasm" in one or both of the muscles tested (fig 9).

In studies of muscles during regeneration following traumatic peripheral nerve lesions we have observed similar synchrony of electrical discharges. The large diphasic spikes recorded from resting muscles have been found to occur synchronously in separate muscles at times and also asynchronously during the same recording period. This was illustrated in the case of a brachial plexus injury in which discharges occurred synchronously in two opposing muscles of the lower arm, whereas the discharges from the upper arm were asynchronous (fig 10). In the same patient, on voluntary flexion of the elbow there were simultaneous action potentials from the biceps, triceps and deltoid without definite synchrony of individual spikes (fig 11).

This synchronization of individual discharges was such an unexpected finding that we took every precaution to rule out the possibility of artefact. Since this

synchronization was not continuous but intermittent it seemed unlikely that it could be due to the picking up by one amplifier of currents from its neighbor in the examining room. Furthermore it was never found in normal controls. Careful efforts were made however, to eliminate any possibility of such extraneous effects. Two different electrode systems were used: the surface electrodes were replaced by corvial needles and the recording was run first on the push-pull circuit and then on the grounded circuit. Shifting of the electrodes from one position on the muscle to another was also tried. All these experiments led us to the same conclusion: that this type of synchronous discharge is a neuromuscular phenomenon.

These observations indicate that an important feature of poliomyelitis is a disorganization of normal reciprocal innervation. The similarity of findings in peripheral nerve injuries suggests that this disorganization is a manifestation of regeneration in the lower motor neuron.

#### COMMENT

Relatively little electrical activity was found in affected muscles during the acute stage of poliomyelitis as compared with that observed two or three months after the onset. These patients promptly received hot fomentations of the type described by Kenny,<sup>1</sup> with consequent reduction in muscle sensitivity.

The electrical response of muscles to passive stretching in our poliomyelitis patients resembled that seen in other conditions in which muscle spasm acted as a protective mechanism in response to pain, as in acute back strain or painful joints associated with arthritis or with trauma. This similarity may indicate that the response is nonspecific as far as a neurologic disease is concerned being a reflex phenomenon stimulated by pain.

The spontaneous electrical discharges at rest, however, appeared to be unrelated to pain or other clinical evidence of muscle spasm. The correlation in this instance was with the degree of muscle weakness and consequently was an index of involvement of the neuromuscular system by the disease process. In completely paralyzed muscles, however, or in muscles much weakened in which there was no evidence of improving function these spontaneous discharges were not obtained.

Because of the limitations in the speed of recording by ink-writing oscillographs fibrillations of denervation are of too short duration to be recordable (1-2 milliseconds). The cathode ray oscillograph provides a more suitable recording speed for this purpose. Needle electrodes are unsatisfactory for detection of the fibrillations of denervation since they frequently act as an irritant to the muscle causing discharges which should be regarded as artefacts, these confuse the records of spontaneous activity in resting muscle.

In our work with an ink-writing oscillograph therefore, no fibrillations of denervation were recorded. The speed was however entirely suitable for registering motor unit activity, the spikes being usually of 5 to 10 milliseconds in duration.

In muscles showing such evidence of improving function as an increase in electrical excitability and in strength there were spontaneous electrical discharges which persisted at least as long as one and a half years. As this same type of electrical activity is also found in muscles supplied by regenerating peripheral nerves following suture it seems reasonable to conclude that the discharges from the muscles in poliomyelitis are manifestations of a regenerative process. When present in the acute stage it may, of course, represent the occur-

rence of degeneration rather than regeneration. The pattern of electrical discharges differs, however, in regard to frequency and voltage from that seen in progressive muscular atrophy, presumably an entirely degenerative disease. In the latter disease increased electrical activity is usually associated with loss of power and atrophy, whereas in poliomyelitis it has been correlated with clinical improvement, the discharges disappearing when this ceased. These discharges may depend on the presence of a combination of functioning and nonfunctioning fibers in a muscle with a resultant hyperirritability on some chemical basis such as sensitivity to acetylcholine or they may represent motor neuron activity. Further experiments such as peripheral nerve blocks, might throw more light on this point. In any case the conclusion seems warranted that this electrical evidence of hyperirritability is not correlated with clinical signs of muscle 'spasm' and is probably an indication of neuromuscular regeneration.

The term muscle "spasm" is inadequate to describe the abnormalities revealed by electromyography and may even be misleading. Instead of a single condition we find that three types of abnormality are observable. The first is hyperirritability of the affected muscles to stretching as indicated objectively by electrical discharges and subjectively by pain during the acute stage of the disease. This may be a nonspecific reflex tension initiated by a painful stimulus. The cause of the pain is obscure. The hyperirritability may be due to invasion by the virus of the posterior roots, meninges or peripheral nerves and muscles.

Secondly, during the period of improving motor function muscle irritability, as evidenced by spontaneous discharges is not correlated clinically with pain, tenderness or shortening but with weakness and with electrical indication of regeneration.

Thirdly, the shortening or contracture of muscles which may persist for months or years after the onset is not associated with hyperirritability electrically and may be due to changes intrinsic to the muscle rather than to spinal cord disease.

The term 'mental alienation' seems unnecessary, for weakness or actual paralysis of muscles is probably due to specific lesions in the anterior horn cells. Loss of volitional control of muscles does occur without such anatomic lesions particularly after immobilization as for fractures and in association with painful movements. In our cases of poliomyelitis, however, weakness was always accompanied by objective signs of neuromuscular disease such as loss of electrical excitability or abnormal electromyograms. Whenever there was imbalance about a joint, such as results in an equinus or calcaneus deformity, we have observed a corresponding imbalance of involvement, the weaker muscle showing the greater electrical abnormalities. If paralyses unrelated to the cord lesion occur in poliomyelitis they would seem therefore to result from treatment such as immobilization or from failure to relieve pain rather than from "alienation" or some other speculative neuromuscular dysfunction specific to the disease process.

We have found objective evidence, however, of "incoordination" in poliomyelitis. The simultaneous activation of antagonists and agonists was a striking feature of our electrical recordings. This does not necessarily prove an abnormality of the nervous system as it is well recognized that individuals with weak muscles from any cause may contract all the muscles together in attempting movements beyond their strength. This is common clinical experience in the muscles of an



extremity immobilized for treatment of a simple fracture. In our cases however, the attempted movements were only minimal and specific muscle reeducation had been given to eliminate, if possible, the simultaneous contraction of opposing muscles. Furthermore, those movements were painless. The actual synchrony of individual spikes in opposing muscles both at rest and during motion is a most unusual finding. This cannot be produced in normal muscles by voluntary attempts and indicates striking disorganization of the neuromuscular mechanism. The fact that this synchrony of muscle discharges was observed also during regeneration of peripheral nerves after injury leads us to believe that it is a phenomenon associated with a regenerative process. It is known that peripheral nerves do not function entirely normally after regeneration if the lesion has been severe enough to cause wallerian degeneration.<sup>9</sup> For example, in many cases of facial paralysis of the common Bell's type coordinated individual muscle action is never regained and the muscles of the eye and mouth consequently function simultaneously with all voluntary movements. The so-called "incoordination" in patients with poliomyelitis may also be an example of abnormal function following regeneration. Although these studies do not rule out involvement of higher levels in the central nervous system, all the results obtained are explainable on a basis of a disordered peripheral neuromuscular mechanism.

## SUMMARY

1 In poliomyelitis the term "muscle spasm" is inadequate to describe the complexity of dysfunction which is revealed by electromyography.

2 In the acute stage only muscles with some degree of paralysis discharge electrical potentials at rest, these electrical abnormalities are not correlated with the presence of clinical "spasm."

3 Partially paralyzed muscles are hyperirritable to passive stretching, as indicated by electrical discharges and pain, the muscle tension thus developed appears to be a reflex protective mechanism.

4 The electrical activity in paretic muscles at rest increases during the period of improving motor power, and the pattern of discharges corresponds with that seen in muscles during regeneration of peripheral nerves. When improvement in motor power ceases, spontaneous electrical discharges disappear.

5 No abnormal electrical activity is associated with the muscle contractures of the late stage of poliomyelitis, nor are any discharges present in completely paralyzed muscles.

6 The concept of "mental alienation" does not contribute to the explanation of paresis in our cases, since objective signs of a disease process were always present in the paretic antagonists of muscles in "spasm."

7 Increase of voltage of action potentials during successive eigographic tests is an index of recovery of motor power.

8 Of the three concepts of Kenny, the only one upheld by our objective measurements is that of "incoordination," although the term is misleading. We demonstrated not only simultaneous activation of antagonists and antagonists but also intermittent synchrony of individual discharges from opposing muscles, such as is found in peripheral nerve injuries during regeneration of axons. Disordered reciprocal innervation seems to be a more descriptive term for this type of dysfunction.

## NEW ASPECTS OF MALARIA

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(MC), USNR

On the return of millions of service men from tropical duty to civilian life at the end of the war it is going to become necessary for every physician to have a working knowledge of malaria and other tropical diseases. This knowledge must include certain new aspects of the nature of malaria and its treatment that have been brought out during this war. The fact that large groups of men have been under military control while being treated for malaria has made it possible to study this disease in an unusual way, by means of routine blood examinations, hospitalization and a more thorough follow-up of patients than would be possible in civilian life.

The material for a comparative study of two different theories of antimalarial tactics was furnished to me while I was doing duty as senior medical officer at an outlying military base, which for obvious reasons I cannot name, nor can I give the exact numbers of men included in these observations. The important fact is that two similar groups of men under identical conditions of living and exposure to malarial infection were handled according to two different accepted methods of malaria control. The one, the Army group, took atabrine (0.15 Gm twice daily) prophylactically on two days of each week, while the second, the Navy group, were being given treatment only as they showed symptoms or had blood smears positive for malaria. This region was one in which there had been a high incidence of malaria for a long time, and the obstacles here to the ordinary methods of malaria control were seemingly insurmountable. There were miles of adjacent swampland that could not be drained, and the dense jungle growth made it impossible to penetrate this area for oiling or other methods of preventing mosquito breeding.

There was also a large group of native people living adjacent to the military reservation, 95 per cent of whose blood smears revealed malarial infection. While effectual mosquito control measures were carried out on the actual base site, millions of mosquitoes came from the swamp areas and became infected with malarial parasites from the native population, then, in spite of bed nets and good screening, they infected our military personnel while the latter was engaged in necessary night duties. At this time it was decided to do routine blood smears on all of our personnel, regardless of presence or absence of symptoms of malaria. We made thick smears, using the Giemsa staining method in all cases. This method in the hands of trained personnel is time saving and according to Capt. Paul W. Wilson, U. S. Navy, it is thirty times as easy to find the parasite in a thick smear as in a thin one. It is also important to take smears on two successive days, as in *Plasmodium falciparum* infections no forms may be found loose in the blood stream on the day that the parasite is dividing. We were astonished to find that 66 per cent of the Navy personnel had malarial findings (35 per cent benign tertian and 65 per cent malignant tertian) while 48 per cent of the Army group likewise had positive findings (the malignant tertian also predominated in this group). Now, in the past there had been a rather high

<sup>9</sup> Sanders, F. K. Repair of Large Gaps in Peripheral Nerves, *Brain* 65: 281-337 (Sept.) 1942.

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incidence of trunk easily diagnosed malaria in the Navy personnel while in the Army group the incidence had been quite low under a regimen of prophylactic treatment with atabrine but when the infection did occur in the Army it was much more severe and was slower to respond to treatment than the infection in the group that had not been receiving antimalarial prophylaxis. The only 2 persons who presented cerebral malaria with coma were in this group. The coma was the first symptom except for slight headaches in both. They were desperately ill men showing cyanosis, temperatures exceeding 104 F, rapid irregular pulse and rapid respiration along with their unconsciousness. Intravenous therapy was given these patients and fortunately both reacted favorably. This convinced us that the prophylactic treatment was masking symptoms while the infecting plasmodia were insidiously doing damage to the infected man's blood-forming organs so that when the malarial infection did break out the body's natural defensive mechanisms were so impaired that a more serious type of disease than usual resulted. We subsequently gave all Army men showing a positive slide intensive quinine treatment for four weeks. This routine kept almost all of this group from having clinical malaria. In the Navy men having positive malarial blood smears we instituted routine quinine and atabrine treatment. In most cases this prevented the development of clinical malaria but in an occasional one the quinine would have a provocative effect and precipitate an attack of chills and fever. We used plasmochin in an occasional case of resistant malaria on the theory then advocated that it destroys the sexual forms of the parasite which are ordinarily responsible for recurrences. However latest reports from Australia where plasmochin was much used refute this claim and although some feel that it has a use in the treatment of a case of stubborn infection showing repeated recurrences other authorities feel that it is so toxic that it should never be used. However, if it is used, signs of toxicity should be carefully watched for such as nausea, abdominal pain, cyanosis, methemoglobinuria, toxic nephritis with albumin, presence of red cells and casts in the urine, edema of the ankles and cardiac disturbances. If any of these symptoms appear to an appreciable extent, the drug therapy should be discontinued and the patient hospitalized. In spite of all treatment there will be some recurrences, especially of infection with *Plasmodium vivax*. We found an occasional case in which atabrine seemed to be ineffective against malaria. In these cases quinine had been given for a week in the treatment of an acute attack then atabrine had been given for as long as four or five days when the patient would develop high fever and chills, which would subside when quinine was administered again. There were also a few cases in which quinine likewise seemed ineffectual while atabrine yielded good results.

In comparing the action of these two drugs a few facts must be kept in mind. Quinine acts at once, due to quick absorption; atabrine acts slower due to slow absorption. Because of this it is sometimes recommended that atabrine 0.1 Gm three times a day after meals for a week be given along with quinine 0.6 Gm three times a day after meals for the first three days of treatment only or that atabrine be given as described for a week with the addition of 0.2 Gm of atabrine intramuscularly twice on the first day of treatment thus getting a high concentration of atabrine in the blood at once. If there is nausea, stupor or coma, parenteral

medication is necessary. In this connection it is well to remember never to give atabrine intravenously or quinine subcutaneously.

Intramuscularly one gives atabrine dihydrochloride 0.2 Gm or quinine dihydrochloride 0.6 to 1.0 Gm in 5 to 10 cc of isotonic solution of sodium chloride. In both instances the drug is to be given in alternate buttocks every eight hours until the patient can take medication by mouth. Intravenously one gives quinine dihydrochloride 0.3 Gm to 0.6 Gm, taking thirty minutes to inject it in 100 to 200 cc of water and repeats the dosage in eight hours if needed. This procedure should be reserved for very serious malarial infection as it may cause a fall in blood pressure, syncope or even death. Antidotes are caffeine and sodium benzoate, theophylline, ethylenediamine or methanamide.

Lumbar puncture and drainage are indicated when there is increased intracranial pressure as in cerebral malaria.

Of the 66 per cent of the Navy group with positive malarial findings the majority did not show any sign of acute illness. Some were men who had had malaria recently but had received inadequate treatment. Some had vague symptoms such as headaches, backaches and dizziness, this group being composed of those whose infection was in the incubation period about to develop as a clinical type of malaria. There remained a few who insisted that they felt perfectly well. Now I feel sure that out of this group if we had not given them treatment there would have developed a few of those atypical cases which often go undiagnosed because they are never characterized by chills or fever or any textbook course of malaria. Instead, the infection shows up with bizarre symptoms simulating like syphilis almost every known disease of the body. A study of these men with routine monthly blood smears together with a study of malarial patients in an outpatient department in which as many as 1,285 patients with malaria among the natives were treated in one month, convinced us that malaria was a much more complicated disease and had many more aspects than we had ever been taught to believe by the regular textbook portrayal of it. We especially had to give up the idea that chills and periodic fevers were constant symptoms of malaria.

To understand the symptoms better one should review briefly the pathology of malaria. Malaria causes destruction of red blood cells. There is selective localization of the parasites in the spleen, the liver and the bone marrow with cloudy swelling, fatty degeneration or even infarction and local necrosis resulting in these parts. There is in addition an invasion of the endothelial cells of the blood vascular system of any part of the body. Again localization of the malarial process may be due principally to the accumulation of large numbers of the parasites in the capillaries, these are sometimes referred to as embolic occlusions. The occlusions may lead to hemorrhage in a ring form and to destruction of adjacent cells and the tissues in the organs involved such as the brain, meninges, heart, gastrointestinal tract, kidneys, pancreas, thyroid, lungs and adrenals. It is held by some authorities that this later process occurs with *P. falciparum* only.

Malaria also frequently causes the occurrence of a positive Wassermann or Kahn reaction in percentages ranging as high as 80 (Taussig and Orgel). Other tropical diseases that have a like effect are yaws, leprosy, trypanosomiasis and relapsing fever. It is important to

remember that these reactions are not true antigen-antibody reactions (for syphilis) but rather that they result from the presence of a lipoidophilic substance which has the property of linking complement to the lipoidal antigen. If this is not kept in mind, grave mistakes will undoubtedly occur, wrongly influencing the diagnosis and treatment of malaria. In our experience the Kahn reaction would be positive frequently thirty days after blood smears of a treated patient were negative for malaria. We have no reliable information on just how long the positive Kahn reaction persists after the malaria is cured.

With these observations in mind it will be easy to understand why the following atypical cases of malaria could occur. Most of the patients with atypical malaria never gave a typical history of chills and fever. Yet every one of them had a blood smear positive for malaria and showed a favorable response to antimalarial drugs.

#### TWO GROUPS OF ATYPICAL CASES

1 In this group there were various manifestations of cerebral malaria. It simulated medical shock with its headache, fever and prostration, or sunstroke, heat exhaustion, acute alcoholism, acute mania or aschile psychoses. The symptoms cleared up or great improvement was noted on antimalarial therapy.

2 In this large group of cases the only complaint was of visual disorder with headache, often of long duration. Some of the patients had typical axial neuritis with clouding or dimness of vision, temporal or frontal headache and deep pain in the orbit which was made worse by pressure or movement. Under antimalarial treatment these patients usually improved, some with varying degrees of residual visual impairment. Some of the visual disorders were due to midbrain or cortical lesions from malaria.

3 Malaria may involve any other one of the cranial nerves, with appropriate symptoms. After the optic nerve the eighth nerve is the next in frequency of involvement with resulting vertigo and deafness. A pure malarial basilar meningitis is sometimes seen and might cause any of these lesions.

4 Damage to the thyroid or the adrenal gland from malaria may result in appropriate symptoms of various degrees of intensity. Replacement therapy with the indicated glandular products may be helpful in starting convalescence in these cases.

5 Embolic occlusions of malarial causation in the wall of the upper part of the bronchial tree may cause severe attacks of asthma or a persistent cough, usually non-productive, with negative findings in the chest on physical examination. These symptoms, which are often the only complaints, clear up quickly under antimalarial treatment.

6 Weakness, shortness of breath and a rapid pulse on exertion may be the only symptoms resulting from direct malarial cardiac damage, or there may be symptoms of damage to the vagus nerve.

7 Nausea and vomiting, especially in children, may be the only malarial symptom observed. This may be due to involvement of the central nervous system as in basilar meningitis, to pressure from an enlarged liver or spleen or to pancreatic involvement with deep seated pain.

8 Dysentery sometimes occurs as the first observed symptom. The patient with this complication of malaria shows intestinal mucosal capillaries filled with parasites. When this patient comes to autopsy the mucosa of the intestine is congested and dark red or

has a mottled appearance as in catarrhal dysentery, while the contents may contain mucus and blood cells, and the epithelial cells may be necrotic, with secondary bacterial invasion also showing in the mucosa.

9 The first complaint may be of urinary frequency, which is due to involvement of the wall of the bladder, or of discoloration of the urine red, brown or black. These symptoms accompany various degrees of renal alterations due to malaria, or the first complaint may be of anuria, as in acute malarial nephritis or the terminal stage of blackwater fever.

10 Bilateral malaria is first evidenced by slight jaundice, and the patient may show a remittent type of fever. This was a fairly frequent form in our experience and responded somewhat slower to quinine than other forms.

11 Pronounced pallor of the face with a bluish or yellowish tinge to the scleras may be the only evidence of malarial infection in persons who insist that they feel fine and are perfectly well but just have the "tropical pallor," though a thick smear shows numerous plasmodia in their red blood cells, as well as definite anemia.

12 There remains one group of cases which are put together only because of the common factor of inconsequential symptoms: cases in which vague neuralgia or pains in the muscles or joints or various untypical cutaneous eruptions occur as the only symptom, blood smears are positive and recovery occurs on quinine therapy.

This enumeration of groups of atypical cases of malaria is not complete, but it points out that the patient who has lived in a district where malaria is endemic should be considered as having malaria until this diagnosis is disproved.

#### CONCLUSIONS

1 In areas of endemic malaria it should be a monthly routine to examine thick smears of blood from all military personnel, two specimens being taken on successive days. All persons with smears containing malarial parasites, even those without symptoms, should be treated vigorously to forestall attacks.

2 In general, the policy of treating men for malaria only after they become infected is better than prophylactic treatment if adequate laboratory facilities are available. Certainly this rule holds in peacetime or at any base where military urgency does not require that a maximum number of men be kept in the field to fight. However, in an area of active combat especially where malaria caused by *P. falciparum* is endemic, prophylactic antimalarial measures must be adopted.

3 Treatment of malaria with both quinine and atabrine (when both are available) is more effective in preventing recurrences than prolonged treatment with one of them. Plasmochin may be indicated in rare, specially selected cases of repeated occurrences.

4 As the result of some idiosyncrasy, an occasional person will be found whose malarial infection does not respond to atabrine or, again, to quinine. The treatment will then have to be given with the single effective drug.

5 The diagnosis and treatment of malaria will be wrongly influenced if a positive Wassermann or Kahn reaction is considered pathognomonic for syphilis.

6 Malaria, like syphilis, may simulate different diseases of every part of the body, and the absence of chills and fever should not rule out its occurrence in people who are living or have sometime in the past lived in the tropics or other areas of endemic malaria.

CONTACT, CONTACT-INFECTIVE AND  
INFECTIVE-ALLERGIC DERMATITIS  
OF THE HANDSWITH SPECIAL REFERENCE TO RUBBER GLOVE  
DERMATITIS

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This somewhat cumbersome title covers the substance of a lecture to Army surgeons on infections of the hands (and feet) currently being given by one of us (J. H. S.) with the tabular analytic summaries for mnemonic purposes which accompany it. The presentation is based on material which aggregated 200 cases in the senior author's practice ten years ago and has grown recently out of all bounds in the direction of the physician's (and surgeon's) hand. Since as Ecclesiasticus has well put it, for surgeons "the handiwork of their craft is their prayer," and since the same authority has said that in the physician's hands is the issue of life, it appears worth while to offer a critical analysis. Such a method of analysis is, in our experience useful in industrial medical practice, now a major defense problem, as well as in the field, the household and the medical office and surgical clinic. Application of the principles tends to render refractory cases amenable, reduces the severity of initial and relapsing infections, may restore incapacitated persons to usefulness and may make surgical treatment for deep or extending infections unnecessary.

The scheduled title of this lecture, 'Dermatophytosis', well illustrates the first problem—to get the medical man over the idea that a single causal agent and a fungus acting alone at that, accounts for all or most dermatitic and especially vesicular and vesicopustular eruptions of the hands and feet. Having endured the blistering scorn of internists at our hesitancy in calling foot rashes, especially interdigital ones "dermatophytosis" when to the medically experienced [sic] eye they are obviously "athlete's foot," we have become dogged in our insistence that the mycotic be invoked only when pathogenic fungi are demonstrable. All other rashes, hand or foot, and in fact the fungous ones too, are compound affairs, susceptible of being designated after adequate study by such titles as mycotic-pyogenic, mycotic or pyogenic-allergic (or both), contact-allergic or contact-infection-(mycotic or pyogenic) allergic lesions—the terminology being analytically expansible, like that of organic chemicals, to almost astronomical hyphenization and syllabicization (to coin still another word). The infecting organism or the exciting (perhaps contact) cause is the trigger puller for an often well camouflaged but heavily loaded gun, the patient himself, loaded with predisposing (and other exciting) causes. To tamper with the trigger even by a patch test may lead to the usual effects or overlooking the (loaded) gun. The background of a contact or infective dermatitis of hand or foot, while not so immediately important as the foreground may contain the explanations unattended to, for chronicity, relapse, uncontrollable extension and noncure.

Table 1 emphasizes the two groups of causes which should be looked for in any painstaking study of a case. Running comment is offered as follows. The family history will usually expose evidence of general allergic tendency, which will usually be emphasized (though not always) in the patient. This does not mean attack alone. Susceptibility to pyogenic and to much less degree to fungous infection also runs in families and sticks out in many of these personal histories like a sore thumb (acute ears, mastoids, osteomyelitis, styes, boils, impetigo, acne and so on). The interplay of infection and allergy must always be kept in mind—a severe infection and a virus infection especially tends to 'broaden the allergic base'—increase the range and seriousness of contact ingestant and inhalant allergy (i.e. sensitizes the individual). This is repeatedly observed in the flares of hands following sinus infections and of course in the development of wholly new contact and other sensitivity, occupational and otherwise following focal and intercurrent infection. In many cases with allergic backgrounds one witnesses the sudden extension of eruptive manifestations, locally or over the body generally or to special regions (the ears and center face, the flexures especially axillary and antecubital). These extensions are spoken of dermatologically as 'ids' (phlyctids, mycotids, bacterids, pyids) as an expression of the extending broadening or heightening allergic susceptibility of the individual to his infecting agent. In fact paradoxically, some eruptions on the hands begin on the feet and, because the organisms have been difficult or impossible to find, have been designated as allergic secondaries" or "ids. Better methods are tending especially in pyogenic allergic cases to show that organisms, usually hemolytic staphylococci or streptococci are present in the numerous pustules of these 'ids' though by original definition an 'id' was supposed to be a toxic affair, the organisms absent. One must constantly think then in eruptions of the hands of infection allergy as well as of general and contact allergy and their concomitants and consequences local and systemic.

The ichthyotic and seborrheic constitutional trends in skin behavior varying with heredity and with such elements as age and diet, are critically important. The parchment palmed, horny kneed and elbowed person cannot use soap. Alkali prepares him for local allergic reaction. The seborrheic cannot guzzle sweets. The explosive extensive 'ids' are commoner perhaps in the seborrheic, the refractory localized (contact) eruptions in the ichthyotic. Constitutional trend underlies a large group of industrial and professional skin difficulties of infective contact-infective, contact-allergic, infective and infection-allergic types.

Items 7 and 8 under 'Predisposing Causes' represent newer conceptions of skin physiology of importance in the behavior of infections. The hands and feet are played on incessantly even in normal persons by vasomotor and sweat impulses—they blush and pale, are moist and dry, influenced by thought, emotion, posture and activity—and these effects are exaggerated in the abnormal to produce the red, hot or the blue, cold, the dry or the clammy extremity with its changes in blood borne pabulum, pH, reducing body content of sweat and outright vascular stasis and interstitial edema. If one is looking for offhand illustrative material for this lecture, let him call forward from the audience the pink eared, moist and red handed members. The skin

hydration mechanism has an unfamiliar literature and much to investigate, but we are impressed with its importance and the usefulness of dehydrative devices in treatment. Especially is it worth while to stress, as the cause of many failures, subthreshold local edema of foot and leg, associated with "blue foot" and with mild cases of varicosity, recognizable only as the patient compresses the return circulation by sitting with the legs dependent over a sharp edge such as a chair or a table. In such cases compression bandaging for a time, and in some cases a light elastic stocking, often do away with the persistence or relapsing tendency of the foot and ankle eruptions. Contrast bathing (hot-cold) is often helpful too, and incidental and occasional elevation, which may even aggregate several hours a day (feet on desk). Of the remaining predisposing causes, heat and

tion that staphylococci like it too (carbohydrate-like) and it does flood the skin with blood (vasodilatation and congestion).

Passing now to the exciting causes, on clinical grounds we believe that the original mycotic invader in some of these hands and feet simply prepares the way, as in the Ravaut-Rabeau conceptions of inguinal (flexural) streptomyces, and is soon lost sight of in a burst of symptoms due to a secondarily invading pyogen. This may be a streptococcus producing lymphangitis and lymphadenitis, fever and so on and erysipelas-like extension of the original lesion. Far more often, however, in our American experience it is a hemolytic staphylococcus, recoverable by both aerobic and anaerobic methods, more abundantly sometimes by the latter. We accept the pathogenicity of this hemolytic staphylo-

TABLE 1—Causal Analysis, Skin Infections (Dermatitis) of the Hands and Feet (Mycotic, Mycotic-Pyogenic, Mycotic-Pyogenic-Allergic Dermatitis)

PREDISPOSING CAUSES	EXCITING CAUSES (Original and Flares)
<ol style="list-style-type: none"> <li>1 Allergic family background</li> <li>2 Immunal infection susceptibility (allergy of infection?) especially pyogenic</li> <li>3 Personal allergy and pyogen susceptibility Allergy and infection interrelations "Broadening the base"</li> <li>4 The ichthyotic or dry skin habitus Predisposed by use of soap and other alkali contacts, because of lack of fat (oil) defense</li> <li>5 The seborrheic or oily skin habitus Predisposed by fat gland over activity and congestion to phytids and bacterids, and to both fungous and pyogenic infections direct</li> <li>6 Vasomotor and sweat mechanism, functional disturbances               <ol style="list-style-type: none"> <li>(a) Hyperhidrosis</li> <li>(b) Red or blue cold hands—"neurocirculatory instability" (Becker)</li> <li>(c) pH and reducing body content of sweat</li> <li>(d) Contact of skin surfaces Effect on concentration of oxygen, etc</li> </ol> </li> <li>7 Causes of skin hydration               <ol style="list-style-type: none"> <li>(a) High carbohydrate intake</li> <li>(b) Alcohol intake</li> <li>(c) High alkaline ash food intake, especially fruits</li> <li>(d) Causes of edema                   <ol style="list-style-type: none"> <li>(1) Varicosities and peripheral stasis (small amount)</li> <li>(2) Serum protein globulin reversal</li> <li>(3) Heart and kidney disease</li> </ol> </li> <li>(e) Diabetes</li> </ol> </li> <li>8 Causes of vasodilatation               <ol style="list-style-type: none"> <li>(a) Heat and humidity</li> <li>(b) Motion</li> <li>(c) Histamine</li> <li>(d) Fatigue</li> <li>(e) Allergens</li> <li>(f) Alcohol</li> </ol> </li> <li>9 Causes of vasoconstriction               <ol style="list-style-type: none"> <li>(a) Arterial disease</li> <li>(b) Vascular spasm</li> </ol> </li> <li>10 Causes of sweating               <ol style="list-style-type: none"> <li>(a) Nervous, emotional tension</li> <li>(b) Atmospheric conditions—heat, humidity</li> <li>(c) Impervious clothing, including shoes and gloves</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>1 Inoculation and reinoculation with infective agent               <ol style="list-style-type: none"> <li>(a) Fungus and pyogen relationships</li> <li>(b) Environmental and contact exposure</li> </ol> </li> <li>2 Development of (a) local or (b) general allergy of infection (phytids and bacterids)</li> <li>3 Ingestion of an allergen (food)</li> <li>4 Ingestion of a drug (barbiturates)</li> <li>5 Common contacts (contact allergens)               <ol style="list-style-type: none"> <li>(a) Alkali sensitiveness—soap, etc (especially in ichthyosis)</li> <li>(b) Rubber—gloves, occupational contacts with chemical catalyzers, etc</li> <li>(c) Leathers and glove and shoe processing materials</li> <li>(d) Medicaments and medical contacts, procaine etc disinfectants, dusting powders, etc</li> <li>(e) Wool</li> <li>(f) House and occupational dusts, oils, cleansers, etc</li> <li>(g) Plants (oleorinsins, etc)</li> <li>(h) Miscellaneous chemicals</li> <li>(i) Physical agents—light, heat</li> </ol> </li> <li>6 Emotional shock and crisis</li> <li>7 Intercurrent infections Especially virus infections of nasorespiratory and gastrointestinal tracts (sinuses, etc, mild, subthreshold infectious, time of onset duration?)</li> </ol>

humidity are the gift of the weather, though sometimes of clothing and occupation.

Emotion expresses itself on the hands in much the same way that the rosacea complex is expressed by the flush area of the face. It is fascinating to watch the color play from relative pallor to lividity of the dermatitic hand, prepared by overwork, strain and fatigue and to see the itch begin and the scratch follow, with wringings and twistings, as the patient, all unconscious of what his members are doing, unburdens his mind and heart with bitten lip and suffused eye. "The hand cries for you" we say—and in none more bitterly than the poker faced but harried physician and the driven surgeon. Histamine bodies we mention with hesitation as theory to explain vasodilatational effects with hypotension and carbohydrate intolerance possibly due to absorption of histamine bodies from the intestinal tract (Kendall syndrome). Alcohol we mention too with hesitation because we respect what contributes to conviviality these days—but we cannot escape the convic-

coccus and would point out that it is present in the most varied types of acute, subacute and chronic dermatitis without necessarily any conventional "impetiginous" characteristics. The clinical earmark is the milium pustule usually at the periphery of a young lesion, often only just seeable with a 3 to 5 diameter lens. If the patient has become allergic to this organism he may sustain extensive "id"-like outbreaks involving elbow flexures, axillas, face, ears, with fever and more rarely lymphangitis. The last trace of fungus, if ever present, has vanished in the melee, so far as scrapings and culture show.

Across the mild or severe allergy of infection presented by these patients play the other allergens of their allergic pattern. Bacon explodes a urologist. Coffee as an allergen overlooked for years leads when removed after identification to a 75 per cent reduction in symptoms. House dust is a common offender in women (dishwater in France). Soap as an alkaliizer prepares the skin for contact allergens of all sorts. Light

sensitiveness follows a bout of intestinal 'flu' (coproporphyrin absorption) and on the trauma inflicted by the allergen appears the hemolytic staphylococcus. This does not mean that all contact irritation transforms itself forthwith into infection and infection allergy but it should be looked for. Twenty minutes of the wrong rubber glove may mean three to six weeks in bed.

Environmental exposure for physicians may include outbursts following the opening of a boil or abscess with unprotected hands quite as much as stepping on a dirty bath mat or locker room floor with unprotected feet. Our observations on the effect of barbiturates (item 4) are based largely on the homology of the bullous type of this drug eruption to the acute infective dermatitic hand. Many physicians with bad hands have been fighting tension with sedatives of this type, but the frequency may be merely coincidental.

The contact factors name may of course be legion. Only the commoner groups of contact allergens are named in table 1. The case histories later presented are those of physicians and emphasize the rubber glove, and particularly the so-called latex glove as the trigger. Suture tube fluids, local anesthetics of the 'caine' types are frequent offenders. The morphology of the glove eruption finally arouses suspicion though it may be years before the conviction dawns on the victim—a dusky, often livid and 'burned' look to the dermatitis, most apparent on the back of the hand with a cuff encircling the wrist, almost suggestive of pellagra or photodermatitis. At first irritation may be slight and cumulative, but as the allergic response is stepped up the itching begins in fifteen minutes the dermatitic disability may last for six weeks following a single contact (case 3) (background causes) and may be immediately converted into a violent hemolytic staphylococcus or streptococcus infection without preliminaries that can be recognized. Rubber is of course, a chemical goulash of synthetics, gum accelerators, vulcanizers, antioxidants, any one of which or several may be allergens or become such for susceptible (backgrounded) persons. The composition of rubber changes constantly with new discoveries; the ingredients are often secret, extremely minute amounts may be profoundly allergenic or irritant. There is a story that one handbarrow load of old shoe heels containing hexamethylene, added to a batch of new materials, brought down the staff of a plant with a dermatitis. Certainly one pair of gloves worn for one operation can do it for the surgeon who is susceptible.

When a contact dermatitis is suspected, patch test search of all possible ingredients may be resorted to, though close questioning and the distribution of the dermatitis provide good clues. Patch tests especially to high concentrations of the types of substances named may produce violent local reaction at the test site and even extensive 'id' manifestations so that patch testing with them is not without risk. When the surgeon begins to suspect his gloves he should try wearing a very thin silk or cotton glove under the rubber one. If this brings pronounced relief American Anode Inc., Akron, Ohio will supply a patch test kit and will moreover, make gloves to order excluding therefrom the incriminated agent. A dermatologist or allergist should do the testing. A piece of the offending glove should also be used. When the glove is definitely incriminated one or other of two (relatively) non-

allergic types may be tried—Neoprene gloves made from the du Pont synthetic by the Pioneer Rubber Company Willard Ohio or the dark glove made by the Seamless Rubber Company, New Haven Conn. Every person responsible for gloves on the operating and supply room staff should be put on the alert for a single mistake may cause a sensitive surgeon prolonged discomfort and incapacity. Thus far no satisfactory method for desensitization to these highly toxic substances has been worked out and avoidance with correction of the background is the only resource.

Of other contact excitants mentioned wool brings in a good many women's hands these days through Red Cross knitting activities. The sensitiveness may be interred by flares after avoidance, but wool is so general a contact in clothing that it is best tested for specifically by patch with the ether and alcohol soluble extracts. Leather, like rubber, is a goulash of processing materials and shoes must be dissected and glove linings examined and the patch materials must be applied so as to test both sides, to detect reactions to glaze, glue and rubber cement. We recall one young patient whose feet finally recovered when she was provided with rubber cementless shoes and her hands when she stopped turning handsprings under the lilac bushes (proved allergy to lilac).

The importance of soap in hand dermatitis concerns both its alkalinizing qualities and its content of specific allergens. Of the two, the former is the more important. The action is a double or treble one including removal of the oil or fat detense by emulsification, elevation of the surface  $p_H$  thus attacking the defensive 'acid mantle,' and the creation as Burckhardt has shown of a local allergen susceptibility. The influence of alkalization varies from person to person, some individuals being apparently constitutionally deficient in skin alkali neutralizing capacity. Because of this complex of considerations the avoidance of soap and of alkali in housework and industrial processes is often of critical importance in preventing eruptions of the hands, and nothing can be accomplished if the patient will not accept the use of a detergent cream containing a wetting agent for cleansing, and use it invariably, not just occasionally. If defatting (as in ichthyotic or xerodermic persons) is the principal trouble some tolerance of soap can be secured if the hands are insistently and persistently and repeatedly inuncted between washings with a bland nonperturbed grease (simple lick-and-a-promise rubbing won't do) to which the patient must not be sensitive (cholesterinized petrolatum is effective). Rubbing in such a grease just before washing as the industries have found or even before beginning dirty work helps. Even the draining of soapy water over the feet in a shower affects some persons unfavorably and the spigot-heel-suspension posture in the bath tub must be adopted.

Light sensitiveness is rarely if ever an affair of the hands alone but in extensive 'id' cases especially with involvement of the face it must be suspected. It develops in patients who concomitantly may have a coproporphyrinemia the apparent source of which is a porphyrin-producing stool flora. Just what starts this flora in the intestine is not known but we have seen light sensitiveness of the hands follow virus infections (nasorespiratory and gastrointestinal) and suspected that their apparent ability to excite it depends on their paving of the way for other pathogens. Improvement



can be brought about by hastening the elimination of the circulating porphyrins with oral administration of nicotinamide.

The influence of nasorespiratory infections on hemolytic staphylococcus infections of hands is recognizable by patients as well as ourselves. It is apparently an induction of infection allergy to judge by the provocation of extensive "rids" in some cases and "allergy" to the staphylococcus rather than the viruses. Apparently the sensitization interval is from eight to thirteen

drug rash may be diagnosed. It is in these cases that we suspect the barbiturates with which the patient or physician is clutching himself to be contributory, by a Milian type of provocative reaction.

#### THE TREATMENT OF HAND AND FOOT DERMATITIS

While some cases of hand or foot dermatitis are refractory and even incurable, most persons not already burned by x-rays, or hampered by the accumulated irreversible pathogenic processes of later life, make

TABLE 2—Directions for the Patient, Causes and Prevention of and Treatment Directions for Ringworm or Fungous Infections of Hands, Feet and Groins

- 1 So called ringworm, 'athlete's foot,' 'jock itch,' etc., is due to a fungus or microscopic plant, midway between a yeast and a mold very tough and hard to kill.
- 2 Other forms may take advantage of the situation and complicate a fungous infection with serious effects.
- 3 No one who knows what he is about promises to cure 'permanently' fungous infections of the feet. They can be cured or improved but the elements of susceptibility and reinfection make it impossible to say whether or not and how soon any given case may be cured.
- 4 Your cooperation is as important as our treatment—more important in the long run. You must keep yourself well.
- 5 The infection is rarely dangerous but it may be, especially in later life and in sensitive persons. It comes and goes, has ups and downs in the same person is helped by a vast number of remedies.
- 6 The infection is made worse, among other things, by
  - (a) Moisture sweating, heat (hot weather and exercise hot sand, hot impervious or sweaty shoes wool socks, carelessness in drying the feet especially between the toes)
  - (b) A diet very high in starch and sugar (sweets including fruit juices ice cream and soft drinks)
  - (c) The use of alcoholic beverages
  - (d) Nervous tension stress and strain, from any cause, including fatigue and nervous overwork
  - (e) A special susceptibility or sensitiveness to the germ (allergy) in certain people
- 7 The common sources of infection are
  - (a) Moist surfaces used by many bare feet—bath mats and floors, showers, swimming pools and gymnasiums, bath houses toilet seats
  - (b) Walking barefooted anywhere
  - (c) Your own wool and silk socks, old slippers and shoes
  - (d) More rarely, other people's bodies and clothes
- 8 Apart from the precaution of not walking barefoot or exchanging towels clothes, footwear, there is little likelihood of passing on the disease. All susceptibles get it from the aforementioned sources (7).
- 9 The general principles of control and prevention are
  - (a) Break yourself completely of the barefoot habit. Never touch a bare foot to the floor, carpet or mat.
  - (b) Dry and cleanse your feet completely every day, removing all scale and moisture, especially between the toes. Do not overuse soap.
  - (c) Use cheap straw, paper or wooden clog slippers and burn frequently.
  - (d) Wear cotton socks and boil them after each day's wear when infection is active. Avoid wool socks at all times.
  - (e) Avoid sweaty shoes and hot footwork.
  - (f) Exchange no clothing with any one.
  - (g) Never scratch, rub, pick, pull or tear. If instructed use scissors, sandpaper, towel and toilet paper.
  - (h) Do not use iodine without medical order.
- 10 To prepare purple solution (potassium permanganate)
  - (a) Remember the solution must be made fresh each time. If it turns brown or muddy while in use, mix some fresh.
  - (b) Potassium permanganate requires a prescription. Use the number of tablets per quart of warm water called for by the prescription. If using crystals, make the solution the color of beet water so that you can still see a mark on the bottom of the dish.
  - (c) The solution stains finger and toe nails brown but the color can be removed with lemon juice or oxalic acid (poison?). Basins and tubs can be cleansed with cleanser. Acid spoils the enamel.
  - (d) In soaking hands or feet, use an enamel basin deep enough to immerse to ankle or wrist. Save time by standing in the basin while shaving. Soak for — minutes (usually 10-20).
  - (e) For baths, use 3 tablespoons of a saturated solution to the tubful of warm water. Clean tub at once after use.
  - (f) After soak, rub the surface clean with old cloths or, better, paper towels or toilet paper wads. Rub off all the brown and dead skin possible.
  - (g) For sponging surfaces, use gauze or a cotton and a rubber glove on hand.
- 11 Clipping and scraping directions
  - (a) Thoroughness determines success or failure at the start. Later it can be overdone, but few do it.
  - (b) Use the blunt end of a new steel nail file, held vertically as a scraper. Do not tear or pull.
  - (c) On dry scaling or thickened surfaces (not between toes), use emery boards (as purchased for finger nails) or 00 (double 0) sandpaper in 2 inch squares (hardware store). Do not grind to the point of soreness, bleeding or oozing. Use fresh sandpaper frequently.
  - (d) Chip blisters with sharp manicure scissors used for no other purpose. Soak in alcohol before and after use. Stick one point into the blister top, chip and slit. Then insert the blade at one end of the slit, cut a second, turn back the V shaped flap and cut it off at the base. Have us show you. Be conscientious. Open all small blisters this way.
  - (e) Apply paints directly to the skin. Ointments spread on gauze. Keep ointment soaked gauze between sore and sticky toes.
- 12 In acute cases, keep off the feet. Sit with them elevated to a desk top or chair whenever possible.
- 13 Remove constricting articles of clothing such as garters and rolled stockings.
- 14 If using supporting bandages note the following
  - (a) Change and wash elastic bandages every other day as directed with package.
  - (b) With roll uppermost (away from skin) start with end on top of foot just behind toes, roll smoothly with firm pressure (not too tight), overlapping each turn one half. Toes should not swell or prickle.
  - (c) Cover the heel (demonstration).
  - (d) Run bandage up to just below the knee.
  - (e) Remove bandage after going to bed. Put it on before rising.
  - (f) Replace bandages that have lost their elasticity (at least every 30 days).
- 15 If you feel an attack coming soak feet 20 minutes in purple solution ice cold in summer, hot in winter.
  - (a) Use the salicylic alcohol solution as directed.
  - (b) Dust the powder between the toes 2-3 times a week.
  - (c) Try a little ointment from your stock, preferably the yellow one.
  - (d) Open the stray blisters as you have been taught.
  - (e) Watch the skin between the 3d and 4th and 4th and 5th toes especially and keep after it.
  - (f) Carry out orders regarding diet, alcohol and nervous influence.
  - (g) Don't be easily discouraged or alarmed. Try these directions first, then get medical advice before the relapse is complete if you can't control it.
- 16 If you can interest a school board or club in preventing infection with 'athlete's foot' and care to do so, ask for further information.

days, but since patients may become subthreshold clinical cases before symptoms appear, the general symptoms may become outspoken only about the time the skin flare begins. A spreading erythema, increased edema, a shower of pustules locally, extension without change in morphology, local lymphangitis and lymphadenitis, sudden involvement of the predisposed flush areas (ears, center face), flexures (intertrigo) or a wholesale outbreak of a follicular papular, patchy or diffusely confluent dermatitis, each or severally, constitutes the flare. A truly magnificent outburst of pustules from head to foot or a pemphigoid bullous eruption with fever have more recently marked the extreme grades of sensitization and require oral sulfonamide therapy. A

gradual recoveries. Failures are usually due either to (a) a one-track view of the case, diagnostically or therapeutically, (b) nonadherence by the patient to a tedious and exacting regimen or (3) nonattention by physician or patient to detail. Since the last mentioned involves instruction which, we have learned, must be full and specific, the minimal directions and information given the patient in the senior author's office are here reproduced (table 2).

Table 3 arranges treatment under the three categories suggested by the analysis of causes. In military life, especially of Americans in the tropics, and among workers in the industries, much trouble can be avoided if selection of personnel can be exercised.

How can a surgeon prevent rubber glove dermatitis? First by not becoming a surgeon if he classifies in column 1 class 1. Second by heeding the instructions for the care of his feet. Third by staying within bounds and the more so the older he becomes on alcohol carbohydrates sedation rest and work. Fourth by knowing what he uses and what he wears on his hands (and feet) and sticking to the least sensitizing and least irritating for him. Fifth the allergically backgrounded individual should have his allergic pattern studied as early as possible and again after severe infections which broaden his base. And finally as any good surgeon does he should avoid infections and infective material and not expose his bare hands to

Passing to the systemic therapy, the opening dose of hydrochloric acid requires no test meal if no history exists suggesting hyperchlorhydria or ulcer. The older the patient and the more flushed the face (rosacea complex) the larger the indicated dose (20 to 60 minims [1.25 to 3.7 cc] three times a day) may be. Glutamic acid hydrochloride (one capsule equivalent to 10 minims [0.6 cc] of diluted hydrochloric acid) is a very acceptable substitute for the bottle-dropper-tube nuisance. It is necessary to watch the weight and fatigability in reducing the intake of carbohydrate by younger persons and fruit and juice guzzling as a source of carbohydrate as well as alkaline ash food in general must be checked.

TABLE 3—Treatment of Skin Infections (Dermatitis) of the Hands and Feet

PREVENTIVE	SYSTEMIC	LOCAL
1. Reject for hand and foot jobs the following: (a) Very gray or very dry skinned persons (b) Persons with red or bluish hands and feet (c) Severely allergic persons (d) Persons with heavily sweating hands and feet (e) High strung nervous red faced or flushed persons (f) Persons with varicosities even minimal (g) Persons with active fungous or pyogenic infections at any site or a history of pronounced susceptibility (h) Alcohol users (more than minimal) 2. Keep bare feet off floors and bath mats 3. In locker and dressing rooms enforce 1 per cent sodium hypochlorite solution foot trays 4. Cotton sock, cool well fitting and climatic ally appropriate footwear 5. Drying dusting powder (zinc oxide boric acid tannic acid an) for sweating feet 6. Less soap rather than more 7. Occasional potassium permanganate soaks 1:4000 solution and manual clean up 8. Aquaphor-cold cream aa for systematic greasing 9. Sterilized alcohol rubs 2 per cent for caly feet	1. Dehydrate by (a) Acid ion increase (HCl by mouth acid ash diet trend) (b) Reducing carbohydrate sharply temporarily or permanently (c) Stopping fruit fruit juices soft drinks (d) Stopping alcohol (e) Water and salt intake restricted 2. Rest 3. Psychotherapy 4. Sulfonamides (sulfathiazole or sulfadiazine) by mouth only if symptoms are severe and use unavoidable or if symptomatic constitutional or metastatic involvement has occurred 5. Desensitization— (a) Allergic study or basic nonallergic diet cyclones desensitization against or avoidance of poisons (b) HCl and pep in ty mouth (c) Acid ash regimen (d) Autohemotherapy (e) Calcium intramuscularly and by mouth 6. Investigation of dextrose tolerance (2-3 hour test) Small doses of insulin diet if indicated	1. If acute (a) Ruthless clean up (debridement) scraping away all detritus clipping out all vesicle top and dead skin (b) Hot potassium permanganate soaks 1:4000 solution 10 minutes once or twice daily (c) Sulfathiazole ointment (emulsion base SKF) 5 per cent 2-4 times daily Short course Sensitization risks (d) 0.5 to 2.0 per cent ammoniated mercury in boric acid ointment as alternate or succor to c (e) Follow as process becomes chronic by Whitfield's 2 per cent salicylic acid 4 per cent benzoic acid in petrolatum (f) In small vesicular or eczematous type use Calomel carbolfuchsin paint beginning with dilution 1:3 with water and increase strength 2. If subacute (scale appearing vesicles disappearing) use soaks ointments and paint as aforementioned (a) Avoid soap use detergent cream (b) Crease with aquaphor cold cream aa or (c) A propionic acid lotion alone or in addition to foregoing or (d) Crude coal tar paint (acetone-collodion base)* or (e) Tar distillate ointment or a crude coal tar in a vanishing cream base (f) Clean up before or after potassium permanganate soaks or if dry usins 60 sandpaper or emery boards 3. If chronic—or if refractory to treatment use foregoing measures plus— (a) Elevation (b) Bandage support using cotton webbing (Ace or Lastex Ten or) 3 inch 5 yard bandage base of toes to knee (c) X rays 5-70 roentgens unfiltered experts only lest flare be produced or subject burned by repetition without control (d) X rays over lymphangitis or lymphadenopathy (e) Si lamp (bulb Hg arc) repeated unburning Do not use with X rays (f) Collodion splint to fissures

Crude coal tar paint Acetone 2 cc flexible collodion 4 cc crude coal tar q s ad 50 cc

pyogens or his feet to fungi. Dashing welders of the pocket bistoury, and inveterate golfers, take heed.

In the prophylaxis of foot infection, important for protection of the hands, item 2 in the preventive column should be made a lifelong habit, item 3 is prevention, not treatment, item 4 permits sterilization by boiling (change every day, boil, wash, rinse thoroughly), certain shoes provoke infections possibly by allergenic content or provoking perspiration or preventing evaporation. Item 6 is much overdone by most patients who soak and wash unnecessarily with soap under the mistaken impression (odor) that dirt and putrefaction are at the bottom of their troubles. In item 7 manual clean-up can be done with paper towels or toilet paper wound around the finger and "reamed" between the toes. In item 8,unction of a grease is ineffectual without time (three to five minutes) and detail (between and under the toes).

Rest and psychotherapy, though treated by single words in the outline, are basic inescapable essentials. One of the most important medicaments in the hand-foot armamentarium is DGAD—not digitalis, gonadotropes, aspirin and diaphoresis (of copper) but huge doses of Don't-Give-a-Damn the psychologic soporific that reduces the eternal friction between what one feels he must do and what one thinks he can. As a guide to the finding and taking of this now increasingly scarce preparation a four page written prescription impossible to reproduce here is handed out to the patient in the senior author's office and then hammered in by one to three or more talks on principles of living which it must be admitted are too deep or fix too high for many physicians and surgeons to grasp or apply them. They see the point but the nub of the matter—to do something about their own tension-mindedness, their own overwork, their own disposition to violate rule 5

Seventeen days later a violent flare occurred with acute lymphangitis, fever and a leukocytosis of 16,000. He was hospitalized.

Special studies were undertaken. Bacteriologic examination disclosed hemolytic streptococci and staphylococci. Oral sulfanilamide and sulfapyridine therapy resulted in much improvement but considerable residual dermatitis. Local infections consisted in an opaque sinus and mucocle (?). With regard to allergy, ingestsants included a number of weak positives including several food favorites but not including patches which had been shown to be responsible for hand urticaria. Contactants included dog fur (he has three dogs),orris root (he cannot use scented powders) and wool. Experiments with a therapeutic lamp (Si) indicated that he was from time to time or had become transiently light sensitive. Staphylococcus toxoid tests and tests to an autogenous hemolytic streptococcus suspension indicated by necrotizing reactions with lymphangitis, a hyperallergic reaction to his infecting organism. The flare effect ("broadening the base") of virus infection even in members of his family (recall his allergic type sinus involvement) was several times demonstrated.

Rubber gloves were finally suspected to be the excitant, although at first the possibility was specifically denied by the patient, following relapse after a long operation in which practically well hands began to show irritation in twenty minutes (dark rubber gloves). A patch test from these gloves was positive. Neoprene gloves were tolerated, but a standard rubber glove a year later provoked a relapse after thirty-six hours despite the fact that a cotton glove had been worn under the rubber glove. Soon three years later the patient, employing allergen eliminative precautions and wearing nonallergic gloves, had reduced his dermatitis to faint traces on two finger webs, and he was able with the usual washing technic to carry a full operative schedule. His background had been materially improved. Lasting desensitization had not been accomplished.

**CASE 3**—An industrial physician aged 55, heavily overworked by the war emergency, developed in 1940 a dermatitis involving the tips, dorsa and sides of the fingers. The hands were equally involved from the start, a puzzling factor until it was found that he was truly ambidextrous. The distribution to contact points likely to be involved in his dispensary work suggested procaine hydrochloride, pontocaine hydrochloride, suture ampule fluids and alcohol denaturants as leading excitants, acting on a soap predisposed (low skin alkali tolerance) background. The fingernails suggested mercury bichloride effects, the toenails fungous infection, scrapings overlooked.

As predisposing causes, his children had mastoiditis, suppurative appendicitis, infantile eczema and hay fever, patient himself lobar pneumonia, catarrhal jaundice, severe tonsillitis, quinsy, mild appendicitis, athlete's foot, and influenza in 1918. His diet had a high sugar content and he was a moderate user of alcohol. He did not use drugs. The tonsils were infected. Infected teeth were removed without benefit. There was an old sinusitis. His nervous load included family problems, responsibility for 16,000 men, inadequate assistance and private practice. He was troubled with sweating hands (rubber gloves made his condition worse).

As exciting causes, contacts included dog fur, Lifebuoy soap (which caused itching), ST 37, Kaldermic suture fluid, catgut and suture fluid (xylene?), pontocaine hydrochloride and procaine hydrochloride. From the distribution, pontocaine and suture fluid were suspected. Latex rubber gloves were routinely tested. Positive patch tests were obtained to both suture fluids and pontocaine. Procaine was negative.

The latex glove test was mildly positive after twenty minutes' exposure of a patched site.

Almost complete recovery followed a nonsoaping and greasing regimen with protection from allergens by nonallergic rubber gloves. This was in contrast to the previous elaborate but unsuccessful treatment, including x-rays. Slight fissuring persisted at the finger tips. The evaluation was incomplete because (a) search for a fungus was not made and (b) a general allergic workup was not done. Another infected tooth was found, infected tonsils were not removed and the prostate was not studied. Improvement was 85 per cent.

## Clinical Notes, Suggestions and New Instruments

### A NEW TEST FOR THE DETECTION AND THE APPRAISAL OF EXPOSURE TO TRINITROTOLUENE

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In the course of an experimental study of the toxicity of trinitrotoluene and the mechanism of its action, it was found that trinitrotoluene is partly reduced in the organism with the formation of amines. One of these is presumably 2,6-dinitro-4-aminotoluene. Although sufficient quantities for chemical identification have not been isolated from the urine so far, certain characteristics seem to favor this assumption. It appears very likely that other reduction products such as mononitrodiaminotoluene and dinitrohydroxylaminotoluene and its derivatives may be encountered, but so far none of these have been identified by us in urines of experimental animals and man. These studies are still in progress and will be reported at a later date together with a discussion of the pertinent literature, but a test developed for the determination of 2,6-dinitro-4-aminotoluene was applied to a large number of urines of workers exposed to trinitrotoluene and was found to be more sensitive and more quantitative than the Webster test or any of its modifications. In a study of 98 women and 245 men exposed to trinitrotoluene the average daily excretion of the amine was found to be 129 mg. and 206 mg., respectively, with 0.0 and 33.5 and 0.27 and 28.75 mg. as extremes. For this reason the original method was simplified and adapted for clinical use so that it might be used for the appraisal of exposure of workmen handling trinitrotoluene. This method is based on the extraction of the metabolites of trinitrotoluene with ether and determination of the amine in the ether extract after evaporation of the ether by diazotization and coupling with  $\alpha$ -naphthylamine, extraction of the latter with toluene, and comparison of the orange-yellow color formed with a set of standards.

The procedure is as follows. Place 50 cc. of urine in a 125 cc. Erlenmeyer flask, add 2 cc. of hydrochloric acid (specific gravity 1.18) and boil gently for one minute. After cooling, add 1 drop of capryl alcohol and 3 to 4 Gm. of sodium bicarbonate in divided portions. After the evolution of carbon dioxide has ceased, shake the solution thoroughly but not vigorously with 100 cc. of ether in a separatory funnel for five minutes. Allow the layers to separate and wash the ether layer successively with 25 cc. of 1 per cent sodium carbonate solution and 25 cc. of distilled water. During this extraction, emulsions occur frequently. When this happens allow the mixture to stand until the layers are reasonably well separated, drain off the lower layer and proceed with the washing. If the emulsion persists, add, after the last washing has been drained off, sufficient anhydrous sodium sulfate to break the emulsion in the ether layer, allowing the clear ether layer to be decanted. Using aliquot portions of the ether extract, the ether is evaporated or distilled off from a 125 cc. Erlenmeyer flask containing 10 cc. of water acidulated with 3 to 4 drops of 2-normal hydrochloric acid. Transfer the aqueous residue while still hot to a 25 cc. glass stoppered cylinder, cool to 20 to 25 C. and add in rapid succession, with adequate agitation after each addition, 1 cc. of a freshly prepared 0.1 per cent solution of sodium nitrite, 1 cc. of 0.5 per cent sulfamic acid and 1 cc. of a freshly prepared saturated aqueous solution of  $\alpha$ -naphthylamine. Let the mixture stand for about ten minutes, then add 10 cc. of toluene and shake vigorously. Separate the layers and transfer the toluene extract to a test tube of the same size as used for the preparation of the standards, add about 1 Gm. of anhydrous sodium sulfate, shake, and compare the intensity of the color with the set of color standards.

The standards are prepared as follows. 1 Fifty mg. of chemically pure methyl orange is dissolved in 100 cc. of distilled water and 14 cc. of this solution is diluted to 100 cc. with

or distilled water. 2 A buffer solution (No 1) is made by adding 0.40 cc of fifth molar sodium hydroxide to 50 cc of fifth molar potassium acid phthalate and diluting to 200 cc with distilled water. 3 A buffer solution (No 2) is made by adding 3.65 cc of fifth molar sodium hydroxide to 50 cc of fifth molar potassium acid phthalate and diluting to 200 cc with distilled water. For the preparation of the standards the proper amounts of the methyl orange solution and the buffer solutions are mixed as given in table 1 to make 10 cc in clean Pyrex test tubes, which are then sealed. If kept in the dark when not in use these standards will not change color for at least three months.

Since the range of these standards is limited to concentrations of 0.01 mg to 0.15 mg of 2,6-dinitro-4-aminotoluene per 10 cc, it may be necessary in some cases to use aliquot portions of the original ether extract or the urine for the determination. With low concentrations of amine in the urine, 50 cc of urine and the entire ether extract will give an adequate intensity of color. With higher concentrations of the amine, aliquot fractions of the ether extract may be used for the determination, or the final toluene extract may be diluted further with known amounts of toluene until the color intensity or shade falls within the range of the standards, and the final reading is multiplied in accordance with the dilution.

TABLE 1—Composition of Standards for the Determination of 2,6-Dinitro-4-Aminotoluene

% Dinitro-4-Aminotoluene (Amount in Mg in 10 Cc)	Methyl Orange Solution in Cc	Buffer Solution in Cc
0.00	0.0	10.0
0.01	0.2	9.8 buffer No 1
0.05	0.6	9.4 buffer No 1
0.05	1.0	9.0 buffer No 2
0.07	1.4	8.6 buffer No 2
0.09	1.8	8.2 buffer No 2
0.11	2.2	7.8 buffer No 2
0.13	2.6	7.4 buffer No 2
0.15	3.0	7.0 buffer No 2

TABLE 2—Determination of 2,6-Dinitro-4-Aminotoluene in Human Urine Containing Known Amounts of the Amine

Amine Added in Mg per 50 Cc.	Amine Recovered in Mg per 50 Cc
0.1	0.10 to 0.14
0.2	0.14 to 0.18
0.3	0.23
0.4	0.36 to 0.44
0.5	0.45
0.6	0.68
0.7	0.77
0.8	0.72 to 0.83
0.9	0.99
1.0	1.1

Table 2 gives the results of determinations made by this method with human urines containing known amounts of 2,6-dinitro-4-aminotoluene. It shows that the method allows a sufficiently accurate estimation of the amount of amine excreted.

It should be pointed out that this method is not specific for 2,6-dinitro-4-aminotoluene because any primary aromatic amine which is soluble in ether will be diazotized and coupled with the formation of a pigment. However the extraction of the coupled product with toluene prior to the colorimetric determination affords a certain specificity in that no compound tested so far is as soluble in toluene as 2,6-dinitro-4-aminotoluene. After diazotization and coupling sulfanilamide for example will remain mainly in the aqueous phase since its solubility in toluene is rather low. Of other drugs tested the ingestion of acetanilid will cause very little and the ingestion of aminopyrine will cause no interference with the determination of the amine. While no normal urine tested has yielded a color after diazotization and coupling occasionally some urine will contain a pigment which passes unchanged through the various procedures into the final toluene extract. If no amine is present in the urine this color will not be changed after diazotization and coupling but in the presence of amine there will be a change of the color of the solution after diazotization and coupling. In such urines the evaluation of the amount of amine present will require some discretion and the determination should be repeated after a few days.

## SUMMARY

A method has been devised for the determination of 2,6-dinitro-4-aminotoluene in the urine of workers exposed to trinitrotoluene, and its limitations have been determined. This method has the advantage over the Webster test in that the final color is stable and allows a quantitative determination.

## TOXIC REACTIONS TO SUCCINISULFATHIAZOLE

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With the establishment of the bacteriostatic value of the different sulfonamides in various infections, it was a logical step to seek for a drug of this group which would control the normal and pathologic flora of the intestine. The fundamental requirements of such a drug were that it should be an effective bacteriostatic agent against coliform organisms in their natural habitat that it should be so slightly absorbed that an adequate concentration in the bowel might be maintained, and that it should be nontoxic to the human organism. Marshall and his associates<sup>1</sup> first introduced a drug appreciably water soluble but poorly absorbed, sulfanilylguanidine, and showed its clinical usefulness in bacillary dysentery. Subsequently Poth,<sup>2</sup> Firor,<sup>3</sup> and others introduced succinylsulfathiazole as an intestinal antiseptic and established the fact that in adequate dosage it lowered the coliform count of the stools significantly in over 90 per cent of cases in dogs and men. They also showed that even in large doses the drug is poorly absorbed reaching levels of less than 2 mg per hundred cubic centimeters in the blood when given alone in their series. No evidence of toxicity was encountered.

On the basis of a series of 50 patients who subsequently underwent surgical procedures involving the large bowel and who were treated preoperatively with succinylsulfathiazole, Poth<sup>4</sup> concluded that administration of the drug largely eliminated complications due to infection and rendered the convalescence smoother and shorter than in untreated patients, though control cases are not presented in this study. As a further instance of the usefulness of this sulfonamide Poth, Chenoweth and Knotts<sup>5</sup> have reported a series of 20 cases of bacillary dysentery in which the age ranged from 8 weeks to 83 years, all successfully treated with succinylsulfathiazole. More recently Smyth and his associates<sup>6</sup> have reported successful therapy of 12 out of 14 cases of Flexner type dysentery using succinylsulfathiazole.

## TOXICITY OF SUCCINISULFATHIAZOLE

Throughout the reports on the use of this drug emphasis is placed on its freedom from toxicity, and it is advertised as a clinically nontoxic intestinal bacteriostat. Admittedly unfavorable reactions are uncommon—much more so than with sulfanilylguanidine, but toxic phenomena do occur. Welch, Mattis and Latven<sup>7</sup> in an extensive toxicologic study on monkeys showed that administration by stomach tube of up

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4 Poth E. J. Succinylsulfathiazole, an Adjuvant in Surgery of the Large Bowel. *J. A. M. A.* 120: 265 (Sept.) 1942.

5 Poth E. J., Chenoweth B. M. and Knott F. L. A Preliminary Report on the Treatment of Bacillary Dysentery with Succinylsulfathiazole. *J. Lab. & Clin. Med.* 28: 162 (Nov.) 1942.

6 Smyth C. J., Finkelstein M. B., Gould S. F., Kopp T. M. and Leeder F. S. Acute Bacillary Dysentery (Flexner) Treated with Sulfaguanidine and Succinylsulfathiazole. *J. A. M. A.* 121: 125 (April 24) 1943.

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to 5 Gm per kilogram daily of succinylsulfathiazole in six equal doses produced blood levels of 30 mg of the drug per hundred cubic centimeters and 0.8 mg of free thiazole per hundred cubic centimeters and led to no toxic effects. Intravenous administration of the sodium salt in doses up to 1 Gm per kilogram produced total drug levels as high as 170 mg per hundred cubic centimeters and resulted in excretion of urine containing as much as 12 Gm of succinylsulfathiazole per hundred cubic centimeters with frequent crystalluria whose intensity varied with *pu* as well as with urinary drug concentration, the more acid specimens showing heavier crystalline deposits. Some urines showed massive crystalluria with 4 per cent drug concentrations while others failed to show any with 10 per cent concentrations. These authors reported hematuria in occasional crystal loaded urines, but it is not clear whether this was gross hematuria and whether all specimens were examined microscopically for blood.

No previous reports of hematuria in man attributable to succinylsulfathiazole have been encountered, but Poth<sup>1</sup> mentions infrequent complaints of headache, dizziness and anorexia. He cites a single case in which 0.25 Gm (presumably per kilogram) of the drug had been administered daily for eight days for chronic ulcerative colitis with complaints of headache, nausea, vomiting, chills and arthralgia associated with a temperature of 103 F, lesions similar to erythema nodosum on the anterior surfaces of the legs, moist rales in the chest and a 5 per cent eosinophilia. A week later, when the reaction had subsided, administration of a single gram of sulfathiazole produced a temperature of 103.6 F and the symptoms and signs described in the first reaction. Smyth and his associates<sup>6</sup> observed sulfonamide crystals in the urine of 10 to 14 patients treated with succinylsulfathiazole for Flexner dysentery but none in the urine of 10 patients hospitalized for other causes and given succinylsulfathiazole as controls.

The records of the Johns Hopkins Hospital show that 100 hospitalized adult patients have received succinylsulfathiazole for periods up to five weeks for such diverse conditions as colonic carcinoma, diverticulitis, bacillary dysentery, accidental perforations of the bowel, ureterosigmoidostomy, chronic fecal fistula and rectovaginal fistula. While the dosage in the vast majority of cases was, as recommended by Poth and Knotts,<sup>8</sup> 0.25 Gm per kilogram as an initial dose and as a daily dose divided into six equal portions, some few patients have received less than this while several have received much more. One patient with a chronic postoperative cecal fistula was given 81 Gm daily by mouth and a similar quantity by colostomy for two days, after which the dosage was gradually diminished to 27 Gm daily by mouth. The drug was discontinued only after seventeen days without reaction. In this series of 100 cases, aside from a case of conjunctivitis questionably due to drug, there were only two unfavorable reactions: the first, a case of fever, rash and arthralgia similar to Poth's case, and the second a case of crystalluria with hematuria. The following are brief case reports.

#### REPORT OF CASES

**CASE 1**—A Negro woman aged 44 was referred to the hospital on March 15, 1943 by her physician, who felt a mass in the left lower quadrant of the abdomen. She had had symptoms of chronic low bowel obstruction for eighteen months and had been hospitalized elsewhere for six weeks for acute obstruction six months previously, being treated by bland diet and enemas. On discharge she herself noticed a small mass in the left lower quadrant of the abdomen, and this grew progressively larger while the patient lost 30 pounds (13.6 Kg). On admission to the Johns Hopkins Hospital she was afebrile, the bowels were unobstructed, the stools were benzidine positive, and a mass the size of a grapefruit was palpable in the left side of the abdomen. A barium sulfate enema revealed a filling defect in the left side of the colon. The patient was given 15 Gm of succinylsulfathiazole immediately and started on a regimen of 4 Gm of the drug every four hours. The temperature had begun to rise four hours after the initial dose and reached 105.4 F orally in twenty-four hours. The chest showed no abnormal physical signs, the urine contained

no white cells and the abdominal findings were unchanged. The blood drug level of free thiazole was 1.0 mg per hundred cubic centimeters. The drug was discontinued twenty hours after it was started and after the patient had taken 39 Gm. The temperature continued elevated, reaching 105.8 F twenty-four hours after discontinuance of the drug. Meanwhile, aside from being warm, the patient felt well and ate with good appetite while the temperature was 105 F. Following discontinuance of the drug the temperature, as stated, remained elevated twenty-four hours and then began to fall. Two days after the maximum elevation the temperature was normal. In order further to confirm the diagnosis of drug reaction the patient, when afebrile, was given a single dose of 5 Gm of succinylsulfathiazole. The temperature gradually rose with fluctuations, reaching 102.6 F two days later, after which it gradually fell to normal. In addition, an hour after the drug was given a pruritic morbilliform rash appeared on the flexor surfaces of the arms and the adductor surfaces of the legs, and generalized myalgias and arthralgias were bitterly complained of. The rash persisted three days and the other symptoms four days.

At operation an adenocarcinoma of the descending colon was resected, and the transverse colon was anastomosed end to end with the sigmoid. There were metastases in the preaortic nodes. The postoperative course was entirely uneventful, the patient got up on the tenth postoperative day and went home a week later, completely asymptomatic.

**CASE 2**—A man aged 54, a Czechoslovakian, was first admitted to the Johns Hopkins Hospital in May 1939 with symptoms and signs of complete low bowel obstruction for four days. At operation adhesions about the terminal ileum were released, but distention persisted postoperatively. Two weeks after discharge obstruction recurred and laparotomy revealed a carcinoma of the sigmoid, which was resected by the Miculicz procedure. The patient was discharged with an excellently functioning colostomy, which was closed successfully seven months later. Two and one-half years later he was again admitted with a story of partial obstruction for ten days, and a barium sulfate enema showed a constriction in the sigmoid. On Sept. 28, 1942 the patient was given 16 Gm of succinylsulfathiazole and started on a regimen of 2.5 Gm every four hours. On the sixth day, October 3, he complained of dull right lumbar pain and his urine, which had been normal on admission as on each previous occasion, was grossly bloody and contained sulfonamide crystals. The drug was discontinued but a blood level was not obtained until two days later, when it was 3.83 mg of free thiazole per hundred cubic centimeters. Microscopic hematuria of diminishing intensity was noted for eight days after the drug was discontinued, and sulfonamide crystals were detected in the urine as late as the fifth day after onset of hematuria. On the fifth day the blood level was 1.3 mg of free thiazole per hundred cubic centimeters.

A 20 cm segment of large bowel with recurrent tumor, which was found to have invaded the abdominal wall, was resected after the hematuria subsided. End to end anastomosis was carried out. The wound became infected and had not completely healed when the patient was discharged with normal bowel function thirty-six days postoperatively.

#### COMMENT

Case 1 represents an instance of drug fever which, while not the first reported attributable to succinylsulfathiazole, is unusual in that it occurred so soon after initiation of therapy. It also indicates that, as with other sulfonamides, arthralgia and rash may appear during the course of succinylsulfathiazole therapy. The second case is, so far as can be ascertained, the first one of hematuria attributable to this drug, although crystalluria, which accompanied the hematuria, has previously been observed. The small total number of patients followed warrants no conclusion as to the frequency of such unfavorable reactions to be anticipated, but the fact that they do occur makes it imperative that patients receiving the sulfonamide be carefully watched and frequent urinalyses carried out. While anemia attributable to succinylsulfathiazole did not occur in this series, the supposition seems warranted by analogy to related drugs that it will occur, and frequent blood examinations are certainly indicated.

<sup>8</sup> Poth, E. J., and Knotts, F. L. Clinical Use of Succinylsulfathiazole, Arch. Surg. 44: 208 (Feb.) 1942.

## Special Article

### THE DRUG TREATMENT OF MALARIA, SUPPRESSIVE AND CLINICAL

*The following article from the Office of the Surgeon General of the Army has been distributed as Circular Letter No. 1-3*

1 *Efficacy of Atabrine, Quinine and Plasmochin*—a. Available evidence indicates that atabrine is as effective as quinine (or more so) both in suppressive use and in the treatment of clinical attacks. No available drug or plan of administration can be expected to prevent relapses in all cases (see paragraph 6). Recent studies have shown that the plasma level of the drug is fundamental in determining its efficacy. Under ordinary conditions the rates of absorption of the two drugs are not significantly different. Quinine is localized in the tissues to a smaller extent than atabrine and effective plasma concentrations therefore are usually attained shortly after the beginning of its administration. Atabrine on the other hand at first is taken up to a much larger extent by the tissues so that effective concentrations in the plasma are reached only as certain tissues become more or less saturated. On the usual dosage plans, therefore quinine reaches an effective plasma level more rapidly than atabrine. In order to attain effective concentrations of atabrine in the plasma, it is necessary to give relatively large initial doses (as is done with the sulfonamides) or to wait for a varying period while the drug accumulates. Further discussion of the desirable methods of giving atabrine will be found under Suppressive Treatment (paragraph 4) and Clinical Treatment (paragraph 5). Since a great many different plans of giving atabrine and quinine have been tested, little can be gained by numerous modifications which serve only to confuse the problem.

b. Plasmochin cannot be used for suppressive treatment, since in safe doses it has very little effect on schizonts. For the same reason it fails to control clinical attacks of malaria; hence plasmochin alone cannot be used in clinical treatment. This drug has some degree of special action in the destruction of gametocytes an effect which does not influence the course of the disease in the patient but might be of value in controlling the spread of the disease. It has not been established, however that the use of plasmochin constitutes a practical method of malaria control. It is also stated that the incidence of relapses is less when plasmochin is given after atabrine or in conjunction with quinine, but this is a matter of controversy and the claim has not been borne out by recent experience. After consideration of the possible advantages and the toxic effects (see paragraph 2c), in addition to the prolongation of hospitalization, the routine use of plasmochin is not advised.

2 *Untoward Effects of Atabrine, Quinine and Plasmochin*—Each of these drugs is capable of producing toxic reactions. Occasional individuals are peculiarly intolerant of each.

a. Mild disagreeable reactions from atabrine may occur in a certain percentage of individuals given the drug for suppressive treatment. When such symptoms occur they usually follow one of the first few doses. They are much more apt to occur when atabrine is

given between meals. They may consist of nausea, abdominal cramps or occasionally headache, vomiting and diarrhea. These symptoms may be prevented in most cases by giving sodium bicarbonate or sweetened drinks such as tea with the atabrine. They are never serious and almost invariably disappear if the drug is continued. In a small percentage of some groups of patients receiving clinical treatment mild excitement has been observed. Toxic symptoms of any type are unusual in association with the treatment of clinical attacks with atabrine. There are on record only a very few instances in which hepatic disease may have been associated with therapeutic doses of atabrine and none with suppressive treatment. Approximately one third of the individuals taking atabrine develop a yellow discoloration of the skin. This is caused by the deposit in the skin of atabrine (which is a dye). It does not represent hepatic damage, is not dangerous and is not an indication for discontinuing the drug. The discoloration disappears within a few weeks after the drug is stopped. Extensive investigation has failed to show that atabrine in the usual doses has any effect whatever on flight capacities of flying personnel. Atabrine in suppressive doses has been taken by large groups for a year or more without known lasting untoward effect.

b. Outstanding untoward results of quinine which appear in most patients following therapeutic doses of the drug are tinnitus, impairment of hearing, dizziness, tremor and palpitation. They have been used as an index that the drug is being absorbed and is exerting an effect. In milder degree some of these symptoms may be seen during suppressive treatment. Some aviators have found them troublesome. The more unusual severe untoward effects of quinine are generally the result of individual hypersensitivity or of unnecessarily large doses.

c. The margin of safety between therapeutic and toxic doses of plasmochin is small. The toxic symptoms include abdominal pain, nausea, vomiting, cyanosis, headache, dizziness and drowsiness, hemoglobinuria, jaundice and acute yellow atrophy of the liver are rarer but very dangerous effects.

3 *Conservation of Quinine*—The limitation of the supply of quinine is so great that the use of the drug must be restricted as directed in S. G. O. Circular Letter No. 179 Dec 21, 1942. Quinine should never be used for suppressive treatment except in emergencies when atabrine is not available and, exceptionally, for the very few individuals who cannot tolerate atabrine. Its use for clinical attacks should be restricted to the following types of cases:

a. Severe infections with *Plasmodium falciparum* in which intravenous therapy is deemed essential.

b. Serious intolerance to atabrine.

c. When atabrine is not available.

d. Following repeated relapses in spite of atabrine therapy, when a change of drug is considered highly desirable. In such cases a complete course of quinine may be used as described in paragraphs 5 b (2) and 6 c.

4 *Suppressive Treatment*—a. Drug suppressive treatment is an emergency procedure which should be employed only when troops must accomplish a mission in an area where there is a substantial risk from malaria and where protection by mosquito control measures is not possible. At present there is no drug known which in safe doses will prevent mosquito borne infection



with malaria. However, atabrine, taken regularly in proper doses, suppresses clinical symptoms for varying periods of time and enables men to remain active in spite of infection which otherwise would incapacitate them. For this reason suppressive treatment has its chief use among troops that must maneuver or fight in malarious regions and cannot be given full protection from mosquitoes. When these troops return to sanitized areas, suppressive treatment should be discontinued as soon as feasible.

b For suppressive treatment to be effective it is essential that the drug be taken regularly. Experience has shown that a roster check with each dose is the only practical means of accomplishing this result. This is the responsibility of the unit commander.

c In general, suppressive treatment should be instituted as soon as possible after arrival in an unsanitized malarious area. There are, however, certain advantages in starting the administration of atabrine in advance of exposure when it is practicable to do so. First, opportunity is afforded to discipline officers and men in establishing the routine of taking atabrine. Second, such disagreeable reactions as may occasionally accompany the first few doses are experienced before the men engage in combat activities. Third, recent experimental studies show that with the suppressive dosage of atabrine recommended in paragraph 4f the maximum plasma concentration of the drug is not attained until after the third week. Hence the institution of atabrine suppressive treatment two weeks in advance of exposure may be advantageous in that a high plasma level of the drug is achieved by the time clinical symptoms might be expected to appear. However, when men must travel to their destination by boat, seasickness may be a contraindication to the institution of atabrine suppressive treatment in the period preceding arrival in the malarious area.

d When suppressive treatment is discontinued, most of the men who have been infected will develop clinical malaria (the majority within two or three weeks) and will then require clinical treatment (see paragraph 5). Consequently, suppressive treatment should not be stopped until the men have returned to a base where adequate medical care is available. When a large force returns from a hyperendemic area it may be wise to stagger the cessation of suppressive treatment in order that hospital facilities may not be overtaxed.

e *Occurrence of Clinical Symptoms During Suppressive Treatment*—In highly malarious regions, especially under the stress of combat, suppressive treatment may fail to prevent clinical symptoms in a certain percentage of cases. These cases should be given a course of clinical treatment (see paragraph 5), following which the suppressive treatment should be resumed, if still indicated. Many instances of so-called break-through of clinical symptoms can be traced to failure of the individual to take the drug regularly.

f *Administration of Atabrine for Suppressive Treatment*—The recommended method is to give 0.1 Gm of atabrine (1½ grains, i.e. one tablet) once daily at the evening meal six days each week (total 0.6 Gm per week).

g An alternative method of suppressive atabrine administration, which has been satisfactory in some areas, is to give 0.05 Gm of atabrine (¾ grain, i.e. one-half tablet) once daily at the evening meal six days

each week, and a dose of 0.1 Gm (1½ grains, i.e. one tablet) at the evening meal on the seventh day (total of 0.4 Gm per week).

h Quinine, because of the limited supply available, should not be used for suppressive treatment except in the few cases mentioned (paragraph 3). Recommended dosage is 0.6 Gm (10 grains) of quinine sulfate daily at the evening meal.

i Plasmochin should not be used for suppressive treatment at any time.

5 *Treatment of Clinical Attacks*—a *Diagnosis*  
(1) Malaria should be suspected not only in patients with periodic chills and fever but also in any obscure illness, febrile or nonfebrile, in endemic regions. The symptoms of malaria may vary in different cases from mild headache or diarrhea to severe chills and fever, and to delirium or coma.

(2) In general, the diagnosis must be based on the actual finding of parasites in the blood. In each suspected case, examine the blood as soon as possible. Thick smears are preferable because the parasites are concentrated. Each smear should be examined carefully for at least five minutes before being pronounced negative. Thin smears should also be made for use when species diagnosis cannot be made from thick smears; each smear should be examined carefully for at least fifteen minutes. In *P. falciparum* infections estimate the proportion of infected erythrocytes, when 5 per cent or more erythrocytes are infected, treat as you would a comatose patient [see paragraph 5c (2)]. If parasites are not found, make smears on successive days, because the symptoms in a first attack may appear when the density of parasites is low and because in *P. falciparum* infections there may be very few parasites in the circulating blood during the second twenty-four hours of each asexual cycle.

(3) Even in severe *P. falciparum* infections with cerebral symptoms, including coma, it may be difficult to demonstrate parasites. Suspect as *P. falciparum* malaria every case of febrile illness in which coma or medical shock occurs in a patient in or from an endemic area. Excessive fatigue, headache and fever are frequently the only prodromal symptoms of cerebral malaria. This form may simulate acute alcoholism or the patient may be manic, requiring morphine. During the stage of onset the temperature is often little elevated and in the presence of coma it may be normal or subnormal. If the facilities for immediate examination of blood smears are not available, malarial therapy should be immediately instituted in such emergency cases.

(4) When treatment is started before parasites are demonstrated, it should not be continued beyond a period of one week, unless the diagnosis is confirmed by finding parasites. It is rare that the fever of malaria fails to respond to adequate doses of atabrine or quinine.

b *Uncomplicated Malaria* (patient able to return oral medication). Be sure that each patient takes the drug as ordered. Each dose should be taken in the presence of a nurse or medical officer. Even though vomiting has not occurred, occasional patients receiving oral therapy fail to absorb the drug adequately. If the diagnosis has been confirmed, patients who are seriously ill and do not respond should receive intramuscular or intravenous therapy, as described in paragraph 5c, until a therapeutic response is obtained. In

occasional cases especially of *P. falciparum* infection, in which fever is persistent method (1) or (2) should be continued beyond the period of seven days at the discretion of the medical officer.

(1) The method of choice is to use atabrine alone. In accordance with the principles outlined in paragraph 1 a atabrine should be given in relatively large initial doses followed by smaller maintenance doses. Recommended dosage atabrine hydrochloride 0.2 Gm (3 grains) and sodium bicarbonate 1 Gm (15 grains) by mouth with 200 to 300 cc of water (or an equal amount of sweetened tea or fruit juice) every six hours for five doses followed by 0.1 Gm (1½ grains) three times a day after meals for six days (total 2.8 Gm in seven days).

(2) If atabrine is not available use quinine alone as follows quinine sulfate 1 Gm (15 grains) by mouth three times a day after meals for two days followed by 0.6 Gm (10 grains) three times a day after meals for five days (total 1.6 Gm in seven days).

(3) Plasmochin may be given in connection with either of the foregoing treatments, however, its routine use is not advised. If plasmochin is given, the patient must be hospitalized and closely observed. The dosage given below should not be exceeded. Plasmochin may be given immediately following atabrine (not with it) or along with quinine on the last days of treatment with that drug. The course consists of plasmochin 0.01 Gm (¼ grain) by mouth three times a day after meals for four days except for the debilitated patient, who should receive only two doses a day. Each dose of plasmochin should be accompanied by at least 1 Gm (15 grains) of sodium bicarbonate. The fluid and sugar intake should be liberal during and for some days after the course. Discontinue plasmochin at once if any toxic symptoms appear.

c Severe Malaria or Malaria Complicated by Vomiting, Coma or Other Serious Disorders. In these cases, and whenever a patient cannot retain or fails to respond to oral medication atabrine or quinine should be given parenterally by one of the methods described below [paragraph 5 c (2) (a) or (b)].

(1) If vomiting is present, take general measures to control it. Do not allow solid food just before a febrile paroxysm is expected. If there is nausea or vomiting, sips of alkaline water may be helpful. If vomiting is frequent and troublesome, the intravenous administration of 5 per cent dextrose in isotonic solution of sodium chloride is indicated, as many patients who vomit become dehydrated and develop acidosis. From 200 to 400 cc may be injected by the usual technic, this injection may be repeated if necessary, or larger amounts may be given by the continuous drip method (at the rate of 50 drops per minute). When dextrose is administered in this way, it should be supplemented with 1 mg of thiamine hydrochloride for each 25 Gm of dextrose.

(2) Coma may be present or imminent in cases of *P. falciparum* infection, even though parasites are not found in the blood smear. This condition constitutes a grave emergency. On reasonable suspicion of the diagnosis, parenteral treatment must be immediately instituted. The intravenous administration of quinine as described in paragraph 5 c (2) (b) is preferable in the light of present knowledge, but it is possible that the intramuscular injection of atabrine is equally effective.

Recommended parenteral methods are as follows <sup>1</sup>

(a) Atabrine dihydrochloride 0.2 Gm (3 grains) in 5 cc of sterile distilled water injected intramuscularly with the usual precautions into each buttock (total 0.4 Gm or 6 grains). If necessary one or two additional doses of 0.2 Gm (3 grains) may be given intramuscularly at intervals of six to eight hours. As soon as the patient can take and retain oral medication atabrine should be given by mouth in such doses as to give a total by both routes together of 1.0 Gm in forty-eight hours followed by 0.1 Gm three times a day after meals for five days (total 2.8 Gm in seven days).

(b) Quinine dihydrochloride 0.6 Gm (10 grains) in sterile isotonic solution of sodium chloride 300 to 400 cc (minimum 200 cc) injected intravenously with the usual precautions especially avoiding speed. If necessary, there should be no hesitation to cut down to the vein. This treatment may be repeated in six to eight hours if the situation demands it. When the patient can take and retain oral medication give a complete course of atabrine (preferable) or quinine by mouth as described for uncomplicated cases in paragraph 5 b.

d General Care. (1) Keep the patient in bed. Maintain fluid intake at 3 to 4 liters per twenty-four hours, using the intravenous route if necessary. Since many patients with malaria may lose a great deal of salt be sure that the intake of salt is adequate giving supplementary amounts as may be indicated. Relieve chills by hot water bags and blankets. Relieve high fever by cold sponges and packs (avoid antipretics). If a sedative is necessary, use one of the barbiturates. In all cases of *P. falciparum* infection observe the patient closely for signs of cerebral or circulatory collapse.

(2) Patients with clinical malaria or parasitemia should be in screened wards or under mosquito bed nets (with care that they do not sleep against the nets).

(3) In convalescence give a generous high vitamin diet, together with ferrous sulfate 0.6 Gm (10 grains) three times a day after meals for at least two weeks (preferably longer).

6 Relapses—A Occurrence. A certain percentage of patients with malaria suffer recrudescences or relapses in spite of any available treatment. The incidence and persistence of recurrences are greatest in *P. vivax* infections. For this reason the original incidence of the species of infection cannot be estimated from their distribution in a group of patients with recurrent clinical activity. The first free interval may be as short as two or three weeks, later on the intervals grow longer and may be many months. With each successive relapse the chance that it will be the last increases. This is one reason why the evaluation of treatment plans in relapses is difficult.

b Diagnosis. The diagnosis of late relapses is often difficult. As long as a patient remains in an endemic area the distinction between reinfection and relapse is practically impossible. Relapses should be suspected in all patients who have a history of malaria. Exposure, strenuous activity, alcoholic indulgence, trauma and surgical procedures frequently precipitate serious recurrences. If fever occurs under these circumstances

<sup>1</sup> In emergency when atabrine and quinine for parenteral use are not available quinine sulfate may be given by rectum in a dose of 1 or 2 Gm mixed with a pinch of starch enough to run through a rectal catheter. This route should not be used more than once or twice.

or without other explanation in men in or from endemic areas malaria should be suspected. If facilities for blood examination are not available, treatment should be instituted without delay. It is desirable, however, to prove the diagnosis, especially when relapses are suspected after a long interval. In a certain proportion of latent cases (but not all) the subcutaneous injection of 0.5 cc of 1:1,000 solution of epinephrine results in finding parasites in the peripheral blood when they are not otherwise seen. In suitable cases this method may be tried. Routine efforts by this or other means to bring out parasitemia or to precipitate relapses in large groups of men who are free of symptoms are inadvisable.

**c Drug Administration** There is no reason to believe that treatment with atabrine or quinine in the absence of parasitemia and clinical relapse has any influence on the future occurrence of relapses; treatment is not recommended, therefore for patients who are free of symptoms or those in whose blood parasites are not found. In general, the treatment of relapses should be the same as that of first attacks. Prolongation of maintenance doses of atabrine to a total period of two or three weeks may be tried. In cases of repeated relapses in spite of atabrine therapy, when it is especially desired to try to prevent further relapses, the quinine treatment described in paragraph 5 b may be used and continued with a daily dose of 0.6 Gm (10 grains) to a total period of three or four weeks, but such instances must be kept to a minimum in order to conserve quinine.

**7 Records, Follow-Up**—In order to accumulate information which will be of value in determining the efficacy of treatment plans, medical officers responsible for the care of patients with malaria should use a few well defined plans, such as those given in this circular letter. Patients should fall into a few clearcut treatment groups, so that the results can be gathered together from time to time for study. Data should be recorded showing the whole course of the patient's malarial history. Only by means of information which is continuous can the need of prolonged follow-up be met. The following points are illustrative of basic data which are required.

**a Previous History**

- (1) Dates of first entry into endemic region and of any subsequent return to an endemic area
- (2) Suppressive treatment at various times, dates, drug, doses, regularity, intermissions
- (3) Clinical attacks, dates, interval following cessation of suppressive treatment, break-through during suppressive treatment, courses of clinical treatment in detail, duration of symptoms, intervals between relapses

- (4) Date of removal from endemic area
- (5) Date of arrival in continental United States

**b Present attack or relapse**

- (1) Diagnosis by smear, including malarial species
- (2) Dates of beginning of symptoms, institution of treatment and cessation of fever
- (3) Rate of disappearance of parasites and date of their final disappearance
- (4) Full clinical notes, including symptomatology and exact plan of drug administration

## Council on Pharmacy and Chemistry

### REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT  
AUSTIN E. SMITH, M.D., Secretary

#### THE STATUS OF DICHLOROPHENARSINE HYDROCHLORIDE TRADE NAMES CLORARSEN, PHENARSINE HYDROCHLORIDE

Since January 1936 the antisyphilitic agent mapharsen has been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies. Mapharsen (Parke, Davis & Co.) is a brand of 3-amino-4-hydroxyphenyl arsine oxide hydrochloride. Reactions following the use of this agent are claimed to be less severe than those observed after the use of arsphenamine and neoarsphenamine.

In recent literature may be found reports of an arsenical antisyphilitic agent which apparently was discovered in the early part of this century but was cast aside as being too toxic for clinical use. Some years later there were published reports on its use in animals and in the treatment of jaws and human syphilis. It was not until 1941 that 3-amino-4-hydroxyphenyl dichloro-arsine hydrochloride was found satisfactory for the treatment of syphilis, apparently the earlier studies were based on the use of an unbuffered compound which would provide a very low pH.

The preparations now available on the market contain sufficient alkaline buffering agent to make neutral a prepared solution for injection. They contain approximately 26 per cent of trivalent arsenic. At least four firms (Abbott Laboratories, Parke, Davis & Company, E. R. Squibb & Sons, Winthrop Chemical Company, Inc.) have been licensed to manufacture and make available for interstate commerce this substance, which is marketed at the moment as Phenarsine Hydrochloride (Winthrop) and Clorarsen (Squibb). The name proposed by the U. S. Pharmacopeia is Dichlorophenarsine Hydrochloride. One firm uses sodium citrate as a buffer, another sodium carbonate. On the addition of sterile distilled water to an ampul containing the mixture of dry dichlorophenarsine hydrochloride and alkaline buffer a reaction takes place with the result that arsenoxide is supposed to be formed. It has been claimed that the latter agent is the therapeutically active part of the compound.

In 1941 the therapeutic possibilities of buffered solution of dichlorophenarsine hydrochloride were presented in a report<sup>1</sup> based on a series of animal experiments and on a clinical study of 171 patients treated over a period of two years. The authors concluded that 3-amino-4-hydroxyphenyl dichloroarsine hydrochloride buffered with sodium citrate is "a safe and effective drug in the treatment of syphilis as judged by (1) rapid production of darkfield negativity of early lesions, (2) prompt healing of early lesions, (3) effectiveness in producing seronegativity in early syphilis, (4) low percentage of relapses, (5) low incidence of abnormal spinal fluids in early syphilis, (6) absence of severe immediate reactions to its administration and relatively low number of reactions in general."

The probable toxicity of the drug was determined by Tompsett and others in mice and rabbits, and no lesions were found in killed animals that could be attributed as due to the toxic effect of the drug. The clinical material for the study consisted of 171 patients: 117 had early, 38 had late latent syphilis, 4 had asymptomatic neurosyphilitic lesions and 12 had various syphilitic lesions. The general scheme of treatment was that of the usual combined bismuth and arsenical treatment except that treatment with the drug under investigation was generally prolonged. Only 1 patient had an infectious relapse. Serologic relapse was not encountered. Gastrointestinal, cutaneous and

<sup>1</sup> Tompsett, R. R., Downs, W. G., McDermott, Walsh, and Webster, Bruce. The Use of Clorarsen in the Treatment of Syphilis. *J. Pharmacol. & Exper. Therap.* 73: 412 (Dec.) 1941.

syncope reactions occurred in 51 cases. However there were no severe immediate reactions. There were no deaths. The gastrointestinal reactions included nausea, vomiting and diarrhea but rarely was it necessary to discontinue the drug. Fainting shortly after injection of the drug was observed in 4 cases but in all the patient was well tolerated later. There were no nitritoid reactions. The other reactions included in part exfoliative dermatitis (1), fixed arsenical eruption (1), papular dermatitis (2), pruritus (1), angioneurotic edema (1), chills, fever, headache (2), jaundice (1), generalized pruritus (1), questionable purpura (1).

Long<sup>2</sup> in reporting on the use of phenarsine hydrochloride<sup>1</sup> in the treatment of 99 patients with syphilis over a period of twenty months which involved 2033 injections declared that the drug results in effects equal to those obtained from any of the arsenicals in general use and the reactions are less frequent and less severe. There were 336 reactions from 2033 injections: the types of reaction included gastrointestinal (288), headache (4), depression (2), malaria (20), salivation (21) and pruritus (1). Early and late syphilis was treated.

Guy and his co-workers<sup>3</sup> conducted toxicity tests and curative tests on rats and concluded that the results obtained from the use of phenarsine hydrochloride did not differ materially from those obtained with mapharsen. The therapeutic index of both compounds was declared as about 28. Clinically they investigated the drug by administering 2581 injections to 233 patients. The administration of 1 injection to 4 patients with primary lesions caused the disappearance of spirochetes from the lesions according to darkfield examinations, within twenty-four hours. Cutaneous manifestations disappeared within an average of fourteen days. As have other investigators, Guy and his co-workers observed mild gastrointestinal upsets. They also experienced one nitritoid reaction and one Herxheimer reaction. Complete blood studies showed no evidence of granulocytopenia or anemia. Routine urinalysis revealed no abnormal urinary findings.

Kampmeier and Henning<sup>4</sup> reporting their findings on 251 patients, which involved 4348 doses, evaluated the efficacy of the drug on the rapidity of producing darkfield negativity, the healing of lesions, the reversal of serologic tests and a low frequency of spinal fluid abnormalities. They found that a single therapeutic dose would usually produce darkfield negativity within twenty-four hours, acute lesions healed promptly, and 37 cases of early syphilis presented negative spinal fluids after two or more courses. No serious untoward reactions were encountered; nausea, vomiting and diarrhea were the most common reactions. Some patients who had had untoward reactions with other arsenical preparations were able to tolerate the drug under investigation without reaction.

A confidential report submitted to the Winthrop Chemical Company by a syphilologist in the East presented a study of 282 patients. The total number of injections of 'phenarsine hydrochloride' usually administered weekly was 1340, an average of 48 injections per patient. Fifteen patients received bismuth concurrently. The usual dosage for men was 0.06 Gm and for women 0.04 Gm. Twenty-two previously untreated patients with primary or secondary syphilis received injections of 'phenarsine hydrochloride' and a bismuth salt. Darkfield examinations of the lesions showed satisfactory responses for the disappearance of the infecting organism. Reactions per thousand injections among the 282 patients provided the following incidence: nausea 42, vomiting 69, diarrhea 19, headache 50, dizziness 10, chill 1, palpitation or mild precordial distress 2, pain in gums 10, sore arm 13, pruritus 18, urticaria 4, dermatitis 2, jaundice 2, agranulocytosis 1. The author stated that the reactions were for the most part of minor significance.

The Council on Pharmacy and Chemistry has had under consideration for some time a brand of dichlorophenarsine hydro-

chloride. Consideration has not been completed pending the receipt of certain additional information, particularly that relating to stability. The Council has had reason on past occasions to give considerable attention to the stability of certain popular antisyphilitic agents and demands that sufficient evidence be supplied for the brands of dichlorophenarsine hydrochloride before any will be accepted for inclusion in New and Nonofficial Remedies. At present, several interested persons claim that this agent is as stable as or more stable than oxophenarsine hydrochloride but the Council is withholding its final decision pending the receipt of more evidence. The four firms who are licensed to manufacture dichlorophenarsine hydrochloride were invited to supply evidence regarding stability but to date have not submitted adequate protocols. The National Institute of Health has permitted a dating period of three years for 3-amino-4-hydroxyphenyl dichloroarsine hydrochloride (dichlorophenarsine hydrochloride), an indication that this body has procured evidence of stability which is satisfactory for a definite dating period. However, because the Subcommittee on Venereal Disease of the Committee on Medicine of the National Research Council and the Committee on Drugs and Medical Supplies concurred in a recommendation that the Council be requested to prepare a statement on the status of dichlorophenarsine hydrochloride and oxophenarsine hydrochloride (N N R brand mapharsen), the Council on the basis of information in the literature and that supplied by the National Research Council and one interested manufacturer adopted for immediate publication this general report and the appended statement of dosage. This statement may have to be revised as experience demands. At present, no brand of dichlorophenarsine hydrochloride stands accepted for inclusion in N N R although the Winthrop Chemical Company has submitted its brand. Another brand which is available in interstate commerce, but which has not been submitted to the Council is Clorarsen made by E R Squibb & Sons.

During its consideration of these agents the Council questioned whether the medical profession will accept generally, the names Dichlorophenarsine Hydrochloride and Oxophenarsine Hydrochloride, which have been proposed for inclusion in U S P XII first supplement, as official names for 3-amino-4-hydroxyphenyl dichloroarsine hydrochloride and 3-amino-4-hydroxyphenylarsine oxide hydrochloride respectively, phenarsine hydrochloride having been preempted as the name for a theoretical compound on which will be based new compounds. The Council is of the opinion that other nonproprietary designations might be chosen to advantage names which would be less conducive to the coining of 'tricky' names for sales promotion and which would be easier for the practicing physician to remember. Consideration might be given to applying the name 'phenarsine' to the structural unit which has been designated phenarsine hydrochloride since the possibility is remote that salts other than the hydrochloride will ever be utilized in the preparation of such compounds. If this should be done then the compound now designated oxophenarsine hydrochloride would become phenarsine oxide and the compound now designated dichlorophenarsine hydrochloride would become phenarsine chloride. Or these compounds also might be called oxophenarsine and chlorophenarsine respectively. If Dichlorophenarsine Hydrochloride and Oxophenarsine Hydrochloride are retained as U S P names, it appears not unlikely that the label will stress Dichlorophenarsine and Oxophenarsine with Hydrochloride appearing in smaller letters. Such a procedure it is understood by the Council, would be acceptable to the National Institute of Health and might offer some aid to the physician.

**Dosage.**—Initial dose 0.03 Gm for women and 0.04 Gm for men intravenously. The second dose may be increased to 0.04 Gm for women and 0.05 Gm for men. The maximum dose may be regarded as 0.05 Gm. Injection may be given every four to five days as it is excreted rapidly.

For children the initial dose should not exceed 0.0005 Gm (0.5 mg) per kilogram of body weight, the later doses should average between 0.0005 and 0.001 Gm (between 0.5 mg and 1.0 mg) per kilogram of body weight.

<sup>2</sup> Long, W. E. Treatment of Syphilis with Phenarsine Hydrochloride, *Arch. Dermat. & Syph.* 47: 236 (Feb.) 1943.

<sup>3</sup> Guy, W. H., Coldmann, B. A. and Cannon, G. P. Phenarsine Hydrochloride in the Treatment of Syphilis, *Arch. Dermat. & Syph.* 47: 235 (Feb.) 1943.

<sup>4</sup> Kampmeier, R. H. and Henning, H. B. The Treatment of Syphilis with Clorarsen, *Am. J. Syph. Conor. & Ven. Dis.* 27: 295 (March) 1944.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 25 1943

## THE QUESTION OF INTRAUTERINE POLIOMYELITIS

Acute poliomyelitis complicating pregnancy is rare. McGoogan<sup>1</sup> collected 5 cases from the literature up to 1931, to which he added 3 additional cases observed in the state of Nebraska during the year 1931. Brahdy and Lenarsky<sup>2</sup> observed 3 instances of pregnancy complicated by poliomyelitis among 1,010 patients with poliomyelitis admitted to the Willard Parker Hospital during 1931. Among these patients were 30 over 19 years of age, of whom 15 were women, and 3 of these developed acute anterior poliomyelitis during pregnancy. Pregnancy and labor in these cases were not affected adversely. In no instance has a mother in whom poliomyelitis developed during pregnancy transmitted the disease to her offspring. Kleinberg and Horwitz<sup>3</sup> present an analysis of 15 cases reported in the literature up to 1941, 1 personal communication and 13 cases which they collected. They conclude that pregnancy complicated by acute anterior poliomyelitis may be anticipated to progress normally, with a normal termination of labor and with normal offspring. The involuntary contractions of the uterus and the ability of the uterus to expel its contents spontaneously, observed also in patients paralyzed by cord tumors, spondylitis and vertebral fracture, are due to the fact that the uterus has an independent nerve supply and will contract not only after the spinal cord is transected but even after its sympathetic nerve supply is extirpated. There was no instance of intrauterine poliomyelitis in the 29 cases reviewed by them. The passive immunity of the offspring derived from the mother does not persist for long, since a number of cases of acute anterior poliomyelitis under the age of 1 month have

been reported. Lotti Hurny<sup>4</sup> reports 1 pair of twins and another infant, all 3 full term, delivered by cesarean section from mothers with acute poliomyelitis. The infants were normal and remained so. Both women died a few days after the operation as the result of the ascending paralysis of the Landry type.

In this issue of THE JOURNAL appears a contribution by Harmon and Hoyne,<sup>5</sup> in which the authors report 2 cases of pregnancy complicated by acute anterior poliomyelitis. Their second patient was admitted to the hospital four days after the onset of acute symptoms of poliomyelitis in her eighth month of pregnancy. Labor was induced and a normal viable child delivered. To date, ten months following birth, the child is progressing well and is apparently normal. There is no evidence of paralysis in the child. In their first patient symptoms of the disease developed in the sixth month of pregnancy. A spontaneous delivery of a stillborn fetus took place. The slightly macerated fetus had probably been dead for forty-eight hours or more. Postmortem examination of the child was carried out on the same day as the stillbirth. The spinal cord was removed and preserved in 50 per cent glycerin. Intracerebral inoculation of a *Macacus rhesus* monkey with the supernatant fluid from the ground emulsion of 0.3 Gm of the fetal spinal cord was performed after the preservation of the cord at 5 C for forty days in 50 per cent glycerin. The animal was observed for the ensuing twenty-six days and there were no consistent signs which might be attributable to poliomyelitic infection. On the twenty-sixth day the animal was killed and the cord removed for microscopic study. Sections prepared at four levels of the spinal cord failed to show any lesions characteristic of the disease. An attempted further passage of the latter material into a second monkey produced no symptoms.

There has not been an instance of the development of poliomyelitis in utero in the 34 cases reported. The 4 fetal fatalities in the Kleinberg and Horwitz series were due apparently to prematurity, to partial asphyxiation and probably to poliomyelitic toxemia. There is ample evidence, both clinical and experimental, that when a submicroscopic virus is present in the blood stream this virus can pass through the placenta and infect the fetus. This has been demonstrated for one of the viruses of encephalitis and for the viruses of measles, vaccinia, chickenpox and lymphocytic choriomeningitis. One of the properties of poliomyelitis virus is its ability to migrate along nerve fibers. Successful demonstration of virus in the blood of monkeys infected with poliomyelitis have been comparatively few, either because the virus is present in low concentration or

1 McGoogan, L. S. Acute Anterior Poliomyelitis Complicating Pregnancy, *Am J Obst & Gynec* 24: 215 (Aug) 1932.  
2 Brahdy, M. B., and Lenarsky, Maurice. Acute Epidemic Poliomyelitis Complicating Pregnancy, *J A M A* 101: 195 (July 15) 1933.  
3 Kleinberg, Samuel, and Horwitz, Thomas. The Obstetric Experiences of Women Paralyzed by Acute Anterior Poliomyelitis, *Surg, Gynec & Obst* 72: 58 (Jan) 1941.

4 Hurny von Lotti. Erkrankt das Kind bei Graviditäts Poliomyelitis? *Schweiz med Wchnschr* 72: 1417 (Dec 19) 1942.  
5 Harmon, P. H., and Hoyne. Archibald. Poliomyelitis and Pregnancy, this issue, p. 185.

not at all. Gordon and Lennette<sup>1</sup> performed in monkeys repeated intranasal inoculation of virus after destruction of their olfactory bulbs. The inoculation did not result in a clinical attack of poliomyelitis, in the appearance of virus in the blood or in a detectable immunologic response. Apparently there was no absorption of virus by the blood stream. In the light of our present knowledge of the mode of spread of the virus of poliomyelitis, one may conclude that the failure of the disease to develop in the fetus of a mother with acute poliomyelitis is due to the low concentration of the virus in the blood stream or to its absence.

### MALARIA

Most physicians during recent years have given little attention to malaria. Their attitudes have reflected the steadily diminishing incidence of indigenous malaria in the United States. However, circumstances associated with the war have checked this apathy and have brought a realization of the many problems which malaria still presents, particularly in the tropics. The experimental study of human infections has been retarded by the high host specificity of their parasites, thus has prevented transmission to laboratory animals. As a consequence analogous parasites of birds, and more recently of mammals, have been extensively utilized for laboratory studies. The value as well as the limitations of such parasites is exemplified by the work which led to Ross's fundamental discovery of the transmission of one species of avian parasite by a culicine mosquito and of his failure to infect mosquitoes of this group with human parasites. He did not achieve success in infection of mosquitoes with the human parasites until the "dapple winged" mosquitoes which we now recognize as anophelines were employed. The details of this relationship were later elucidated by Grassi. Thus, early in the experimental study of malaria the limitations of the interpretation of the human infection in terms of phenomena observed in the analogous infections of lower animals became manifest. Observations with apparent implications for human infections must always be confirmed with human parasites in the human host before their medical significance can be considered established.

An approach to the problems of malaria on more significant levels was opened when Warrington Yorke and S. P. James recognized that the malaria therapy of neurosyphilis particularly that naturally induced by the employment of infected anophelines, offered many opportunities for investigation. A productive program has been sponsored for several years by the Florida State Board of Health and the Florida State Hospital with the financial support of the Rockefeller Foundation. Boyd and his associates have contributed mate-

rially to enlarge our knowledge of the malarias as self-limited infections.

Boyd<sup>2</sup> has shown that the white patients inoculated have not been a homogeneous group from the point of view of their susceptibility to vivax malaria. Those patients who experienced clinical attacks of from two to twelve weeks' duration, with a gradually declining parasitemia, are regarded as having been in a condition of pristine susceptibility at the time of inoculation. In these persons high densities of parasites prevail for some weeks after spontaneous subsidence of the paroxysms, the decline and disappearance of parasites is gradual. In a second group similar densities of parasites are attained at a similarly early period, and the paroxysms are of equal severity with those observed in the first groups, but after a period of clinical activity usually lasting not over two weeks the attack terminates abruptly coincident with a rapid and spontaneous decline in the parasitemia. Such patients evidently had an autochthonously acquired immunity to a heterologous strain of the vivax parasite, which soon becomes activated and capably deals with the new infection. In a third group the initial rise in the parasitemia is similarly checked, before clinical manifestations recur. Such patients have a potent immunity homologous to the strain employed in the induced inoculation. This homologous immunity may persist for several years, even in the apparent absence of a latent infection.<sup>3</sup>

The development of immunity is first manifested by the acquirement of a tolerance to the presence of the parasites. Whereas in the case of fully susceptible persons clinical activity is frequently initiated with densities of parasites of 10 per cubic millimeter or even lower,<sup>3</sup> when clinical activity spontaneously ceases several weeks later densities of several thousand parasites per cubic millimeter still prevail. When the parasitemia finally disappears the defense mechanism has become fully activated, so that large numbers of homologous parasites may be rapidly removed if suddenly introduced.<sup>4</sup>

The demonstration that this acquired immunity is highly potent against the homologous parasites led to attempts at the hyperimmunization of convalescents by repeated reinoculations with the homologous parasite. Patients so treated apparently acquired an ability to remove promptly, without clinical reaction, doses of over 8 billion trophozoites introduced intravenously.

<sup>1</sup> Boyd, Mark F. Criteria of Immunity and Susceptibility in Naturally Induced Vivax Malaria Infections. *Am J Trop Med* 22: 217 (May) 1942.

<sup>2</sup> Boyd, Mark F., Stratman, Thomas W. K. and Kitchen, S. F. Duration of Acquired Homologous Immunity to Plasmodium Vivax. *Am J Trop Med* 16: 311 (May) 1936. Boyd, Mark F. and Mathew, C. B. Further Observations on the Duration of Immunity to the Homologous Strain of Plasmodium Vivax. *ibid* 19: 63 (Jan.) 1939. Boyd and Kitchen.

<sup>3</sup> Boyd, Mark F. The Threshold of Parasite Density in Relation to Clinical Activity in Primary Infections with Plasmodium Vivax. *Am J Trop Med* 18: 497 (Sept.) 1939.

<sup>4</sup> Boyd, Mark F. and Kitchen, S. F. Attempts to Hyperimmunize Convalescents from Vivax Malaria. *Am J Trop Med* 23: 279 (March) 1943.

<sup>5</sup> Gordon, F. B. and Lennette, E. H. The Blood Stream in Experimental Poliomyelitis. *J Infect Dis* 64: 97 (March-April) 1939.



However, the transfer of 500 cc quantities of blood from such effectively hyperimmunized patients to a patient who had been inoculated with the homologous strain and another experiencing an active clinical attack from the same did not in the one case prevent a take or in the other produce any observable alteration in the course of the infection.<sup>1</sup>

While vivax infections are usually benign and readily interrupted therapeutically, physician and patient are frequently perplexed by the recurrence of clinical activity after remissions of from six to eighteen months' duration.<sup>2</sup> Such recurrences are not observed in persons whose attack was induced by inoculation with infected blood<sup>3</sup> or following natural inoculation when there has been no therapeutic interference with the evolution of the primary attack.<sup>4</sup> Furthermore, the former infections are readily sterilized by a few small doses of plasmodicidal drugs<sup>5</sup> while the latter, as already mentioned, frequently recur after repeated courses of treatment. Thus it would appear that the trophozoites are fully vulnerable to plasmodicidal drugs and are not present in situations inaccessible to drugs dissolved in the plasma. Since the clinical attacks following either method of inoculation appear essentially similar,<sup>6</sup> it would appear likely that the variation is attributable to differences in the character of the inoculum, i. e. trophozoites vs sporozoites. For many years Schaudinn's report of having observed sporozoites penetrate erythrocytes and transform into trophozoites was generally accepted. If this observation is true, the differences between artificially and naturally induced infections just described should not be expected. However, Schaudinn's report has not been confirmed. Further important points of difference between the infections resulting from the two methods of inoculation are that (a) by the administration of massive doses of trophozoites both the incubation and the prepatent period may be suppressed,<sup>7</sup> while heavy doses of sporozoites will not effect a suppression of these intervals, (b) the blood is immediately infectious following inoculation by trophozoites,<sup>8</sup> but following inoculation by sporozoites it appears to be free from parasites for nearly a week,<sup>10</sup> and (c) available drugs are not reliable causal prophylactics, i. e., will not prevent the contraction of

infection from the bites of infected mosquitoes. These differences suggest that the sporozoites do not enter erythrocytes to become transformed into trophozoites and that there probably is an intermediate stage in the development of the parasite which is not passed in the erythrocytes. Exoerythrocytic stages are observed at various periods in the evolution of certain of the avian malaria infections. It seems not unlikely that something analogous occurs in the human infections induced by sporozoites and either that parasites in such a stage are protected from the drugs or that they are more resistant to parasitocidal drugs. When a new infection is interrupted by the early initiation of treatment shortly after the onset, not all the postulated intermediate stages have as yet completed their development and discharged their complement of trophozoites, belated parasites in this stage are not killed but perhaps are narcotized. It is likely that the induced remission will persist as long as the narcosis continues, but, if the effect is dissipated before immunity develops, further clinical activity is likely when the narcosis wears off and more trophozoites are produced. Until some drug is discovered which will attack the parasites while in this situation, the likelihood of vivax recurrences is probably enhanced rather than diminished by the early initiation of treatment.

#### ARTIFICIAL BLOOD GROUP A SPECIFIC ANTIGEN

Morgan<sup>1</sup> of the Lister Institute, London, has reported synthesis of an artificial antigen capable of stimulating the production of exceptionally high titer specific agglutinins and hemolysins for group A human erythrocytes.

About twenty-five years ago the theory of the production of antigens was broadened to include relatively simple organic compounds which in themselves are incapable of stimulating the in vivo production of specific antibodies. These are generally known as "partial antigens," "haptens" or "specificity determinants," since they can be raised to full antigenicity by conjugation with proteins or other colloidal "carriers." Thus combined they stimulate the in vivo production of polyvalent (or multiple) antibodies giving specific precipitation reactions with the resulting protein-hapten complex. One successful application of this technic is the conversion of bacterial polysaccharides into hapten-protein complexes which induce the formation of polysaccharide specific antibodies. Less well known is the preparation of successful antigenic conjugates with such complex haptens as agar and acacia.<sup>2</sup>

5 Boyd, Mark F., and Kitchen, S. F. Recurring Clinical Activity in Infections with the McCoy Strain of *Plasmodium Vivax*, *Am J Trop Med* 17: 833 (Nov) 1937, Vernal Vivax Activity in Persons Simultaneously Inoculated with *Plasmodium Vivax* and *Plasmodium Falciparum*, *ibid* 18: 505 (Sept) 1938.

6 Boyd, Mark F. Some Characteristics of Artificially Induced Vivax Malaria, *Am J Trop Med* 20: 269 (March) 1940.

7 Boyd, Mark F., and Coggeshall, L. T. A Resume of Studies on the Host Parasite Relations in Malaria. *Acta Conventus Tertii de Tropice atque Malaria Morbis*, Amsterdam, 1939, part 2, p. 292.

8 Boyd, Mark F. Therapeutic Interruption of Artificially Induced Malaria Infections, *Am J Trop Med* 23: 49 (Jan) 1943.

9 Boyd, Mark F., and Kitchen, S. F. Efficiency of the Homologous Properties of Acquired Immunity to *Plasmodium Vivax*, *Am J Trop Med* 16: 447 (July) 1936.

10 Boyd, Mark F., and Stratman Thomas, W. K. Observations on Inoculation and Onset. *Studies on Benign Tertian Malaria*, *Am J Hyg* 20: 483 (Sept) 1934.

1 Morgan W. T. J. *Brit J Exper Path* 21: 41 (April) 1941.  
2 Partridge S. M. and Morgan W. T. J. *Chem Ind* 50: 51 (1940), *Brit J Exper Path* 23: 84 (April) 1942.

The earlier haptén-protein conjugates were made by complex chemical processes. These were found to be inapplicable to many haptens since they led to partial or complete haptén denaturation. A more simple technique was therefore developed by the London biochemists involving the use of self-conjugating somatic proteins of the *Shiga* bacillus. A simple mixture of bacterial or vegetable polysaccharide with *Shiga* protein in saline solution often led to the formation of a stable polysaccharide-protein complex. The *Shiga* conjugates were found to be more highly antigenic than the earlier conjugates with relatively inert serum proteins. The *Shiga* complex is readily precipitated with the corresponding antiserum and gives positive complement fixation reactions and lethal anaphylaxis in haptén-sensitized guinea pigs.

The *Shiga* technique has been applied to the haptens which determine human blood grouping. Human blood group haptén A, for example, is present in commercial pepsin, in peptone and in hog gastric mucin. This haptén is a polysaccharide-amino acid compound which in itself does not stimulate the formation of anti A agglutinins in laboratory animals. Haptén A, however, is able to inhibit the agglutinating action of human anti A agglutinin on human group A erythrocytes in extremely small amounts. To raise this haptén to full antigenicity the gastric mucin polysaccharide and *Shiga* protein were mixed in the same saline solution and the reaction adjusted to  $pH$  4.5 by the addition of acetic acid. The resulting precipitate was repeatedly washed by centrifugation. Rabbits whose tissues are free from A antigen were injected intravenously at three to four day intervals with the haptén-*Shiga* precipitate. From seven to nine days after the sixth intravenous injection antisera were drawn from these rabbits. These antisera would often agglutinate human group A erythrocytes in dilutions as high as 1:32,000. There was no agglutination in control tests with B or O group human erythrocytes. Positive reactions, however, were given at a somewhat lower titer with human  $A_2$ ,  $A_3$ ,  $A_1B$ ,  $A_2B$  and  $A_3B$  erythrocytes. The anti A rabbit serum is strongly lytic for sheep erythrocytes in the presence of complement. This hemolysis is inhibited by the blood group A polysaccharide. Attempts at passive sensitization of guinea pigs were unsuccessful, presumably because of the presence of Forssman antigen in guinea pig tissues.

As a practical application of his results Morgan suggests the substitution of his high titer anti A rabbit antiserum for the human alpha agglutinin currently used. Such a substitution would lead to the ready detection of weakly reacting human erythrocytes such as  $A_2B$ ,  $A_3$  and  $A_3B$ , which are at present readily overlooked.

Attempts are now being made to prepare an equally potent anti B antiserum by conjugating B polysaccharide of human saliva with *Shiga* protein. The possibility of improving current antipneumococcus vaccines by a similar conjugation is also under investigation.

## Current Comment

### TOXICITY OF CHLORINATED HYDROCARBONS

Color compounds of the petroleum series have a wide use as degreasers of metal, cleansers of textiles, dry cleansers, solvents for rubber and other industrial uses. They are as a group not inflammable and have strong solvent properties. Hamilton<sup>1</sup> divides them into three groups: the saturated (paraffin) group such as methane and ethane, the unsaturated olefins such as ethylene and propylene and the naphthalenes. Methyl chloride, carbon tetrachloride, ethylene dichloride, acetylene tetrachloride and acetylene trichloride are industrially the most important. Tetrachlorethane, the common name for acetylene tetrachloride, is the most toxic of the chlorinated hydrocarbons that have been used in industry. All the substances, however, have some toxicity. Dr. Hamilton emphasizes that the increasing use of heat in connection with their industrial employment, as for example in degreasing with vapors of trichlorethylene or carbon tetrachloride, is far more dangerous than was the earlier method of dipping the material in cold fluid. If such vapors come in contact with a naked flame or with hot metal pipes, decomposition may take place with the formation of the highly toxic gas phosgene. Cases of poisoning with especially rapid development and great severity after brief exposure have most often arisen following the use of carbon tetrachloride fire extinguishers in a confined place. This summary of the toxicity of the chlorinated hydrocarbons parallels that by von Oettingen<sup>2</sup> of the aliphatic and aromatic hydrocarbons, including benzene and the more toxic benzene.

### INDIVIDUAL SUSCEPTIBILITY TO DENTAL CARIES

The causes of dental caries remain obscure. In a recent study of this subject Gore<sup>3</sup> concludes that the food impaction theory of Miller fails to explain individual susceptibility to caries and the mechanism by which the various types of decalcification of the enamel are produced. The chemical changes in the saliva following changes in diet seem to Gore to offer a more likely explanation. Salivary currents and the physical characteristics of the spontaneously precipitated mucin in the stagnant saliva, Gore says, play an important part in localizing to specific areas of the enamel the acid formed by hydrolysis and fermentation of the carbohydrate radical in mucin.

1. Hamilton, Alice. The Toxicity of the Chlorinated Hydrocarbons. *Yale J. Biol. & Med.* 15: 67 (July) 1942.  
2. von Oettingen, W. F. The Toxicity and Potential Dangers of Aliphatic and Aromatic Hydrocarbons. *Yale J. Biol. & Med.* 15: 1-16 (Dec.) 1942.  
3. Gore, J. T. Individual Susceptibility to Dental Caries. *J. Am. Dent. A.* 30: 1018 (July) 1942.

# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## DOCTOR SHORTAGE AND CIVILIAN HEALTH IN WARTIME

*Following is a comprehensive report prepared by the Office of War Information. The data are secured from the United States Public Health Service, the War Manpower Commission and the Federal Works Agency*

### CIVILIAN HEALTH

1 Statistics of the Public Health Service show the lowest death rate on record, 10.3 per thousand, for 1942. The birth rate has risen from 18.7 per thousand in 1941 to 20.7 in 1942, and the maternal mortality rate has dropped for the thirteenth consecutive year and for 1942 was about 3 deaths per thousand live births. Infant mortality also continued to drop, falling 4 per thousand to 40 or 41 per thousand live births. The general death rate is a little less favorable so far this year.

2 Statistics on a sampling of workers, concerning sickness which caused absences of longer than eight days, show an increased number of man-days lost, especially from respiratory sickness. However, according to the Industrial Hygiene Division of the United States Public Health Service this increase is not greater than was expected from the strain of wartime living and working conditions.

3 The 1942 and more recent reports on communicable diseases, perhaps not the best gauge of adult health, show a mixed tendency. Influenza and typhoid, normally danger points under war conditions, were in 1942 below the peacetime average. Infantile paralysis and meningococcic meningitis (cerebrospinal fever) showed sharp increases this year. There have been flareups of smallpox and sporadic outbreaks of food poisoning and dysenteries. Strenuous efforts are being made to control the traditional wartime upturn of venereal diseases and tuberculosis deaths. The latter has not yet begun to show in health records.

### SHORTAGE OF DOCTORS

The shortage of doctors for civilian practice will continue to increase indefinitely unless the requirements of the armed forces are revised. This arises, first, from the fact that the armed forces have commissioned to date only a little more than 80 per cent of their stated needs and are continuing to withdraw physicians from civilian practice, secondly, from the fact that 80 per cent of all new medical graduates will be commissioned.

There is no guaranty that a full 20 per cent of these graduates will remain for civilian work. Even if the 1,500 represented by this percentage should remain they would supply only about half the replacement needed in peacetime since, on the average, 2,500 to 3,000 doctors die annually.

Although it is logical to expect a greater number of deaths in war years from the strains of overwork, there is no evidence of this to date.

To compensate for this shortage the Public Health Service and the Procurement and Assignment Service of the War Manpower Commission are making all possible efforts to achieve the optimum distribution of the doctors remaining for civilian practice, to minimize needs by extensive preventive work and increase of medical care facilities.

These things are being accomplished by

1 Making surveys to show where needs are acute  
2 Seeking to shift physicians from relatively well supplied areas to those where the ratio of doctors to population is substandard. As of August 1 a total of 1,469 doctors was reported relocated, 52 per cent to congested areas, dentists relocated totaled 72.

3 Limiting recruitment to twenty states and the District of Columbia, which are relatively well supplied, removal of physicians from substandard areas is minimized.

4 Helping local authorities to organize cooperative use of doctors and facilities for greater efficiency wherever consent can be obtained.

5 Improving and increasing hospital and clinical facilities. New facilities, largely financed under the Lanham act administered by the Federal Works Agency, include 44 health centers completed and 153 hospitals constructed or building. As of June 30, 1943 recommended hospital construction on 451 projects had been approved by the President.

6 Continuing attempts to improve sanitary conditions (300 water supply projects at a total cost of \$81,000,000 finished in congested areas under the Federal Works Agency) and by Public Health Service emergency work in control of diseases (700 additional professional and more than 3,000 nonprofessional personnel assigned to local health department work, malaria control, endemic typhus, industrial hygiene and so on).

7 Extensive work to control the spread of venereal diseases by breaking up districts of prostitution near industrial and military centers, by army prophylaxis work, by establishing treatment centers where infected women can be cured of syphilis and gonorrhea through the new rapid treatment techniques and an attempt made to rehabilitate them.

8 Widespread case finding work in tuberculosis through the new inexpensive x-ray traveling units set up by the Public Health Service under Dr. Herman E. Hilleboe, capable of checking on 20,000 persons a week.

Dr. Thomas Parran, Surgeon General of the United States Public Health Service, estimates on the basis of surveys made by his field units, in cooperation with the Procurement and Assignment Service of the War Manpower Commission, that 332 known localities will need about 500 doctors and dentists in the next fourteen months. However, he adds that such needs actually become acute long before they find their way into formal reports.

Dr. Joseph W. Mountin, Assistant Surgeon General, summarizes the overall statistical picture this way: "There was a pre-war registry of 180,000 registered physicians listed in the United States. Of these, 15,000 were full time employees of public health agencies, medical schools, insurance companies, etc., 28,000 were more than 65 years old and evaluated as only one third effective, 7,000 under 65 were completely or partially ineffective, 3,000 were residents in hospitals, and 42,000 were in the armed forces, as of Jan. 1, 1943." These figures show, as of the first of this year, 95,000 fully effective doctors available for civilian practice, plus a percentage of service from some 32,000 others partly incapacitated by reason of age or other factors.

During 1943, 11,000 of the 95,000 fully effective doctors were to be taken into the armed services, making a total of 53,000 physicians allotted to the care of sickness and injuries for an army estimated at 10,800,000 men when fully enlisted. This leaves 84,000 physicians, surgeons, specialists and general practitioners—plus 15,000 public health doctors, plus 5,000 interns and 3,000 residents, a total of 108,000, to care for the nation's remaining 120,800,000 civilians. These are the figures of the Procurement and Assignment Service.

It is estimated that, assuming perfect distribution, there would thus be 1 effective doctor for every 1,118 persons or, in general practice, a ratio of 1 to 1,557. This is very close to the ratio of 1 to 1,500 "considered desirable from the standpoint

of health protection" But perfect distribution does not exist for many reasons and, short of compulsory shifts of doctors to critical localities, is not attainable

Dr Mountain has stated that "in general no military or industrial community should have less than a ratio of 1 physician to 3000 population if its citizens are to have even a fair standard of care" However, the end point of the induction of civilian doctors into the armed services is in sight The Army and Navy training program, when it becomes fully effective in 1944, will take care of all further needs for professional personnel The first full class will be available in September 1944

If this were the complete picture, relocation of doctors and other remedial measures might be expected eventually to rectify the situation But another factor operates to cause a continuing and increasing shortage of doctors This is the ordinary attrition of death which, even in peacetime, removes between 2500 and 3000 doctors annually from their practice It is expected that wartime strains, overwork and the return to practice of overage and retired physicians will increase this annual loss Replacements will not be available unless there is an alteration of the plan to induct 80 per cent of new medical graduates into the armed forces These number about 5,000 every nine months because of the speeded up schedule for training, or an average of 7000 a year Or these it is estimated there would be only 1,500 to replace the 2,500 to 3,000 doctors who die yearly

Everything possible is being done to assure the best possible distribution of the remaining physicians Doctors are to be taken into the armed services only from those twenty states, plus the District of Columbia, which show the most favorable ratio between doctors and population None are to be taken from fifteen specified states in which influx of workers has made shortage of medical care critical States from which doctors are not to be taken are Alabama Arizona Delaware, Georgia, Idaho, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, South Carolina, Tennessee, Texas West Virginia and Wyoming

Dr Frank H Lahey, chairman of the Directing Board, Procurement and Assignment Service, has reported a total of 1,469 doctors and 72 dentists relocated Some of the shifts of doctors from one locality to another were arranged by the commission, others resulted from work by other agencies, and still others were unsolicited movements Of these, 389 were relocated in the states listed which have an unfavorable doctor to population ratio Alabama reported 76, Arizona 27, Georgia 17, Idaho 2, Kentucky 93, New Mexico 2, North Carolina 7 South Carolina 23 Tennessee 39, Texas 87, West Virginia 13, Wyoming 3 Of the 1,469 doctors, 604 were relocated before January 1 An examination of the records on these showed 52 per cent moved into congested areas of the type in which doctor shortages have chiefly developed Twenty per cent went into towns with populations between 5,000 and 25,000 Comparison with the joint surveys made by the United States Public Health Service and the Procurement and Assignment Service of the War Manpower Commission shows that among those communities where shortages were found 24.4 per cent have received at least one additional doctor

One of the basic problems of relocations is the difficulty of licensure Of the 604 doctors checked, 154 had crossed the state line barrier and, in a majority of cases this entailed taking a new medical examination These ordinarily are given only once or twice a year, but some states recognizing the critical nature of the problem, have given as many as six Only seven states have laws permitting temporary licensure These are Delaware, Maine Nevada Pennsylvania Washington, New York and Montana One state, Florida, permits out of state doctors to practice there under supervision of the state medical director of civilian defense Procurement and Assignment estimates that nineteen other states have laws making a similar arrangement possible but Florida alone is exercising the privilege

Recently the War Manpower Commission's Procurement and Assignment Service endeavored to place some foreign doctors who have been licensed by the state of New York These doctors had not yet been in this country long enough to become citizens but all had their first papers The service found that

the states had medical license reciprocity with New York but none of these states could by law, admit the foreign doctors Four of these nine states require that doctors be citizens, the laws of another group of four forbid acceptance of graduates of foreign schools the ninth requires that graduates of foreign schools have further education in the United States

Analysis of state licensure requirements, as applied to foreign doctors and listed by the State Board Number of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for 1942, shows that twenty eight states require full citizenship as a preliminary to practice and fourteen require first papers only Those requiring full citizenship are Alabama, Arkansas, Delaware, Georgia, Idaho, Iowa, Kansas, Kentucky, Maine Michigan, Minnesota, Mississippi, Missouri Montana, Nebraska, New Hampshire, New Jersey, North Carolina North Dakota, Ohio, Oklahoma, South Carolina, Texas, Utah, Vermont, Virginia, West Virginia and Wyoming plus Alaska, Hawaii and Puerto Rico Those requiring only first papers are Colorado, Connecticut, Illinois, Louisiana, Maryland, Massachusetts, Nevada, New Mexico, New York Pennsylvania, Rhode Island, South Dakota, Washington and Wisconsin However, of those states that require only first papers, Louisiana withholds permanent license until citizenship is completed Many states exempt Canadians from these requirements

Many other states will not accept doctors who do not have American medical degrees, and these include Arizona, Arkansas, Colorado Illinois, Kansas, Kentucky, Maryland Minnesota, Mississippi, Nevada New Hampshire, New Mexico, North Carolina, North Dakota, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Washington, West Virginia Wisconsin and Hawaii

This pool of foreign doctors is estimated to contain 6000 variously qualified physicians According to figures given by Harry D Beale of the National Center for Resettlement of Foreign Physicians, 2000 of these men have become United States citizens and many of them, who have taken out only first papers, have been licensed to practice medicine in this country Between 3000 and 3500 have been licensed in New York, 400 in Massachusetts 150 in Ohio, 250 in California, 250 in New Jersey 100 in Connecticut and 100 in Maryland Only 50 of these men have been taken into the Army, which has stringent regulations about their employment Doctors taken into the Army must be American citizens and must undergo rigid scrutiny for reasons of security

Seven or eight foreign doctors are being used in California, which, previous to the present crisis had set up a physicians' service, sponsored by the state medical association, to care for migrant farm workers who flooded the state during the dust bowl era This service now has shifted its attention to the federal projects housing industrial workers

It was pointed out that these foreign doctors constitute our largest available reserve of physicians and that, in another respect they fit well into the present medical care crisis Officials estimate that fully half of these doctors will return to Europe after the war and thus, if they fill in where current needs are acute will not remain after the war to displace men returning from the armed services

The ease or difficulty with which out of state doctors are admitted to practice depends largely on local licensure Where the need is recognized, ways are found to permit doctors to enter and relieve the critical shortages which government surveys have shown to exist Occasionally local physicians not realizing the need, have not cooperated However this situation seems to be changing, and there have been a number of cases of doctors and medical associations reversing their previous opposition on condition that those doctors who enter their bailiwick do so only for the duration of the war

It is stated that of the 45000 or more doctors inducted into the armed services 1500 have been released to civilian practice again and presumably must be replaced Three hundred were discharged between January 1941 and April 1942 Since that time and up until May 1943 1200 others had been released

Letters were written to 200 of these doctors in an effort to determine whether any were available for relocation Of those who replied by far the major portion had returned to their original practice and only 2 per cent indicated they were

willing to shift to a different locality. Some of them were incapacitated physically, but most were perfectly capable of carrying on civilian practice.

HEALTH FACILITIES

Another attack being made on the problem of decreased medical care for the civilian population is an extensive enlargement of hospital and sanitation facilities. Most of these are financed under the Lanham act by the Federal Works Agency. As of July 31, 1943 the FWA lists 33 new hospitals as wholly or substantially completed at an estimated cost of \$4,265,513, of which the government allotted \$3,481,435. These 33 hospitals will supply an additional 1,615 beds for civilian care. Those hospitals for which funds have been allotted—including some under construction, some on which contracts have been awarded and some on which bids have been asked—total 250 and will cost \$53,451,136, of which the government is paying \$44,702,052. These hospitals will supply an additional 13,827 beds for civilian care. Health centers are smaller projects, usually providing clinics and sometimes 6 to 8 emergency beds. Construction of these projects is financed with federal and local funds and operation is by local authorities. Of such projects 44 had been completed as of June 15, 1943. Other projects financed through the Federal Works Agency as War Public Works and Services, including a great number already finished, and others approved by the President, as of June 30, 1943, include those listed in table 1.

TABLE 1—War Public Works and Services

Type of Project	Number of Projects	Estimated Total Cost	Federal Funds
Total *	3,874	\$431,109,670	\$302,979,098
Schools †	1,883	162,298,630	77,818,220
Medical (hospitals, venereal disease hospitals and health centers)	489	72,385,054	62,845,973
Water	305	83,086,215	69,303,301
Sewerage sanitation	293	47,975,331	40,802,529
Recreation	692	80,092,941	29,636,402
Power	10	20,515,599	12,019,716
Fire, police	123	3,877,635	3,144,295
Streets, highways	37	3,880,143	3,051,607
Other ‡	42	6,998,122	4,356,855

\* Includes \$26,154,170 transferred by warrant to agencies outside FWA as follows: (A) WPW: schools, 37, \$6,791,432; medical, 1, \$151,000; water, \$7,510,000; recreation, 209, \$18,160,708; and fire and police, 3, \$28,200. (B) WPS: \$267,850.  
† Includes nursery schools and child care facilities.  
‡ Garbage disposal, miscellaneous utilities and so on.

A further report from the Public Health Service shows that the PHS has recommended 451 health centers and hospital projects, through surveys made by its reconnaissance units. As of Feb. 15, 1943, 358 had been recommended and approved, and 153 had been constructed or were building. The Federal Works Agency, under the Lanham act, also finances an extensive child care program and rehabilitation work in venereal disease rapid treatment centers under the direction of Miss Florence Ken.

Other government agencies are also making a vigorous attack on the problem of shortages. In areas where army camps have many civilian workers and where local medical facilities and doctors are lacking, the Army may request that the section be declared a "remote area." If this is done, the civilian workers may receive care through military facilities on a fee basis. The Army has pending, at present, requests to have ten such areas declared remote. In one such area, civilian employees number more than 7,000 and have no health protection other than could be provided in this way.

Medical care is reaching out into the sea lanes also, and for the first time in history merchant seamen will have health facilities aboard ship. Today pharmacist's mates are being assigned to merchant vessels carrying cargo to battle lines all over the world. In addition, merchant seamen suffering the strains of enemy attack—war neurosis or combat fatigue—are being treated and rehabilitated through a program sponsored by the War Shipping Administration and the Public Health Service.

In the volunteer civilian services, additional work to relieve shortages also is being done. The Red Cross nurse's aide pro-

gram, which seeks only to take the strain off graduate nurses by performing minor parts of their tasks, has a total of 85,679 such volunteer workers who have completed the required courses. The last survey showed that during a period of a month about 80 per cent of the trained workers were active. Maximum cooperation of the volunteer workers was obtained, according to the Red Cross, where the hospitals made a serious effort to work the volunteers into their routine.

TABLE 2—Joint Survey of Pascagoula, Miss., Made on Jan. 5, 1943

Population of Pascagoula and Moss Point area in 1940	9,000
Population at time of survey	9,000
Number of practicing physicians in area in 1940	9
Number of effective practicing physicians at time of survey, including one over 70 years of age	8
Ratio of physicians to population in 1940	1 to 1,000
Ratio of physicians to population at time of survey	1 to 1,125

HEALTH SURVEYS

No program of stretching health facilities and medical care could operate efficiently without fact finding surveys. The Public Health Service, in cooperation with the Procurement and Assignment Service of the War Manpower Commission and local authorities, is conducting continuous investigations in congested areas to determine their precise needs.

On March 1, 1943, according to the Public Health Service, joint studies had been made of thirty-three communities in sixteen states. The investigating agencies are unanimously agreed that there is urgent need in twenty of these communities for additional medical, dental and nursing personnel. Such surveys are made whenever local authorities or federal agencies direct attention to community problems and are carried forward as rapidly as the number of workers will permit.

Two such surveys are summarized in tables 2 and 3.

The Pascagoula and Moss Point region is a vital war area the population of which is mainly employed in shipbuilding. It is estimated that by June 1943 the population will be 42,000 because of completion of new housing projects. Local and federal surveyors agreed that 4 additional physicians were urgently needed if suffering and actual loss of life are to be avoided. The ratio of physicians to population was put at approximately 1 to 3,500 in June 1943. By March 1, 1943 state and local groups had induced 2 additional physicians to locate in Pascagoula.

Orange County has three important shipyards, working on a twenty-four hour basis. The estimated population of war housing projects is 27,260. The survey group agreed that 2 additional physicians and 1 dentist should locate in Orange. The report recommends that 1 additional physician trained in public health be assigned to the Orange Health Center. It was also recommended that the 3 doctors employed at the Consolidated Steel Company yards obtain authorization to enter into private practice during their off hours.

TABLE 3—Joint Study of Orange County, Texas Made on Feb. 22, 1943

Population of Orange county, 1940	17,000
Population of Orange county, February 1943	6,000
Number of physicians, 1940	9
Number of practicing physicians, February 1943	1
Ratio of physicians to population, 1940	1 to 1,889
Ratio of practicing physicians to population, February 1943	1 to 6,000

Reports on other surveys by these same services were made available to the Office of War Information. Names of localities are withheld because the reports are confidential and the instances given are used as samples rather than specific cases. Abstracts follow.

In one Southern seacoast city, as the result of an influx of workers for war work the population has increased from 27,000 to an estimated 70,000 in three years. The survey showed that this area has only 14 effective physicians and 4 dentists. Each doctor had 20 to 40 patients daily at his offices and was able to make only 3 or 4 home calls a week. There are no

of people rising from the sick bed dressing and going to a doctor's office to wait several hours for treatment. Some doctors refused night calls, others sent emergency cases to the hospital where there was no intern and where it would be necessary for the patient to wait until a doctor could go there. It was necessary to wait three and a half to four months for a dental appointment. This survey showed that there was still a housing shortage, that there was an inadequate number of food stores, that restaurants were not only few but overcrowded and poor and that laundry services were inadequate. Under these conditions the survey group was not surprised to find that daily absenteeism at the war factories ran as high as 11 to 16 per cent and that the labor turnover was extremely heavy. There was a record that of 818 employees hired by one concern 506 either had been fired or had left the company's employ.

The surveyors held the threat of epidemic to be serious, not only that there was danger of epidemic in such crowded and below standard conditions but that should an epidemic break out, the doctors would be totally unable to cope with the situation both because of their small numbers and because of the inadequacy of hospital facilities.

The only hospital for this community of 70,000 persons contained 68 beds, of which 18 were reserved (in the basement) for Negroes. Since Negro doctors were not allowed to use hospital facilities these beds were not often filled. On July 1 a new wing was started for this hospital, which will contain 30 beds when completed. Nurses quarters are to be built thus releasing 35 more beds in the hospital proper.

As a result of the survey the shipyards hired a physician and assigned him to a housing project as a practitioner. The doctor in charge at the shipyard wishes to hire 3 more. The survey also succeeded in having a community council set up to handle the problem. An intern was hired for the hospital. An army doctor nearby, whose duties required only about one hour daily, has sought permission to help.

Another survey was made in January 1943 of an Alabama community whose population in three years had jumped from 13,171 to an estimated 25,000 plus an estimated 10,000 additional newcomers in the county, 11,800 workers are employed making munitions. To take care of this population there are 10 effective white doctors. No hospital is available for Negroes, who comprise 26 per cent of the population. In the county there are 4 effective doctors though 7 practice there. Four doctors were taken from this community by the armed services and 3 others have died. No new doctors have entered. The picture resolves itself into 21 effective doctors making a ratio of 1:3,800 far above the critical ratio of 1:3,000 and more than double the desirable ratio of 1:1,500. Another hospital is urgently needed, as well as 2 to 7 new doctors, 1 of whom should be an obstetrician.

In a survey of another Southern community made at approximately the same time an even more serious situation was found. This community, a county which included three towns showed an increase of population from 51,842 to about 75,000 within three years. (Estimates of increased population are approximately accurate, being based chiefly on the issuance of ration books.) The population of one town had increased 200 per cent, another more than 100 per cent and a third had risen from 515 persons to 5,000. There are two ordnance plants in the county employing 15,000 persons. The ratio of doctors to population in the county is 1:3,600. Two doctors have been taken by the armed services. The ordnance plants have a total of 10 or 11 doctors who do not practice in the community. One of the towns in this county has a new health center with 6 beds and almost enough equipment for obstetrics and general surgery. There has been some discussion of its use as a maternity center but nothing has been done. An allotment of \$106,000 has been approved for an 80 bed hospital with quarters for 22 nurses. Recommendations were made that the hospital construction be hurried that the ordnance plant doctors be made available for emergency use, that there be no further drafting of doctors from this community, that the health center be used as a maternity center, that funds be found for its equipment from federal sources, that public health nurse services help the doctors, and that 2 doctors, at least 1 a Negro, be sent to the community.

Norfolk Va and its sister cities about Hampton Roads form one of the critical areas of the Eastern Seaboard. Here a large new water supply has been brought in financed under the Federal Works Agency, and approval of priorities is sought for a new privately financed hospital. The population has risen from 251,318 to an estimated 460,260. The survey shows that 15 doctors are needed as well as 16 dentists and 5 public health nurses. In Norfolk the doctors and the medical association will welcome assistance and new doctors, but the reaction of physicians in other localities is by no means uniform. In one area doctors opposed the building of a health center because they said, it pointed the way toward 'socialization of medicine'. They also opposed free immunization or industrial workers by public health officials, saying that the workers were simply able to pay for injections, vaccination and so on.

In a Southern seaport and shipbuilding center a resurvey is in progress. Here the doctors formerly were opposed to the introduction of any new physicians unless they were uniformed men sent in temporarily and resisted any idea of liberalizing the licensing system. If a state health officer asked for uniformed doctors the Public Health Service would be unable to supply them because it does not have sufficient funds for the purpose.

#### PREVENTION

Another extensive phase of the fight to preserve civilian health falls in the division of prevention, professional and popular education in public health methods, maintenance of healthful and sanitary conditions and work to arrest the spread of preventable diseases.

*Industrial*—The Public Health Service's Division of Industrial Hygiene operating through thirty-eight state and eight local bureaus has one of the largest single undertakings in civilian health. It has direct and indirect supervision over the working and living conditions of an estimated 30,000,000 workers. This force is divided 22,000,000 working on arms, ship building, munitions and construction and 8,000,000 on transportation, public utilities, food processing and farms. The Industrial Hygiene Division's work was intensified by the fact that up until 1943 73 per cent of war contracts had been awarded to factories in twenty big centers which had 22 per cent of the total population of the country. A further complication was the construction of war plants in rural communities which lacked even rudimentary sanitary facilities and the fact that the ranks of state and local public health workers were depleted showing a shortage as of February 1942 of 1,000 doctors and 2,700 public health nurses.

The Division of Industrial Hygiene increased its workers to 300 and gave special training to 60. Through this force the division in cooperation with local and state authorities maintains almost constant surveys of factory health conditions, keeps up continuous laboratory work for elimination of industrial hazards, sponsors educational campaigns on hygiene and nutrition and keeps continually before management the advantages of having medical supervision in their shops.

The latest available survey of industrial hygiene services in plants employing almost a million and a half workers showed as of 1939 that 15.1 per cent of the workers were supplied with hospital facilities, 15.5 with full time doctors, 33 1/3 with full time nurses and 47.5 with a trained first aid worker. Because of the huge influx of new workers these figures may have fallen off slightly. However there was an increase of 10 per cent last year in industrial employment of public health nurses and also a definite increase in interest among physicians and communities in industrial hygiene. Many institutes (four or five day series of lectures) have been held throughout the country to establish what the Public Health Service refers to as the framework of industrial hygiene. This framework, which the national service urges on state and local authorities, places strong emphasis on preplacement examination, not only to put every available man and woman to work but also for the purpose of placing handicapped or less sound workers in those jobs for which they are best suited. Other features of the framework stress the medical setup in the plant, attention over machine safeguards, ventilation and heating, sanitation and recreation facilities and better health in the homes including recreation and housing. It was pointed out that



connection that 90 per cent of all sickness absences are caused by nonindustrial sickness and accident.

In addition to plant surveys by local and state officials, federal workers make frequent field trips. The Public Health Service is directly responsible with the Surgeon General of the Army for supervision in government-owned industry, its work in other fields is on the basis of requests from management or labor in industry or of cooperation with local health authorities. These field trips have covered many ideal factory setups but also many where the most rudimentary safeguards for workers' health did not exist. In a factory which made rubber rafts for planes, a field worker found a turnover of 25 per cent in employees in one particular section where cement was brushed on seams. The odor of the chemicals used was stifling, and it was clear that headaches and similar ill results from the fumes were unavoidable. The factory had provided the required exhaust ventilation sucking out the fumes through a grid which also formed the work bench on which the chemicals were spread on the rubber. It had neglected to teach the workers that, in spreading the chemical they must not put it on the grid. Consequently the grid was clogged and the ventilation system was not functioning properly.

In another factory, where bullets were made, the machinery was old, ill lighted, and without the most elementary safeguards. On the other hand, this factory employed a full time public health nurse who was doing splendid work. This woman had returned to her home town with a sense of mission and had sold her services to the factory on a part time basis, the understanding being that she would work half time on the assembly line. After two months of this work the management realized the value of her work and put her on a full time basis as a nurse. A factory whose workmen became caked with dust provided only pails of water for them to wash in at quitting time. A West Coast shipyard, whose payroll had increased from 500 to 5,000 men, had provided no additional toilet facilities and no additional sewage disposal. The water supply was contaminated and several hundred cases of dysentery occurred before the condition was corrected. It was emphasized that these cases were by no means typical of all factories, but that they did represent a measurable percentage of those inspected.

**Tuberculosis**—The work of detecting tuberculosis in its early stages is considered extremely important. According to Surgeon General Parran the death rate from tuberculosis increased 13 per cent in Great Britain after two years of war. There has been no increase here as yet, but the objective circumstances favoring such an increase are prevalent. These include overcrowding and longer hours of work, with resulting fatigue and emotional strain.

Educational work to encourage proper eating, personal hygiene and rest is being done by the Public Health Service, chiefly by distribution of literature and consultation or organizational work with local and state health authorities. But the main reliance is placed on x-ray diagnosis. To this end the Office of Tuberculosis Control was set up under Dr. Hilleboe. Ten portable x-ray units were obtained and set up in trailer-automobile units, staffed with three workers, a doctor, an x-ray technician and a clerk. The cost of the x-ray units is about \$5,000, of the trailer \$1,200. With these units, in cooperation with industry in congested areas, a quarter of a million persons were x-rayed in 1942. These include 160,000 workers in nine states and 40,000 federal employees in the District of Columbia. An additional ten units were purchased, but failure to obtain an expanded appropriation for this year's work permitted the Public Health Service to place only two of these in operation. Two are being held in reserve and the remaining six will be lent to states where they will have the maximum utility. Dr. Hilleboe expects by these units to x-ray a million persons this year at a unit cost of about 15 cents per examination, and he has requests for work which would include another million whom he is unable to examine because of lack of funds. The present rate of work for each mobile unit is about 2,000 x-ray examinations a week. These units utilize an inexpensive microfilm technic and new equipment which permits taking as many as 300 to 500 photo-fluorograms in a normal eight hour day.

**Veneral Diseases**—Another of the danger points in communicable disease where prevention plays an important role is syphilis and gonorrhea. A rise in venereal diseases traditionally accompanies war, and England has experienced an increase of 70 per cent. In this country an increase of 20 per cent in patients treated at public clinics has already occurred. The Public Health Service conjectures that a great portion of this apparent rise may be due to an increase in serologic tests and augment case finding throughout the country. It is estimated that 30,000,000 such tests will be made in 1943. Districts of prostitution have been closed in three hundred communities, and it has been found necessary in only two areas to invoke the stringent May Act, which makes prostitution a federal offense in districts designated by the Secretaries of the Navy and of War. The two areas include twenty-seven counties in Tennessee and twelve counties in North Carolina. Venereal clinics have been increased by 300 per cent since 1938. Nearly 10,600,000 syphilis treatments were given last year by public health doctors, an increase of 260 per cent over 1938.

A further extensive work to curb venereal infection is going forward swiftly, financed jointly by the Lanham act and Public Health Service funds. Rapid treatment centers have been established for the treatment and rehabilitation of infected prostitutes. Twenty-nine such centers have been opened in fifteen states, Puerto Rico, the Virgin Islands, the District of Columbia and the Canal Zone. Eleven more centers have been approved, six others recommended and awaiting approval, and twenty are being considered. The twenty-nine centers already functioning have a capacity of 3,400 beds and are kept constantly supplied with patients through arrests and commitments by state and local officers. Turnover is on an approximate maximum basis of six weeks per patient. Treatment is primarily by the new intensive methods for syphilis and the use of sulfonamide drugs for gonorrhea. These faster methods of treating syphilis vary in length from one day to six weeks. Intensive treatment is said to give great promise and may supplant the classic treatment which required some seventy injections spread over a period of eighteen months or more. Sulfonamide drugs permit a cure of 80 to 90 per cent of gonorrhea patients in a week's time. In addition to health treatments, extensive educational and rehabilitative work is done at these centers, and it is hoped that many of the girls and women will find their way into more normal life through wartime jobs.

**Typhus**—Despite preventive work, typhus, spread in this country by the rat flea, was continuing to increase in 1942 when 3,700 cases were reported, a rise of 1,000 over the previous year. It is believed that the actual incidence of the disease is several times as great as the number of cases reported. Typhus has been gradually spreading northward along the East Coast and along the granary lines in the Middle West. The principal foci of infection are in Texas and Georgia. The way to stamp out typhus is to kill its host, the rat. Buildings in centers of infection are being rat proofed and the rats destroyed. A district at a time, whenever local authorities will assume responsibility for continuing the work. The Public Health Service has set up a field office for typhus control with headquarters in Atlanta. A field officer carrying out control work reported 231 rats killed by a single fumigation in one small grocery, plus an uncounted number of others gassed in their burrows. Twelve persons employed in that store had been infected with typhus in the two previous years.

**Malaria**—Extensive work in malaria control has been done in the last two years, and \$6,000,000 is to be spent on such work in the coming year. Today a protected zone is being created around every war industry and every military camp in the malaria belt. These projects have employed 3,700 men to protect 1,161 war establishments in eighteen states. As an index of the effectiveness of this work, the Army experienced its lowest malaria rate in its history in continental United States, 0.6 per thousand men in 1942. So far this year the rate is 0.7. Considerable work is being done also in the Western states in control of bubonic plague, which is endemic there in one of the rodents. Areas surrounding military camps are cleared up, and there is a continual sampling of rats in urban communities.

the West Coast. In the last year plague was found among rats in two communities—one on Puget Sound the other near San Francisco. Immediate action to exterminate rats resulted in cleaning up the areas, and recent examinations have shown no traces of the plague.

Diseases from other parts of the world unknown in this country are being guarded against also. Such exotic diseases may gain a foothold unless preventive measures are taken. Global warfare, which breaks down national barriers and makes worldwide communication easy, also opens a path for invading disease germs via plane and ocean vessel passengers and returning troop. Two examples of such exotic diseases—not yet successful invaders—are filariasis, a disease of the lymph glands transmitted by mosquitoes and schistosomiasis, an intestinal

infection prevalent in Africa Central and North America and the West Indies, transmitted by snails. Mosquitoes and snails of the United States therefore are being studied to determine whether they might become carriers of these possible invaders.

Because of the possibility of aircraft transporting insect carriers of plague, yellow fever, typhus and other infectious diseases, all planes from foreign ports are fumigated twice—once before arrival by flight personnel and on arrival by the Public Health Service. New ocean vessels constructed for our wartime merchant marine incorporate Public Health Service ratproofing specifications. Ratproofing, incidentally, saves money and time. It saves steel during construction and saves dollars and hours after construction owing to the fact that ratproofed ships seldom require fumigation.

## NAVY

### MEDICAL FIELD PHOTOGRAPHIC UNITS

The Secretary of the Navy, Frank Knox, has authorized the Bureau of Medicine and Surgery to organize and equip two medical field photographic units for the purpose of obtaining documentary clinical photographic records of the medical and surgical management of naval casualties in the combat areas. One unit will be assigned to the Pacific area, the other to the Atlantic European area.

The fundamental plan is to secure a coordinated series of motion and still pictures illustrating war injuries using individual case histories as far as practicable and following them from the field or combat along the chain of evacuation to final destination. In addition to case history reports, a photographic record will be made of environmental conditions wherever pertinent and necessary so as to familiarize medical personnel with the problems to be encountered. In addition to war casualties, the units will be concerned with disease problems, particularly tropical diseases.

The Division of Preventive Medicine, which will have direct cognizance of this work, will appreciate comments and suggestions from officers in the bureau as to suitable material and locations for such medical field photography.

### LIEUT. COMDR. CHARLES E. BALDREE, JR. CITED

Lieut. Comdr. Charles E. Baldree, Jr. (MC), U. S. N. R. formerly of Belleville, Ill., has been cited for splendid service to wounded Americans evacuated to his ship. The citation came from Lieut. Gen. S. B. Buckner, Jr., who is commanding general of all U. S. forces in the Alaska area where Dr. Baldree is stationed. The citation reads as follows:

Reports have reached me from several sources concerning the splendid service rendered by you to U. S. Army troops wounded at Attu and evacuated to your ship. Your untiring efforts and professional skill greatly alleviated the suffering of our troops during their trying voyage.

I wish to convey my appreciation of your magnificent work and trust we may be so fortunate as to have the benefit of your services again in this theater.

Dr. Baldree, who graduated from the University of Tennessee College of Medicine in 1928, entered military service in August 1942.

### NAVY CROSS AWARDED TO DR. RINGNESS

Lieut. Henry R. Ringness (MC), U. S. Navy, has been awarded the Navy Cross posthumously for extraordinary heroism while under fire on Guadalcanal. Lieutenant Ringness, who died of wounds sustained in the action in which he earned his decoration, graduated from George Washington University School of Medicine, Washington, D. C., in 1939. The citation accompanying Lieutenant Ringness's award is as follows: For extraordinary heroism as flight surgeon of a marine aircraft group during action against enemy Japanese forces on Guadal-

canal on the night of Oct. 13-14, 1942. When a hostile task force moved in off our beachhead and commenced a vigorous bombardment of the island airfield, Lieutenant Ringness, trapped in a foxhole in the camp area by the sporadic bursting of shells, was mortally wounded by a near miss which killed four of his companions and wounded others. Although completely paralyzed in the lower half of his body and suffering great pain because of his immobility, he persisted in administering morphine and blood plasma to wounded personnel until he was finally evacuated to a base hospital. Even then, with unselfish devotion to his fellow man, he tried to minimize his own critical condition in order that others might be given preference in medical treatment. Three days later, as a result of his injuries, he gallantly gave up his life in performance of duty in service to his country.

### WOMEN OFFICERS' UNIFORMS

According to the *Army and Navy Journal* of September 4, women physicians commissioned for service in the Medical Corps of the Navy or any other women in the U. S. Naval Reserve who may be appointed as officers in Navy staff corps will wear the basic uniform originally adopted for the Women's Reserve, U. S. Naval Reserve. The special types of staff corps service will be indicated by the appropriate corps insignia worn above the sleeve stripe and when the uniform jacket is removed by the miniature collar device.

The staff corps device shall be of the same color as the sleeve stripes prescribed for the navy women's uniform—reserve blue on the navy blue uniform and navy blue on the white uniform. The acorn, where used on staff corps insignia, will be embroidered in appropriate contrasting color of either white or reserve blue.

In addition to the medical corps, women are now serving in the hospital corps, supply corps and civil engineer corps and will wear the appropriate corps devices.

### NAVY PERSONALS

Capt. Robert P. Parsons (MC), U. S. Navy, who has recently returned from command of a naval hospital in the South Pacific area, has been assigned to command a new naval hospital at Pleasanton, Calif., which will be completed on October 1.

Comdr. Richard I. S. Silvis, U. S. Navy, has been appointed medical officer at the air station's Naval Air Technical Training Center, succeeding Comdr. M. J. Tendler. Commander Silvis reported to the training center after sixteen months of sea duty aboard the U. S. S. *Charrier*, an auxiliary aircraft carrier. He has been in the regular navy since his graduation from the University of Nebraska College of Medicine, Omaha, in 1931.

Lieut. Col. James E. Peterman, M. C., A. U. S., formerly district health officer with the Pennsylvania Department of Health, has recently been transferred from the office of the Surgeon General, Washington, D. C., to foreign service where he will serve as vital statistician for one of our overseas forces.

## MISCELLANEOUS

## MORE REGISTERED NURSES NEEDED

The Directing Board of the War Manpower Commission's Procurement and Assignment Service announced on September 1 that the nation is faced with a critical shortage of registered nurses. More than one fifth of all the active nurses in the country are with the armed forces and an equal number must be recruited to meet Army and Navy needs between now and next July. There is in addition, it was stated, a serious shortage of nurses in many hospitals and elsewhere where their services are vital in meeting the health needs of the civilian population.

The wholehearted cooperation of each member of the nursing profession and of all those who employ nurses—hospitals, industrial and business firms, physicians and the general public—will be necessary if these shortages of nurses are to be surmounted, the Directing Board said.

The cooperation of all nurses, both active and retired will be particularly required by the new Nursing Division of the Procurement and Assignment Service. This division will (1) determine the availability for military service or essentiality for civilian service of all nurses eligible for military service and submit such determinations to the American Red Cross for use in procurement of nurses for the armed forces, (2) promote plans for maximum utilization of full time nurses and those who are able to serve only part time, (3) develop and maintain a roster of all graduate registered nurses and (4) develop and encourage sound methods of supplementing the work of nurses with non-professional personnel.

To meet the serious discrepancy between supply and demand for nursing service, five overall steps are being undertaken. First, the requirements necessary to provide proper nursing care for those in the armed forces have priority over all others. They must and will be met, the Directing Board said. More than 36,000 nurses now are with the armed forces, and the American Red Cross, which is the

recruiting agency for the armed forces, will recruit another 36,000 between now and June 30, 1944 in cooperation with the Nursing Division of the Procurement and Assignment Service.

Second, concerted effort will be made this fall to bring back into active nursing the thousands of registered nurses who have left the profession because of marriage or to enter other occupations.

Third, to fill still further the gap between the supply of, and civilian needs for, nursing services, more Red Cross nurse aides are being recruited to augment the 72,960 certified and the 100,000 enrolled in classes on June 1. These aides supplement the work of and help relieve the burden of those nurses who are serving their country in the less spectacular role of hospital duty.

Fourth, an educational program is being designed to bring about a better conservation and utilization of nurses.

The fifth step aims at meeting the nation's increasing need for nurses. The new Division of Nurse Education of the United States Public Health Service has set a goal of 65,000 new students in schools of nursing, to be recruited this year for the U S Cadet Nursing Corps, which was established by the recently enacted Bolton-Bailey Act. Under the provisions of this act, assistance also will be given to those retired registered nurses who will require refresher courses before reentering service.

## PUBLIC HEALTH UNDER HITLER

According to *Dagens Nyheter*, July 21, TT reports from Oslo that epidemics are spreading so quickly in Norway that hospitals can no longer receive scarlatina patients, who must in future be isolated at home. Medicinal-direktor Dr T Ostrem has emphasized that hospitals are to accept only patients who are seriously ill with scarlet fever.

*Norö Pressen*, July 10, reports that all doctors and hospital attendants born between 1903 and 1911 and hitherto unmobilized are ordered to report for mobilization.

According to *De Tijd*, June 30, the Central Press Service of the NAF has announced that Dutch women working in Germany have now become eligible for maternity allowances. At the birth of a child they will get free nursing and also an allowance if the birth takes place in Holland. In addition they will also get a maternity allowance, beginning six weeks before the

probable date of confinement and ending six weeks after the birth of the child. This allowance will be based on the average weekly wage earned during the last thirteen weeks but will not be less than 13 reichsmarks daily. Expectant mothers may not be dismissed during pregnancy, unless they agree, in which case they will lose these benefits. Six weeks before confinement they must request to be relieved of all work, and they will not accept any work during the six weeks following confinement.

An underground hospital for several hundred patients has, on the initiative of the Red Cross, been built close to a Berlin hospital as better protection for sick persons from air attacks, according to *Transocean*, July 13. As soon as the alert is given, all patients of the hospital will be taken to these shelters, which are equipped with a modern operating room. In order to

be prepared for every emergency, night operations will henceforth be exclusively carried out in this operating shelter. Sterile material for seventy operations will constantly be kept in readiness. An x-ray department is available. This underground hospital will also serve as protection for pregnant women. Ventilation and electric lighting have been installed. The walls are covered with luminous paint, enabling the nurses to carry out the most urgent duties even if the electric lighting should break down.

As a result of many cases of infantile paralysis at Montluçon and vicinity the prefect of the Allier has forbidden all meetings in the town and district, *Radio Paris*, July 8, reports. Not only cinemas and theatrical productions have been suspended but all festivals, presentations of prizes, political reunions and baby shows. The Montluçon arrondissement has been barred to holiday makers and campers.

According to *Ålbetaren*, Stockholm, July 21, a violent epidemic of diphtheria is raging in Narvik with numerous deaths. A Baptist church and a large private building which have been converted into hospitals to receive those who are infected are already crowded. Twenty persons have been found to have spread the infection without being ill themselves.

## HOSPITALS FAIL TO RETURN QUESTIONNAIRES

Many hospitals have not returned the questionnaire recently sent out by the Procurement and Assignment Service. If this questionnaire is not returned immediately, hospitals will have to be appraised on the basis of old information and therefore will not receive as satisfactory allocation of house staff. Prompt returns are imperative.

# ORGANIZATION SECTION

## OFFICIAL NOTES

### POSTWAR PLANNING FOR MEDICAL SERVICES

The Committee on Postwar Medical Service met in Chicago on June 5 1943. There were present

representing the American Medical Association,

Brigadier General Fred W. Rankin

Rear Admiral Dallas G. Sutton

Dr. James E. Paullin

Dr. H. H. Shoulders

Dr. Alan Gregg

Dr. Warren F. Draper

Dr. Roger I. Lee

representing the American College of Surgeons,

Dr. Irvin Abell

Dr. Everts A. Graham

Dr. Arthur W. Allen

Dr. James M. Mason

Dr. Elmer L. Henderson

representing the American College of Physicians,

Dr. James E. Paullin

Dr. Ernest E. Irons

and by request Dr. Morris Fishbein and for a short time Dr. Olin West.

The discussion was largely exploratory. It was the sense of the meeting that as there are many organizations for postwar planning it might be well to assemble and maintain a current list of these different organizations and of their activities. It was pointed out that this committee, as a medical and professional committee at this time was not related to other postwar planning organizations although such relationships might come later. It was pointed out that postwar was an indefinite term and should be perhaps taken in the broader sense perhaps ten years after the actual cessation of hostilities. Dr. Paullin felt that this committee ought to be ready to appoint other subcommittees either on request or in anticipation of request on such general topics as

- 1 Nutrition
- 2 Infectious Diseases
- 3 Child Welfare
- 4 Maternal Welfare
- 5 Mental Welfare and perhaps others

#### TRENDS IN MEDICAL SERVICE

There was considerable discussion rather general about the trends of medical service. It was pointed out that the rural areas would be an increasing problem for medical service and that probably the Public Health Service would have wider activities in the future than in the past. The general problem of district hospitals was discussed, particularly in its relation to medical service in rural areas.

#### RELOCATION OF PHYSICIANS

It was agreed that relocation of physicians would very likely represent a tremendous problem. Some of the young physicians would have had inadequate internships. There would seem to be a large demand for residencies and for opportunities in which returning physicians could make a transition from the army pay to some sort of an assured income without too great an interruption and without the necessity perhaps of slowly building a practice by the old method.

#### POSTGRADUATE EDUCATION

The necessity of postgraduate education was stressed. It was pointed out that there was a committee already vigorously at work on graduate training in the armed forces and likely the same committee or a continuing committee might function

after the war. It was pointed out that postwar graduate training would probably not be restricted to the Americas on account of the situation in nearly all of Europe. A suggestion was made that the American embassies might have an educational attache just the same as they have a naval and military attache.

In the problem of the continuing program of medical education, it was felt that research must play a large part. It was also pointed out that presumably many of these doctors would need reeducation in the doctor-patient relationships. Very likely the Public Health Service would play a large part in the accelerated redistribution of physicians, unless the process was very slow.

It was agreed that this committee of the American Medical Association appointed by the Trustees ought to have the authorization of the House of Delegates of the American Medical Association. [This authorization was given by the House of Delegates at the meeting of the House of Delegates which took place a few days later.—Ed.]

#### CURRENT SITUATION

During the interval since the first meeting events have moved rapidly. At the moment the emphasis seems to rest on finding a peace that will be permanent. However as the country approaches the end of the second year of actual conflict more and more civilian doctors have joined the armed forces. The duration of internship will likely be shortened to nine months. Medical schools have soldier and sailor students and the coming winter will bring many troubles to civilian communities shorn of their doctors, and to understaffed medical schools and hospitals. Medical research except as related to the war effort has disappeared. Many doctors have now been in the armed forces over a year a goodly number for two years and some for three years.

The following problems seem pressing for consideration

1 Relocation or redistribution of physicians returning from the armed forces. This will entail the setting up of some form of information center and clearing house.

2 Cooperation in planning or advising in such governmental plans for postwar vocational training periods which affect physicians and medical students and which are now being actively discussed.

3 Graduate and postgraduate medical education for the returning physicians.

4 Organization of plans by which the younger men especially may complete internship and residencies and by which residencies and specialist training may be made available.

5 Plans for the educational rehabilitation in medicine through all gradations of a varying number of individuals of those countries whose medical systems have been largely eliminated in the last few years. Obviously this will depend on many conditions now unknown. But the rehabilitation of systems of medical service and medical education for medical practice may well be both tremendous and lengthy.

6 There are of course other problems some of which may seem to the committee to be more urgent than the ones listed. In any event it seems essential to begin consideration of these problems.

7 A proposal has been made that the committee consider the inclusion in a subcommittee of representatives of the younger group of medical officers of the Army and Navy.

8 The committee should consider also the sending of a questionnaire to a sampling of medical officers of the Army and Navy as to their desires and needs as related to the problem of education internships residencies relocation salaried positions and similar aspects of postwar rehabilitation.

[Another meeting is scheduled for the near future.—Ed.]

## Medical News

(PHYSICIANS WILL CONFERR A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF INTEREST OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Physicians Needed**—The Los Angeles County Civil Service Commission announces examinations for the positions of physician M D head anesthetist and chief physician, M D (tuberculosis) in the Los Angeles County Department of Charities which includes the Los Angeles County Hospital Rancho Los Amigos Honda and Olive Sanatorium, Olive View. Physicians interested in any of these positions should write to the office of the commission, Room 102, Hall of Records, Los Angeles 12, for full information. Applications must be filed on or before October 22 for the physician and anesthetist positions and by September 30 for the chief physician position.

**Lectures on the Heart**—Under the auspices of the California Heart Association Dr Jinsley R Harrison professor of medicine Bowman Gray School of Medicine of Wake Forest College Winston-Salem N C, will deliver a series of lectures in San Francisco November 4-6, Los Angeles November 11-12 and San Diego November 9. His subjects will include "The Abuse of Rest in the Treatment of Cardiovascular Disease," "Gastrointestinal Disorders Simulating Angina Pectoris," "Some Conditions Commonly Confused with Coronary Thrombosis" and "Some Common Errors in the Interpretation of Electrocardiograms as Indicating Coronary Artery Disease." The program will also include a clinical pathologic conference.

### DISTRICT OF COLUMBIA

**Annual Scientific Assembly**—"Medical Progress Since Pearl Harbor" is the theme of the fifteenth annual scientific assembly of the Medical Society of the District of Columbia, to be held at the Mayflower Hotel Washington, September 30-October 2. Among the speakers will be

Colonel Raymond E Scott M R C, U S Army, Treatment of Injuries in Combat Zone  
Capt Camille M Sharr (MC) U S Navy, Treatment After Evacuation from Combat Zones  
Capt Winchell M Crug (MC) U S Naval Reserve Injuries of the Head  
Major Brian B Blades, M R C, U S Army Injuries of the Chest  
Comdr Louis E Gilje (MC) U S Navy Injuries of the Abdomen  
Col Lloyd G Lewis M C A U S Injuries of the Genitourinary Tract  
Dr Robert V Funsten, Charlottesville Va, Injuries of Bones and Joints  
Dr Claude C Coleman Richmond, Va Neurovascular Lesions of Extremities  
Dr Robert H Ivy, Philadelphia Plastic Surgery  
Major Gen Norman T Kirk, surgeon general of the U S Army, Sulfonamides in Prevention and Treatment of Wound Infection  
Colonel Roy D Halloran M C A U S Neuropsychiatric Problems in the Army  
Major Murray Sanders, M C A U S, Epidemic Keratoconjunctivitis  
Dr Edward A Cafritz, Washington, D C War on Appendicitis  
Dr Henry W Cave New York Sulfonamides in the Preparation and Care of Patients for Intestinal Operations  
Lieut Col Thomas B Turner, M C, A U S, Present Day Management of Venereal Diseases in the Armed Services  
Dr Andrew C Ivy, Bethesda, Md, Cirrhosis of the Liver  
Dr Thomas Parran surgeon general of the U S Public Health Service, Pandemic Influenza  
Dr Jesse G M Bullowa, New York, The Pneumonias  
Lieut Col Baldwin H E W Lucke M R C U S Army, The Renal Lesions of the Crush Syndrome and Other Forms of Hemoglobinuric Nephrosis  
Capt Emanuel B Schoenbach, M C, A U S, Meningitis—Its Diagnosis and Treatment  
Capt Juanita Redmond, N C, U S Army Nursing Experiences on Bataan  
Dr Rolla E Dyer, Bethesda, Endemic and Epidemic Disease, Including Tropical Diseases  
Philip Drinker, Ch E, Boston, Medical Service in Industry  
Dr Warfield T Longcope, Baltimore, Civilian Medical Practice  
Dr Harvey B Stone, Baltimore, Civilian Surgical Practice  
Dr Malcolm T MacEachern, Chicago, Hospital and Administrative Problems  
Dr Arthur C Christie, Washington, Misleading Concepts Arising from Mobilization  
Dr Oscar B Hunter, Washington Blood Transfusions with Special Reference to Reactions and the Rh Factor  
Dr John B Alsever, surgeon, U S Public Health Service Reserve, The Current Status of Blood Substitutes  
Lieut Col Aubrey O Hampton, M C, A U S, Recent Advances in X Rays  
Comdr Omar J Brown (MC), U S Navy, Malaria—Its Control and Treatment  
Read Admiral Ross T McIntire, surgeon general of the Navy, Problems of Postwar Medicine  
Brig Gen Albert W Kenner, M C, U S Army, Medical Experiences in Army Warfare

Guest speakers at special luncheon sessions will include Major Margaret D Craighill, M C, A U S, on "Women in the Army Medical Department," September 30, Dr Jui Heng Liu, former minister of public health for the government of China, "Medical Progress in China," October 1, and Mr Edward T Folliard, journalist and radio commentator of Washington, D C, "What is Happening to Our World," October 2.

### ILLINOIS

**Rocky Mountain Spotted Fever**—The state laboratory has confirmed diagnosis of a case of Rocky Mountain spotted fever near Chester. The patient was a 12 year old boy.

**Dr Sievers Named Assistant State Health Director**—Dr Jerome J Sievers, assistant to the chief of the division of communicable diseases, Illinois Department of Public Health, Springfield, has been appointed assistant state health director. The appointment became effective on September 1. Dr Sievers, who graduated at the University of Illinois College of Medicine in 1935, received his M S Ph degree at the University of Michigan in 1939. He has been connected with the Illinois department of health since 1939.

**Grant to Study Penicillin**—The University of Illinois has accepted a grant of \$25,000 a year for three years from the Upjohn Company of Kalamazoo, Mich, for the academic study of the structural composition and possible synthesis of penicillin. The grant provides for an enlarged three year research chemistry project under the direction of Herbert E Carter, Ph D, in the department of biochemistry at Urbana amplifying both an earlier cooperative research project at the school and the bacteriologic and other research now being conducted at the Upjohn Company's laboratories at Kalamazoo.

### Chicago

**Personal**—Lola Armstrong Ponton, executive secretary of the Illinois Association for the Crippled since it was organized, has resigned.—At the recent annual meeting of the Illinois Psychiatric Society Dr Clarence A Neymann was chosen president. Other officers include Drs Hugh T Carmichael vice president, and Frances Hannett, secretary-treasurer, all of Chicago.

**Rongetti Seeks to Have License Restored**—Amante Rongetti, under charges in the Cook County Court of practicing medicine without a license, filed a petition in superior court on August 18 for a writ of mandamus to compel Frank G Thompson, Mount Vernon, Ill, director of the state department of registration and education, to expunge an order of May 4, 1932 which revoked his license, newspapers reported. He was said to have charged that the action was unconstitutional and that the order was issued without due process of law.

**William Hamlin Wilder Memorial Foundation Created**—The Institute of Medicine of Chicago announces the establishment of the William Hamlin Wilder Memorial Foundation which has been made possible through a gift from Mrs Wilder. Dr Wilder was professor emeritus of ophthalmology at Rush Medical College at the time of his death in 1935. He was a founder fellow of the Institute of Medicine and a former member of its board of governors. The first lecture under this foundation will be delivered by his son, Dr Russell M Wilder chief, Civilian Food Requirements Branch, War Food Administration, Washington, D C, who will speak on "Nutrition and the Human Eye" on the last evening of the two day postgraduate assembly on Nutrition in Wartime sponsored by the Institute of Medicine to be held at the Palmer House, November 17-18.

### KENTUCKY

**State Medical Meeting**—The annual session of the Kentucky State Medical Association will be held in the Brown Hotel, Louisville, October 5-6. The program has been contributed by wartime graduate medical meetings under the auspices of the American Medical Association, the American College of Physicians and the American College of Surgeons. Among the speakers will be

Lieut Col Claude S Beck M C A U S Burns  
Dr Eugene A Stead Jr, Atlanta, Ga, Shock  
Dr Roy R Kracke Emory University Ga Blood Derivatives  
Brig Gen Fred W Rankin M R C and Lieut Col Burr V Carr M C, A U S, Current Trends in Military Surgery  
Dr Charles B Stacy, Pineville Medical Problems in Kentucky  
Dr Jacob A Bargen, Rochester, Minn, Chemotherapy in Digestive Organs  
Dr Alexander E Brown, Rochester, Chemotherapy (a) In Gen urinary Infections and (b) General Consideration

Dr Herman I Kretschmer Chicago President Elect of the American Medical Association Medical and Surgical Diseases of the Prostate Gland

Brig Gen David N W Crant M C U S Army We Are Not Content

Dr Ben Wilcox Smock Louisville Where To Surgery?

Dr Edward I Turner Nashville Tenn Classification of Dysenteries

Dr Arthur W Allen Boston Thrombophlebitis and Pulmonary Embolism

On Wednesday a symposium on general surgery will be presented by Dr Allen on Gastric and Duodenal Ulcers Surgical Management and Neurovascular Lesions of the Extremities and Dr Warren H Cole Chicago Gas Gangrene and Intestinal Obstruction

## MASSACHUSETTS

**Tufts Announces Change in Program for Anniversary Celebration**—On September 22 Col Raymond W Bliss assistant to the surgeon general of the U S Army will discuss Plans and Operations of the Surgeon Generals Office in connection with the fiftieth anniversary celebration of Tufts College Medical School Boston September 15 October 6 Portraits of Drs Timothy Leary and Cadis Phipps professor emeritus of pathology and professor of medicine respectively will be presented during the exercises on September 29 These dates differ from those announced previously by Dr Harry Blotner Boston secretary of the Tufts Medical Alumni Association (THE JOURNAL, September 11 p 103) On October 6 the anniversary celebration will conclude with a meeting in the John Hancock Hall at which Dr Alonzo K Paine Boston president, Tufts Medical Alumni Association will preside The speakers will include

Karl T Compton LL.D. president Massachusetts Institute of Technology Cambridge Some Evolutionary Trends in Professional Education

Capt A. Warren Stearns (MC) U S Naval Reserve dean on leave of Tufts College Medical School Boston In Retrospect

Comdr Bartholomew W Hogan (MC) U S Navy Navy Medicine on the Home Front and in Combat Areas

Leonard Carmichael LL.D. president Tufts College Some Distinctive Characteristics of Medical Education at Tufts

At this time A History of Tufts College Medical School prepared by Dr Benjamin Spector professor of anatomy and professor of the history of medicine at Tufts will be presented

## MICHIGAN

**James L Wilson Goes to Professorship in New York**

—Dr James L Wilson associate professor of pediatrics at Wayne University College of Medicine Detroit has been appointed chief of the children's medical service at Bellevue Hospital and professor of pediatrics at New York University College of Medicine New York. Dr Wilson graduated at Harvard Medical School, Boston in 1926

**Changes in Health Officers**—Dr Neal N Wood Mackinac Island health director of Charlevoix Emmet Otsego and Antrim counties, has been appointed in charge of the Bay County department of health succeeding Dr Douglas A Fryer Bay City resigned—Dr Addison D Aldrich Houghton has been named director of the Houghton-Keweenaw-Baraga health department—Dr Mordechai A Elstein was recently named health officer of Delta County it is reported

**Graduate Courses**—The Michigan State Medical Society in cooperation with the University of Michigan Medical School Ann Arbor Wayne University College of Medicine Detroit the Michigan Department of Health and the Wayne County Medical Society announces the extramural postgraduate courses for the autumn of 1943 The centers and dates are Ann Arbor October 12 and November 9 Battle Creek October 5 and 19 Flint October 12 and 26 Grand Rapids October 12 and November 9 Lansing October 7 and 14 Mount Clemens October 13 and 27 Saginaw October 19 and November 16 and Traverse City October 8 and November 12 On the first day the program will include lectures on the Recent Advances in the Management of Cardiac Irregularities and Syphilis Serologic and Clinical Findings in Relation to Treatment and a panel discussion on Evaluation of the Surgical Risk In addition to a panel discussion on Newer Drugs and Their Use in Practice the program for the second day will include lectures on Fatigue Its Increasing Significance in Wartime and Practical Problems in the Management of the Menopause An intramural course on Electrocardiographic Diagnosis will be held at the University Hospital Ann Arbor November 1-6 Additional information may be obtained from the committee on postgraduate education Room 2040 University Hospital

## MISSISSIPPI

**Dr Guyton Retires as Dean**—Dr Billy S Guyton has resigned as dean of the University of Mississippi School of Medicine University, effective August 31 Dr Guyton who received his master's degree at the University of Mississippi has been associated with the medical school since 1915 first as professor of bacteriology and pathology and later as professor of minor surgery He has been dean since 1935 Dr James B Looper, recently appointed assistant dean of the school (THE JOURNAL, July 31, p 959), has been named to succeed Dr Guyton, effective September 1

## NEW YORK

**Dr Tainter Named Professor of Physiology at Albany**

—Dr Maurice L Tainter, director of research of the Winthrop Chemical Company Inc, Rensselaer, has been appointed professor of applied physiology at the Albany Medical College The appointment to the medical school will not interfere with his activities at Winthrop Prior to his association with Winthrop Dr Tainter was professor of pharmacology at the Stanford University School of Medicine and professor of pharmacology and head of the division of physiologic sciences at the College of Physicians and Surgeons School of Dentistry San Francisco

**District Meetings**—On September 21 the Third District Branch of the Medical Society of the State of New York held its annual meeting in Troy Among the speakers were Col Eugene R Whitmore M C U S Army Washington D C on Postwar Problems in Tropical Diseases in Civilian Practice The fifth district branch devoted its September 22 meeting to a symposium presented by the department of obstetrics of the Syracuse University College of Medicine In addition Dr Leon H Griggs Syracuse among others discussed 'Common Diseases of the Skin' The sixth district branch will be addressed on September 28 among others by Lieut Herbert Brown Jr (MC), U S Naval Reserve, on Physiologic Considerations in the Treatment of Burns Dr Richard B Cattell Boston among others will address the seventh district branch in Rochester September 30 on Recent Improvements in Biliary Tract Surgery

## New York City

**Personal**—Dr George G Ornstein has been appointed professor of medicine and attending physician (chest diseases) at the New York Polyclinic Medical School and Hospital—Barry G King Ph.D., recently resigned as assistant professor of physiology at Columbia University College of Physicians and Surgeons to accept a commission as lieutenant in the U S Naval Reserve as a physiologist assigned to medical research at the Naval Research Institute National Naval Medical Center Bethesda Md—Dr James C Magee, major general U S Army formerly surgeon general who just returned from a trip to the troops in England and North Africa lectured before the faculty and students of the New York University College of Medicine recently on military medicine with special reference to tropical diseases—Gordon T Broad assistant to Dr Edward M Bernecker commissioner of hospitals has been appointed a deputy commissioner Mr Broad has been in city service since 1912 and since February of this year has acted as food administrator for city institutions

**Postgraduate Course in Industrial Medicine**—To meet the continued wartime need for a general training course for physicians engaged in or desiring to enter into industrial practice, the Long Island College of Medicine Brooklyn has announced its second postgraduate course in industrial medicine to be given in Brooklyn November 1-12 The course designed for physicians has been limited to fifty A limited number of others will be permitted to attend as auditors Dr Thomas D Dublin associate professor of preventive medicine and community health which is sponsoring the course will be in charge The program will consist of afternoon and evening lectures at the college and morning clinics in the medical departments or nearby industrial plants Assisting Dr Dublin in the formulation and development of the course are Dr Cassius H Watson medical director of the American Telephone and Telegraph Company alumnus and trustee of the college Dr John J Wittmer medical and personnel director of Consolidated Edison Company an alumnus and Alired R Crawford AB assistant to the dean in the department of administration The general topics of the lecture sessions various phases of which will be discussed include 'The Physician in Industry and His Field Planning an Industrial Medical Department' Evaluating the Health Status of a



Worker, "Occupational and Nonoccupational Incapacitation," "Community Factors in the Health of the Worker," "Industrial Accidents," "Protecting the Place of Work," "Surgical Management of Industrial Injuries," "Industrial Toxicology and "Special Wartime Problems in Industrial Medicine."

## OHIO

**Health Supervisor Wins Howell Medal**—Dr. Lyman W. Childs, Orlando, Fla., health supervisor in the Cleveland Public Schools from 1910 to 1935, has been announced as the recipient of the William A. Howell Medal for distinguished service in the field of school health. The award will be presented to Dr. Childs at the annual meeting of the American School Health Association in New York, October 11. Dr. Childs retired in 1935.

**Academy of Medicine Opposes Medical Care Plan**—On August 6 the board of directors of the Academy of Medicine of Cleveland at a special meeting voted their opposition to the proposed medical service plan and went on record that it will actively oppose such a plan. The medical service plan is one instigated by the Cleveland Medical Service Association, which was set up in 1942 to assume leadership in drawing up a plan for citizens of Cuyahoga County after a vote of the academy had rejected the approval of such a plan (*THE JOURNAL*, Dec. 19, 1942, p. 1328). In presenting a statement, the board of directors of the Academy of Medicine of Cleveland said that it has become increasingly apparent that the majority of the practicing physicians of Cuyahoga County are definitely opposed to the medical care plan instituted by the Cleveland Medical Service Association. Medical service plans have twice been defeated by vote of the academy membership, it was stated. This position is supported by the majority of non-members of the academy residing in the county.

## PENNSYLVANIA

**State Medical Meeting**—The ninety-third annual session of the Medical Society of the State of Pennsylvania will be held at the Bellevue-Stratford Hotel, Philadelphia, October 5-7, under the presidency of Dr. Robert L. Anderson, Pittsburgh. Among the speakers on the program will be

Robert A. Hingson Jr., assistant surgeon, U. S. Public Health Service, An Analysis of the First Ten Thousand Obstetric Cases Managed with Continuous (caudal) Analgesia with Report of Author's First Twelve Hundred Cases  
 Drs. Michael G. Wohl and Harold F. Robertson, Philadelphia Bromide Intoxication—Some Observations on Its Treatment with Sodium Chloride and Desoxycorticosterone  
 Dr. John B. Montgomery, Philadelphia, The Role of Gynecologic Lesions in Uteral Obstructions  
 Dr. Vincent T. Curtin, Scranton, The Use of Blood Plasma Intraperitoneally in the Treatment of Gastroenteritis in Infants  
 Drs. Paul M. Rike, Duquesne, and Frank J. Gregg, Pittsburgh Cardiovascular Survey of Supervisors  
 Dr. Louis H. Clerf, Philadelphia Prevention of Bronchiectasis  
 Dr. James M. Alesbury, Philadelphia Obstetric Deaths Resulting from Operative Deliveries Other than Cesarean Section  
 Dr. George F. Cahill, New York Hormonal Tumors of the Adrenal Gland  
 Dr. Francis C. Grant, Philadelphia Surgical Treatment of Cranial Trauma  
 Dr. Joseph A. Hepp, Pittsburgh, Menopausal Management—A Further Report on Diethylstilbestrol  
 Dr. Thomas M. Durant, Philadelphia Thiocyanate Therapy in Hypertension  
 Dr. Burton Chance Jr., Philadelphia Evaluation of the Kenny Method in Chronic Infantile Paralysis  
 Dr. Robert L. Moorhead, Brooklyn Complications of Mastoiditis  
 Dr. Eugene P. Pendergrass, Philadelphia, The Roentgen Diagnosis of Some of the Lesions Around the Diaphragm  
 Dr. Charles M. Hower, Bloomsburg, The Problems of the Rural Surgeon  
 Dr. Leo H. Cripe, Pittsburgh, Allergic Dermatitis—Diagnosis and Treatment  
 Dr. Norman M. MacNeill, Philadelphia Infant Feeding in a Rationed Era  
 Dr. Walter Hughson, Abington, Hearing Aids  
 Dr. Wendell J. Stainsby, Danville, The Treatment of Pneumonia in General Practice  
 Dr. Thomas A. Shallow, Philadelphia, The Surgical Aspect of Acute Pancreatitis  
 Dr. Charles F. Kutscher, Pittsburgh, Retinal Arteriolar Changes in Sclerosis and Hypertension  
 Drs. Robert Denison Harrisburg and Joseph C. Yaskin, Philadelphia, Medical and Surgical Masquerades of the Depressed States  
 Drs. Henry D. Rentschler and John W. Settle Jr., Sayre, Treatment of Impaired Hearing by Radiation of Excessive Lymphoid Tissue in the Nasopharynx  
 Dr. David M. Davis, Philadelphia, The Absence of Pain in Serious Urologic Disease  
 Dr. Wallace M. Yater, Washington, D. C., Selection and Interpretation of Laboratory Procedures  
 Dr. W. Wallace Dyer, Philadelphia, Masked Hypoglycemia  
 Drs. Francis D. W. Lukens and Francis C. Dohan, Philadelphia Remission of Diabetes Mellitus  
 Surg. Gen. Norman T. Kirk, U. S. Army The Adaptation of War Surgery to Civil Surgery  
 Dr. Guy A. Hunt, Butler, Glaucoma—Early Signs and Symptoms  
 Dr. John C. Ullery, Philadelphia, Continuous Spinal Anesthesia in Gynecology and Obstetrics

Dr. Henry K. Sangree, Philadelphia Prostatic Carcinoma Endocrine, Roentgenologic and Surgical Therapy  
 Dr. Adolph G. DeSanctis, New York, Sulfonamides in Pediatric Practice  
 Capt. Jack Edward Berk, M. C., A. U. S. Trends and Shortcomings in the Approach to Gastrointestinal Diseases, a Review Based on Experience in an Army General Hospital  
 Dr. Max M. Strum, Bryn Mawr, Post Transfusion Hemolytic Reactions  
 Louis Schwartz, medical director, U. S. Public Health Service, Washington, D. C., New Developments in Industrial Dermatitis  
 Dr. James A. Cown Jr., Pittsburgh The Principles of Preparation for and the Management of Elective Surgery in Children  
 Dr. Ross Golden and Arthur P. Stout, New York, Correlation of the Roentgenologic and Pathologic Aspects of Carcinoma of the Stomach

A special general assembly will be held Wednesday evening on the art and science of therapeutics at which the speakers will be Drs. Abraham H. Aaron, Buffalo, Calvin M. Smyth Jr. and Hobart A. Reimann, Philadelphia, and Harold B. Gardner, Pittsburgh.

## Philadelphia

**Tribute to the Late Martha Tracy**—The Alumnae Association of the Woman's Medical College of Pennsylvania announces the publication of a series of addresses delivered at a service in memory of the late Dr. Martha Tracy, dean of the college from 1918 to 1940. Copies of the booklet may be obtained from the alumnae office at the Woman's Medical College. The price is \$1 per copy. Proceeds will be placed in the Tracy Memorial Fund.

**The Alvarenga Prize Lecture**—Ernest C. Faust, Ph.D., professor of parasitology and acting head of the department of tropical medicine, Tulane University of Louisiana School of Medicine, New Orleans, will deliver the annual Alvarenga Prize Lecture of the College of Physicians of Philadelphia on October 13. His subject will be "Some Modern Conception of Amebiasis." In July Dr. Faust was announced as the winner of the Alvarenga Prize for "outstanding contribution to our knowledge of parasitology and tropical medicine" (*THE JOURNAL*, August 7, p. 1024).

## VIRGINIA

**Special Society Election**—Dr. Joseph E. Barrett, Marion, was chosen president of the Mental Hygiene Society of Virginia at its meeting in Roanoke recently. Mabel F. Martin, Ph.D., is the secretary and Frank W. Gwaltney, Richmond, executive secretary. A feature of the recent meeting was a public meeting devoted to a discussion of alcohol, a state and psychiatric problem, by Hunter Miller, formerly state senator, and Dr. Robert V. Seliger, Baltimore.

**Personal**—Dr. Emmett Triple, Gatewood, Richmond, was elected president of the Virginia Society of Ophthalmology and Otolaryngology recently. Dr. Samuel D. Sturkie, former health director for the Marion-Bristol area, has been named director of public welfare in Lynchburg. He succeeds the late Mosby G. Perrow, Ph.D.—A portrait of Dr. Rosier W. Miller, past president of the state medical society, was recently unveiled at a regular meeting of the Richmond School Board. Dr. Miller has been a member of the school board for nearly twenty-three years and has served as chairman since 1928.—Elias W. Langs, assistant surgeon, U. S. Public Health Service, has been appointed health officer of Norfolk County.

**State Medical Meeting**—The Medical Society of Virginia will hold its annual meeting at the Hotel Roanoke, Roanoke, October 25-27 under the presidency of Dr. John M. Emmett, Clifton Forge. Among the speakers will be

Dr. William M. Bickers, Richmond, Functional Uterine Bleeding  
 Dr. Charles Stanley White, Washington, D. C., Demerol—A Synthetic Morphine Substitute  
 Dr. Matt O. Burke, Richmond, Medical Progress During the Last Sixty Years  
 Dr. Charles J. Frankel, Charlottesville, The Kenny Treatment for Poliomyelitis—One Year of Observation  
 Dr. David C. Wilson, Charlottesville, The Treatment of Alcoholic Addicts  
 Brig. Gen. Charles C. Hillman, M. C., U. S. Army, Medical Operations in the Pacific Theaters  
 Dr. Ernest L. Copley, Richmond, Agranulocytic Angina—A Drug Hazard  
 Dr. Frank S. Johns, Richmond, The Treatment of New Growths at the Rectosigmoid  
 Dr. Charles L. Harrell, Norfolk, Tuberculosis in the Aged  
 Lieut. Col. Ernest T. Trice, M. C., A. U. S., The Continuance of Symptoms After Surgery of the Bile Tract  
 Dr. Eugene L. Lowenberg, Norfolk, Femoral Vein Ligation in the Treatment of Pulmonary Embolism Due to Femoral Thrombophlebitis  
 Capt. Don S. Knowlton (M.C.), U. S. Naval Reserve, Subject not announced  
 Capt. John O. Owsley (M.C.), U. S. Navy, Subject not announced  
 Dr. Randolph H. Hoge, Richmond, Pelvic Pain  
 Dr. Martin L. Dreyfuss, Clifton Forge, The Diagnostic Value of the Technique of the Aspiration Biopsy of Sternal Marrow  
 Dr. Harry H. Henderson, Richmond, The Prevalence and Danger of Rickettsial Diseases  
 Dr. William R. Jordan, Richmond, Diabetic Coma

Dr. Dean B. Cole and J. June But Richmond A. Hmatic Atlee  
to Stimulating Program  
D. John L. Kaul North Acute Surgical Conditions Compli-  
cating Malnutrition  
D. Harvey B. Hane and I. S. Larson Th D Richmond Recent  
Advances in the Pharmacology of Nicotine  
D. William B. Mellware and Lett J. White Petersburg Reports  
and Observations on About Two Hundred Cases of Whooping Cough  
Dr. Julian K. Beckwith Clinton Forge The Diagnosis and Medical  
Treatment of Pulmonary Embolism  
Dr. Everett I. Evans Richmond Plastic Surgery of Severe Burn

Special society luncheons will be held the same day of the  
American College of Physicians Virginia Section Virginia  
Obstetrical and Gynecological Society Virginia Orthopedic  
Society Virginia Pediatric Society Virginia Radiological  
Society and Virginia Urological Society

## WEST VIRGINIA

**Personal**—Dr. Jerome I. Andes former instructor in the  
West Virginia University School of Medicine Morgantown  
and recently medical director for the Hercules Powder Com-  
pany at Lawrence Kan has been appointed director of the  
student health center at the university to succeed Dr. Roy R.  
Summer who resigned to enter private practice at Charleston  
(THE JOURNAL July 24 p. 885)—Dr. Harry A. Garrison  
medical superintendent of the Spencer State Hospital Spencer,  
has been appointed superintendent of the Weston State Hos-  
pital, Weston. He succeeds Dr. John E. Offner Weston who  
was recently named state health officer—Robert F. Rooth  
president of the board of control of the state department of  
public assistance has been named director of the department  
for the term ending July 1, 1948. He succeeds Homer W.  
Hanna.

**Positions in State Health Department Available**—Posi-  
tions now available in the West Virginia Health Department  
for which applications are being accepted together with salary  
range are

Public health nurse (class A)	\$1 680-1 980
Public health nurse (class B)	1 500-1 860
Public health nurse trainee	1 380-1 500
Graduate nurse	1 380-1 620
Junior engineer	2 160-2 640
Chemist	1 620-2 100
Sanitarian	1 620-2 100
Sanitarian trainee	1 200-1 500
Junior bacteriologist	1 920-2 400
Junior virologist	1 920-2 400
Technical laboratory assistant	1 500-2 100

Age limits and residence in West Virginia have been waived  
for consideration of applicants for these positions. Appoint-  
ments may be made at a salary above the minimum. Addi-  
tional information may be obtained from the West Virginia  
Merit System Council 212 Atlas Building Charleston 1.

## GENERAL

**National Safety Congress**—Stop Accidents—Speed Lim-  
its will be the theme of the thirty-second National Safety  
Congress and Exposition to be held at the Sherman Hotel  
Chicago October 5-7. Sessions will also be held at the Mor-  
rison and LaSalle hotels.

**Council of International Relations Created by Hospi-  
tal Group**—A Council of International Relations designed to  
promote better hospital care for the people of the world was  
established by the board of trustees of the American Hospital  
Association at a meeting in Buffalo on September 12. The  
council will cooperate with Nelson Rockefeller coordinator of  
the Office of Inter-American Affairs and plans to assist in  
maintaining reciprocal relations with all hospital groups in the  
world. It will concern itself with matters affecting the coop-  
eration of hospitals in all countries and endeavor to promote  
better hospital care for the peoples of the world through the  
coordination of national hospital associations and the exchange  
of information on matters of hospital administration. The asso-  
ciation also has created a postwar planning commission on  
hospital care to study present and prospective needs for hos-  
pital care and the present practices policies and progress of  
voluntary private and public institutions caring for the sick.

**Science Writers Plan Medical Publication**—A special  
publication committee has been appointed by the National  
Association of Science Writers to explore the possibilities of  
founding an official journal for the association to bring the  
advances of science and medicine to a wide layman audience.  
Serving on the committee will be Robert D. Potter New  
York science editor of the *American Weekly* William Lau-  
rence of New York *Times* Howard Blakeslee of the Asso-  
ciated Press Waldemar Kaempffert of the New York *Times*  
David Dietz Scripps-Howard Newspaper and Lawrence Sal-  
ter of the American Medical Association. Recent committee  
appointments include Mr. Blakeslee as chairman of the pre-

dent's advisory committee Mr. Laurence chairman of the war  
advisory committee and Gobind B. Lal, International News  
Service chairman of the program committee. Officers of the  
association are Mr. Potter, president and Capt. Stephen J.  
McDonough M. A. C. of the Office of the Surgeon General  
of the Army secretary-treasurer.

## LATIN AMERICA

**Health Activities in Latin America**—The establish-  
ment of a cooperative program to promote health and sani-  
tation in the Dominican Republic was provided under an  
agreement August 26, by Dr. George C. Dunham as represen-  
tative of the Institute of Inter-American Affairs and Dr. Dario  
Contreras secretary of the Department of State for Health  
and Public Welfare in the Dominican Republic. The agree-  
ment provides for the creation in the department of state for  
health and public welfare of the republic of a special technical  
service to be known as the Servicio Cooperativo Inter-  
Americano de Salud Publica to serve as the agency respon-  
sible for the cooperative program and to constitute a separate  
entity in the department of state for health and public welfare  
and as an integral part of the government. The Institute of  
Inter-American Affairs will furnish a group of persons to be  
known as the field party to collaborate with the secretary of  
state for health and public welfare. Members of the field party  
will be in charge of Dr. Thomas B. Phinizy now chief of the  
party in Costa Rica. The nature and extent of the health and  
sanitation projects will be determined by Dr. Contreras and  
Dr. Phinizy.

**Construction**—Plans have almost been completed for the  
Quinta Normal Health Center in Santiago, Chile, to provide  
services for venereal disease child welfare maternity and tuber-  
culosis. Provisions are also being made for an auditorium that  
will seat 150 persons for desks for 20 visiting nurses and 1  
sanitary engineer with 4 assistants for a milk distributing sta-  
tion and for public baths and laundries. A health center is also  
being planned for Valparaiso, locations for other centers have  
yet to be selected. In Peru new hospitals are under way  
at Iquitos Pucallpa Yurimaguas, San Martin Chimbote and  
Tingo Maria. A health center is being planned at Lima and  
a dispensary at Barranca was begun in July. In Paraguay the  
new building in projects include a health center and ministry  
of health building Asuncion and an addition to the Barrio  
Obrero Hospital general improvements to the National Hos-  
pital de Clinicas and a leprosy preventorium.

**New Health Units**—A cooperative organization has been  
started in Mexico to be known as the Direccion de Cooperacion  
Inter-Americana de Salubridad Publica or D. C. I. S. P. It  
will function as an integral part of the department of public  
health of Mexico and have offices in the department's building.  
Health Centers are also being planned at Encarnacion Villa-  
rica and Concepcion.

**University Project**—The Department of Health of Mexico  
has signed an agreement with the Tulane University of Loui-  
siana School of Medicine New Orleans to establish and main-  
tain a health unit and field training station at Boca del Rio  
Vera Cruz, with a full time resident director and staff. The  
unit will function as a health center for the welfare of the com-  
munity and serve as a training center for physicians named by  
the Mexican department of health or by Tulane University  
with the approval of the Mexican department. Patients in the  
health unit of the city of Vera Cruz and in the hospitals there  
and those obtained through the facilities of the Institute of  
Tropical Diseases and other hospitals in Mexico D. F. and  
clinic patients of Boca de Rio will be available for study.  
Funds to construct and equip the health unit building at Boca  
del Rio will be provided by the Mexican department of public  
health and Tulane University but the department will provide  
funds to operate the health unit as such. Additional expenses  
incurred in connection with the training program for physicians  
chosen at Tulane's suggestion will be paid by the university.

**New Medical Organization**—A new medical society organ-  
ized in Asuncion Paraguay to be known as the El Circulo  
Paraguayo de Medicos held its first general meeting on July  
20. Dr. Juan Max Boettner was named president and Dr.  
Manuel Riveros vice president.

## CORRECTION

**Robert Collier Page**—In the list of Asuncion Medical  
Examiners in the Medicine and the War section of THE JOURNAL  
of September 4, page 40 under New York the fifth name  
listed should have been Robert Collier Page instead of  
Robert Clinton Page.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Aug 6, 1943

#### The British Medical Association and the Beveridge Scheme

The stand made by the representatives of the British Medical Association against the government proposals has been described in a previous letter (*THE JOURNAL*, July 10, p 759). The discussions with the minister of health are concluded and the next stage is the issue by him of what is called "a white paper" surveying the position. The representatives of the association urged on him that this paper should be confined to a statement of the problems and not commit the government to any solution, thus facilitating frank discussion by the public and the profession. On the minister's ruling the discussions were confined to a consideration of a comprehensive health service available to the whole community. They ranged over a wide field, such as central and local administration, health centers, free choice of doctor, private practice and remuneration. The council of the British Medical Association has reaffirmed certain basic principles laid down in the association's "General Medical Service for the Nation" approved in 1938. 1 The system should be directed to the achievement of health and prevention of disease no less than to the relief of sickness. 2 There should be provided for every one a family doctor of his own choice. Consultants and specialists, laboratory and other auxiliary services, institutional provision when required, should be available through the agency of the family doctor. These recommendations and the following further ones are submitted by the council for consideration by the divisions of the association. The state should not assume control of doctors rendering personal service. It is not in the public interest to convert the medical profession into a salaried branch of government service. Free choice of doctor should be preserved and the state should not invade the doctor-patient relationship. Free choice of doctor should be reinforced by a method of remuneration related to the amount of work done. Consultants and specialists should normally be based on the hospital. For those who wish to be treated in private accommodation, whether part of a hospital or not, private consulting practice should continue as at present. The central administrative body set up for the medical service of the future should be responsible for all civilian health services. The minister to whom this body is responsible should be advised on medical matters, including personnel, by a medical advisory committee representative of the medical profession. Locally, new administrative bodies, responsible to the central authority, should cover wide areas and should be representative of the community served and, in appropriate numbers, of the local profession and voluntary hospitals.

#### British Surgeons Observe Russian Medical Services

A mission of British surgeons, sent to Russia by the British Council and the Medical Research Council (*THE JOURNAL*, July 10, p 752), has returned favorably impressed by the Russian medical institutes and the medical services of the army. The mission included Surgeon Rear Admiral Gordon-Taylor, consulting surgeon to the Royal Navy, Mr E Rock Carling, consultant adviser to the Ministry of Health, Major General D C Monro, consulting surgeon to the British army, and Mr R W Watson-Jones, civilian consultant in orthopedic surgery to the Royal Air Force. Two American surgeons, Col Elliott C Cutler and Lieut Col Loyal Davis, and a Canadian surgeon, Prof Wilder Penfield, accompanied the mis-

sion. The general conclusions reached by the mission were given at a reception held at the offices of the British Council. "We are convinced that the Russian soldier is in thoroughly good hands," said Mr Carling. "Many of those hands are women's hands. We came away with tremendous admiration for the Russian women and particularly for the Russian nurses. At the front we found that they could turn their hands to any thing. In a forest we came to a hospital which the nurses were enlarging in their spare time, cutting down timber, digging the ground, building the wards. After dinner they gave an extremely good cabaret show."

The organization of the Russian medical services was first rate and thoroughly well adapted to the enormous number of wounded. Their surgical work also was good. They appeared to follow the same principles as British surgeons. The system of blood transfusion was most impressive. It was carried out on a colossal scale in the best way. The arrangements for the collection of blood were beyond criticism. The enormous numbers dealt with was shown by the fact that one Moscow institution handled 500 to 800 cases a day. Ninety per cent of the donors were women, who were bled up to seven times a year. They were paid but voluntarily returned 80 per cent of what they received for war purposes. Where blood was needed it was never lacking. It was transported to the front in big airplanes and then in smaller ones to outlying parts. Airplanes were used behind the German lines for carrying wounded partisans to concealed small hospitals. The Russians appeared to have solved the problem of getting special cases into the hands of specialists as soon as possible. Even in advanced hospitals 8 to 10 kilometers from the front different types of cases were segregated in the hands of junior specialists, to be passed back to the special hospitals. Of the doctors now being trained in Russia 90 per cent are women, compared to the normal 50 per cent. Seventy per cent of the wounded recover so completely as to return to the battlefield. Each bottle of blood for the wounded is labeled with the donor's name, which has led to romances between the donor and the recipient.

#### The Prevention of Venereal Diseases

As reported in previous letters, the increase in venereal diseases due to the war has brought about a public discussion of the subject unparalleled in this country before. In his presidential address to the York diocesan conference the archbishop of York stated that there has been an increase of 120 per cent in syphilis, though the proportion of all forms of venereal disease was smaller for this war than for the last. The rise in syphilis had been mainly among women. The church must help in prevention by giving clear and definite teaching. Increased venereal disease was a symptom of increased moral laxity. The church had always condemned promiscuous intercourse but at the present day there were many who saw no harm in it if the consent of both parties was given. Some advocated compulsory notification of the disease. He thought universal compulsory notification impossible. This would tend to drive the disease underground, as the patient would delay consulting the doctor who would have to notify the authorities. But if the disease could not be checked it might be desirable to notify it in certain localities. He approved of the compulsory treatment of those proved to be centers of contagion, as adopted by the Ministry of Health. He also thought it right that instruction should be given as to how to avoid venereal disease provided this was accompanied by the statement that there was no safety except in avoiding promiscuity. Care should be taken to provide recreation in all isolated camps. More women police were required to deal with girls who hung about camps pestering the men. More intelligent teaching of the Christian view of sex was needed.

### Huge Profits from the Sale of a Proprietary Pill

At the annual general meeting of Bechmans Pills Ltd the chairman reported that for the eleventh successive year there were increased profits. For the past year they amounted to \$6,000,000 which was \$470,000 up on the previous year, in spite of difficulties created by the war. The raw material position was more difficult and quotas and other restrictions militated against sale expansion. The huge profits indicate the extent to which the public treats itself for constipation and even in its absence for symptoms which it imagines will yield to an aperient.

### BRAZIL

(From Our Regular Correspondent)

July 30 1943

### Puerperal Sepsis

Dr João M. Pereira, assistant physician of the Arthur Bernardes Maternity of Rio de Janeiro has published a study of the incidence of puerperal sepsis in 1,000 consecutive deliveries performed in that hospital at the same time presenting recent data from other hospitals of Brazil and South America. Dr Pereira emphasizes that puerperal sepsis is rather prevalent in Rio de Janeiro where many pregnant women are delivered by low standard midwives particularly in the suburbs. The mean annual maternal mortality rate for the decade 1932-1941 is 6.9 per thousand live births and out of the total of maternal deaths puerperal septicemia represents the high average of 46.8 per cent. In 1942 puerperal septicemia and infection was registered as the cause of 126 deaths or 41.5 per cent of the maternal deaths (1 death in 321 live births as against 1 in 282 in 1941). Even in the hospitals puerperal sepsis is now not uncommon. In 1911 Dr Fernando Magalhães, professor of obstetrics at the University of Rio de Janeiro began a campaign against intrauterine manipulation and excessive vaginal douching and at the same time recommended the routine use of Mouchotte metallic drains.

Dr Pereira emphasizes that the Arthur Bernardes Maternity is a free hospital that receives childbearing women from its antepartum clinic as well as directly from the homes. Most come through the Municipal Emergency Medical Service, staffed in part by medical students who do not refrain sufficiently from vaginal examination before sending the patients to the maternity. In this maternity its director Dr Clovis Correa da Costa, is following the policy of enforcing strict measures to prevent infection primarily as a medical educational campaign. Here all patients presenting a temperature above 38 C (100.4 F) after the first twenty-four hours persisting for more than one day and showing positive signs of infection (fever, uterine subinvolution changes in the lochia) with absence of another intercurrent infection are considered infected. Also considered cases of infection are the atypical ones in which the careful examination of all organs does not disclose the origin of the fever.

As a general prophylactic measure in the antepartum clinic all the genital tract or infection are carefully treated. After entering the hospital the patients are subjected to the most rigorous aseptic care. During labor prophylactic vaginal instillations are routinely used (2 per cent mercurochrome solution every four hours) a procedure that is not yet generalized in the Brazilian maternities.

According to the data from a paper published a few months ago by Dr H. Duek, also an assistant of this maternity, the rate of infected cases was immediately halved (from 6.6 per cent to 3.3 per cent) after these routine prophylactic instillations had been adopted. Also as a prophylactic measure in the cases in which examination of the placenta discloses the retention of cotyledons or fragments of the membranes a manual uterine control is done after the plan first suggested by Gheorgiu of Bucharest followed by an intrauterine washing with boiled water. A special paper on the good results of this technique will

be soon presented by Dr Rezende Figueiredo. Still as a prophylactic measure in the cases presenting larger possibilities of infection (manual deliveries, internal versions, protracted cesareans, difficult forceps deliveries) sulfonamides and estrogens are used associated or not.

As a comparison Dr Pereira states that in the Maternidad del Salvador in Santiago, Chile, data relating to 1940 and 1941 show 889 cases of infection in 3,352 deliveries (26.5 per cent) for the former and 908 cases of infection in 3,718 deliveries (24.4 per cent) for the latter year. Recent data from the maternity service of Prof. Peralta Ramos of Buenos Aires, Argentina, present a rate varying between 10 and 15 per cent of infections. In the Buenos Aires maternity directed by Dr Palacios Costa the latest information gives only 4.5 per cent of infections. In the maternity service of Dr Gonzales in Buenos Aires the data for the last two years are 4.60 and 4.72 per cent. At the Laranjeiras Maternity under the direction of Dr Fernando Magalhães, professor at the University of Rio de Janeiro, the rate for the last year is 8.3 per cent of cases of infection with 0.6 per cent of mortality. In the 1,000 deliveries presented in Dr Pereira's paper, from the Arthur Bernardes Maternity under Dr Clovis Correa da Costa, there were only 42 cases of puerperal sepsis, what corresponds to the general rate of 4.2 per cent for the whole group without any death. But the important point is the sharp decrease in the rate, as a response to Dr Correa da Costa's campaign: 4.88 per cent for the year 1940, 4.72 for 1941 and 0.67 for 1942.

## Marriages

RICHARD BEDON JOSEY, Columbia S. C. to Miss Norma Katherine Vanderlip at Niagara-on-the-Lake, Ont., Canada recently.

EDWIN BURWELL JONES WHITMORE, Jr., Peterburg, Va. to Miss Claudine Price Burkholder of Richmond, July 31.

JOSEPH CULLEN HALL, Winston-Salem, N. C. to Miss Mary Catherine Cheek of Graham at Saxapahaw, August 21.

SOLOMON MURRAY RAUCHWERGER to Miss Vanda A. Martin both of Oteen, N. C. in Asheville, N. C. July 15.

SAUEL WESTBROOK HATCHER to Miss Dorothy Marie Bonner both of Jersey City, N. J. June 10.

NICHOLAS G. BUTLER, Hartford, Conn. to Miss Helen Regma McDermott of Bridgewater, Mass. July 20.

LAWRENCE RODNEY RODGER, Amarillo, Texas, to Miss Ivy Lorna Piper of Decherd, Tenn. August 6.

JOHN ALLISON HOLMES, Lawrence, Kan. to Miss Elizabeth Jane Ames of Vernon, N. Y. recently.

ANTHONY J. FREDERICK, Columbus, Wis. to Miss Roshara Bussewitz of Horicon, August 21.

SPENCER ALLEN TRUEX, Jackson, Tenn. to Dr. Barbara Mae Binkley of Nashville, recently.

RICHARD VERNON MAXWELL to Miss Anna L. Stolzenberger both of New York, July 31.

HENRY F. BERCHTOLD to Miss Florence Wilcoxson both of Springfield, Ill. August 14.

ROBERT A. CRAIG, Gary, Ind. to Miss Mildred McGarran of Indianapolis, July 10.

CARRIE J. ANDERSON to Mr. Charles Robbins both of Grand Junction, Colo. June 30.

CARL R. GREEN to Miss Evelyn Walker both of Morristown, Tenn. August 3.

LOUIS F. KRUHREIN to Miss Anna Irene Zirkler both of Baltimore, August 18.

CHARLES E. BRANCH to Miss Edna Kennedy both of Piper City, Ill. August 29.

LEON S. EISENMAN, Chicago, to Miss Ida Weinstein in New York, recently.

MOSES BENMOSECHE to Mrs. Gladys Goodman both of New York, in August.

RICHARD W. DRIVEY to Miss Elaine Thies both of Waterloo, Iowa, June 10.

## Deaths

**Elias Joseph Marsh & Piterson, N J**, Columbia University College of Physicians and Surgeons, New York, 1900, president of the Medical Society of New Jersey, 1942-1943, formerly second vice president and for many years treasurer in 1921 president of the Passaic County Medical Society, served as president of the New Jersey Sanitary and Health Association and the Harvard Club of New Jersey, member of the House of Delegates of the American Medical Association in 1903, member of the Academy of Medicine of Northern New Jersey and the Robert McKean Medical History Club, specialist certified by the American Board of Ophthalmology, a captain in the medical corps of the U S Army during World War I and later a lieutenant colonel in the medical reserve corps not on active duty, served as senior assistant surgeon at the Herman Knapp Memorial Eye Hospital, New York, surgeon emeritus, Paterson Eye and Ear Infirmary, consulting surgeon to the Paterson General Hospital and the Valley View Sanatorium, aged 68, died in the Neurological Institute of New York, September 11, of injuries received in a fall the previous day.

**Twigg Brooks Wiggin, Janesville, Wis**, College of Physicians and Surgeons of Chicago, 1886, member of the Illinois State Medical Society, professor of physiology at the American Dental School, Chicago, from 1889 to 1894, professor of physiology and general pathology at the Northwestern University Dental School, Chicago, from 1894 to 1924, professor of physiology at his alma mater, now known as the University of Illinois College of Medicine, from 1896 to 1899, professor of microscopic and chemical diagnosis from 1899 to 1901, adjunct professor of practice of medicine and clinical medicine from 1901 to 1908 and professor of physical diagnosis from 1908 to 1912, member of the associate staff of the Cook County Hospital, Chicago, from 1906 to 1908, author of "Outlines of Physiology," 1903, and "Lectures on Pathology," 1905, aged 78, died, August 23, of coronary thrombosis.

**Meyer K Amdur, Cincinnati, Tomsk Medical Institute, Tomsk, R S F S R**, 1920, member of the Medical Society of the State of Pennsylvania, Southern Psychiatric Association and the American Psychiatric Association, from 1918 to 1920 was a captain in the Russian army in Siberia, formerly on the staffs of the Cleveland State Hospital, Toledo State Hospital, Gallinger Hospital, Washington, D C, and Veterans Administration Facility in Philadelphia and Augusta, Ga, in 1942 resigned as chief of the reconstruction service, Veterans Administration Facility, Coatesville, Pa, to become assistant superintendent and resident physician at the Longview State Hospital, where he died, July 15 of extensive obliterative arterial disease, aged 48.

**Thomas Hubbard, Ashtabula, Ohio**, University of Pennsylvania Department of Medicine, Philadelphia, 1885, specialist certified by the American Board of Otolaryngology, member of the House of Delegates of the American Medical Association in 1904, secretary of the Ohio State Medical Association from 1892 to 1895, president of the Toledo Academy of Medicine in 1906, member of the American Laryngological Association and in 1913-1914 president, member of the American Laryngological, Rhinological and Otolological Society and the American Otolological Society, Inc, formerly on the staffs of the Robinwood, St Vincent's, Toledo and Flower hospitals, Toledo, aged 83, died, July 5, of myocarditis.

**Owen Smith, Portland, Maine**, Medical School of Maine, Portland, 1892, member of the Maine Medical Association, fellow of the American College of Surgeons, past president of the New England Otolological and Laryngological Society, specialist certified by the American Board of Otolaryngology, served on the staffs of the Maine Eye and Ear Infirmary, the Maine General Hospital and the Children's Hospital, Portland, and the Webber Hospital, Biddeford, past president of the board of directors of the Maine School for the Deaf, aged 74, died in Standish, July 29, of aneurysm of the abdominal aorta.

**Ernest Boone Downs, Bath, N Y**, St. Louis College of Physicians and Surgeons, 1915, National University of Arts and Sciences Medical Department, St. Louis, 1917, served as a captain in the medical corps of the U S Army during World War I and with the sanitary corps and Base Hospital of the 90th division, formerly a captain of Company H, 102d Medical Regiment of the New York National Guard at one time on the staff of the Veterans Administration Home, Danville, Ill, and the Veterans Administration Facility, where he died, July 22, aged 53.

**Fritz C Askenstedt** Ⓢ Louisville, Ky, Pulte Medical College Cincinnati, 1889, at one time professor of physical diagnosis, diseases of the chest, pathology and bacteriology at the Southwestern Homeopathic Medical College and Hospital, formerly visiting physician to the Louisville City Hospital, aged 78, died, June 16, of carcinoma of the stomach.

**Chester Clyde Box** Ⓢ Crestview, Fla, Medical Department of Tulane University of Louisiana, New Orleans, 1909, served in the medical corps of the U S Army during World War I, aged 58, died, July 3, of coronary thrombosis.

**Robert Jackson Brown, Iuka, Miss**, Memphis (Tenn) Hospital Medical College, 1907, member of the Mississippi State Medical Association, past president of the North Mississippi Medical Association, aged 65, died, July 12, of chronic myocarditis, bronchitis and endarteritis.

**Fred Burger, Olathe, Kan**, University Medical College of Kansas City, Mo, 1899, for many years director of health and physical education in the Kansas City, Mo, public schools, aged 74, died recently of pulmonary thrombosis.

**Adam McClintic Byrd, Bluefield, W Va**, Medical College of Virginia, Richmond, 1898, member of the West Virginia State Medical Association, aged 74, died in St. Luke's Hospital, July 4, of chronic lymphatic leukemia.

**Walter Joseph Cathrall, Bethlehem, Pa**, Baltimore University School of Medicine, 1901, member of the Medical Society of the State of Pennsylvania, veteran of the Philippine Insurrection, Spanish-American War and World War I, served several terms as coroner of Northampton County, surgeon for the city police department, aged 79, member of the staff of St. Luke's Hospital, where he died, June 23, of senility.

**John Mayo Conley, Oshkosh, Wis**, Northwestern University Medical School, Chicago, 1897, member of the State Medical Society of Wisconsin, medical director of the Wisconsin National Life Insurance Company, for many years served as health officer of the city of Oshkosh, served in the medical corps of the U S Army during World War I, aged 69, on the staff of the Mercy Hospital, where he died, June 7, of carcinoma of the urinary bladder.

**William Benjamin Dangerfield Cooper, Philadelphia**, Temple University School of Medicine, Philadelphia, 1918, also a pharmacist, served on the staff of the Frederick Douglass Memorial Hospital, aged 53, died, June 1, of carcinoma of the adrenal gland.

**John Fred De Courcy, Cincinnati**, Medical College of Ohio, Cincinnati, 1908, served during World War I, aged 59 on the staff of the Good Samaritan Hospital, where he died, July 5 of myocarditis.

**Homer Denman, Baker, Mont**, Jefferson Medical College of Philadelphia, 1904, member of the Medical Association of Montana, aged 72, died, July 15, in the Holy Rosary Hospital Miles City, of cerebral thrombosis and hemiplegia.

**Charles Willard Doty, Beaver Crossing, Neb**, Rush Medical College, Chicago, 1888, Chicago Homeopathic Medical College, 1895, past president of the Seward County Medical Society, formerly a member of the state senate and coroner of Seward County, for many years had served on the pension examining board, aged 82, died, July 13, of carcinoma of the stomach.

**Joseph Patrick Durkin, New York**, Cornell University Medical College, New York, 1931, aged 37, died in Greenwood Lake N Y, June 28.

**John V Eaves, Gaffney, S C**, Chattanooga (Tenn) Medical College, 1897, aged 75, was found dead in his office, June 7.

**Arthur Frank Edwards, Seattle**, L R C P and L R C S of Edinburgh, Scotland, 1897, member of the Washington State Medical Association, contract surgeon in the U S Army for many years a member of the city health department, aged 71, died, June 23, in the Station Hospital, Fort Lawton, of cerebral hemorrhage.

**Carl Abraham Fjelstad, Spokane, Wash**, University of Minnesota College of Medicine and Surgery, Minneapolis, 1892, aged 71, died recently of cerebral hemorrhage.

**Francis Eugene Gibbons, Presidio, Texas**, Northwestern University Medical School, Chicago, 1898, member of the State Medical Association of Texas, in 1927 was elected the first mayor of McCamey, at one time health officer of Fergus County, acting assistant surgeon in the U S Public Health Service, aged 72, died recently of uremia.

**Robert Thomas Gibbs, Mexico Mo**, Missouri Medical College, St. Louis, 1884, aged 92, died, June 22, of senility.



**Archibald H Graham** Philadelphia Jefferson Medical College of Philadelphia 1898 aged 67 formerly on the staffs of the Children's Hospital and the Jefferson Hospital where he died June 20 of cerebral hemorrhage

**Nemorin Guilhempe**, New York College of Physicians and Surgeons Boston 1917 Boston University School of Medicine, 1919, aged 61 died June 10

**Boleslaw Robert Gurgas** Buffalo University of Buffalo School of Medicine 1921 member of the Medical Society of the State of New York served during World War I, member of the Selective Service System on the staffs of the Emergency Hospital of the Sisters of Charity and the Buffalo Hospital of the Sisters of Charity aged 47 died in Evans, N Y, June 10 of dilatation of the heart

**Lambert John Hargarten** Milwaukee Wisconsin College of Physicians and Surgeons, Milwaukee 1904 member of the staffs of St Joseph's, St Anthony's, St Michael's and Misericordia hospitals aged 70, died June 21 of chronic myocarditis

**James Albert Harris**, Jonestown Pa Jefferson Medical College of Philadelphia 1896 aged 72 died in the Good Samaritan Hospital Lebanon, June 7 of chronic myocarditis

**Virgil O Harvard**, Arribi Ga Southern Medical College Atlanta 1897 member and past president of the Medical Association of Georgia, aged 65 died, June 26 of hypertensive heart disease

**Thomas A Hathcock**, Norwood N C University of Maryland School of Medicine Baltimore 1893 member of the Medical Society of the State of North Carolina served as a major in the medical corps of the U S Army during World War I member of the staff of the Yarkin Hospital Albemarle aged 77 died June 16 in the Memorial Hospital Charlotte of cerebral hemorrhage and cirrhosis of the liver

**Frank J Higgins**, Philadelphia University of Pennsylvania Department of Medicine Philadelphia 1895 formerly on the staffs of St Joseph's and St Mary's hospitals aged 70 died in the Hospital of the Woman's Medical College of Pennsylvania June 14 of pneumonia

**Frank Edwin Hill** & Muncie Ind Medical College of Ohio Cincinnati 1890 a member of the staff of the Ball Memorial Hospital, where he died, July 15 of cerebral hemorrhage aged 81

**Clyde Toney Hockett**, Enterprise Ore Willamette University Medical Department Salem 1904 member of the Oregon State Medical Society veteran of the Spanish-American War and World War I, served three terms as a member of the state legislature for many years member of the school board and city council medical director of the Enterprise Hospital aged 65 died, June 11, of coronary thrombosis

**Urial G Holloway**, Troy, Ky University of Louisville Medical Department, 1879, president of the local bank aged 90 died in the Woodrord Memorial Hospital, Versailles July 14 of pneumonia

**John Musser Holmes** Monticello Ill, College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois 1902 member of the Illinois State Medical Society secretary and past president of the Piatt County Medical Society aged 75 on the staff of the John and Mary E. Kirby Hospital where he died June 10, of coronary thrombosis

**Thomas Allison Horine**, Brighton, Ill St Louis Medical College 1879 member of the Illinois State Medical Society served as mayor and president of the board of education of Brighton formerly on the staffs of the Alton Memorial and St Joseph hospitals Alton aged 84 died July 15 of chronic hemorrhage

**Henley Harvey Hubbard**, Boswell Ind Indiana University School of Medicine Indianapolis 1911 member of the Indiana State Medical Association served during World War I formerly coroner of Benton County, aged 56 died July 4 in St Elizabeth Hospital LaFayette, of cerebral hemorrhage

**Robert Virgil Huggins**, Columbus Ohio Pulte Medical College, Cincinnati 1891 aged 74 died July 23, of pneumonia

**Vincent Ippolito** Beaumont Texas University of Texas School of Medicine, Galveston 1927 member of the State Medical Association of Texas began active duty as a captain in the medical corps of the Army of the United States Sept. 25 1942 and was assigned to Camp Polk, La honorably discharged in March 1943 aged 39 died July 15 of a self inflicted bullet wound

**Edward Pelham Kerper**, Harrisburg Pa University of Pennsylvania School of Medicine, Philadelphia, 1919, aged 47 died, June 23 of heart disease

**William T Kimsey**, Blairsville, Ga Atlanta Medical College 1898 aged 70 died, June 1

**Martin Edward Klingler** & Garrett, Ind Fort Wayne College of Medicine 1904, county chairman of the procurement and assignment board, medical director of The Clinic president of the Chamber of Commerce, aged 67, died, June 19 in the University Hospital Ann Arbor, of coronary thrombosis and pulmonary atelectasis

**George Hyde Krall**, Philadelphia University of Pennsylvania Department of Medicine Philadelphia 1895, for many years a member of the medical department of Sharp and Dohme, Inc aged 71 died, in Lansdowne, Pa, June 21, of carcinoma of the apex of the left lung

**Derk B Lanting** & Grand Rapids Mich, College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois, 1901, on the staffs of the Blodgett Memorial and St Mary's hospitals, aged 69, died, June 17, of angina pectoris

**Flurence William McCarthy**, North Bangor N Y, University of Vermont College of Medicine Burlington, 1904, member of the Medical Society of the State of New York, president of the board of education, served as examining physician for the draft board of Malone during World War I for many years mayor on the staff of the Alice Hyde Hospital Malone aged 69, died, July 18 of heart disease

**William H McCauley** Sutton W Va College of Physicians and Surgeons Baltimore 1888 member of the West Virginia State Medical Association health officer of Sutton, aged 83, died July 2, of coronary thrombosis

**William Irvin McFarland**, Hebron Neb John A Creighton Medical College Omaha 1905 member of the Nebraska State Medical Association at one time health officer of Republic County Kan owner of the Blue Valley Hospital aged 66 died July 7 of heart disease

**William Jefferson McGowan**, Paducah Texas Baylor University College of Medicine, Dallas, 1905 member of the State Medical Association of Texas in 1934 served as vice president of the Hardeman-Cottle-Foard-Motley Counties Medical Society, aged 69, died recently of nephritis and arteriosclerosis

**Theophilus Weeks Madden** & Collingswood N J College of Physicians and Surgeons Baltimore, 1898, past president of the Camden County Medical Society, school physician, aged 67, died, June 29, in the Burlington County Hospital, Mount Holly, of coronary thrombosis and arteriosclerotic heart disease

**J George Mannhardt**, Galion Ohio University of Wooster Medical Department Cleveland 1904 health commissioner of Galion at one time coroner of Crawford County, aged 65 died, July 20 of coronary thrombosis

**Leo Bernard Meyer**, New York, Columbia University College of Physicians and Surgeons, New York 1898, fellow of the American College of Surgeons served as a major in the medical corps of the U S Army during World War I served on the staffs of the Mount Sinai, Beth Israel, Svidenham and Montefiore hospitals, aged 68 died July 3

**Abner Haven Middleton**, Cable, Ohio, Homeopathic Hospital College, Cleveland 1887, formerly administrator of old age pensions in Champaign County, served on the staff of the Champaign County Hospital, Urbana, aged 80 died July 7 of heart disease

**Katherine De Witt Miesse**, Flushing N Y Woman's Medical College of Pennsylvania, Philadelphia 1889 member of the Medical Society of the State of Pennsylvania, aged 89 died, July 27 of cerebral hemorrhage

**James Fitzwilliam Myers** & Virginia Ill Medical Department of Tulane University of Louisiana New Orleans 1903 member of the staffs of the Passavant Memorial and Our Saviour's hospitals, Jacksonville, chief examining physician of the Cass County local draft board number 7 aged 72 died July 2 of coronary thrombosis and arteriosclerosis

**Bernhard Newburger**, Cincinnati Johns Hopkins University School of Medicine, Baltimore 1922 member of the Ohio State Medical Association specialist certified by the American Board of Surgery fellow of the American College of Surgeons on the staffs of the Jewish Hospital and the Cincinnati General Hospital aged 46 died July 16 of coronary thrombosis



**James Lovelace Parkes**, Conehatta Miss, University of Louisville (Ky) Medical Department, 1906, formerly associated with the Indian Service, served overseas during World War I at one time state senator, aged 63 died July 6, in the Veterans Administration Facility, Fuscaloosa, Ala

**Joseph Anthony Randazzo**, Jamaica, N Y, Boston University School of Medicine, 1934 commissioned a passed assistant surgeon in the reserve of the U S Public Health Service on Jan 27, 1942, assigned for duty under the U S Public Health Service, district number 2, at the county health department Wilmington, N C, aged 34, died July 23, in the U S Marine Hospital, Norfolk, Va

**Samuel Howard Ridgway** & Shepherdsville, Ky, Kentucky School of Medicine, Louisville, 1893 for many years physician for the Louisville and Nashville Railroad, aged 71, died in St Joseph Infirmary, Louisville, June 14, of hypernephroma and arteriosclerosis

**Ora C Rogers**, Davenport, Iowa John A Creighton Medical College, Omaha 1898 aged 83, died, July 27, of uremia

**Calvin Luther Rowland**, Westpoint, Ind, Hospital College of Medicine, Louisville Ky, 1900, member of the Indiana State Medical Association served during World War I, trustee of the Wayne township for two terms and deputy coroner, for many years medical superintendent of the Indiana State Soldiers Home Hospital and on the staff of the St Elizabeth Hospital, LaFayette where he died, July 8, of heart disease aged 71

**Nicola Maria Sansone**, Bridgeport, Conn Gross Medical College, Denver 1902, member of the staff of the Bridgeport Hospital, aged 75, died June 23, of heart disease

**Rollo Bielby Sarginson**, Jacksonville Ill Loyola University School of Medicine Chicago 1916, on the staff of the Jacksonville State Hospital, aged 55 died in the Research and Educational Hospitals, University of Illinois, Chicago, August 2, of uremia secondary to extensive bilateral pyelonephritis

**John Smith Sayers**, Springfield, Mo, Barnes Medical College St Louis, 1897, member of the Missouri State Medical Association, on the staff of the Springfield Baptist Hospital, aged 71, was killed in an automobile accident, June 14

**Gustavus Adolphus Schaub** & Earth, Texas, George Washington University School of Medicine, Washington, D C, 1912, veteran of the Spanish-American War, the Philippine Insurrection, the Chinese Boxer uprising and World War I, formerly senior medical officer of the United States transport *Mercury*, aged 64, died, July 14, of coronary occlusion

**Friedrich Schnek**, Chicago, Medizinische Fakultät der Universität Wien, Germany, 1924, aged 43, was found dead in his home, June 14, apparently a suicide

**William P Scott** & Houghton, Mich, Detroit Medical College, 1884, an Affiliate Fellow of the American Medical Association, past president of the Houghton County Medical Society, at one time on the staff of St Luke's Hospital, Detroit, and division surgeon of the Michigan Central Railroad, aged 85, died, July 1, of arteriosclerosis

**Raymond Charles Joseph Seed**, Lawrence, Mass, Jefferson Medical College of Philadelphia, 1921, member of the Massachusetts Medical Society, school physician, aged 45, on the staff of the Clover Hill Hospital, where he died, June 17, of cerebral hemorrhage

**Myles Bernard Sharkey**, Syracuse, N Y, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1915, school examiner, served on the staffs of the Syracuse Memorial, Peoples and St Joseph hospitals, aged 53, died, June 21, in Bath

**Amos G Shellito**, Independence, Iowa, College of Physicians and Surgeons, Baltimore, 1882, member of the Iowa State Medical Society, past president of the Buchanan County Medical Society, part owner of the Shellito and Agnew Clinic, on the staffs of the Peoples Hospital, aged 82, died, June 30, of heart disease

**Victor W Shirley**, Detroit, Saginaw (Mich) Valley Medical College, 1902, at one time mayor of Onaway, Mich, on the staffs of St Joseph's Mercy Hospital, Detroit and St Francis Hospital, Hamtramck, where he died, June 25, of pneumonia, aged 74

**William Austin Sibley**, North Little Rock, Ark, St. Louis University School of Medicine, 1906, for many years associated with the Veterans Administration as medical rating specialist, served in the medical corps of the U S Army during World War I, aged 64, died, June 13, in the Army and Navy Hospital, Hot Springs National Park, of coronary artery disease

**John Hagood Smith**, Mullins, S C, University College of Medicine, Richmond, 1907, aged 60, died, July 26

**William A Smith**, Philadelphia, Jefferson Medical College of Philadelphia, 1896, aged 67, died, June 15, in the Jefferson Hospital

**Henry Augustin Spang**, New Haven, Conn, New York Homeopathic Medical College and Hospital, New York, 1891, also a dentist, for many years a member and at one time president of the local board of education, aged 74, died, June 12, in the Hospital of St Raphael of angina pectoris

**Jacob Henry Spivey**, Shreveport, La, Memphis (Tenn) Hospital Medical College, 1898, served on the staff of the Henderson (Texas) Memorial Hospital, aged 69, died in the Highland Sanitarium, June 25, of coronary occlusion

**Julia Ione Stannard**, Petoskey, Mich, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892, aged 72, died recently

**Edgar Sturge** & Scranton, Pa, University and Bellevue Hospital Medical College, New York, 1899, fellow of the American College of Surgeons, orthopedic surgeon to the Scranton State, Mercy and West Side hospitals, aged 74, died, June 15, of paralysis agitans

**Joseph Samuel Tanner**, New York, University of the City of New York Medical Department, New York, 1888, member of the Medical Society of the State of New York, aged 82, died, May 10, of heart disease

**John Holsey Thompson**, West Palm Beach, Fla, College of Physicians and Surgeons, Boston, 1911, aged 66, died June 12, in the Pine Ridge Hospital

**Thaddeus Sims Troy**, St Petersburg, Fla, Medical College of Virginia, Richmond, 1899, served during World War I, for many years on the staff of the Veterans Administration Facility in Washington, D C, serving as a special medical expert and later as senior medical officer in other facilities, retired on account of disability, Nov 26, 1941, died, June 21, of carcinoma of the prostate with metastases, secondary anemia and cachexia, aged 64

**Homer B Watkins**, Novapater, Miss (licensed in Mississippi in 1904), formerly health officer of Winston County, aged 63, died, June 20, of coronary thrombosis

**William M Weems**, Clopton, Ala, Medical College of Alabama, Mobile, 1892, aged 74, on the staff of the Moody Hospital, Dothan, where he died, June 24, of intestinal obstruction

**Iantha Jane Wetmore**, Grand Rapids, Mich, Detroit Homeopathic College, 1905, aged 83, died, June 22



CAPT DONALD KARL FLESSA  
1902-1943, M C, A U S

#### KILLED IN ACTION

**Donald Karl Flessa** & Babylon, N Y, Cornell University Medical College, New York, 1931, served on the staff of the Southside Hospital, Bay Shore, began active duty as a captain in the medical corps of the Army of the United States at Fort Bragg, N C, Aug 15, 1942, aged 40, was killed in action in Sicily, July 22

## Bureau of Investigation

### MISBRANDED PRODUCTS

#### Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D D N Y and foods F N Y. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

**Bo Go Ha Ma Mineral Springs Water**—Stafford Mineral Springs Company, Losburg, Miss. Shipped Oct. 20, 1941. Composition: a mildly alkaline water similar to Washington tap water except that it contained about twice the amount of dissolved mineral matter. Misbranded because of false and misleading statement on label. It is very soothing and healing to the kidneys and bladder. —[D D N Y F D C 587 November 1942]

**Codrol**—Pho-Sol Products Corporation, Kendallville, Ind. Shipped Feb. 10, 1941. Adulterated because its strength differed from and its quality fell below that which it was claimed to possess, namely, 3.71 per cent of cod liver oil extract (4½ units of vitamin A per gram) which it did not. Misbranded for the same reason and because package did not bear an accurate statement of the quantity or contents. Also misbranded and adulterated under provisions of the law applicable to foods as reported in F N Y 57—[D D N Y F D C 571 November 1942]

**Crawford's Ridia**—Crawford Foods, Inc., San Jose, Calif. Shipped Jan. 10, 1941. Composition: essentially alfalfa with smaller proportions of mint. Misbranded because accompanying circular falsely represented that the product was a substitute for the secretions of the pancreas and that it would be efficacious for the relief of persons suffering from diabetes; that each tablet contained a potency equal to 2 insulin units and that by its use insulin sickness would vanish; that inulin stiffness and muscular pains that grow on the patient after a prolonged use of insulin would slowly leave the body; that the blurred vision and partial blindness induced by insulin would gradually be cleared and that this product was a natural remedy and health food adjuvant. Also misbranded under the provisions of the law applicable to foods as reported in F N Y 5819 and 2823—[D D N Y F D C 577 November 1942]

**Filto Vapor Nasal Filter Outfit**—Medical Products Institute, Inc., Cincinnati. Shipped Jan. 16, 1941. Composition: consisted of a pair of nasal filters, one detachable band, tweezers, filter pads, a bottle labeled Filto-Vapor Cold Tablets, and another labeled Filto-Vapor Nasal Filter Pad Fluid. The cold tablets were found to consist essentially of acetophenetidin, aspirin and caffeine and the nasal filter pad fluid essentially of camphor, menthol, eucalyptol, pine-needle oil, alcohol and a vegetable oil. Misbranded because false representation as a new and scientific continuous treatment for colds, sinus, sore throat, cough, bronchitis and la grippe since the treatment would not be efficacious for those purposes. Also misbranded because the label for the nasal filter pad fluid represented that castor oil was an active ingredient which it was not. Further misbranded because the label of the cold tablets did not state the active ingredients and the aspirin was not listed by its common or usual name—[D D N Y F D C 582 November 1942]

**Hercules Congestors**—Holdfast Trust Company, Oakland, Calif. Shipped May 26, 1941. Device consisted of a metal vacuum pump and a large glass tube bearing at one end a soft rubber collar and closed at the other end with a metal cap which was threaded to screw into the pump. Misbranded because circular enclosed in each package bore the false statements: Organ Developer. This developer removes all obstructions in the organ, propels the blood rapidly through the disordered channels and a quick and favorable result follows. This simple apparatus is called upon to increase the life energy and remove the loss of strength. In most cases results come in a short time while others of long standing require the patient use of the developer for five or six weeks. Also misbranded because label failed to bear the name and address of the manufacturer, packer or distributor—[D D N Y F D C 591 November 1942]

**Lishus and Bekus Puddy**—Dr. Jack on Food, Brooklyn. Shipped Jan. 13, 1941. Composition: essentially flaxseed, rice, rice polishing, wheat and wheat bran. Both products misbranded because statement on carton: If troubled with Acid Stomach or fermentation etc. do not use sugar. Cook raisins or dates in with the cereal if sweet is required. was false and misleading since with or without raisins or dates they did not constitute an adequate treatment for acid stomach or fermentation.

Also misbranded because pictures of a robust man accompanied by the legends: Dr. Jackson at 80 and photo of Robert G. Jackson, M.D. at 60, were false and misleading since use of these products could not be depended on to produce or maintain robustness. Further misbranded because of false and misleading statements in an accompanying leaflet representing that these preparations were especially designed to relieve constipation and remove its cause by natural means; furnish sufficient roughage to stimulate muscular activity of the bowels and enough minerals to stimulate and support nervous control of those muscles besides causing three to five evacuations a day in a person ordinarily having but two movements a week. Lishus was further misbranded under the provisions of the law applicable to foods as reported in F N Y 2995—[D D N Y F D C 579 November 1942]

**Lurin**—Lurin Company, Cleveland. Shipped between April 8 and 19, 1941. Composition: essentially aluminum hydroxide (21 grams per hundred cubic centimeter) and water flavored with peppermint oil. Misbranded because statements on label: Alcoholic Over Indulgence and Where Used in the Treatment of Active Peptic Ulcers were false and misleading since this was not an adequate treatment for those conditions. Also misbranded because of false label claim: Combines with at least 12 times its volume of 1/10 Hydrochloric Acid since the volume of aluminum hydroxide that it contained was sufficient to combine with only 808 volumes of 1/10 hydrochloric acid. Further misbranded because statement on label: Contents 8 Fl. Oz. was false and misleading since the package contained less than 8 fluid ounces—[D D N Y F D C 589 November 1942]

**McCollum's Vitamin A and D Tablets**—McCollum Laboratories, Hollywood, Calif. Shipped between July 12 and 25, 1941. Adulterated because strength differed from and quality fell below that which it was represented to possess, namely: Each tablet contains 3,000 International Units of vitamin A and 400 International Units of vitamin D since each tablet contained much less than these respective amounts. Misbranded because the claim was false and misleading. Also adulterated and misbranded under provisions of law applicable to foods as reported in F N Y 2980—[D D N Y F D C 569 November 1942]

**Newbro's Herpicide**—Herpicide Company, New York. Shipped Oct. 14, 1940. In two forms: Regular and Odorless. Composition: analysis showed both forms to consist essentially of salicylic acid, glycerin, water, alcohol and small amounts of brucine and aromatics. Misbranded because of false and misleading representations on label that it would be efficacious in treating obstinate dandruff, falling hair and general scalp and hair disorders. Further misbranded because label did not list the common or usual names of the active ingredients—[D D N Y F D C 586 November 1942]

**New Food**—Parke D. Brodier, trading as Parke Lee Food Company, Lorain, Ohio. Shipped Feb. 8, 1940. Composition: ground and roasted flaxseed. Misbranded because of false and misleading label representations that this was an entirely new type of food, contains an all-vegetable mucin (mucilage), an excellent auxiliary food, that it possessed such nutritional value as to supply important amounts of minerals, fats and proteins and thus give extra nourishment and strength besides furnishing an appreciable amount of mucin whereas it would be without value for such purposes. Further misbranded because claim: This food will be a pleasant and effective addition to the diet of any person of any age, falsely implied that the product would supply vitamin constituents which are lacking in modern foods or might have been destroyed by modern methods of preparation. Also misbranded because of statement: eminent food authorities are agreed that there exists a certain fatty acid deficiency, principally a deficiency of Linolic, Inolinic and Linolinic or Unsaturated Fatty Acids (Vitamin F), whereas authorities are not agreed that the term "vitamin F" is a proper name to be applied to the unsaturated fatty acids nor are they agreed that there are fatty acid deficiencies in the ordinary human diet. Misbranded again because false representation to be an effective treatment of symptoms of diabetes, stomach and intestinal ulcers, high blood pressure and indigestion besides enabling diabetic persons to reduce their sugar, helping them to remain sugar free and giving them extra nourishment and strength. Further misbranded because label did not conspicuously bear the common or usual name of the contents, namely, flaxseed or linseed. This product was also misbranded under the provisions of the law applicable to foods as reported in F N Y 2820—[D D N Y F D C 574 November 1942]

**Orrine No. 1**—Orrine Company, Washington, D.C. Shipped between April 9 and Aug. 20, 1940. Composition: essentially gold chloride, hyoscine hydrobromide, ammonium chloride and cinchona alkaloids. Misbranded because of false and misleading representations on label that treatment would be efficacious in lessening or relieving the desire or craving for liquor—[D D N Y F D C 584 November 1942]

**Pinolator Inhaler and Medicament**—Pinolator Company, Minneapolis. Shipped Jan. 2, 1941. Composition: the medicament bore the name: Breath O The Forest and was found to consist essentially of menthol, camphor, pine oil, thymol and a benzoate of oil dissolved in a mixture of alcohol (60 per cent or 288 minims per fluid ounce) and water. Misbranded because label represented product to provide soothing relief and comfort in symptoms of common cold, sinus, bronchitis, asthma and hay fever and enable the user to pass through the worst hay fever season without serious discomfort. Also misbranded because claim on bottle label and carton: Ethyl alcohol 69% 3.0 minims per ounce was false and misleading and because carton did not declare the name of each active ingredient or the quantity and proportion of alcohol or the quantity of contents—[D D N Y F D C 583 November 1942]

## DANGEROUS TO HEALTH

## Because of Inadequate Warnings on Labels

[EDITORIAL NOTE—These abstracts differ from other abstracts or Notices of Judgment issued by the Food and Drug Administration of the Federal Security Agency which have appeared in these pages in that they deal with nostrums which were misbranded because their labels failed to carry adequate warnings against giving them to children or using them in those pathologic conditions in which they might be dangerous to health or caution against unsafe dosages or methods or duration of administration or application, for the protection of the user. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

**Bron Cho-Line Emulsion**—Johnstone Drug Sales Corporation Rochester N. Y. Shipped July 17, 1941. Composition essentially creosote, calcium sodium and phosphorus compounds, benzyl alcohol, methyl salicylate and gum acacia emulsified in a mineral oil. Misbranded because label carried false claims regarding the alleged curative powers of these drugs. Further misbranded because labeling failed to bear adequate warnings against use in those pathologic conditions such as persistent cough or high fever wherein this product might be dangerous to health or to caution against unsafe duration or administration.—[D D N J, F D C 611 February 1942]

**Comfort Tablets**—Shipper's name not reported. Shipped March 30, 1940 from St. Louis to College Laboratories, Inc., Denver who repackaged product in such a way that it was misbranded. Composition included acetophenetidin, aspirin and caffeine. Declared misbranded because of inadequate directions for use on the label and because of insufficient warning against use in those pathologic conditions wherein it might be dangerous to health and lack of caution against unsafe dosage or duration of administration for protection of users since label failed to warn that frequent or continued use might cause serious blood disturbances and that not more than the recommended dose should be taken. Further misbranded because one ingredient, aspirin, was listed on the label not by its common or usual name but by its chemical name, acetylsalicylic acid.—[D D N J, F D C 613 February 1942]

**Doctor's Daughter Tablets and Dr. Wilbur's Laxative Tablets**—Dr. John Wilbur Daughter Company, Westerly, R. I. Shipped April 16, 1941. Composition first named product essentially calcium carbonate, sodium carbonate and sodium bicarbonate. Laxative Tablets essentially belladonna alkaloids, including atropine and laxative plant drugs. Misbranded because of lack of adequate warning on labeling against use by children or in those pathologic conditions wherein it might be dangerous to health or against unsafe methods or duration of administration or application for protection of users, since labeling did not warn that frequent or continued use might cause dependence on laxatives and that the product should not be taken when symptoms of appendicitis such as nausea, vomiting or abdominal pain are present. Also misbranded because carton did not give common or usual names of active ingredients or state the quantity or proportion of belladonna alkaloids present in the laxative tablets. Again misbranded because the envelope containing the latter did not declare the quantity or proportion of belladonna alkaloids or common or usual names of all the active ingredients since "Exl and phodophyllum" (?) did not inform that "extract and 'podophyllum' were meant. Misbranded further in that the carton label did not accurately state quantity of contents since no reference was made to the envelope containing the 25 laxative tablets.—[D D N J, F D C 554 November 1942]

**Dye's Compound Tablets and Dye's Laxative Pellets**—Dr. J. H. Dye Medical Company, Buffalo. Shipped between May 8 and June 10, 1941. Composition first named product consisted of plant extractives including valeric acid and plant drugs containing alkaloids, the laxative pellets were aloin, podophyllum resin and hydrastis. The pellets were misbranded because labeling did not give adequate directions for taking them, or sufficient warnings against use in pathologic conditions wherein the product might be dangerous to health, or caution against unsafe duration of administration, for protection of user, particularly in absence of warning that frequent and continued use might result in dependence on a laxative and that a laxative should not be taken when symptoms of appendicitis are present, such as nausea, vomiting and abdominal pain. Further misbranded because of false and misleading representations that the pellets would effectively relieve headache, coated tongue, bad breath, aggravated pimply skin, lassitude, indigestion and other distressing symptoms due to temporary constipation. "Dye's Compound Tablets" misbranded because of false and misleading label representations to the effect that they would relieve symptoms of functional dysmenorrhea and other female irregularities, and accompanying conditions such as headache, nervousness, irritability, backache, nausea, rings under eyes, melanchoia, hysteria, loss of appetite and pains in various parts of the body,

that they would build up physical resistance, improve digestion and help one to obtain more nourishment, that they would promote happy life and increase vitality and personal magnetism, and would be an appropriate preventive and treatment for amenorrhea, dysmenorrhea, menopause, menorrhagia, metritis and ovaritis.—[D D N J, F D C 614 February 1942]

**Fernol Concentrate**—Fernol Company, Chicago. Shipped between Feb. 21 and Nov. 15, 1941. Composition essentially epsom salt, extract of cascara sagrada and small amounts of magnesium carbonate, sodium phosphate, salt and iron, with ammonium citrate, a sugar, saccharin, alcohol and water. Misbranded because labeling failed to warn sufficiently against use by children, to whom it might prove dangerous to health, or against unsafe dosage or methods or duration of administration for protection of users since label did not caution that frequent or continued use of the product might result in dependence on laxatives. Further misbranded because label warning against using preparation when symptoms of appendicitis are present was not sufficiently conspicuous to make it easily read by the ordinary individual. Again misbranded because name "Fernol" and statements on the label falsely suggested that the article was an appropriate and effective treatment for obesity. Also misbranded because label declaration of contents failed to reveal the material fact that the effect of the mixture was due essentially to its epsom salt and that the other ingredients mentioned were present in relatively inconsequential amounts and that some of them, namely, sodium chloride (common salt), iron and ammonium citrate, saccharin, dextrose (grape sugar) and caramel color (burnt sugar) were not active ingredients.—[D D N J, F D C 615 February 1942]

**Prostatic Absorbent**—C. F. Breitenbach (Mucine Company), Chicago. Composition ichthammol, juniper oil and extracts of plant drugs incorporated in wool wax (lanum). Misbranded because of various false representations such as soothing and relieving chronic conditions of the prostate and bladder neck. Further misbranded because label failed to bear name and place of business of manufacturer, packer or distributor since designation "Ainsworth Specialty Co., Kansas City, Mo.," did not make clear this concern's connection with the product, and because label did not give the common or usual name of each active ingredient or its quantity. Also misbranded because label did not contain adequate directions for taking or sufficient warnings against use by children, or in those pathologic conditions in which it might be dangerous to health or caution against unsafe dosages or methods or duration of administration or application, for protection of user.—[D D N J, F D C 436 September 1942]

**Prunlax**—Adams Laboratories, Inc., St. Louis. Shipped between Oct. 11 and 14, 1940. Composition essentially extracts of plant materials including laxative plant drugs with sugar, glycerin, flavoring materials and water, preserved with salicylic acid. Misbranded because label directions for adults and children were neither appropriate nor adequate, because label failed to caution against use by children, or in those pathologic conditions wherein it might be dangerous to health, or warn against unsafe dosage or duration of administration, for protection of users, since label did not caution the user that Prunlax was not to be taken in cases of appendicitis and that frequent or continued use might result in dependence on laxatives. Further misbranded because name "Prunlax" falsely implied that the product was derived from prunes, which it was not. Also misbranded because of misrepresentation that the absence of phenolphthalein and alcohol from the formula was evidence that the product contained no potentially harmful or deleterious ingredients, when such was not the case. A few other charges of misbranding also were cited.—[D D N J, F D C 452, September 1942]

**Starr's Wonderful M. L. & K. Pills**—Starr Medicine Company, San Francisco. Shipped April 1, 1941. Composition essentially extracts of plant drugs, including laxatives, with coating of calcium carbonate. Misbranded because label failed to warn adequately against use in those pathologic conditions wherein the product might be dangerous to health and against unsafe duration of administration, since the label failed to caution that the product was not to be taken in the presence of symptoms of appendicitis, such as nausea, vomiting or abdominal pain, or that continued use might result in dependence on a laxative. Misbranded also because label failed to give adequate directions for use as a laxative. Further misbranded because of false and misleading label claims, since the product contained no ingredients which would constitute treatment for conditions quoted: "Used in weak back, liver kidney complaints, biliousness, cold, fever, headaches, indigestion." Also misbranded because label did not accurately declare quantity of contents.—[D D N J, F D C 555 November 1942]

**Velpaus Pills**—F. W. Briggs and Company, Buffalo. Shipped June 1, 1941. Composition essentially aloes, ferrous sulfate, myrrh and starch with volatile oils, including sassafras oil, and a coating of sugar and chalk. Misbranded because directions on carton and in circular were not appropriate for the administration of a laxative. Also misbranded because labeling failed to warn against use in those pathologic conditions wherein it might be dangerous to health or against unsafe dosage or methods or duration of administration for protection of users since warning in circular failed to state that product should not be taken in the presence of symptoms of appendicitis, such as vomiting, nausea or abdominal pain and that frequent or continued use might result in dependence on a laxative. Further misbranded because not effective as represented, delayed menstruation even when taken under medical supervision and also because the warning to avoid all laxatives in case of symptoms of appendicitis did not reveal that this treatment itself is a laxative.—[D D N J, F D C 557 November 1942]

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of board of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL Sept. 18, page 169.

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Nov. 17-19 J. J. Sec. Dr. I. S. Rodman 225 S. 15th St. Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY *Written Part I* Various center Jan. 21. Final date for filing application is Oct. 21. Sec. Dr. P. M. Wood 745 Fifth Ave. New York 22 N. Y.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written Part I* Locally Feb. 12. Final date for filing application is Nov. 15. Sec. Dr. Paul Titus 1015 Highland Bldg. Pittsburgh Pa.

AMERICAN BOARD OF OPHTHALMOLOGY *Oral Parts I and II* Chicago Oct. 8-9. Sec. Dr. John Green 830 Waterman Ave. St. Louis Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Written and Oral Part II* Chicago Jan. 21-22. Sec. Dr. Guy A. Caldwell 5503 Pryor St. New Orleans Louisiana.

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Chicago October. Sec. Dr. Dean M. Lierle University Hospital Iowa City Iowa.

AMERICAN BOARD OF PEDIATRICS *Written Locally Feb. 4 Oral* Philadelphia March 25-26 and San Francisco May 6-7. Sec. Dr. C. A. Altrich 707 Fullerton Ave. Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *Written Locally Oct. 30 Oral Locally Dec. 20-21* Final date for filing application is Sept. 30. Sec. Dr. Walter Freeman 1028 Connecticut Ave. N. W. Washington D. C.

AMERICAN BOARD OF RADIOLOGY February. Final date for filing application is Dec. 1. Sec. Dr. B. R. Kirklin 102 110 Second Ave. S. W. Rochester Minn.

AMERICAN BOARD OF UROLOGY *Oral* Chicago February. *Written* Various centers December. Final date for filing application is Nov. 1. Sec. Dr. Gilbert J. Thomas 1409 Willow St. Minneapolis Minn.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

#### Workmen's Compensation Acts Cerebral Hemorrhage Resulting in Partial Paralysis Following 16 Inch Fall—

Ale a man of 63 had had a high blood pressure condition which had been reduced to a normal range sometime before the industrial accident occasioning the litigation here discussed. In the course of his employment as a 'general repair man' in the oil fields he was using both hands in tightening a nut on an eccentric power when the wrench he was using slipped from the nut, causing him to fall backward from the concrete platform on which he was working to the ground some 16 inches below. In falling he struck a pipe with his back. He noticed immediately that his back had been slightly injured and that his left foot had become numb and that his left toe was 'dragging'. He went home immediately and has not been able to work since. That night he vomited. The next day his condition was worse and he consulted a physician. He grew worse and several days later was sent to a hospital eventually losing complete control of his left leg. Attributing his condition to the industrial accident, he instituted proceedings under the Oklahoma workmen's compensation act. At the hearing the medical witnesses were in agreement that Ale had a partial paralysis caused by a cerebral hemorrhage and that this was the proximate cause of his disability. The industrial commission found that the fall sustained in the course of Ale's employment had aggravated a preexisting condition and brought on the cerebral hemorrhage which resulted in partial paralysis. An award of compensation was accordingly made in his favor. The employer and his insurance carrier then instituted an original

proceeding in the Supreme Court of Oklahoma to obtain a review of the award.

The petitioners contended that the finding by the commissioner that the workman's paralytic condition resulted from the accidental injury he sustained from the fall was without the support of any competent evidence. The court then undertook to discuss some of the evidence before the commission. None of the physicians, said the Supreme Court, who testified at the hearing testified directly or positively that in their opinion the hemorrhage and the resulting paralysis were caused by the fall but, on examination of the medical testimony coupled with the time of the injury, the inferences and circumstances of the disability we must conclude that the commission had some substantial evidence on which to base an opinion that the fall was at least a contributing cause of the hemorrhage. The medical testimony is to the effect that there are four possible conditions which may give rise to a disability of the nature here involved: (1) strain (2) stress (the fall), (3) anger and (4) advanced years in general. There is no evidence of the presence of any of these conditions except the fall and the age of the workman. Dr. Wilkins, who was called as a witness by the employer and his insurance carrier, stated:

Generally we just think if he had marked symptoms at the time he fell down then you would say this fall precipitated it that maybe it didn't cause it entirely but at least was the precipitating factor.

With respect to the existence of "marked symptoms" at the time he fell, the workman's testimony as to what happened after the fall is significant. He stated that he first walked to his car, which was about 50 feet away, and that his left toe was practically dragging on the ground. The first marked symptom then was present immediately after the fall. Again, Dr. Wilkins testified:

Yet there is a sufficient chain of events from that period (that is the time of the fall) to cause me to say that I am just not able to divorce the man's cerebral condition entirely from the strain and all of falling. Certainly had he not had the high blood pressure and the diseased vessels I don't think that fall would have done anything at all.

On direct examination Dr. Wilkins stated that he was not able positively to say that the strain or the fall had anything to do with the cerebral hemorrhage. On the other hand on cross examination he stated that he would not say that the fall didn't cause the disability. This physician, continued the court, was not called on to testify, one way or the other, as to the positive cause of the disability and in fact under the circumstances of the case, it would have been impossible for an honest physician, such as this witness appeared to be to have given a positive answer. The practice of medicine is not an exact science and especially so in regard to the human brain. Summing up the testimony of Dr. Wilkins however, we believe the commission was justified in concluding that his testimony as a whole was to the effect that he could not account for the workman's condition other than connecting it with the fall. His evidence was really more convincing and more worthy of belief than it he had stated that the disability was or was not caused in whole or in part by the fall. Under all the facts and circumstances surrounding this case the commission had proper grounds to find a causal connection between the fall and the workman's present disability. A finding of fact of the industrial commission on nonjurisdictional grounds when supported by any competent evidence is conclusive on this court.

The award in favor of the workman was accordingly in effect affirmed.—*Tidewater Associated Oil Co v Ale* 130 P (2d) 991 (Okla. 1942).

**Pharmacy Practice Act (Oregon) Limitation of Sale of Aspirin to Licentiates of Board of Pharmacy Valid**—A section of the Oregon pharmacy practice act (58-307 O. C. L. A.) authorizes the board of pharmacy to license shopkeepers not druggists to sell simple United States Pharmacopeia National Formulary and New and Nonofficial Remedies substances or preparations not of a poisonous nature in the original unbroken packages only and prohibits the sale of such substances except by licensed shopkeepers or licensed pharmacists. The section provides however that no license is required to sell certain articles such as olive oil, glauber salts, vaseline

carbonate of soda, borax, witch hazel, epsom salt "and other such articles and items as may hereafter be specifically listed, enumerated and exempt from the provisions of this act by proper order and regulation of the board of pharmacy," provided such products shall be sold in unbroken packages only. The defendant who operated a store and who was not a licensed druggist or a licensed shopkeeper, was convicted in a justice's court of the crime of selling a package of aspirin tablets without having obtained a permit or license from the board of pharmacy, and his conviction was upheld on appeal by the circuit court, Wheeler County, Ore. The defendant then appealed to the Supreme Court of Oregon.

The United States Pharmacopoeia, the National Formulary and New and Nonofficial Remedies, said the court, are official publications, of which this court may take judicial knowledge. The pharmacy practice act itself takes cognizance of those publications. Acetylsalicylic acid—commonly known as aspirin—is recognized as a drug or medicine in the official publication of the United States Pharmacopoeia, ed 12, pp 13, 14 and 15. Aspirin is not an entirely harmless drug or medicine especially when taken in excessive doses. Undoubtedly the sale of medicines is a business subject to regulation under the police power by legislation reasonably necessary to protect the public health and morals. The mere fact that aspirin is a simple household remedy does not preclude the regulation of its sale. As was said in *State Board of Pharmacy v. Matthias*, 197 N Y 353, 90 N E 966:

There are strong reasons relative to the public welfare which make it proper that regulations concerning the sale of drugs and medicines should not be confined to poisons but may be extended so as to embrace what are known as harmless household remedies—that is, which may be harmless if properly prepared. The injury to the public health which might ensue if such medicines were carelessly or ignorantly compounded so as to contain deleterious ingredients or deceptively, so as to be something different from what they purported to be, is manifest. The police power logically extends to such medicines no less than to poisons and other lethal medicinal agents.

Of course, the regulations relative to the sale of medicines cannot be arbitrary or capricious but must have some reasonable relation to the end to be attained, namely the protection of the public.

The defendant first contended, in effect, that the board of pharmacy acted arbitrarily and unreasonably in classifying aspirin—a simple household remedy—as one which could be sold only by a duly licensed person. In other words, the defendant argued that by thus restricting the sale of aspirin the welfare of the public is not subserved. The court, however, did not agree with this contention. We see no unlawful delegation of legislative authority to the board, said the court, in this case. The legislature itself classified aspirin as a medicine which may be sold only by a duly licensed person. Its status as a drug or medicine was fixed by the legislature in view of the fact that it is a simple United States Pharmacopoeia and National Formulary remedy and is not within the exempted class of drugs or medicines enumerated in the act. Neither has it been shown that the board, in the exercise of its discretion, has seen fit to add aspirin to those medicines or drugs exempted from the operation of the act. As a matter of fact, the board in a regulation promulgated by it specifically prohibited the sale of aspirin except by licensed pharmacists and by licensed shopkeepers. That regulation is merely declaratory of the statutory classification of aspirin and was wholly unnecessary, since it is clear that the pharmacy practice act specifically makes it a crime for a person not a licensed shopkeeper or a licensed pharmacist to sell aspirin.

The defendant next contended that the pharmacy practice act for the violation of which he was convicted is unconstitutional in that the restriction relative to the sale of aspirin is arbitrary and unreasonable. If, said the court, the provisions of the pharmacy practice act are in fact arbitrary and unreasonable and bear no reasonable relation to the public health, their enactment and enforcement is not a valid exercise of the police power. Under the due process clause of the constitution no person can be arbitrarily or unreasonably restricted in the transaction of legitimate business. However, the constitutionality of similar statutes regulating the sale of drugs and medicines has been sustained in other jurisdictions. For instance,

in *State v. Woolworth Co*, 184 Minn 51, 237 N W 817, the court upheld the constitutionality of an act restricting to licensed pharmacists the sale of milk of magnesia. In disposing of the contention that such restriction was arbitrary and unreasonable, the court said:

We are not prepared to say that having a licensed pharmacist in charge of the sale of medicines, even if harmless and sold in original packages has no reasonable relation to public health and cannot be of public benefit.

Is it continued the court, arbitrary and unreasonable for the legislature to prohibit the sale, except by licensed pharmacists and licensed shopkeepers, of aspirin? If there is any reasonable basis which the court can conceive for such regulation it must be sustained as a valid exercise of the police power. The pharmacy practice act authorizes the board to employ inspectors to investigate all complaints as to the quality and strength of all pharmaceutical preparations and medicines and to take such action as may be necessary to prevent the sale of such as do not conform to the standard and tests prescribed in the official publications noted in the statute. Such inspection undoubtedly would aid in guarding against the sale of impure drugs and medicines. It would also enable the board to ascertain whether aspirin was being sold in standard doses. We think it is highly proper for the board, acting for the welfare of the public, to know who is dealing in drugs and medicines and such knowledge can best be obtained by requiring dealers to procure a license. The act does not discriminate against certain classes of shopkeepers, as all who obtain a license may sell aspirin. The grievance of the defendant—reduced to its ultimate analysis—is that the board failed to add aspirin to the list of drugs and medicines exempt from the operation of the act.

The court concluded that there was a reasonable basis for the legislation in question, as the regulation of the sale of the drugs in question tended to promote the public health. The judgment of conviction was therefore affirmed—*State v. Combs*, 130 P (2d) 947 (Ore., 1942).

## Society Proceedings

### COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology, Chicago Oct 10-13 Dr W L Benedict 102 Second Ave S W Rochester, Minn Secretary
- American Public Health Association, New York, Oct 12-14 Dr Reginald M Atwater, 1790 Broadway, New York, Executive Secretary
- Association of Military Surgeons of the United States, Philadelphia Oct 21-23 Colonel James M Phalen, Army Medical Museum Washington, D C, Secretary
- Delaware, Medical Society of, Wilmington, Oct 12-13 Dr W O La Motte, 601 Delaware Ave, Wilmington Secretary
- District of Columbia, Medical Society of the, Washington, Sept 30-Oct 7 Mr Theodore Wiprud, 1718 M St N W, Washington, Secretary
- Indiana State Medical Association, Indianapolis Sept 28-30 Mr T A Hendricks, 23 East Ohio St, Indianapolis Executive Secretary
- Inter State Postgraduate Medical Association of North America, Chicago Oct 26-29 Dr Arthur G Sullivan, 16 North Carroll St Madison Wis Managing Director
- Kansas City Southwest Clinical Society, Kansas City Mo Oct 4-6 Dr William M North, 1115 Grand Ave Kansas City Mo, Secretary
- Kentucky State Medical Association, Louisville Oct 4-6 Dr P F Blackerby, 620 South Third St, Louisville, Acting Secretary
- Mississippi Valley Medical Society, Quincy Ill Sept 29-30 Dr Harri Swanberg, 510 Maine St, Quincy, Ill Secretary
- Oklahoma City Clinical Society, Oklahoma City Oct 18-21 Dr Cla H Hall, 117 North Broadway, Oklahoma City Secretary
- Omaha Mid West Clinical Society, Omaha Oct 25-29 Dr J D McCarthy, 1036 Medical Arts Bldg, Omaha Secretary
- Pennsylvania, Medical Society of the State of Philadelphia Oct Dr Walter F Donaldson, 500 Penn Ave Pittsburgh Secretary
- Southern Medical Association, Cincinnati November 16-18 Mr C I Loran, Empire Building, Birmingham Alabama Secretary
- Virginia, Medical Society of, Roanoke Oct 23-27 Mr A A Edwards 1200 East Clay St Richmond Secretary

## Current Medical Literature

### AMERICAN

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Title marked with an asterisk (\*) are abstracted below.

#### American Heart Journal, St. Louis

25 719-874 (June) 1943

- Experiments with Calculated Therapeutic and Toxic Doses of Digitalis—III. Effects on Coronary Blood Flow. W. H. Dearing, H. E. Essex, I. F. Herrick and A. R. Barnes—p. 719.
- Id. IV. Effects on Cellular Structure of Central Nervous System. W. H. Dearing, A. R. Barnes, J. W. Kernohan and H. E. Essex—p. 744.
- Effects of Digitalis, Urethra Congestive Cardiac Failure and Atropine on Hyperactive Carotid Sinus. A. D. Nichol and H. Strauss—p. 746.
- Effect of Quinidine on Sinus Tachycardia Including Production of Transient Bundle Branch Block. P. S. Barker, F. D. Johnston and F. N. Wilson—p. 760.
- Auricular Paroxysmal Tachycardia with Auriculoventricular Block. P. S. Barker, F. N. Wilson, F. D. Johnston and S. W. Wishart—p. 766.
- Auricular Paroxysmal Tachycardia with Alteration of Cycle Length. P. S. Barker, F. D. Johnston and F. N. Wilson—p. 799.
- Coronary Blood Pressure in Man: Direct Measurements in Digits of Patients with Rivaud's Disease and Scleroderma Before and After Sympathectomy. L. W. Eichna—p. 812.

#### American Journal of Clinical Pathology, Baltimore

13 231-284 (May) 1943

- Sternal Marrow in Banti's Syndrome and Other Splenomegalic States. Effect of Splenectomy. L. R. Immerzi, R. M. Jones, J. T. Paul and H. G. Poncher—p. 251.
- Erythrocyte Aplasia Following Sulfathiazole. Anne Marie Strauss—p. 249.
- Hodgkin's Disease. Pathologic Classification. S. R. Bersack—p. 25.
- Atypical Gaucher's Disease. J. A. Petit and E. M. Schleicher—p. 260.
- Case of Infiltrating Hydatidiform Mole. L. D. Moss and J. A. Wintermantel—p. 267.
- Struma Ovarii. Report of Two Cases. S. Sailer—p. 271.
- Evaluation of Laboratory Procedures in Determination of Basal Metabolic Rate. L. E. Nolan—p. 278.

#### American Journal of Diseases of Children, Chicago

65 827-990 (June) 1943

- Influence of Minor Dietary Changes on Frequency of Infants' Stool. Study of Effect of Varying Content of Lactose, Milk Fat and Thiamine. I. J. Wolman and S. Borowski—p. 827.
- Basal Metabolism of Normal Boys and Girls from Two to Twelve Years. Old Inclusive. Report of Further Study. R. C. Lewis, Anna Marie Duval and Alberta Iliff—p. 834.
- Basal Metabolism of Normal Children from Thirteen to Fifteen Years. Old Inclusive. R. C. Lewis, Anna Marie Duval and A. Iliff—p. 843.
- Serum Cholesterol Values for Infants and Children. R. G. Hodges, W. M. Sperry and Dorothy H. Anderson—p. 858.
- Diagnosis of Juvenile Psychosis. M. Sherman and H. Jost—p. 868.
- Immunity to Tetanus Induced by Third Dose of Toxoid Two Years After Basic Immunization. Based on Study of Thirty-One Allergic Children. M. M. Peshkin—p. 87.
- Congenital Malformations Induced in Rats by Maternal Nutritional Deficiency. IV. Cleft Palate. J. Warkany, Rose C. Nelson and Elizabeth Schraffenberger—p. 882.
- Attempts to Enhance Virulence of Hemophilus Pertussis by Serial Passage in Mice. L. P. Strean—p. 895.
- Electroencephalography on Children. N. L. Low—p. 898.
- Congenital Idiopathic Cardiac Hypertrophy. A. N. Roen—p. 905.
- Enzymatic Debridement in Local Treatment of Burns. Preliminary Report. G. R. Cooper, G. B. Hodge and J. W. Beard—p. 909.

**Immunity to Tetanus.**—Two years after the completion of basic immunization with two 0.5 cc doses of combined alum precipitated diphtheria and tetanus toxoids, Peshkin gave to 31 allergic children a third or booster dose of 0.5 cc. (16 children received combined alum precipitated toxoids and 13 children alum precipitated tetanus toxoid alone). Antitoxin levels were determined at various intervals after the second and after the third dose of the toxoid and the respective totals of 159 and 194 specimens of blood serum were titrated for

tetanus antitoxin. The incidence of local reactions after the third dose of combined toxoids after the third dose of tetanus toxoid alone and after the basic immunization was 50, 25 and 25 per cent respectively. An elevation of temperature which lasted from one to two days occurred only after the third dose of combined toxoids in 22 per cent of the children. This incidence of febrile reactions contrasts with 3 per cent in the group of 65 children given a third injection of combined toxoids from three to fifteen months after basic immunization and with 1 per cent in the group given only the basic immunization. The injection of a third or "booster," dose of combined alum precipitated diphtheria and tetanus toxoids and alum precipitated tetanus toxoid alone into allergic children two years after the completion of basic immunization with two doses of combined toxoids was followed within one month by an adequate tetanus antitoxin titer which was always higher and lasted for a much longer period than that which followed basic immunization as well as that which followed the third dose of combined toxoids given from three to fifteen months after basic immunization. The antitoxin titer obtained on the seventh day after the third injection of toxoid given two years after basic immunization was always adequate and at its maximum in the majority of instances. Comparison of the initial antitoxin levels and the corresponding titers one month and two years after administration of the booster dose of toxoid for one group of children two years after basic immunization and for another group from three to fifteen months after immunization and for a final group given basic immunization only revealed not only that the percentage of the first group of children attaining the highest antitoxin levels (0.5 to 1 unit or more of antitoxin) within one month of receiving their last dose was significantly higher than that of either of the last two groups (100 compared with 70 and 32 per cent respectively) but that two years later the ratio between the patients of the three groups who showed an antitoxin titer of 0.1 unit or more was 4:1 (72 and 18 per cent respectively) for the children of the first and the second groups and 8:1 (72 and 9 per cent respectively) for the children of the first and the third groups. When a child has had basic immunization with two doses of combined alum precipitated diphtheria and tetanus toxoids and a third, or booster, injection of toxoid is administered two years later, then alum precipitated tetanus toxoid alone should be used in order to keep febrile, local and systemic reactions at the minimum.

#### Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

49 719-854 (June) 1943

- \*Roentgenologic Changes in Small Intestine in Presence of Hookworm. G. R. Krause and J. A. Crilly—p. 719.
- Roentgenographic Obstetric Pelviccephalometry in Erect Posture. R. P. Ball and R. Golden—p. 731.
- Analysis of Roentgen Pelvimetry by Johnson Stereoroentgenometer in 579 Cases. J. N. Ane and L. J. Menville—p. 742.
- Roentgenologic Localization of Placenta Without Contrast Media. R. M. Smith—p. 750.
- Symphysis Spondylitis. E. Freedman and I. Meschan—p. 756.
- Angiocardiography in Congenital Heart Disease. II. Intracardiac Shunts. M. F. Steinberg, A. Grishman and M. L. Sussman—p. 766.
- Miliary Calcification of Lung. E. F. Geever—p. 777.
- Liver Formation in Pylorography. Alice Ettinger—p. 783.
- Variability in Onset of Ossification in Epiphyses and Short Bones of Extremities. I. Pyle and L. W. Sontag—p. 793.
- Radiation Treatment of Lymphangioma. G. W. Holmes and L. E. Hawes—p. 799.
- New Type of Radium Loading Protective Device. A. H. Dowdy, B. DuBilier and D. B. Cowie—p. 803.
- Artificial Decrease of Radio-sensitivity of Skin and Mucous Membranes in Roentgen Therapy. P. Lehmann—p. 811.
- Cavernous Hemangioma of Face in Infant Treated with Radium. Report of Case. A. W. Jacobs—p. 816.
- Isodose Charts for Fields of Special Ultraviolet in Treatment of Cancer of Uterine Cervix. S. M. Silverstone, C. B. Braettrup and B. S. Wolf—p. 819.

**Roentgenologic Changes in Small Intestine in Presence of Hookworm.**—Krause and Crilly show that infection with the hookworm *Necator americanus* causes alterations in the small intestine which they designate as the deficiency pattern. If this pattern is seen the stools should always be examined for the ova of intestinal parasites. The authors studied the small intestine of 97 young white men who were known to harbor *Necator americanus* and who had no other diseases known to cause the deficiency pattern. Of the 44 patients with



clinically significant "hookworm disease," 40 showed the deficiency abnormalities which were moderately or far advanced in 26. Of the 53 patients with asymptomatic, incidental hookworm infection, 33 had a normal small intestine, 16 showed minimal variations from the normal and only 4 had severe alterations of the normal pattern. After anthelmintic therapy alone there was a return toward, but not to, the normal pattern in those with severe involvement. Minimal alterations disappeared entirely in some instances. A significant correlation exists between the presence and extent of the physiologic alterations seen on the roentgenograms, the clinical findings and the severity of the infection with the hookworm.

## Annals of Internal Medicine, Lancaster, Pa

18 913-1052 (June) 1943

- Comparison of Metabolic Effects of Isocaloric Meals of Varying Composition with Special Reference to Prevention of Postprandial Hypoglycemic Symptoms. G. W. Thorn, J. T. Quimby and M. Clinton Jr. —p. 913
- Problems of Internist in Army. R. E. Duncan —p. 920
- Medical Care of Aviation Personnel. D. N. W. Grant —p. 926
- Peptic Ulcer in United States Army. V. W. Logan and P. W. Bransford —p. 929
- Military Neuropsychiatry in Present War. L. H. Parsons —p. 935
- Psychoneuroses in Wartime. L. H. Ziegler —p. 941
- Treatment of Functional Gastrointestinal Disturbances of Neuropsychiatric Origin. J. C. Ashkin —p. 949
- Liver Therapy. G. B. Trivette —p. 968
- Relation of Carrier to Epidemic Meningitis. J. H. Mueller —p. 974
- Carcinoma of Lung. Review of 31 Proved Cases at Philadelphia Naval Hospital. I. Fetter —p. 978
- Problems of Fluid Balance in Traumatized Patient. J. E. Rhoads —p. 988
- Relation of Crush Syndrome to That of Burns and Other Types of Traumatic Wounds of Human Tissues. W. E. Lee —p. 991
- 35 Mm Films in Diagnosis of Chest Conditions. E. C. Boots —p. 997
- Acute Nephritis and Effect of Sulfonamides on Kidneys. F. D. Murphy and W. D. Wood —p. 999
- Medical Aspects of High Altitude Flight. D. N. W. Grant —p. 1006
- Present Status of Clinical Electroencephalography. F. A. Gibbs —p. 1012
- Observations on Immunity in Mumps. J. F. Enders —p. 1015

**Prevention of Hypoglycemic Symptoms**—According to Thorn and his associates ingestion of a typical American breakfast—one relatively high in carbohydrate and low in protein and fat content—predisposes to midmorning hypoglycemic symptoms. The prolonged sense of well-being which follows the ingestion of a meal rich in protein suggested that the intake of increased protein at breakfast might obviate the necessity for midmorning nourishment and might be expected to improve the performance of individuals who do not have access to supplementary nourishment at that time. Studies were undertaken to determine the changes in blood sugar level, caloric distribution and metabolic rate which followed the ingestion of isocaloric breakfasts composed of varying proportions of carbohydrate, fat and protein. In a normal subject the ingestion of a breakfast high in carbohydrate and low in protein and fat was followed by hypoglycemic symptoms in one to two hours, an isocaloric breakfast high in fat and low in carbohydrate and protein was followed by hypoglycemic symptoms at a later hour, an isocaloric breakfast high in protein and low in fat and carbohydrate was followed by an improved sense of well-being and no symptoms of hypoglycemia. The blood sugar levels following these three types of breakfast correspond closely to the clinical symptoms. A sustained increase in metabolic rate occurred following the ingestion of the high protein breakfast, a transient increase in metabolic rate followed by a fall below the basal metabolic rate was observed after the ingestion of an isocaloric high carbohydrate breakfast, no significant increase in metabolic level followed the ingestion of an isocaloric high fat breakfast. Following the ingestion of the high carbohydrate breakfast, differential derivation of calories reflected striking fluctuations in the character of the food substances utilized as sources of energy. These fluctuations did not occur following the isocaloric high protein and high fat meals.

**Immunity in Mumps**—Enders found that infection of the rhesus monkey with the virus of mumps leads in a short time to the appearance of specific complement fixing antibodies which are not present in normal susceptible animals. These antibodies may persist in the blood for many months. Serums from

patients with mumps at comparable periods of the disease have given results analogous to those noted in the animal experiments. In man as in the monkey, specific complement fixing antibodies are usually absent in the earliest stage of the disease, appear shortly thereafter, increase and then decrease to persist for at least some months following recovery. These observations have led to the application of the test as an aid in the diagnosis of cases of encephalitis without definite parotitis, suspected on clinical grounds of being attributable to infection with the virus of mumps. It became of great interest to ascertain whether the complement fixing antibody was present or absent in the serums of normal individuals, since its presence might be taken to denote previous infection with the virus whether or not this had led to clinically apparent disease. Conversely, its absence might be assumed to indicate susceptibility. The author presents results of studies on 163 persons at the Harvard Medical School. Antibodies occurred in about 92 per cent of the serums of those giving a positive history of mumps. In sharp contrast, 50 per cent of the serums of those who denied having had the disease contained antibodies. Thus it seems possible that nearly half of those who denied having had mumps underwent an inapparent or "silent" infection which should render them insusceptible. On the other hand, it seems that those in whose serums antibodies could not be demonstrated are potentially susceptible. The experiments with the children yielded data of the same sort, but, as could be expected in this age group, the percentage of negative reactors with negative histories was greater. The author developed a skin test which was positive in cases with a history of mumps and in which the complement fixation test was negative. The results strongly imply that a positive skin reaction indicates a previous infection with the virus, whereas failure to react signifies in most instances potential susceptibility.

## Annals of Surgery, Philadelphia

117 801-976 (June) 1943

- Management of Coconut Grove Burns at Massachusetts General Hospital. Foreword. O. Cope —p. 801
- Id. Problems of Hospital Administration. N. W. Faxon —p. 803
- Id. Social Service Activities. Ida M. Cannon —p. 809
- Id. Neuropsychiatric Observations. S. Cobb and E. Lindemann —p. 814
- Id. Resuscitation and Sedation of Patients with Burns Which Include Airway. Some Problems of Immediate Therapy. H. K. Beecher —p. 825
- Id. Pulmonary Complications. Clinical Description. J. C. Aub. Helen Pittman and A. M. Brues —p. 834
- Id. Roentgenologic Report of Pulmonary Lesions. R. Schatzki —p. 841
- Id. Pathology, With Special Reference to Pulmonary Lesions. T. B. Mallory and W. J. Brickley —p. 865
- \*Id. Treatment of Surface Burns. O. Cope —p. 885
- Id. Problems of Infection and Chemotherapy. C. Lyons —p. 894
- Id. Procedures in Rehabilitation of Severely Burned. B. Cannon —p. 903
- Id. Note on Physical Therapy. A. L. Watkins —p. 911
- Id. Problem of Burn Shock Complicated by Pulmonary Damage. O. Cope and F. W. Rhinelander —p. 915
- Id. Note on Blood Bank. L. Soutter —p. 928
- Id. Note on Thrombophlebitis Encountered. F. D. Moore —p. 931
- Id. Metabolic Observations. O. Cope, I. T. Nathanson, G. Margaret Rouike and Hildegard Wilson —p. 937

**Treatment of Surface Burns**—A feature of the treatment of the 39 burned patients brought to the Emergency Ward of the Massachusetts General Hospital from the Coconut Grove night club consisted in omission of debridement and cleansing. Gauze strips saturated with a bland ointment (boric acid) were applied to burned surfaces and kept in place with pressure bandages. Two Gm. of sodium sulfadiazine was injected intravenously through the cannula or needle already in place for plasma transfusion. The dressings were not changed until the fifth to tenth day, when boric acid ointment gauze was reapplied. A major point in favor of nondebridement of the burn is the availability to the wound of chemotherapeutic agents administered internally. Absorption of sulfonamides applied locally to the debrided burn surface may be rapid and irregular and, if the burn surface is large, toxic levels of the drugs in the body fluids may be reached. The levels of the sulfonamide drugs in the body fluids are more easily controlled by internal administration. The advantage of the treatment lies in its simplicity. The available personnel is freed from the care of shock and anoxia, yet the surface wounds need not be neglected.

## Archives of Internal Medicine, Chicago

71 741-916 (June) 1943

- Note Concerning Leuc. Neglect of Auenbrugger's Inventum Novum  
J. B. Herrick—p. 741
- Scleroderma Heart Disease With Consideration of Certain Other Vascular Manifestations of Scleroderma S. Weiss, F. A. Stead Jr.  
J. V. Warren and O. T. Bailey—p. 749
- Leukemia: Clinical and Pathologic Study of 123 Fatal Cases in Series of 14,400 Necropsies I. D. Kirschbaum and I. S. Freiman—p. 777
- Clinical Observations on Osteopetrosis and Myelofibrosis A. Rosenthal and I. A. Erf—p. 780
- Profile Printing in Photomicrography of Blood Cells W. P. Murphy and E. T. Green—p. 814
- Significance of Glycosuria J. A. Mirkin and N. Nelson—p. 827
- Lymphopathia Following Maphar in Therapy Pathologic Report with Unusual Finding A. M. Kahner, I. S. Freiman and N. Apter—p. 836
- Postganglionic Sympathetic System S. Bohart—p. 844

**Leukemia: Studies on 123 Fatal Cases**—Kirschbaum and Freiman correlate clinical and pathologic observations in all types of leukemia. They examined 123 fatal cases which were selected from 14,400 consecutive autopsies. The cases are classified in three ways: (a) according to the clinical course as acute leukemia or chronic leukemia, (b) according to the type of cell in the peripheral blood, bone marrow and tissues as stem cell leukemia (28 cases), myelogenous leukemia (53 cases), lymphatic leukemia (37 cases) and monocytic leukemia (5 cases), and (c) as leukemic or aleukemic disease. Of the patients 69 per cent were male, 30.1 per cent were female, 78 per cent were white and 22 per cent were Negro. The high incidence of acute leukemia in the older age groups is unusual. Stem cell leukemia occurs most frequently in persons in the first three decades. Enlargement of the liver and the spleen was most commonly encountered in myelogenous leukemia and less frequently in lymphatic leukemia and stem cell leukemia. Definite anemia was observed in all forms of leukemia. The white blood cell picture showed considerable variability and fluctuation. Attention is drawn to the observation that grave leukopenia may be observed in the early or the late stages of stem cell leukemia and myelogenous leukemia especially in the acute forms. Advanced thrombopenia may cause a hemorrhagic diathesis. Myeloid metaplasia was frequently noted in myelogenous leukemia and stem cell leukemia. Repeated transfusions of blood produced the most beneficial results but gave only temporary relief.

## Archives of Neurology and Psychiatry, Chicago

49 793-946 (June) 1943

- Electroencephalographic Foci Associated with Epilepsy Erna L. Gibbs, H. H. Merritt and F. A. Gibbs—p. 793
- Effect of Electrical Stimulation on Atrophy of Denervated Skeletal Muscle D. A. Solandt, D. B. DeLury and J. Hunter—p. 802
- Interaction of Electric Shock and Insulin Hypoglycemia: Experimental Investigations E. Gellhorn and M. Kessler—p. 808
- Studies on Corpus Callosum IX. Relationship of Grasp Reflex to Section of Corpus Callosum A. J. Akelatis, W. A. Risteen and W. P. Van Wagenen—p. 820
- Experimental Swelling of Brain S. Obrador and J. Pi Suñer—p. 826
- Schizophrenic Language J. C. Whitehorn and G. K. Zipf—p. 831
- Oral and Intravenous Dextro-α-Tolerance Curves of Patients with Manic-Depressive Psychosis E. E. Gildea, A. L. McLean and E. B. Mann—p. 832
- Syndrome of Involvement of Posterior Cord of Brachial Plexus R. A. DeLong—p. 860
- Encephalopathy Following Intravenous Administration of Arsenical Preparation D. A. Boyd Jr. and L. Nix—p. 863
- Petrograde Degeneration: Effect of Hemisections on Homolateral Axons of Spinal Cord A. M. Lasek—p. 878
- Cervical Syringomyelia and Syringomyelia-like States Associated with Arnold-Chiari Deformity and Platysmia B. W. Lichtenstein—p. 881

**Electroencephalographic Foci Associated with Epilepsy**—According to Gibbs and her collaborators the problem of diagnosis and treatment of epilepsy often centers on the question of whether or not localizing signs are present. Electroencephalographic evidence of a focus of abnormal activity is an important localizing sign. In 174 cases (15 per cent) of a total series of 1,161 cases of epilepsy studied at the Boston City Hospital there were found either localizing symptoms or signs on neurologic examination or an electroencephalographic focus. The presumed cause of seizures in these 174 cases was trauma in 69 cases, infection in 20 cases, vascular disease in 14 cases, birth injury in 12 cases and developmental defects in 4 cases. In 55 cases there was no evident cause for the seizures. In

58 per cent of the 160 cases with electroencephalographic foci clinical localizing signs were present, and in all the clinical and electroencephalographic localizations were in agreement. A corroborating electroencephalographic focus was noted in 87 per cent of 106 cases with clinical localizing signs or symptoms. Clinical evidence of localized damage to the brain was fifty-eight times as common in epileptic patients with electroencephalographic foci as in patients in whom the disturbance was generalized or absent. The same types of seizure discharge or other electroencephalographic abnormality were encountered in cases with focal electroencephalographic activity as in cases with nonfocal disorders. However certain types of abnormality notably irregular 1/2 to 3 per second activity spikes and 2 per second waves and spikes were much commoner in focal than in nonfocal records. The presence of one of these three types of abnormality is presumptive evidence of localized damage to the brain.

## Archives of Otolaryngology, Chicago

37 757-914 (June) 1943

- Prevention of Traumatic Deafness: Preliminary Report W. H. Wilson—p. 757
- Influence of Anulson of Trigeminal Nerve on Human Nose F. L. Federer and R. Dimolt—p. 768
- Acute Mastoiditis Masked by Treatment with Sulfonamide Compound: Clinicopathologic Considerations G. B. Gilmore—p. 783
- Deviated Septum: Physiological Aspect A. Wachsbarger—p. 789
- Experiments on Conduction of Sound Through Cavity of Middle Ear H. G. Kobrak—p. 796
- Treatment of Retroauricular Fistula: Report of 5 Consecutive Cases E. A. Griffin—p. 802
- Exact Diagnosis of Otitis Media R. F. Nelson—p. 810
- Lymphoepithelioma of Nasopharynx: Report of Case A. H. Persky—p. 813
- Sequestration of Ossicles Labyrinth B. Proctor, J. R. Lindsay and W. S. Gonne—p. 819
- Control of Hemorrhage W. F. Hulse—p. 831
- Schmincke Tumor: Lymphoepithelioma of Nasopharynx H. J. Burman and D. Burman—p. 833
- Surgery of Mastoid J. A. Sullivan—p. 843
- Chronic Progressive Deafness Including Otosclerosis and Diseases of Inner Ear G. E. Shambaugh Jr. and F. Wojniak—p. 856

## Archives of Pathology, Chicago

36 1-126 (July) 1943

- Structure and Histogenesis of Tumors of Aortic Bodies in Dogs With a Consideration of Morphology of Aortic and Carotid Bodies F. Bloom—p. 1
- \*Chronic Granuloma Following Intradermal Injection of Typhoid Vaccine I. L. Tilden and H. L. Arnold Jr.—p. 13
- Pathologic Changes Induced in Various Species by Overdosage with Desoxycorticosterone H. Selve and C. E. Hall—p. 19
- Nature of Hyaline Changes in Islets of Langerhans in Diabetes Mellitus J. B. Arey—p. 32
- Portal Systemic Collateral Veins in Guinea Pig with Schistosomal Cirrhosis of Liver: Discussion of Congestive Splenomegaly C. Krakower, W. A. Hoffman and J. H. Axtmayer—p. 39
- Calcification of Bone Marrow in Toxic Hyperparathyroidism R. D. Moore—p. 51
- Genetic Analysis of Induction of Tumors by Methylcholanthrene: Absence of Sex Influence When Large Dose of Carcinogen Is Administered L. C. Strong—p. 58
- Therapeutic Effects of Disodium Formaldehyde Sulfonate Diaminodiphenylsulfone in Experimental Tuberculosis W. H. Feldman, H. C. Hinshaw and H. E. Moses—p. 64

**Chronic Granuloma Following Typhoid Vaccine**—Tilden and Arnold observed a peculiar hitherto undescribed, focal granulomatous reaction to intradermal injections of triple typhoid vaccine in 6 among a total of 4,500 vaccinated persons. The vaccine employed was prepared by the United States Army using the Bovill strain. No correlation appears between this reaction and previous injections of typhoid vaccine. It is not known whether this reaction vitates the effect of the vaccination or not. Its chief practical importance appears to lie in the possible cosmetic consequences should the vaccination be performed in a conspicuous location. The observation is of theoretical importance because it so clearly demonstrates the similarity between the histiocytic response to injections of triple typhoid vaccine and the histiocytic response to virulent typhoid bacilli and because it constitutes another link in the growing chain of evidence that spindle-shaped cells in granulation tissue may be histiocytes and not as is so often and so easily assumed fibroblasts.

## California and Western Medicine, San Francisco

58 313-386 (June) 1943

- California Medicine In Brief Review, Address of the President W R Molony Sr—p 319  
 Dermatology Experiences in United States Naval Hospital I G Novy Jr—p 321  
 Mental Illness Following Pregnancy K O Von Hagen—p 324  
 Dermatologic Management Some Functional Concepts M T R Maynard—p 327  
 California Physicians Service Current Activities E V Askey—p 330  
 Bone Plates New Type R Townsend and C Gilfillan—p 332  
 Surgical Treatment of Intractable Pain C H Shelden—p 334  
 Origin and Development of Science of Roentgenology J D Cramp—p 337  
 \*Diverticulosis and Diverticulitis of Colon L J Kilfoy—p 341

**Diverticulosis and Diverticulitis of Colon**—Kilfoy shows that with modern roentgenology the diagnosis of diverticulosis and diverticulitis is common and that these conditions occur in 5 to 15 per cent of the general population after the fourth decade of life. In about 5 to 10 per cent complications develop and 12 to 20 per cent require surgical intervention. These diverticula do not exist at birth but occur in the fourth, fifth, sixth and seventh decades of life. They are more frequent in males than in females, the ratio being about 2:1. They are produced by many extrinsic factors such as obesity, constipation, flatulence and weakness in the longitudinal muscle fibers of the colon. Most patients can be kept well on a smooth, high caloric diet. To keep the lower bowel evacuated enemas are advisable or liquid petrolatum or any other soft oily preparation may be given by mouth. The patients must always watch their diet and be educated to watch for complications. If there is severe pain, high leukocyte count, tenderness, rigidity and evidence of perforation or of abscess formation, immediate surgical intervention is indicated. In a large percentage of cases the clinical diagnosis will be either acute appendicitis or ruptured duodenal ulcer. Many methods of surgical attack have been suggested. A single diverticulum can be excised. Resection of the colon or of the area involved may give good results.

## Canadian Journal of Public Health, Toronto

34 193-250 (May) 1943

- Nutrition Survey in East York Township Description of Survey and General Statement of Results Eleanor Riggs, Helen Perry, J M Patterson, J Leeson, W Mosley and E W McHenry—p 193  
 Bacterial Food Poisoning Part II C E Dolman—p 205  
 Effect of Glucose on Penicillin Potency Tests A G Lochhead and M Timonin—p 236

## Canadian Medical Association Journal, Montreal

49 1-76 (July) 1943

- \*Immersion Blast Injuries of Abdomen D R Webster, A S Ross and E L Alford—p 1  
 \*Effect of Riboflavin on Corneal Vascularization and Symptoms of Eye Fatigue in Royal Canadian Air Force Personnel I F Tisdall, J F McCreary and H Pearce—p 5  
 Paget's Disease of Bone With Report of Case J Miller—p 13  
 Night Vision D Y Solandt and C H Best—p 17  
 Present Views on Etiology and Treatment of Shock Address in Medicine Before Royal College of Physicians and Surgeons of Canada J C Meakins—p 21  
 Physiologic Principles in Repair of Inguinal Hernia Address in Surgery Before Royal College of Physicians and Surgeons of Canada W F Gillespie—p 29  
 Clinical Points on Ruptured Intervertebral Disks, Low Back Pain and Sciatica D McEchern and V V Cone—p 33  
 Treatment of Plantar Warts J E Gendreau and O Dufresne—p 35  
 Survey of Series of Hay Fever Cases Treated in 1942 R F Hughes—p 38  
 Anorexia G E Swallow—p 43  
 Ossiculotomy H M Bowen—p 46

**Immersion Blast Injuries of Abdomen**—Webster and his associates observed 15 survivors of a torpedoed ship who sustained abdominal injuries from an exploding depth charge while swimming. They were swimming away from the ship but turned to watch it as it dived and were facing it when the explosion occurred. Each felt that he had been struck a tremendous blow in the abdomen. All suffered severe abdominal pain, crampy in some but mostly a pronounced stabbing pain. All vomited repeatedly, several with blood and bile, and 9 had bloody diarrhea. All had fever averaging 102 F. In 5

distention developed, and almost all had rigidity of the abdominal wall. Four patients died. Four after a protracted convalescence still had mild symptoms five months after the injury. Seven recovered in from three to fourteen days. The tremendous force of the blast is proved by the fact that a cigarette lighter and a wrist watch carried by an officer were completely flattened. He was swimming on his back beside his captain, who was swimming on his abdomen, when the blast occurred. The captain was killed. The officer survived, with the usual symptoms of vomiting, bloody diarrhea and pain, and was able to leave the hospital in two weeks. This seems to argue against the suggestion that the blast enters the rectum. Thoracic symptoms were almost completely absent. Almost all these men had kapok life preservers about their chest, which probably gave protection as well as elevating them to the water's surface. The leukocytosis, the prolonged sedimentation rate, the fever, the loss of weight associated with moderate or severe abdominal pain, tenderness and rigidity, and the absence of physical signs of abscess formation suggest a low grade inflammatory process. It is possible that injury from submucosal hemorrhages permitted pathogenic organisms to infiltrate or pass through the wall of the bowel. The apparent response of two of the patients to sulfathiazole would support this assumption. Submucosal and petechial hemorrhages in the bowel wall could interfere with the neuromuscular mechanism, producing ileus, late sloughing and perforation. The authors recommend that naval personnel be warned of this danger, that life preservers be made of kapok and designed to cover the abdomen and chest, and that physicians in coastal areas appreciate the urgency of early treatment, both medical and surgical.

**Effect of Riboflavin on Cornea Vascularization and Eye Fatigue**—Tisdall and his collaborators attempted to demonstrate photographically the changes which occur in the cornea in riboflavin deficiency. Kruse and his co-workers had suggested that the minor degrees of vascularization of the cornea frequently seen in apparently normal human beings were due to a deficiency of riboflavin. They postulated that symptoms of tiredness of the eyes, burning of the eyes, a sandy sensation under the lids and lacrimation might be manifestations of the deficiency and might be cleared by the administration of riboflavin. Riboflavin is rapidly destroyed by light, and it seems possible that a person who is exposed to a great deal of light would have an increased destruction of riboflavin in the eye which would necessitate a greater intake to maintain normal vision and normal health. Men in the Air Forces are exposed to much light. The authors investigated the various degrees of vascularization of the cornea in men who were flying over water and exposed to considerable glare. One hundred and ninety-eight men were examined. There was only 1 man with normal eyes, 17 showed stage 1 involvement, 87 stage 2 and 93 stage 3. A group of men showing stage 3 involvement was chosen to demonstrate the effect of treatment on vascularization of the cornea and the symptoms of fatigue of the eyes. These men were questioned regarding tiredness of the eyes, aching of the eyes, watering of the eyes, sandy sensation under the lids, dizziness, headaches, intolerance of reading and decreased visual acuity. Sixty-seven per cent suffered two or more of these symptoms. The men were divided into three groups. One received capsules containing 33 mg of riboflavin three times daily for a period of two months. The second group received similar capsules three times daily for one month. The third group received capsules which were similar in appearance but which contained no riboflavin. Of the 28 men who received treatment with 99 mg of riboflavin daily for two months, 20 showed either pronounced or moderate improvement, 8 showed either slight or doubtful improvement or no change and none showed increase in vascularization of the cornea. Of the 21 men who received treatment for a period of one month, 6 showed pronounced or moderate improvement, 14 showed slight or doubtful improvement or no change, and 1 man showed an increase in vascularity. Of the 21 men treated with placebo, none showed either pronounced or moderate improvement, 15 showed slight or doubtful improvement or were unchanged, and 6 were worse. In areas where milk, the best source of riboflavin in the diet, was not available, the prevalence and the severity of corneal vascularization were increased.

## Cancer Research, Baltimore

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Occurrence and Transplantation of Embryonal Nephromas in Rabbit H S Greene—p 444  
Mammary Cancer in Littered and Unlittered C H Breeding Females and Their Hybrids I I Buttner—p 441  
Studies on Effect of Hypothermia I Acute Physical and Physiologic Changes Induced by Prolonged Hypothermic State in Rabbit I Ariel F W Bitten and S I Warren—p 448

## Endocrinology, Springfield, Ill

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- Effect of Large Doses of Androgen on Testes in Ground Squirrel (Citellus tridecemlineatus) I I Well—p 455  
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Pituitary Diabetes in Cat Recovery Following Phlorizin Treatment F D W Lukens F C Dobbin and M W Wolcott—p 471  
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Comparison of Influence of Some Crystalline Hormones of Adrenal Cortex on Deposition of Glycogen in Liver R M Reinecke and E C Kendall—p 505  
\*Determination of Rate of Thyroid Hormone Secretion at Various Environmental Temperatures E W Dempsey and E B Astwood—p 509

**Secretion of Thyroid Hormone at Various Temperatures**—From data presented by Dempsey and Astwood it may be concluded that the rate of secretion of the thyroid hormone is increased by exposure to cold and reduced by exposure to heat. The maintenance or restoration of normal thyroid weight by the administration of thyroxin to rats simultaneously treated with the antithyroid drug thiouracil has been used as the basis of a procedure for the assay of thyroid hormone. The rate of thyroid enlargement in response to thiouracil was low in hot environments and high when rats were maintained in the cold. A quantity of thyroid hormone equivalent to 52 micrograms of thyroxin daily was required to maintain a thyroid of normal weight in young male rats kept at room temperatures averaging 25 C. At 1 C the thyroxin requirement was increased to 95 micrograms while at 35 C it was decreased to 17 micrograms. These values are considered to be quantitatively equivalent to the amount of hormone produced by the normal thyroid gland under these conditions.

## Journal of Aviation Medicine, St Paul

14 97-156 (June) 1943

- \*Hyperventilation Syndrome and Its Importance in Aviation H C Hinshaw R F Rutherford and W M Boothby—p 100  
\*Decompression Disease of Bone J H Allan—p 105  
Medical Service of Service and Depot Groups Army Air Forces J Hargreaves—p 112  
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Some Physiologic Aspects of Parachute Descent from High Altitudes K E Penrod—p 119  
Problem of Airsickness P A Campbell—p 126  
Labyrinth in Aviation H Brunner—p 132

**Hyperventilation Syndrome in Aviation**—Hinshaw and his collaborators describe the symptoms produced by voluntary deep and rapid breathing which are characterized by dizziness, blurring of vision numbness of the extremities and in later stages by muscular cramps serious vasomotor collapse and unconsciousness. These symptoms are produced by apnea and may result from spontaneous unrecognized hyperventilation occurring under conditions of emotional strain excitement and anxiety. The symptoms of extreme hyperventilation are well known but it has not been adequately emphasized that similar ones are produced by mild hyperventilation continued over a longer period. Such symptoms would interfere seriously with a pilot's ability to control an airplane. A few instances of probable spontaneous hyperventilation among fliers have been described. The authors noted a clear variation in results produced among different aviators tested by voluntary hyperventi-

lation. The severity of symptoms was not related to the degree of apnea produced. They propose that the demonstration of voluntary hyperventilation be included as a part of the routine periodic medical examination of commercial and military pilots so that these fliers may be trained to recognize the symptoms produced and to control them by voluntary suppression of respiration should they occur during flight. If this plan should be carried out on a sufficiently large scale it would be possible to determine how frequently spontaneous hyperventilation occurs during flight and to estimate its importance as a factor in the production of 'pilot error'.

**Decompression Disease of Bone**—Allan points out that during ascent in an airplane the tissues become supersaturated with nitrogen because the partial pressure of nitrogen in the lungs falls off. As this pressure is released the nitrogen comes out of solution in the body and appears in the tissues and in the blood in the form of bubbles. Since the elimination of nitrogen from the body is entirely through the blood stream those parts of the body which have the poorest blood supply will be the slowest to lose their excess nitrogen. Bone is the tissue with the poorest blood supply in relation to the nitrogen content. There are two areas in bone where anastomotic connections are limited, namely the epiphyseal area and the metaphyseal area close to the epiphyseal line. In these two areas the reaction to complete or incomplete interruption of the blood supply is the same as in any area with limited anastomotic connections and the process is known as aseptic necrosis. In these two areas are found the lesions so characteristic of decompression disease of bone. The favored seats for these lesions are the long bones, the shoulder joint and the hip joint. The late effects of this process are recognizable roentgenographically. They are (1) aseptic necrosis of the hips and the shoulders (2) medullary calcification in the diaphyseal ends of the long bones and (3) hypertrophic arthritis. Not all of these need be present to justify the diagnosis. Aseptic necrosis with osteoarthritis may occur without medullary calcification. Joint changes are more frequently present than changes in the long bones. The recognition of such bone changes is of paramount interest in time of war as the incidence of symptoms due to decompression illness associated with high altitude bombing and fighting are on the increase.

## Journal of Nervous and Mental Disease, New York

97 623-740 (June) 1943

- Psychologic Observations in Affective Psychoses Treated with Combined Convulsive Shock and Psychotherapy N A Levy and R R Grinker—p 623  
Neurologic and Endocrine Aspects of Atrophic Arthritis (Deformans) Report on Use of Vitamin E and Artificial Fever S Stone—p 638  
Paralysis in Old Testament Some Neurologic Observations Recorded in Bible by Ancient Hebrew Prophets C J Brim—p 66  
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Environmental and Personality Factors in Psychoses Irene Case Sherman and S H Kraines—p 676

98 1-114 (July) 1943

- Introduction to Growth Concept of Nervous Integration (Application to Psychiatric Disease Schizophrenia and to Somatic Disease Renal Hypertension) D E Schneider—p 1  
\*Present Status of Convulsive Shock Therapy A E Bennett—p 23  
Hemiatrophy of Brain with Contralateral Cerebellar Atrophy Case Presentation with Histopathologic Findings J Moore—p 31  
Pubertas Precox in Female Infant Caused by Ventricular Cyst Report of Case D J Flicker—p 32  
Cataplexy and Its Treatment J B Dvnes—p 38  
Observations in Electric Shock Therapy Applied to Problems of Epilepsy L B Kalinowsky and F Kennedy—p 36

**Present Status of Convulsive Shock Therapy**—Bennett shows that convulsive shock therapy is of doubtful value in modifying the schizophrenic personality. In cases with affective predominance it is effective but otherwise it is not advisable in schizophrenia. The induction of grand mal seizures by whatever method is effective in a large percentage of affective disorders. Traumatic skeletal and visceral complications are extremely serious in any form of straight convulsive shock whether induced by a drug or electrically. Preliminary curarization is a safe preventive of traumatic complications in any type of convulsive shock. It increases the scope of usefulness of convulsive therapy and lessens the contraindications and thus improves the therapeutic results.

## Journal of Urology, Baltimore

49 755-894 (June) 1943

- \*Pheochromocytoma of Adrenal Gland A Hyman and W H Mencher —p 755
- Pre-renal Sympathicoblastoma in Infant Causing Urinary Obstruction A B Hepler —p 777
- Immunoradiography in Visualization of Suprarenal Glands S I Wilhelm —p 785
- Anatomic Relations of Ectopic Iliolumbar Kidneys, Bilateral in Adult, Unilateral in Fetus I H Driesler and B I Anson —p 789
- Upper Urinary Tract in Cases of Neurogenic Bladder Preliminary Communication I Smith and A Strassberg —p 803
- Cystitis Imphysematosa Case Report R A Burns —p 808
- Transurethral Resection with Cold Punch Operative Technique J L Emmett —p 815
- \*Transurethral Prostatic Resection Ultimate Results L M Orr, P R Kundert and I J Pike —p 810
- Medical Findings in Benign Prostatic Hyperplasia New Method of Grouping Cases for Operation C H Del Shivers —p 847
- Sedimentation Rate in Cases of Benign Hypertrophy and Carcinoma of Prostate Gland and Carcinoma of Prostate Gland with Metastasis J H Lillich and H C Haben —p 857
- Ratio of Urinary Androgen and Estrogen in Relation to Benign Hypertrophy of Prostate Mary I Miller and R A Moore —p 861
- Unusually Long Foreign Body Impacted in Urethra Causing Painful Priapism for Seven Days Removal and Cure by External Urethrotomy R Gutierrez —p 865
- Male Chrometec Additional Observations of 57 Patients A A Werner —p 872
- Henry Jacob Bigelow and His Operation—A Major Contribution to Modern Urology Comes Finally into Its Own R P Middleton —p 883

**Pheochromocytoma of Adrenal Gland**—Tumors of the medullary portion of the adrenal gland, according to Hyman and Mencher may be divided clinically into those which produce hormonal symptoms and those which do not. Tumors of the pheochromic cell (pheochromocytoma) represent the type producing the hormonal symptom complex, sympathoblastomas, neuroblastomas, and ganglioneuromas arising from the ganglionic cells represent the nonhormonal type of tumor. The pheochromocyte represents the mature stage of the endocrine differentiation of the formative cells. An abnormal proliferation of these mature cells leads to the development of hormonal medullary tumors variously known as chromaffinomas, paragangliomas or pheochromocytomas. These occur not only in the medulla of the adrenal gland but wherever chromaffin tissue is present. They may thus be intra-adrenal or extra-adrenal in location. They are usually benign and well encapsulated. In a typical history the patient begins to complain of a pounding headache, nausea, dyspnea, orthopnea, palpitation, blanching of peripheral portions of the body, paresthesias, abdominal cramps, vomiting, precordial throbbing and extreme weakness. The attacks vary in length from minutes to hours, during which time the patient may be in a state of shock. The attacks usually terminate with flushing of the blanched areas, profuse perspiration and weakness. Death during an attack may occur from shock, pulmonary edema, failure of the left side of the heart, coronary disease or cerebral manifestations. The attacks may occur spontaneously or they may be induced by any mechanism which calls forth a discharge of epinephrine (pressor response). The causative factors include emotional upset, fear, anger, slight trauma, change in posture from the reclining to the upright position, physical exertion, hyperventilation, lying on the side of the tumor, massage of the abdomen on the side of the tumor, administration of histamine or of epinephrine or immersion of the extremities in cold water. The diagnosis of pheochromocytoma is based on (a) the typical symptom complex during an attack (spontaneous or induced), (b) the typical mechanisms of a pressor response, (c) the demonstration of a pressor substance in the blood of a patient during the height of an attack, (d) the demonstration of the tumor by perirenal insufflation. Four cases of pheochromocytoma of the adrenal gland are presented. Three of the patients were women and the fourth was a male. All the tumors were removed successfully and all the patients made an uneventful recovery. A long period of follow-up reveals that the patients are in excellent health and that no further attacks have occurred.

**Ultimate Results of Transurethral Prostatic Resection**—Orr and his co-workers made a follow-up study of 483 cases of transurethral resection of the prostate. Of these 407 were traced. One hundred and fifteen patients died within a few months to nine years or more after leaving the hospital. Intelligible replies were received from 252, and of

this number 209 presented themselves for examination. The information obtained did not substantiate the extremely low mortality rate reported by other workers with the method. Patients who stated that they were completely relieved and in whom a complete resection had been performed had no evidence of regrowth on cystoscopic examination several years after operation. Complete resection implies the removal of all obstructing tissue down to the fibers of the prostatic capsule in all directions in all quadrants of the vesical outlet. Patients who returned with obstructive symptoms years after the original operation were invariably found to have hypertrophy in that part of the prostate which was not interfered with at the original operation. Patients who were never completely relieved and who returned a few months to a year later were usually those from whom not enough prostatic tissue had been removed. Persistent pyuria resulting in frequency, burning and nocturia has been a discouraging complaint in a large majority of cases. Pathologic as well as bacteriologic study of the tissue removed indicates that pyuria is far more often due to the leaving behind of infected bits of prostatic tissue than to the introduction of infection during or immediately after the operation. The pathologist is at a disadvantage in making a diagnosis of the tissue removed by resection unless practically every section is examined. In many cases incipient carcinoma is undoubtedly overlooked, as evidenced by the number of patients returning with unmistakable signs of a cancerous process in later years. Many of these patients would have stood a much better chance of cure had they undergone total prostatectomy. The most important conclusion to be gained from this study is that a great many more patients with severe organic diseases were given the opportunity for relief of their urinary obstruction by the use of transurethral resection where other methods of removal may have been considered too hazardous. It is in this narrow field of borderline patients that prostatic resection offers an advantage over other methods of prostatectomy.

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- Some Suggestions from Oculist to General Practitioner J D Williams —p 200
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- Dietary Deficiencies Review of Vitamin B Deficiencies J H Kooser —p 207

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- Vitamin B Complex C W Dowden Jr —p 225
- Vitamin B Complex Used in Neuropsychiatry E E Landis —p 229
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- Disability Following Back Injury C B Stacy —p 240
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## Maine Medical Association Journal, Portland

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- Notes on Medieval Guilds of Medicine H T Karsner —p 103
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- Hospital Care as Department of Health and Welfare Problem H R Kobes —p 131

## Medical Annals of District of Columbia, Washington

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- Medical Aspects of Chemical Warfare II Vesicants and Their First Aid Treatment D H Stubbs —p 220
- \*Problem of Varicose Ulcers of Leg W R Manning —p 223
- Advantages of Teaching Syphilitic Clinic in Hospital Polyclinic G W Creswell and W L Murray —p 227
- Multiple Spondylolisthesis Report of Case M C Cobe, H C Hansen and M H Morris —p 231

**Varicose Ulcers of Leg**—Manning stresses the need for more standardized methods of treatment of varicose ulceration. High saphenous ligation, with multiple ligations when indicated, accompanied by retrograde injection is the best method of obliteration. Periodic injections of isolated varices may easily be done during the follow-up treatment. Stimulation of granulation tissue should be undertaken following stoppage of the

reversed flow of blood. Removal of the stagnant tissue fluids about the ulcer can be accomplished by the use of an elastic supportive bandage. A most important point is that the patient should use the leg while the bandage is in place to obtain a better result. Skin grafting will occasionally greatly shorten the period of healing. Recurrences will be prevented in some cases by prolonged support.

### Military Surgeon, Washington, D. C.

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- Problems of Medical Activities with Expeditionary Forces L. W. Johnston—p. 1  
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- Relationship of Maternal Ether Anesthesia to Inauguration of Fetal Respiration W. C. C. Cole and D. M. Kimball—p. 200  
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### Pennsylvania Medical Journal, Harrisburg

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Osteomyelitis of Tibia with Thrombosis of Saphenous Vein Dissection of Constrictive Therapy A. O. Wilensky—p. 955  
\*Appraise Vitamin Formulas and Not Titles H. T. Kelly—p. 961

**Appraise Vitamin Formulas and Not Titles**—To evaluate a vitamin combination it is necessary to know the amount of the vitamins it contains. For this reason their biologic activity should be expressed in terms of a common system and where possible the weights in milligrams of the vitamins should be given. The vitamins should be present in the ratio of the adult minimum daily requirement to permit adequate dosage of any component without waste of others. Five times the daily recommended allowances or maintenance levels should be pre-

scribed for therapeutic doses. It is also necessary to bear in mind the cost of the product on the basis of the daily cost of supplying the therapeutic requirements of the individual.

### Southern Medical Journal, Birmingham, Ala.

36 467-542 (July) 1943

- Cancer of Rectum Preoperative and Postoperative Complications I. L. Telks—p. 467  
Malignant Predominantly Cystic (Unilocular) Cerebral Tumor (Meningioma) with Alveolar and Reticulin Forming Cells C. R. Tuthill and J. M. Meredith—p. 471  
Prefrontal Lobotomy Six Years Experience I. W. Watts and W. Freeman—p. 478  
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Complications in a Diabetic Nodular Thyroid and Branchial Cleft I. Tulke H. J. Warthen and W. R. Jordan—p. 536

**Prefrontal Lobotomy**—Watts and Freeman have performed lobotomies on 136 patients during the last six years. Unless sufficient white matter is cut worry, nervous tensions, apprehension and obsessive thinking are not permanently relieved. The operation must be done symmetrically on both sides. Anatomic studies of patients who have died some time after the operation showed that integrity of the cortical architecture in the frontal lobe is preserved but that degeneration takes place in the nucleus medialis dorsalis of the thalamus. The authors believe that this bundle is of importance in linking ideational with affective experience and that interruption of this pathway is the greatest factor in producing alteration in emotional responses of the patient. Having observed repeatedly that a satisfactory therapeutic result occurs when lobotomy produces drowsiness, impairment of memory and disorientation, they now use these as a yardstick to determine the depth and the extent of the incisions. Whenever possible the patient is operated on under local anesthesia. The neurologist converses with the patient and puts him through various intellectual exercises. Apprehension and anxiety may decrease or disappear after two or three quadrants have been cut but this is not enough. Unresponsiveness or disorientation is usually necessary in order to obtain a satisfactory clinical result. Disappearance of nervous tension, impairment of memory, confusion and disorientation usually come on within a few seconds to a few minutes after the fourth quadrant is sectioned. There is little shock associated with the operation. When prefrontal lobotomy fails to relieve the mental symptoms or when the remission of symptoms is only temporary, a second or even a third operation is performed. This has been done on 23 of the authors' patients. Twenty-seven of the patients subjected to prefrontal lobotomy are regularly employed, 16 are employed part time or studying and 39 are keeping house. Therefore 82 are leading useful lives. Thirty more are living at home but are not taking an active part in the activities there. The best results occur in the obsessive tension states and the involutional depressions. Definite conclusions cannot be drawn about the schizophrenias until more time has elapsed and a larger series is accumulated but the results have been satisfactory enough to encourage use of the procedure in selected cases.

### Southwestern Medicine, Phoenix, Ariz.

27 139-162 (June) 1943

- Rheumatic Heart Disease in Arizona A. N. Shoen—p. 140  
\*Relief of Allergic Premenstrual Headache Preliminary Report E. V. Phillips—p. 144  
Fractures of External Malleolus H. A. Barnes—p. 147

**Relief of Allergic Premenstrual Headache**—Phillips points out that premenstrual headache may be accompanied by nausea, vomiting, vertigo and visual disturbances and frequently by pruritus or urticaria. Premenstrual tension is a condition of more or less irritability, emotional sleeplessness,



and temperamental change, may occur without a headache, but it also may precede the headache. Malaise, discomfort and eruptions on the face are not unusual. These manifestations vary widely in degree and duration. With the increasing employment of women in essential industries this recurring impairment of efficiency or absence from work presents a considerable industrial problem. The author found that certain allergic women who suffer from premenstrual headache, premenstrual tension and associated dysfunctional ailments were found to have sharply positive reactions to intradermal testing with a gonadotropic preparation, a 1:5 dilution of synpoidin (a combination of chorionic gonadotropin and pituitary extract). Numerous controls had a negative response. Women showing positive reactions were relieved by intradermal desensitization with the same preparation. This test and treatment are simple, harmless and effective. It is recommended for trial by gynecologists and industrial physicians.

### Tennessee State Medical Assn Journal, Nashville

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Predisposition to Compressed Air Illness I. J. Thorne—p. 1044  
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\*Local Use of Microcrystalline Sulfathiazole in Treatment of Female Gonorrhea and as Prophylaxis for Gonorrhea H. E. Stedman—p. 1118

### Results in 155 Cases of Primary Atypical Pneumonia

—Correll and Cowan report clinical observations in 155 unselected clinically similar cases of atypical pneumonia, which may be classified as primary atypical pneumonia, etiologic agent unknown. The principal clinical symptoms were rapid onset with chilliness, intermittent or remittent fever lasting six to eight days, sore throat, nonproductive cough becoming productive in four to seven days, and headache. The physical findings frequently developed late, and the paucity of such findings as compared with the extensive x-ray findings was striking. Resolution as demonstrated by x-ray studies usually took about twenty days. The infrequency of complications and sequelae, the frequency of migration and delayed resolution and the failure to respond to sulfonamides were the other characteristics of importance. Not infrequently a febrile period of one to two days, with a temperature of 100 F, and a few findings

in the chest may prove on examination to be extensive pneumonia requiring twenty or more days for resolution. The proper x-ray technique is important in order to avoid overlooking this type of pneumonia. The x-ray films must be made with a so-called light technique, that is, the dorsal vertebrae should not be visible through the cardiac shadow. In 1 of 23 patients given x-ray therapy within four days after admission there was a failure to respond to treatment. In the remainder the febrile period, the total number of days of illness and the days for resolution as proved by x-ray examination were reduced one half. Of 9 patients whose pneumonia failed to resolve within thirty days on routine or other treatments, as evidenced by x-ray studies 7 showed x-ray clearing within an average of 40 days after one or two treatments of 112 roentgens each. Twenty-two and three-tenths per cent failed to be benefited by x-ray treatment. Roentgen therapy in this series showed definite promise in shortening the period of sickness in cases of acute development, it appears to be of definite value in shortening the period of delayed resolution and may be of aid in decreasing the incidence of complications. Its further trial in similar cases is suggested.

**Primary Atypical Pneumonia**—Haight and Trolinger present their observations in 47 cases. Although the disease does not seem to be highly communicable, its incidence may be much higher than is generally appreciated in view of its as yet limited recognition. The authors have found the following aspects of greatest value in diagnosis: (1) a benign clinical appearance, (2) a gradual onset with chilly sensations, headache and malaise, (3) relative bradycardia—pulse rate out of proportion to fever, (4) suppressed breath sounds as the most reliable and localizing of the usually deceptive pulmonary signs, (5) an essentially normal hemogram and normal flora in the sputum and (6) an x-ray film of the chest as the final court of appeal, without which few cases can be definitely diagnosed. There were no complications (pleural effusion, empyema, secondary invaders, abscess, pleuritis or bronchiectasis) in this series. As the disease is apparently unaffected by the sulfonamides, treatment is symptomatic and supportive.

**Local Use of Sulfathiazole in Treatment and Prophylaxis of Gonorrhea**—Stedman employed the microcrystalline preparations of sulfathiazole because of the ease of application, the property of remaining in a milklike suspension and the absence of a tendency to clump and cake. He tried this therapy in a group of native women who were the source of gonorrheal infection in the military forces. Of 60 women who had been treated during the last three years, 17 were found to be infected. These were immediately started on local therapy consisting of daily douches of 5 per cent saponated solution of cresol followed by swabbing of the cervix and vagina with acriflavine 1:2,000. Five did not respond after three or four weeks of this form of therapy. These 5 who still had smears positive for the gonococcus and all others subsequently encountered provided the clinical material for a trial of local sulfathiazole therapy. The method of treatment was as follows: 1. Treatments were given once daily. The mucopurulent exudate was removed from the cervix and vagina with a dry sponge. 2. Three methods of application of microcrystalline sulfathiazole were used: (a) By means of a powder blower the cervix and vagina were coated with microcrystalline sulfathiazole, (b) 2 or 3 cc of a 5 per cent solution of microcrystalline sulfathiazole was instilled into the vagina or (c) a suppository of 10 per cent microcrystalline sulfathiazole was inserted into the vagina. This suppository takes about ten minutes to dissolve, spreads out over the entire cervix and vagina and remains for several hours. The glycerin suppository was found to be the best form of application. 3. About 5 cc of a 5 per cent suspension of microcrystalline sulfathiazole was instilled into the urethra. This plan of treatment resulted in negative smears in from eight to thirty-one days. Local sulfathiazole therapy caused the patients no inconvenience except the daily attendance at the "clinic." There was no evidence of irritation or inflammatory reaction due to the local use of the drug. Prophylaxis by urethral instillation of a 5 per cent suspension of microcrystalline sulfathiazole was effective in all but 2 (99 per cent) of 297 males. The use of vaginal suppositories of microcrystalline sulfathiazole is suggested as prophylaxis against gonorrhea in order to protect both parties of the sexual union.

## War Medicine, Chicago

4 1-128 (July) 1943

- Air Borne Infections: A Review of the Personnel of Naval Laboratory Research Unit No. 1. A. P. Krueger, officer in charge—p. 1  
 Rapid Identification of Enteric Pathogenic Bacteria. M. I. Littman—p. 1  
 Localized Tetanus: Use of Oculograph Electrocardiograph for Recording of Normal and of Abnormal Action Currents of Skeletal Muscle (Electroviscerogram). I. (unlike) and J. F. Walker—p. 57  
 Head Injury: Review of Literature. H. H. Merritt—p. 61

## Western J Surg, Obst &amp; Gynecology, Portland, Ore

51 225-256 (June) 1943

- Clinical Effects of Oral Anhydroprogesterone on Motility of Human Cravid Uterus. E. W. Page and L. Woods—p. 225  
 Problem of Nutrition in Patients with Gastric Lesions Requiring Surgery. J. E. Rhoad, C. Riegel, C. E. Koop and I. S. Ravdin—p. 229  
 Chronic Mastitis and Carcinoma. D. McKinley—p. 234  
 Substitution Operation for Opponents Paralysis of Thumb: Modification of Ryse Technique. L. S. Lucas and H. E. Davis—p. 240  
 \*Simple Amenorrhea or Pregnancy? Use of Prostinine in Differentiation and Treatment. H. S. Douglas—p. 245

**Chronic Mastitis and Carcinoma**—McKinley discusses the relationship of chronic cystic mastitis to carcinoma of the breast. He presents a summary of the pathologic pictures that come under the heading of chronic cystic mastitis as described and interpreted by Chertle and Cutler. The first is mazoplasia the manifestation in the breast of excessive secretion of corpus luteum. The second form is cystiferous dequammative epithelial hyperplasia. Malignant neoplasia of the breast arises chiefly from the sessile papillomas. McKinley reviews 60 cases of chronic cystic mastitis seen in the University of Oregon Medical School and also the records of the cases of breast carcinoma of the tumor clinic. He found that 23 per cent of 128 pathologic reports of breast carcinoma contain an associated diagnosis of cystiferous dequammative epithelial hyperplasia or imply such a diagnosis. He thinks that this percentage is inaccurate and too conservative. In 4 per cent of the reports the carcinoma originated in papillomas of cystiferous dequammative epithelial hyperplasia. The analysis of the cases of cystiferous dequammative epithelial hyperplasia or chronic cystic mastitis has not resulted in a satisfactory appraisal of the incidence or subsequent carcinoma. Reasons for the inability to draw conclusions are that (a) too small a series has been accumulated, (b) many of those on whom the diagnosis is made clinically have not had pathologic confirmation and (c) follow-up has been too infrequent and too short. The author thinks that with regard to the management of an individual case of chronic cystic mastitis the attitude of Shields Warren seems the most logical. Chronic cystic mastitis predisposes to cancer. It is impossible to tell clinically in which case cancer will or will not develop. The risk is probably not sufficiently great to warrant bilateral mastectomy in all cases. Certainly all localized masses in the breast should be excised and examined but local excision will be followed by further symptoms in about 15 per cent and will not insure against carcinoma either microscopic at the time of surgery or in the future. Endocrine therapy (or pregnancy) may be permissible in those under 30.

**Prostinine Pregnancy Test**—Douglas directs attention to the prostinine pregnancy test first announced three years ago by Soskin, Wachtel and Hechter. He reviews 62 cases of menstrual delay in which he resorted to the intramuscular injection of prostinine methyl-sulfate and concludes that this procedure is a reliable test for pregnancy and that it yielded results comparable to the Friedman test. In all instances in which the Friedman test was used to corroborate the prostinine test the two were found in perfect accord. In borderline endocrine cases the interpretation of the prostinine test must be as carefully guarded as in certain positive Friedman tests. In 2 instances in which this test was used in cases of dyscrinism prostinine failed to bring on the menstrual flow as might be expected. The clinician must not include such cases for a prostinine trial without properly evaluating the glandular factors involved. The advantage of prostinine as a test for pregnancy over that of other pregnancy tests is especially noted in that in the absence of pregnancy or a glandular dysfunction it will bring about vaginal bleeding thereby acting as a therapeutic as well as a testing agent and affording quick psychologic and physiologic relief. The test is simple the results are accurate and it can be applied by the clinician in his office.

## FOREIGN

An asterisk ( ) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## Archives of Disease of Childhood, London

18 65-112 (June) 1943

- Studies in Anemias of Infancy and Early Childhood. Part VIII. Experiments on Blood Regeneration and Their Significance for Life Span of Erythrocytes. H. S. Baer—p. 65  
 Rheumatic Infection in Childhood. E. C. R. Couper—p. 88  
 Plasma Protein Values in Infants. Evelyn M. Hickmans, Ethel Finch and Eva Tonks—p. 96

## British Journal of Radiology, London

16 187-220 (July) 1943

- Treatment of Carcinoma of Prostate. F. W. Riches, I. G. Williams and A. Haddow—p. 187  
 Etiology of Erythema Nodosum. P. Kerley—p. 199  
 Calculation of Dosage Rates from Directional Caliper Measurements. F. Bush—p. 20  
 Osteochondral Hypothyroidism. Two Cases. R. Hermon—p. 208  
 Carcinoma of Thoracic Esophagus. Some Notes on Its Pathology and Spread in Relation to Treatment. J. A. C. Fleming—p. 212  
 Some Problems in Connection with Early X-Ray Changes in Adult Pulmonary Tuberculosis. G. Simon—p. 217  
 Dilatation of Esophagus. E. R. Williams—p. 220

## British Medical Journal, London

1 747-776 (June 19) 1943

- Principles of Exercise Therapy. E. A. Nicoll—p. 747  
 \*Jaundice Following Administration of Human Blood Products. H. A. Morgan and D. A. J. Williams—p. 750  
 New and Simple Method for Subcutaneous Ligation of Varicose Veins. B. W. Goldstone—p. 755  
 Postoperative Respiratory Complications in Service Cases. H. M. Bird, S. D. Kilner and D. I. Martin—p. 754  
 Caustic Soda Burns: Their Prevention and Treatment. H. Terry—p. 756

1 777-808 (June 26) 1943

- Immunity to Tuberculosis. G. G. Kaye—p. 777  
 Mild Depressive Psychosis. B. Andratshke and C. H. Rogerson—p. 780  
 Abnormal Agglutination Reactions of Strain of Leptospira Icterohemorrhagiae. J. C. Broom and H. C. Brown—p. 785  
 Symptomatology of Malaria. P. H. Birk—p. 784  
 Gas Infection of Brain as One Form of Serious Complications of Cerebrocranial Injuries. Report by a Committee of Soviet Scientists—p. 785

2 1-30 (July 3) 1943

- Circulation in Arterial Hypertension. G. W. Pickering—p. 1  
 Differential Diagnosis of Spinal Arthritis in Young Subjects. C. W. Buckley—p. 4  
 Study of Accuracy of Serum Protein Estimation and of Diurnal Variations in Their Level. M. Dixon and G. Plut—p. 6  
 Control of Menopausal Flu by Vitamin E. A. M. Hain and I. C. B. Sym—p. 8  
 Hemiplegia Complicating Whooping Cough. L. J. Grant and C. E. Williams—p. 9

**Jaundice Following Administration of Human Blood Products**—Morgan and Williamson describe a small series of cases of jaundice which followed the intravenous administration of plasma or reconstituted dried human plasma. The observation of jaundice in 2 patients who had received serum intravenously several weeks previously led to an investigation or all known to have been transfused with serum or plasma in the past year. Of 56 patients 50 have been traced and 9 (18 per cent) of them have since developed jaundice. Six were under direct observation at the time of jaundice but 3 were questioned retrospectively. The author gives brief histories of these 9 patients. There were no cases of jaundice among the medical and nursing staffs of the wards concerned. None of the patients who returned to their homes before developing hepatitis were aware of contact with any case of jaundice. The onset of symptoms which was sudden occurred forty-nine to one hundred and seven days after the last transfusion. Malaise, nausea and epigastric discomfort which sometimes persisted for some weeks accompanied the jaundice in 7 cases and preceded its onset by a few days in 3. In all but 1 of the cases the liver was enlarged and tender but in only 1 was the spleen palpable. There was a positive direct van den Bergh reaction in 5 cases and pale stools in 7. The duration of the illness varied from three to twelve weeks. The clinical picture most closely resembles that of infective hepatitis. It seems unlikely that this is an outbreak of infective hepatitis.

The only common causal factor was the administration of serum or plasma. It therefore seems probable that these fluids are of etiologic significance and that this outbreak is similar to those occurring after yellow fever and measles inoculation. The occurrence of such cases of jaundice with transfusion may easily be overlooked in view of the long symptomless period which intervenes.

### Edinburgh Medical Journal

50 321-384 (June) 1943

- Chronic Disease with Arthralgias. R. B. M. Millan—p. 321  
Causes of Fetal and Neonatal Death. Agnes R. Macgregor—p. 332  
Kahn Verification Test. Preliminary Note. W. I. M. Beveridge—p. 344  
Studies in Refractory Anemia. II. Anemias with Hypocellular Normoblastic Marrow. J. S. P. Davidson, I. J. Davis and I. Innes—p. 355

### Journal of Royal Army Medical Corps, London

80 287-338 (June) 1943

- Army Medical Services in Action. A. Hood—p. 287  
Suggestions for Battle Drill for Stretcher Bearers. R. O. Murray—p. 291  
Surgical Experiences at a Base Hospital in Egypt. A. McMillan—p. 300  
Laboratory Diagnosis of Dysentery Occurring in South African Troops in Middle East. M. H. Emlynson—p. 307  
Abnormalities of Sleep. I. W. Crofton—p. 314

**Laboratory Diagnosis of Dysentery**—According to Emlynson dysentery in the Middle East, as in South Africa may be caused by helminthic, protozoal or bacterial infection. He investigated 125 cases of dysentery in a South African General Hospital in the Middle East. Thirty-eight cases showed a 'bacillary exudate' diagnostic of bacillary dysentery. 57 cases showed an "indefinite exudate," while 30 cases showed no exudate. Eleven of the patients examined, or 88 per cent were found to be infected with *Endameba histolytica*. Three patients were found to be passing *E. histolytica* cysts. These patients all showed evidence of previous *E. histolytica* infection. Thirty-two of the 38 patients showing "bacillary exudate" yielded dysentery bacilli on culture. *Bacterium flexneri* was isolated in the majority of cases. *Bacterium shigae*, *Bacterium dysenteriae* Schmitz and *Bacterium sonnei* also were encountered. A routine examination of 55 suspected carriers yielded two cultures of *B. flexneri*, and in 1 case *Schistosoma mansoni* ova were identified. *B. flexneri* was isolated from 3 of 12 sigmoidoscope specimens obtained from patients with chronic dysentery.

### Lancet, London

1 793-822 (June 26) 1943

- \*Chemotherapeutic Drugs in Anaerobic Infections of Wounds. J. McIntosh and F. R. Selbie—p. 793  
Hydatid Disease in Wales. H. R. I. Wolfe—p. 795  
\*Blast, Sudden Death and the Epiglottis. F. C. Eve—p. 799  
Bilateral Adrenal Hemorrhage. J. E. Morison—p. 800  
Estimation of True Ascorbic Acid in Urine. D. Richter and Phyllis Godby Croft—p. 802  
Soviet Military Ophthalmology. A. A. Kolen—p. 804  
Plastic Splints. T. I. B. A. MacGowan—p. 805

**Chemotherapy in Anaerobic Infections of Wounds**—McIntosh and Selbie state that an analysis of cases of gas gangrene failed to show an appreciable reduction in its incidence in spite of prophylactic and therapeutic chemotherapy. They report the results of some further experimental investigations. A large number of chemotherapeutic substances were tested. It was found that the discrepancy between the experimental and field results seems largely due to the fact that most of the experimental anaerobic infections used as tests are not severe enough to be comparable with the disease in man. The authors have tried to overcome this by devising a standard severe infection in mice. The disease is produced by the intramuscular injection of 100 minimal doses of the bacteria with calcium chloride as a stimulant, followed an hour later in the same site by an injection of the chemotherapeutic drug under test. This interval of an hour does give consistent results with repeated tests. The most effective chemotherapeutic substances against the individual infections were penicillin against *Clostridium perfringens* and *Clostridium oedematiens*, and sulfathiazole against *Clostridium septicum*. The acridines possess a fairly powerful action against all three anaerobes though in a lower degree. Propamidine had a lower activity against all

three organisms, though its individual action in the case of *C. welchii* and *C. oedematiens* compared favorably with the sulfonamides. The tests show that no one drug is equally active against the three common anaerobes responsible for gas gangrene (*C. perfringens*, *C. septicum* and *C. oedematiens*). The best prophylactic results are achieved with the use of a mixture of drugs, and experience suggests the local application of a mixture of sulfathiazole and proflavine. The test the authors have used might be more aptly described as a prophylactic one. Owing to the rapidity with which gas gangrene spreads, the value of local treatment becomes restricted and general treatment, including antitoxins, is then essential.

**Blast, Sudden Death and the Epiglottis**—Observations on a man who died from an electric shock suggested to Eve that impaction of the epiglottis may be the explanation of sudden death from blast. The high pressure wave of blast, both in air and in water, compresses the thorax, expelling some air. The chest, being elastic, then expands, and air is drawn sharply inward. This rush of air might slam down the epiglottis and its effect would be reinforced by the low pressure wave, which sucks the walls of the thorax outward, just as it sucks glass out of windows. The epiglottis might thus be fixed firmly in position, as in the electrocution case, and there might not be enough air in the lungs to expire it upward again. If this is the mechanism in death from blast, survival will depend on such details as whether, at the time of impact, the person has just filled or just emptied his lungs, whether his mouth or nares are open, whether his ribs are rigid or flexible and whether his epiglottis is tilting downward as it does in swallowing. He has made a number of experiments with models representing the thorax and epiglottis, they clearly demonstrated a suction capable of slamming down the epiglottis. The hypothesis must eventually be proved or disproved by post mortem findings rather than by experiments. Positive evidence of impaction of the epiglottis should be diligently sought in blast victims by digital exploration or by postmortem examination. This evidence will not be found until it is specifically looked for. If the hypothesis is correct, death can be averted if the epiglottis is promptly replaced or if the vacuum holding it down is abolished by plunging a hollow needle into the trachea. Artificial respiration is futile till this is effected.

2 1-32 (July 3) 1943

- Bacteriology of War Wounds. R. J. V. Pulvertaft—p. 1  
Tuberculosis in Children. Study of 100 Cases. J. C. Roberts—p. 2  
\*Listeria Monocytogenes Isolated from Case of Infectious Mononucleosis. R. A. Webb—p. 5  
\*Vitamin A and Dark Adaptation. J. Yudkin, G. W. Robertson and S. Yudkin—p. 10  
Lung Stone Causing Profuse and Recurrent Hemoptysis. F. G. Chandler—p. 13  
Collapse Under Pentothal Sodium Anesthesia. F. Hoernigsberger—p. 14

**Listeria Monocytogenes in Infectious Mononucleosis**—Webb reports the clinical history of a student, aged 20, who presented the symptoms of glandular fever with swollen lymph nodes, pharyngitis, fever of three weeks' duration and a mononucleosis. The small quantity of serum available from the fourteenth day blood sample was used for the Paul and Bunnell sheep red cell heterophile agglutinin test. This gave positive agglutination to a titer of 1:2,048 (serum dilution). This result affords strong confirmatory evidence of glandular fever. The culture of the blood clot of the arm vein specimen taken on the fourteenth day of the disease yielded an organism the morphologic and cultural characteristics of which suggested *Listeria monocytogenes*. Its biochemical activities were therefore investigated and compared with those of three stock strains of this organism. The author describes the cultural and biological tests for this organism, including the appearance of the lesions in experimental animals. He discusses the natural history of disease in animals caused by *Listeria* ("listeriosis"), and the relation of *Listeria* to certain types of human meningitis and meningoencephalitis and to infectious mononucleosis. The reported case furnishes the third instance of the association of *Listeria monocytogenes* and infectious mononucleosis. In the two previous instances the countries of origin were Denmark and the eastern United States of America.

**Vitamin A and Dark Adaptation**—Yudkin and his associates show that considerable differences of opinion have been expressed concerning the technique of measuring dark adaptation. Discussion has centered especially about the advisability of having a fixation spot or showing the test light in flashes and of using a form perception test rather than one of simple light perception. In their opinion many of the differences have been considered too much from the theoretical aspect; too few comparative tests have been done with different apparatus to determine whether and to what extent differences in technique produce different results. Various types of apparatus measure somewhat different functions. Thus the presence of a fixation spot will be of special value in determining the physiologic status of a fairly definite area of the retina; the absence of a fixation spot on the other hand allows the subject to find the most suitable parts of the retina with which to view the object and so to approach the practical conditions of vision at night. Using a modification of the Crookes dark adaptation apparatus the authors have measured the course of dark adaptation in 400 apparently normal subjects. Repeated measurements showed that the readings for one subject are reproducible within narrow limits. In any one individual the variations rarely exceed 0.2 log unit for cone or rod threshold and two minutes for the cone-rod transition time. The course of adaptation varies considerably in different individuals and the visual threshold in the early stages of adaptation—especially in the first ten minutes—may bear no relation to the readings of the final rod threshold. This confirms the observations of other investigators but since many workers still use methods which give readings within a few minutes or even seconds of the onset of dark adaptation the importance of these observations is stressed. Administration of vitamin A as it affects dark adaptation at all always affects the final rod threshold. Other parts of the curve such as the cone threshold or the cone-rod transition time may not be affected. If single readings are to be used for assessing visual performance in the dark they are best made in conditions approaching complete adaptation.

### Medical Journal of Australia, Sydney

1 481-504 (Nov 29) 1943

Hippuric Acid Test in Thyrotoxicosis H. R. G. Poate, R. J. Bartholomew and T. E. Wilson—p. 481  
Blackwater Fever: Review of Cases A. J. M. Nelson—p. 491

**Hippuric Acid Test in Thyrotoxicosis**—Poate and his associates discuss the results of 183 hippuric acid tests on 133 patients with diseases of the thyroid gland together with the results of 45 hippuric acid tests on 40 other patients. Basal metabolic rates and blood cholesterol, bilirubin and prothrombin levels were also estimated in many of these cases but it was not possible to prove a relationship between the results of any of these tests, the age and the sex of the patients, the duration of symptoms and the postoperative reaction. It is shown that of female patients suffering from thyrotoxicosis are grouped on a pathologic basis as (1) having acute thyrotoxicosis (hyperplastic thyroid gland) and (2) having toxic adenomatous thyroid. These two groups differ from each other in age, duration of symptoms and response to the hippuric acid test and in either series these factors of age, duration of symptoms and conjugation and detoxication are probably unrelated. It is therefore concluded that patients with toxic adenomatous thyroids show greater impairment of the conjugating and detoxicating function of the liver than do patients with acute thyrotoxicosis and that this difference is not entirely due to the longer duration of symptoms or to the increased age of the former group of patients. In the 9 fatal cases of thyrotoxicosis in this series the results of the hippuric acid test were not proportional to the changes in hepatic structure nor was there a relationship between the result of the hippuric acid test and the pathologic changes in the thyroid gland in those cases in which this gland was removed at operation or necropsy. It is concluded that impaired liver function is not the sole cause of thyroid crises and that from preoperative hippuric acid tests it is not possible to determine in which cases these crises will develop. The authors do not wish to convey the impression that the hippuric acid and other tests have usurped clinical judgment in the treatment of thyrotoxicosis; rather these tests are subservient to it. The hippuric acid test con-

firms the beneficial effect of preoperative treatment in cases of thyrotoxicosis and helps to establish the unsuitability of some patients for operation, especially many of those elderly patients with toxic adenomatous thyroids in whom the toxic state has existed for several years.

1 505-526 (June 5) 1943

Anovulatory Menstruation R. Mackey—p. 505  
Rh Factor and Its Application to Obstetric Practice C. S. Adam—p. 507  
Some Remarks on Head Injuries J. E. Hughes—p. 509  
Granulocytopenia Complicating Administration of Sulfonamides Report of 2 Cases F. Catarrichi and J. J. Hurley—p. 511

**Rh Factor and Its Application to Obstetric Practice**—Adam points out that antibodies (agglutinins) for the Rh factor do not normally occur in human plasma, so that when an Rh negative subject is given blood from an Rh positive donor as a first transfusion the reaction may be absent or slight, but Rh antibodies are nevertheless produced, so that a second transfusion from an Rh positive donor may be followed by a fatal reaction. In obstetric practice however, it is not necessary for a woman to be given a second transfusion before incompatibility reactions involving the Rh factor can occur. It was observed that most of the puerperal patients who had suffered transfusion reactions had been given blood from their husbands. Analysis of several of these cases demonstrated that the recipient was Rh negative and had moreover anti Rh agglutinin in her serum and that the husband donor was Rh positive. The possibility was suggested that the antibodies have been formed in response to an antigen present in the fetus and inherited from the father but absent in the mother. The concept of isommunization by the Rh factor was thus developed and new light was thrown on the cause of erythroblastosis fetalis. If a blood transfusion is required for a woman during pregnancy or the puerperium it is best not to use the husband as the donor even though he is of the same blood group or a universal donor. It is apparently possible that some degree of isommunization may develop without producing signs of erythroblastosis in the infant but sufficient to produce anti Rh agglutinins in the mother's serum. If a woman has given birth to an infant suffering from erythroblastosis fetalis and requires a blood transfusion in no circumstances must the husband be used as the donor, as he is almost certain to be Rh positive and the mother will be Rh negative; her serum will contain Rh antibodies and a severe or even fatal reaction will follow. The application of the available knowledge toward prevention of erythroblastosis fetalis lies in the premarital determination of the Rh character of the blood of the two persons concerned. It is doubtful however whether knowledge is yet sufficiently full to advise against marriage when the indications (as shown by the Rh factor) are unfavorable. It seems that the potency of the Rh antibodies developed through isommunization during the first pregnancy may not be sufficient to interfere with the birth of a healthy child on this occasion but that the risk of erythroblastosis or of uterine gravis neonatorum increases with successive pregnancies especially if the interval between them is short.

### Schweizerische medizinische Wochenschrift, Basel

72 1369-1400 (Dec. 12) 1942 Partial Index

- \*Clinical and Bacteriologic Investigations on Sulfonamide Resistance of Pneumococci A. Grumbach and R. Hegglin—p. 1369
- \*Elimination of Sulfonamides Particularly of Sulfathiazole in Breast Milk and Significance for Nursing G. Rieben and J. Druet—p. 1376
- Experience with Administration of Vitamins to School Children Mary Stutz and E. Braun—p. 1380
- Provoked Hyperglycemia Test After Exertion R. M. Du Pan—p. 1383
- Collaboration of Physician and Dentist in Dental Focal Infection W. Wiler—p. 1386

**Pneumococcal Resistance to Sulfonamide Compounds**—Grumbach and Hegglin examined 62 strains of pneumococci obtained from 36 cases for sensitivity to sulfonamide compounds. Clinical course and in vitro chemosensitivity corresponded in those cases which showed prompt clinical response as well as in those which showed poor clinical response and had a fatal outcome provided all other causes were excluded and the strains were immediately isolated from the sputum and tested. Decrease in virulence goes parallel with increase in resistance.

and increase in virulence with greater sensitivity to chemotherapy. Massive local administration of a sulfonamide compound increases the resistance to chemotherapy. Of strains which were repeatedly isolated in the course of a chemotherapeutically treated pneumonia, some showed unchanged sensitivity, others were more and still others were less sensitive on second isolation.

**Elimination of Sulfathiazole in Breast Milk**—According to Richen and Düry, at the women's clinic in Basel, Switzerland, about 55 per cent of the women are given sulfathiazole for a time after delivery. This raises the problem of the effect of the sulfathiazole on the nursing infant. The authors studied the elimination of sulfathiazole in the milk of 10 lactating women making 225 analyses. With a daily oral dose of 3 Gm, the elimination varied between 0.5 and 1.5 mg per hundred cubic centimeters, with a daily dose of 6 Gm, between 1 and 2 mg. The corresponding blood level was generally from two to three times as high as that of the milk. The largest amount of sulfathiazole ingested by a nursing infant in the course of a day was 4 mg. Between 0.3 and 2 per cent of the sulfathiazole ingested by the women appeared in the milk. This amount is too small to exert a therapeutic effect on the nursing infant. In comparative serial tests on 138 infants it was proved that with a maximal maternal dose of 6 Gm daily for five days the admixture of sulfathiazole to the breast milk exerted no influence on the infant. The weight curves of the nurslings whose mothers received sulfathiazole did not differ from those of the controls. Thus there is no reason to discontinue breast feeding when a mother requires the aforementioned doses of sulfathiazole.

### Semana Médica, Buenos Aires

50 1159-1218 (May 27) 1943 Partial Index

- Autochthonous Murine Exanthematic Typhus in Human Beings N S Izquierdo—p 1159
- Congenital Diaphragmatic Hernia M J del Carril and I Diaz Bobillo—p 1169
- Sedimentation Speed of Erythrocytes in Temporomaxillary Arthritis M B Galea and H D Branchi—p 1177
- \*Influence of Testosterone on Hypertension in Men A L Marquez—p 1180
- Grave Febrile Acute Pemphigus C R Castilla, R S Aguirre and G Alvarez—p 1182
- Prolapse of Female Urethra P Quiroga—p 1188

**Testosterone in Hypertension**—The occasional coexistence of hypertension and impairment of sexual potency induced Marquez to inject testosterone propionate in the treatment of hypertension. At first he injected 5 mg once or twice each week. The effect being slight, he increased the dose to 10 mg, administered two or three times a week. Increasing the individual dose to 25 mg did not noticeably improve the results obtained with 10 mg. The favorable results sometimes became evident after from 50 to 80 mg had been injected, but he usually continued the treatment for from two to three months in order to retain the favorable results. He reviews the histories of 5 patients with hypertension in whom injections of testosterone propionate reduced the hypertension considerably and greatly improved the subjective symptoms and the general condition. At the time of his report the improvement had persisted for as long as nine months.

### Medizinische Klinik, Berlin

38 337-360 (April 10) 1942 Partial Index

- Hemorrhoids and Their Treatment by Injection H Junghanns—p 337
- \*Vaccination Against Typhus and Vaccines Used H Hetch—p 341
- Facilitation, Shortening and Reduction of Risks of Delivery of Old Primiparas W Benthin—p 342

**Vaccination Against Typhus and Vaccines Used**—Hetch points out that passive immunization against typhus may be obtained with serum from convalescents or specifically immunized animals. The protection conferred is of short duration and the potency of the serums is not uniform. Vaccines prepared from rickettsias hold out best promise for active immunization. The author speaks of Weigl's work with rickettsias from the intestine of lice, Zinsser's studies in which the tunica vaginalis of rats was used and Cox's method of culturing rickettsias on the chorioallantois of incubated eggs. This last

vaccine has proved just as effective as Weigl's lice intestine vaccine. Vaccines have also been prepared from the hepatized lungs of experimentally infected mice, rabbits or dogs. A certain cross immunity exists between classic typhus and murine typhus, and repeated injections of vaccine from murine virus confer a certain degree of immunity, but the best protection is conferred by vaccines from homologous rickettsias. In regions in which murine typhus occurs mixed vaccines of *Rickettsia prowazekii* and *Rickettsia mooseri* can be used.

### Munchener medizinische Wochenschrift, Munich

89 207-230 (March 6) 1942 Partial Index

- \*Sporadic Typhus K Luz—p 207
- Typhoid Fever Its Diagnosis and Treatment E Fenz—p 210
- Interferometric Method of Abderhalden's Reaction in Research and Clinic J Bauer—p 214
- Neurohormonal Basis of Pathogenesis of Exophthalmic Goiter P Sunder Plassmann—p 217
- Problem of Congenital Defect of Femur and Its Treatment E Mackai—p 220

**Sporadic Typhus**—Luz reports observations on 41 cases of typhus in Leipzig, 36 of the patients were Poles and 5 were Germans. He stresses that the face of the patient with typhus is red and bloated, the eyelids are swollen, there are conjunctivitis and photophobia, the eyes are glassy, the speech is indistinct and oral pharyngeal symptoms are present. Fever rises rapidly and remains between 39 and 40 C (102.2 and 104.0 F) for from ten to fourteen days, fall in temperature is by lysis. The exanthem appears at the height of the fever, between the fourth and sixth days. It begins on the abdomen and shoulders and spreads rapidly over the entire trunk and the extremities. The face always remained free from the rash in the cases seen by the author. Splenic enlargement was present in all except the cases of mild disease. Involvement of the central nervous system was indicated by hallucinations, delirium, excitation and catatonic symptoms. Tremor and muscular contractions, defects in speech and hearing, and increased reflexes were observed. Typhus nodules in the brain were found at necropsy in 3 cases. Lumbar puncture in 6 cases disclosed increased pressure, the protein reaction was positive and the cell count was between 21 and 78. The arterial pressure was decreased. Except for mild anginal symptoms in a few patients, cardiac symptoms were negligible. Leukocytosis with counts from 10,000 to 13,000 existed at the height of the disease, there was an increase in neutrophils as well as eosinophilia. There were some cases of extremely mild infection without exanthem. In these cases the Weil-Felix reaction was decisive for the diagnosis. The author stresses the great importance of this reaction. Among the Polish patients the mortality rate was 28 per cent, whereas among the German patients it was 40 per cent. This corroborates the observation that the disease is more severe in countries where it is not endemic.

### Zentralblatt für Chirurgie, Leipzig

69 1-48 (Jan 3) 1942 Partial Index

- Experience with Use of Scopolamine Eukodal Ephedrine (High Dosage by Intramuscular Administration) in War and Peace H Engels—p 1
- Experiences with Peridural Anesthesia W Hueber—p 5
- \*Action of Demerol in Surgery T Anda—p 8
- Fish Mouth Incision for Thigh Amputation in Gangrene K Schiele—p 11
- Observation on Local Tetanus L Rathcke—p 13

**Demerol in Surgery**—Anda reports observations on 130 persons to whom Demerol was given for the control of pain after ventriculography, brain operations and cerebral contusion, also before and after operations for gastric carcinoma, appendicitis, hernia and cholelithiasis, after operations for spinal tumor and for endarteritis obliterans. Demerol was administered in tablet form, by intramuscular injection and in suppository form. The author stresses that Demerol has primarily a spasmolytic effect, the analgesic action being less prominent. It was particularly effective in cases in which the cranial pressure was increased. It prevented vomiting in abdominal operations performed under local anesthesia. The analgesic effect of Demerol after major operations is less than that of morphine. Secondary effects and habituation were not observed.

## Book Notices

**Gout.** By John H. Tallott, M.D., Associate in Medicine, Harvard University, Boston. Edited by Henry A. Christian, A.M., M.D., J.D., Clinical Professor of Medicine, Tufts College Medical School, Boston. [Reprinted from Oxford Texts of Medicine with the same page numbers as in that work.] Cloth, Price \$2.00. Pp. 79, 131 with 6 illustrations. New York, London & Toronto: Oxford University Press, 1944.

This small book is one of the best monographs on this poorly understood condition. It is a reprint from the Oxford Loose-Leaf Medicine. The book includes a comprehensive discussion of all phases of the disease and the results of the author's clinical and laboratory researches. Gout makes up about 5 per cent of patients who come to arthritis clinics. Clinical control in the acute stage can be accomplished by proper therapy. The author presents an accurate description of clinical gout and the researches on the metabolic phenomena of the gouty diathesis. The book contains many interesting and instructive illustrations. There is a brief historical section. The chemical, clinical, hereditary and metabolic aspects of the condition are well covered. The complications, associated diseases and differential diagnosis are described. The treatment is divided into that pertaining to prevention, the acute attack, the intercritical period and the chronic stage.

**China's Health Problems.** By Szeming Sze, General Secretary, Chinese Medical Association, Washington, D. C. Boards, Price \$1. Pp. 60. Washington, D. C.: Chinese Medical Association, 1943.

The author is editor of the *Chinese Medical Journal* and general secretary of the Chinese Medical Association. Since his visit to America in 1941 he has received requests for information about China's health problems and this small book contains that information. China has high morbidity and mortality rates, the former being 4 per cent of the population of 400 000 000 and the latter 25 per thousand of population. On any one day some 16 000 000 persons in China are ill and 10 000 000 persons die each year. Medical facilities with which to fight these high rates are meager. Only 12 000 doctors and 38 000 hospital beds are available whereas on the basis of moderate estimates of authorities there should be a minimum of 266 000 doctors and 2 000 000 hospital beds. Practically all of the modern facilities are in the large cities leaving the immense rural areas where 84 per cent of the people live virtually without any facilities. A determined effort by the government and by certain organizations and individuals is being made to improve the health of the Chinese and the foundations for a national health system have been laid. The author says however that since 84 per cent of the population are incapable of paying for private medical care it is agreed that the only solution is state medicine particularly in the rural areas. No attempt will be made to force state medicine on the cities where the public demands the services of private practitioners. The government's policy is to organize each of twenty-four provinces into districts each having several counties. A province will have one hundred district health centers each with some 30 hospital beds for emergency cases. A county will have sub-health centers which in turn would be served by health stations in each village. This plan forms a working basis. Although not ideal it has been only partly accomplished owing to limited funds and difficulties thrust on China in the last six years by Japan. To forward this plan there is the National Health Administration, a National Institute of Health which trains personnel and carries on research, the National Epidemic Prevention Bureau, the Central Narcotics Bureau, the Central Drug Factory and the Surgical Equipment Factory which provide drugs supplies and equipment for the health services. Up to 1942 there had been established in areas not occupied by the Japanese seven hundred and eighty-three district health centers, sixteen provincial medical centers and fifteen provincial hospitals. In addition one hundred and fifty non-governmental hospitals have linked their facilities with the National Health Services.

The greatest needs in the state medical system are hospitals and technical personnel. The author believes that the remaining one hundred and sixty nongovernmental hospitals in China should take their place as far as possible in a coordinated national system. These hospitals are willing and a beginning

has been made in some provinces. The boards of management of these additional hospitals, most of which are mission hospitals, are becoming more and more Chinese as the financial support obtained locally increases.

About 150 000 000 persons are estimated to have trachoma, 1 000 000 to have leprosy, 32 000 000 to have tuberculosis and 40 000 000 to have syphilis or gonorrhea, most of which diseases in health conscious countries are on the decline. The aim of the government is to educate the people in health matters. To aid in this movement the Health League of China, organized in 1940 is promoting health education in places not yet covered by the governmental health centers. China has twenty-eight medical colleges, ten national nine provincial and nine private medical colleges. The biggest problem in medical education lies in the small schools of low standards which the Ministry of Education will have to subsidize to help them attract better teachers. Progress had been made up to the outbreak of war with Japan in 1937, but the war has seriously affected this program.

The Chinese Medical Association of some 3 000 members, which is practically the only medical scientific society cooperates closely with the government. The Medical Practitioners' Federation which is less efficiently organized, is composed largely of the poorly qualified doctors. In fact it is a federation of practitioners' unions which the law requires to open its membership to registered practitioners, irrespective of qualifications. The leaders of the Chinese Medical Association and the Medical Practitioners Federation recognize the need for closer cooperation but that will come only when the number of unqualified practitioners becomes a negligible part of the medical profession.

China is a land of famines which follow floods in the valleys of the Yellow and Yangtze rivers or droughts in the great plains of the northwest. China has its National Relief Commission and Red Cross but the latter should be reorganized. The United States since 1940 has sent lend-lease medical supplies and technical personnel to aid the Chinese army and the National Health Administration. Many other national Red Cross societies sent funds and supplies until the World War began in 1939 when gifts ceased with the exception of those from the American Red Cross. China's friends in many countries have organized United China Relief, the American Bureau for Medical Aid to China, the missionary bodies, the Associated Boards for Christian Colleges of China, China Child Welfare Inc. of New York and other cultural and relief bodies.

The author closes his book with a brief chapter on medical supplies listing those which are particularly scarce and the raw materials for the manufacture of medical supplies which are sufficient.

**Emotion in Man and Animal. Its Nature and Relation to Attitude and Motive.** By Paul Thomas Young. Cloth, Price \$4. Pp. 42 with 28 illustrations. New York: John Wiley & Sons Inc. London: Chapman & Hall Limited, 1943.

This is another of those run of the mill textbooks whose author professes to offer an authoritative discussion relative to problems of human behavior. As such it is probably no worse and certainly no better than most such works which are now utilized to teach psychology in many of our presumed institutions of higher learning. This is only another way of stating that most such volumes are completely outdated and many of their concepts long discarded or in some instances, the discussions although supported by modern theories and experimental research are entirely inadequate in attempts at presentation of dynamic emotional concepts. It is discouraging to read a book which as the author states in the preface has not only been arranged in form convenient for classroom use but which he has obviously intended for popular consumption to find that the contributions of leading past and present research workers in the field of human and animal emotions have been either vaguely mentioned or entirely ignored. The anthropologic, experimental and research contributions of such men as Frazer, Mantegazza, Mahinowski, Roheim, Freud, Carl Abraham, Magnus Hirschfeld, Franz Alexander and his co-workers, Kurt Lewin and his group, Carl Menninger and his associates, H. W. Gant and Jules Masserman only to mention a few are either ignored or are referred to quite casually and superficially. Freud's monumental contributions to the understanding of



ing of human emotions receive only passing attention in the text and are left out of the recommendations for reading as well as the author's index. It seems unfortunate to this reviewer that modern dynamic psychology as understood and taught by prominent men and women in the field has not been introduced to more of our larger universities.

**A Manual of Otolaryngology, Rhinology and Laryngology.** By Howard Charles Ballenger, M.D., F.A.C.S., Associate Professor of Otolaryngology, Northwestern University School of Medicine, Chicago. Second edition. Cloth. Price \$4. Pp. 331 with 117 illustrations. Philadelphia: Lea & Febiger, 1941.

Obviously no author could write a manual on diseases of the ear, nose and throat that would satisfy every laryngologist who is engaged in teaching undergraduates. The material that must be compressed within the narrow confines of a small book is too vast to permit adequate condensation without slighting certain topics which to some teachers are more important than those selected by this author. If the purpose of such a book is to present in as concise a manner as possible the essential and important features of the specialty and to emphasize vital diagnostic signs, Ballenger's book comes close to filling the bill as is humanly possible. In the new edition the text includes the latest data. Sufficient emphasis is still placed on the important and serious complications which may often perplex the general practitioner, as indeed they frequently do the specialist. The chapters on neck infections, foreign bodies in the air passages, intracranial complications and Meniere's disease are worthy of special mention. The student or general practitioner who uses a book such as Ballenger's should always bear in mind that the author is presenting only the bare essentials which are offered as foundation stones on which the reader is to build as he progresses in the practice of medicine and his experience widens. Because of the limitations of space the text must be condensed and it is therefore important that it be read carefully since every sentence means something. One might add only the tiny regret that the author had so little to say on the subject of the sulfonamides in otolaryngology, a topic on which much has recently been written.

**Bacteriology for Students of Medicine and Public Health.** By Pinar Isifson, Ph.D., Professor of Bacteriology, University of South Dakota School of Medical Sciences, Vermillion. Medical Students Series, edited by Fred C. Zapffe, Secretary, Association of American Medical Colleges, Chicago. Cloth. Price \$3. Pp. 326 with 153 illustrations. New York & London: Paul B. Hoeber, Inc., 1942.

The first half of this book is devoted to the general aspects of bacteriology as found in most textbooks. The author then takes up epidemiology and biostatistics together with the major communicable diseases, because he "feels that it is just as important, if not more so, for the medical student to understand bacteriology as it is for him to know it." The author indulges in considerable freedom, such as placing the tularemia organism with the *Brucella* group and the cause of rat bite fever with *Actinomyces*. The terms "undulant fever" and "brucellosis" are used interchangeably in different parts of the book. Some of the charts showing incidence of disease by years unfortunately lack figures for the last decade. In one instance a commercial preparation is specified by name for use as a disinfectant. These isolated instances do not detract from the book as a whole, however, and are offset by many excellent features.

**Discovering Ourselves: A View of the Human Mind and How It Works.** By Edward A. Strecker, A.M., M.D., and Kenneth E. Appel, Ph.D., M.D. In collaboration with John W. Appel, M.D. Second edition. Cloth. Price \$3. Pp. 434 with 28 illustrations. New York: Macmillan Company, 1943.

The first edition of this work was published more than twelve years ago. The book explains in nontechnical language the essentials of modern psychology and the principles of psychiatry and mental hygiene. The usefulness of the previous edition prompted the development of the present volume, which includes new chapters on emotion, fear and anger and incorporation of the ideas of psychosomatic medicine. There is also attention to special problems created by the war. Another addition to the work is an appendix providing a series of questions on the individual chapters. The book is well printed, easily readable, and can be recommended to physicians as a work which they, in turn, can confer on patients who need therapeutic literature.

**Trail to Light: A Biography of Joseph Goldberger.** By Robert P. Parsons. Cloth. Price \$3. Pp. 373 with portrait. Indianapolis & New York: Bobbs-Merrill Company, 1943.

The story of the accomplishments of Dr. Joseph Goldberger should by this time be well known to most members of the medical profession. His life was devoted largely to study of infectious diseases made under the auspices of the United States Public Health Service, but the climax of his career came with his basic contributions to our knowledge of pellagra. The book is based largely on letters which Dr. Goldberger wrote to his wife over some twenty-three years and on collections of news paper clippings and other memorandums which had been assembled in a chest which was made available to the biographer. Dr. Goldberger's career might well serve as an inspiration to young men who contemplate work with the United States Public Health Service as a career.

**Fractures and Fracture Treatment in Practice.** By Kurt Colsen, M.D., Tutor to the Department of Surgery, Registrar to the Surgical Firm of the University of the Witwatersrand, Johannesburg. Fabrikoid. Price 12s. 6d. Pp. 117 with 157 illustrations. Johannesburg: Witwatersrand University Press, 1942.

This handy book was written by a man who has conducted the fracture tutorial course in connection with the class of systematic surgery in the Witwatersrand University at Johannesburg, South Africa. It serves its purpose well. The manuscript is brief and to the point. The illustrations are line drawings and are simple and instructive. The book reflects the teachings of Böhler and Watson Jones. It is an excellent book for medical students and general practitioners.

**Whooping Cough.** By Joseph H. Lavin, B.Chem., M.D., Adjunct Pediatrician, Bronx Hospital, New York. Cloth. Price \$4.50. Pp. 278 with illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1943.

This monograph is written in an easy, understandable style. It contains abstracts of all the worthwhile literature on whooping cough. It covers epidemiology, immunology, bacteriology and the preparation of various endotoxins and exotoxins. It also describes the clinical manifestations of the disease. The author has attempted to make a critical analysis of the literature and gives his own interpretations and evaluations of the various studies. In this he has succeeded very well. The illustrations are excellent. It is an invaluable book for the investigator and is equally valuable and practicable for the practitioner.

**Central Autonomic Regulations in Health and Disease with Special Reference to the Hypothalamus.** By Heymen R. Miller, M.D., Associate Attending Physician, Montefiore Hospital, New York City. Introduction by John F. Fulton, M.D., M.A., D.Phil., Sterling Professor of Physiology, Yale University, New Haven. Cloth. Price \$5.50. Pp. 430 with 61 illustrations. New York: Grune & Stratton, 1942.

In the coordination of actions of the human body the cerebral cortex and the hypothalamus play most important parts. This book offers a concentration of the general physiology of the autonomic nervous system and special considerations of the manner in which the temperature of the body, the use of water and minerals, metabolism, circulation, respiration, sleep, the emotions and other functions are controlled. The arrangement of the book is such that the fundamental anatomy forms the subject of the concluding chapters. As is pointed out by Dr. John F. Fulton in his preface, the physiology of the autonomic nervous system has tremendous application to clinical practice. The author has considered the available literature, most of which is reviewed in this book. The case reports in many instances indicate the technic of application of the knowledge concerned to the care of the sick.

**Mercy in Hell: An American Ambulance Driver with the Eighth Army.** By Andrew Geer, Captain, American Field Service. Cloth. Price \$2. Pp. 264 with illustrations. New York & London: Whittlessey House, McGraw-Hill Book Company, Inc., 1943.

This is a record of the work of an ambulance driver who was with the Eighth Army in the battle in North Africa up to the time of the Tunisia campaign. It is a graphic record of the part played by the Medical Corps in a situation in which it worked under tremendous difficulties. Unfortunately the author lacks the literary ability necessary to dramatize the terrifically dramatic events in which it played a central part.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### INTERMITTENT HYDRARTHROSIS

**To the Editor**—A woman aged 35 has been married five years and has never been pregnant. The patient's chief complaint is that during the past four or five years both knees have become swollen to such an extent that they cannot be bent. This swelling comes every ten days and lasts for three or four days. After five days the swelling disappears gradually so that she can bend her knees again. For about one week there is no swelling at all but at the end of the week the swelling returns. There is no relationship in time to her menstruation or to the weather. The swelling is the same in the morning as it is in the evening. There is dull pain in the knees at the time they are swollen but there is neither redness nor fever. The swelling consists of a pronounced edema above and below the knee joint. Menstruation is regular and without pain. Examination of the abdomen and pelvis does not reveal anything abnormal. Venules are prominent in the thighs above her knees. The history and findings are otherwise negative except that she is nervous and comes of a nervous family. I have seen the patient when the knees were swollen and the swellings were prominent.

M D New York

**ANSWER**—This patient appears to have intermittent hydrarthrosis. During approximately a hundred years since the disease was recognized the incidence of reported cases has been only about 1 each year. Many cases, however, are not reported.

Two varieties of the disease are encountered. The first type has been designated symptomatic intermittent hydrarthrosis because the recurring articular swellings prove to be early symptoms of a progressive rheumatoid type of arthritis which later appears in the joints involved by the periodic edema or in other joints. In this form the cycles are often regular for varying periods, sometimes for many months. Later the periods of freedom between swellings become shorter and the degree of recovery from attacks is less complete. A second form of the disease has been called idiopathic intermittent hydrarthrosis because some observers believe that neither rheumatoid arthritis nor any other cause has been demonstrated. Most persons with either form eventually acquire rheumatoid arthritis. Furthermore, synovial membranes from both clinical types of the disease removed in attempts at surgical cure have shown identical pathologic changes, namely, synovial edema and villus formation, scattered and follicle-like infiltration of sub-synovial tissues with lymphocytes and endothelial cells, regions of hyaline degeneration of fibrous tissue, thickening of the endothelial layer by enlargement of endothelial cells, and reduplication of the lining endothelium. Thus remissions in both forms are only apparent. The underlying synovitis is permanent and progressive.

The syndrome of intermittent hydrarthrosis affects men and women with equal frequency. The remitting swellings always appear in the knee although occasionally another joint such as the ankle, hip and rarely a joint of the upper extremity may also be involved. The intervals of freedom vary in length from two or three days to three weeks, being in most instances from seven to ten days. The swellings generally last three to five days. Attacks cause discomfort in the form of swelling, tightness and stiffness from distention of the joint by exudate. Pain is generally moderate but may be severe and may require rest in bed or immobilization of the affected joint. The attacks are not associated with fever and despite the acuteness of the swelling there is no redness, pronounced heat or notable tenderness and there are no striking signs of constitutional reaction during the attacks. When the swelling has cleared the joint may appear to be completely recovered. In some instances periods of complete freedom from attacks may intervene. Such periods may be of months or years duration only to be followed by recurrence of regular cycles.

Laboratory data are variable. Some patients (in whom the condition is of the so called symptomatic form) have secondary anemia and elevation of the sedimentation rate.

The cause is unknown. Its periodicity suggested to many investigators that the condition might represent an allergic reaction either to bacteria or to some other irritant agent. However, such evidence as has been adduced to support the allergic hypothesis is purely inferential.

During the acute attacks patients are more comfortable at rest. Some comfort may result from supporting the knee with an elastic bandage. Physical therapy and acetylsalicylic acid

generally provide some relief during the attacks. Measures worthy of trial in an attempt to prevent recurrences of the attacks include intravenous administration of typhoid vaccine and removal of infected foci if any can be demonstrated. Synovectomy has been recommended by some physicians, but others have found that progressive arthritis appears (sometimes in other joints) despite synovectomy. The disease is said to have been stopped after administration of ergotamine tartrate in doses of 1 mg daily for approximately two months followed by repeated courses of one tablet daily for periods of about a month when attacks tend to recur. Attacks are said to have stopped in 1 patient when foods to which the patient was sensitive were eliminated from the diet. Desensitization with histamine by means of intravenous and intramuscular injections of this substance has failed to influence the course of the disease in several instances.

The prognosis must be considered decidedly uncertain. In many instances the regular recurrence of attacks has continued for years even for two or more decades without any change in the nature of the symptoms. In most instances, however, the patient eventually acquires definite rheumatoid arthritis.

### DICHLOROACETIC VERSUS TRICHLOROACETIC ACID FOR WARTS

**To the Editor**—I am interested in the use of bichloroacetic acid as a corrosive agent in the treatment of warts although I have seen no literature on the subject. However, this compound is inordinately expensive. Is there any great superiority in the use of this compound as compared with trichloroacetic acid? If so are there any approved, relatively inexpensive products with this active ingredient which could be used for this purpose?

Colonel M C U S Army

**ANSWER**—It is true that dichloroacetic acid marketed by the Kahlenberg Laboratories under the name bichloroacetic acid is somewhat more expensive than the better known trichloroacetic acid which is an official drug listed in the U S Pharmacopeia XII. Chemical supply houses currently list a reagent grade of dichloroacetic acid at a cost of \$4.54 per pound while trichloroacetic acid U S P costs only \$3.45 per pound. The current retail price of bichloroacetic acid in the 1/2 ounce size with kit for application is \$2.50. In contrast it is possible for a pharmacy to purchase dichloroacetic acid from a photographic supply house bottle it in 1 ounce bottles (the bottle costing approximately 25 cents) and sell it for \$1.

When used in concentrated form for caustic action the two give much the same result. The stinging due to the trichloroacetic acid is slightly greater, but both cease to sting in a few minutes. The area treated becomes white and loses sensation while about it the skin becomes pink and slightly swollen. In a short time the swelling and flush subside and a grayish white area is left about which a narrow zone of deep red is seen which persists. So far as could be seen by a trial on the writer's forearm the action of the two drugs in concentrated form the bichloroacetic acid sold by Kahlenberg and a saturated solution of trichloroacetic acid made by adding a few drops of water to some crystals of trichloroacetic acid was equal causing a superficial necrosis of the same degree in the two.

### THERAPEUTIC FASTING FOR HYPERTENSION

**To the Editor**—I am interested in the therapeutics of fasting. Is there any authoritative literature on this subject especially as to its effect on degenerative diseases and hypertension? Can you discuss it briefly?

M D Canal Zone

**ANSWER**—The effect of fasting and of modified fasting (consuming only fruit and vegetable juices) in hypertension was studied by Kampmann in Volhard's Clinic (Frankfurt on Main). Kampmann and Volhard recommend the use of fasting as a means of reducing high blood pressure. However, Volhard points out that a high blood pressure should be regarded only as a symptom like fever and the specific cause should therefore be sought and treated. Nevertheless, the reduction of a high blood pressure by fasting, modified fasting or fluid and salt restriction may alone suffice to bring about considerable general improvement in some cases. Recently Laird reported a 20 per cent reduction in blood pressure as one of the incidental benefits derived by internees in a Japanese internment camp where the food supplies were quantitatively inadequate.

The reduction in some cases of high blood pressure by fasting or food restriction is attributed to a reduction of the ordinary metabolic strains on the circulatory system and the kidneys. Fasting is also regarded by some as beneficial in other conditions because it is believed that it gives the eliminative organs a chance to reduce accumulated toxic products, facilitates more complete oxidation in the body, uses up or



## OBSCURE RECURRENT LESIONS OF MOUTH

**To the Editor**—A well built lean professional man aged 38 has had periodic attacks of stomatitis for eleven years worse in the last nine. The lesions begin as red areas of various shapes and sizes which ulcerate in a few days leaving a gray or red base. At this stage bad breath develops some regional adenitis fever up to 103 F and 11 000 white blood cells. Lesions are located in the lower fornix of the mouth between the cheeks and the jaws the upper fornix the floor of the mouth beneath the tongue the uvula the pharynx and the upper surface of the tongue in that order of severity and frequency. The gingiva itself is not involved except in one place where a first lower molar is missing. There the upper surface of the gingiva was once involved. The alveolar bone and gingivae are otherwise normal. Each attack has a gradual onset and after reaching a peak resolves rapidly. The attacks last four to seven weeks usually six weeks the peaks of the attacks are about two to four months apart usually three months and the period between attacks when he is entirely well is one to six weeks usually four weeks. During several attacks there has been slight burning on urination and a 2 mm zone of redness of the glans about the meatus. The only other significant fact is that with rare exceptions he has not had a bowel movement without an enema for nine years. He gets a headache and feels sluggish every three days and takes an enema of 1 quart of lukewarm tap water. The stools are hard and normal in color. The barium enema revealed some hypermotility of the descending colon. Gastric analysis urine and blood studies including Wassermann and Kahn tests were normal. Cultures of the lesions were reported to show thrush and other organisms and a slight indication of Vincent's. Treatments tried include large doses of hydrochloric acid neosarsphenamine intravenously various local oxidizing agents daily injections of 100 mg of niacin with 33 mg of thiamine and 1 Gm of sulfathiazole every four hours. Malaise followed five doses of sulfathiazole but he was close to relapse anyway. None of these treatments were consistently followed by improvement. No correlation with seasons is apparent but there is some correlation with periods of mental stress. Suggestions would be appreciated.

M D California

**ANSWER**—The recurrent oral lesions have apparently been well studied. They do not suggest a local cause although more complete bacteriologic data might be useful. The failure of arsenicals vitamin B concentrates and one of the sulfonamides is helpful in a negative way.

The lesions might have a neurogenic basis with the local infection being secondary and atypical. The occurrence during periods of stress and in association with a spastic colon is suggestive.

There would be several trial approaches possible.

1. Treat the general and intestinal tension by use of sedatives (phenobarbital  $\frac{1}{4}$  to  $\frac{1}{2}$  grain [0.016 to 0.032 Gm] three times daily) plus a drug aimed at autonomic nerve depression. Combine this with a bland diet.

2. Prepare a vaccine from the stools for desensitization (as suggested for various lesions by MacIntosh and Hill).

3. Try succinylsulfathiazole in an attempt to change the intestinal flora. This drug is almost nontoxic is scarcely absorbed into the blood and often softens the stool. The initial dose is 0.25 Gm per kilogram of body weight, followed by 0.25 Gm per kilogram daily divided into four or more doses.

## INHERITANCE OF PSEUDOHYPERTROPHIC MUSCULAR DYSTROPHY

**To the Editor**—A primipara aged 36 now five months pregnant has had progressive muscular dystrophy of a pseudohypertrophic type with involvement of the back and thigh muscles for approximately three and a half years. She had some sort of infection called meningitis at the age of 2½ years and she was unable to walk well until she was 5 or 6 years of age. With the resumption of walking she developed normally and was able to go through high school and a teaching career engaging in horseback riding basketball tennis and the other common sports without noting any weakness. The trouble has been gradually making its appearance during the last three and a half years and since the beginning of pregnancy the symptoms have been aggravated. Can the patient be carried safely through several more months of pregnancy and then an elective cesarean section done with sterilization? What is the prognosis with regard to the baby? Do you advise interruption of the pregnancy at once with sterilization? One brother died at the age of 19 with so called Bright's disease but he had a weak back. One sister died at the age of 30 with pneumonia but she had had a weak back for five years preceding the pneumonia on account of typhoid M D South Carolina

**ANSWER**—It is doubtful that the infection at the age of 2½ years called meningitis has any direct relation with the patient's present condition. Although somewhat late in onset it is probable that the patient is suffering from pseudohypertrophic muscular dystrophy although such a diagnosis cannot be made without equivocation as there was a long history of good health and normal muscular action up to the third decade of life. It is not unusual however for the condition to be aggravated during pregnancy. Lacking here is an exact description of the patient's present condition moreover the evidence that her brother and sister both deceased had weak backs does not definitely confirm the diagnosis of the familial type of pseudohypertrophic muscular dystrophy.

If the diagnosis is correct, and particularly if the condition has appeared in previous generations of the family, one has seriously to consider the possibility of transmitting this disease to another generation. Whether this would take place in an individual case is not an easy question to decide. The disease is inherited in about 50 per cent of the children the sexes being approximately equally affected. This is based on studies of cases in which the disease appeared in successive generations and had the characteristics of a mendelian domination. On the other hand, if the disease has not occurred in previous generations it may be looked on as a recessive factor and the chances of inheritance are much less. There are sporadic cases, usually occurring in the male, and these appear in a frequency of about three to one. It is impossible therefore, to give any prognosis with regard to the baby in the case presented. There is no indication as far as the mother is concerned that the pregnancy should be interrupted on account of her disease. Advice with regard to the continuance of the pregnancy based on the possibility of inheritance cannot naturally be given to the patient in a categorical manner. All one can do is to place the known facts before the patient. In the case presented here there are so many unknown or at least uncertain, factors that definite advice cannot justifiably be given.

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## SERUM ALBUMIN AND TOXEMIA OF PREGNANCY

**To the Editor**—I am on duty in the Southern Pacific area and naturally find it impossible to try the efficacy of the following idea. While reading a belated article and editorial on the use of human serum albumin in counteracting the plasmapheresis of shock it occurred to me that similar treatment might hasten the alleviation of the preeclamptic state. Of course plasmapheresis does not manifest itself in preeclampsia for we are dealing with albuminuria primarily as far as the loss of albumin is concerned. I should appreciate knowing whether or not such experimental treatments have as yet been attempted in obstetric clinics. If not what do you think of my idea and the possibility of administering human serum albumin in an effort to raise the osmotic pressure in the blood with the possible resultant relief of the concomitant rise in blood pressure and the excessive gain in weight?

Captain M C A U S

**ANSWER**—There have been no reports in the literature on the administration of human albumin to patients with preeclampsia and eclampsia. Serum albumin concentration is usually depressed in toxemia of pregnancy and although this depression tends to enhance edema formation the basic cause for fluid retention is considered to be primarily renal or possibly endocrine in origin. Its correction is therefore of secondary concern only in the management of the fluid retention and of the hypertension.

Blood volume is increased in pregnancy and there is a distinct tendency to pulmonary edema in preeclampsia and eclampsia. Human serum albumin is supplied as a 25 per cent solution which has about five times the osmotic attraction of plasma. Its administration would increase further the plasma volume with the resultant danger of precipitating an acute pulmonary edema. The administration of plasma or of whole blood has been advocated for the control of the peripheral circulatory failure (shock) to which these patients frequently succumb but these must be administered slowly over the course of several hours in order to prevent pulmonary congestion.

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## LECITHIN AND ITS USE IN FOODS

**To the Editor**—One hears now a good deal about lecithin as an ingredient of artificially prepared foods. Please tell me what is meant by lecithin in such cases. What are its sources and how is such lecithin prepared?

M D Maryland

**ANSWER**—Lecithins are the phosphatides or esters of fatty acids and glycerophosphoric acids which contain choline. They are compound molecules consisting of one molecule of glycerol two molecules of fatty acids or molecule of phosphoric acid and one molecule of choline linked together by loss of an H or OH ion. Formerly lecithin was prepared from egg yolk. Lecithins are present in many plants and especially in cereals.

and legumes. Most commercial lecithin is now prepared from soy beans and is often sold as a lecithin hydrate, which has the advantage of being water soluble. It is usually obtained by a modified alcohol extraction (see Horvath, *A. A. J. Chem. Education* 14 424, 1937 for details). Because of its emulsifying properties lecithin has many food uses. Recently one of its constituents, choline, has assumed increased dietary importance because it has been found similar to vitamins in physiologic significance. Lecithin is used in candy, margarine, shortening, food fats and oils, biscuits, crackers and other food commodities. It is added to cocoa butter used in chocolate in amounts up to 0.4 per cent.

Lecithin hydrate is manufactured by Jungmann & Co., Inc., New York, from whom details as to its use in food products can possibly be obtained.

### FLUORESCENT LAMP NOT RESPONSIBLE FOR ASTHMA IN WATCHMAKER

*To the Editor*—A man aged 50, a watchmaker for the past thirty years with a history of prolonged jaundice of unknown etiology at the age of 12, complains of fatigue, sneezing, nasal discharge and some bronchial congestion. These symptoms are of recent date and he associates them from the time he has been working under a fluorescent lamp (mercury?). He claims that when the lamp is removed the symptoms gradually disappear in several weeks and manifest themselves again when he resumes his work under the fluorescent lamp. He is well developed for a man of his age and routinely takes calisthenics, hikes and swims. At his work he uses naphtha, carbon tetrachloride and alcohol at various intervals for cleansing purposes making sure of good ventilation. He gives no history of any past asthmatic or allergic manifestations. He refuses any studies because he has been symptom free since avoiding the use of the lamp. Are there any reports as to fluorescent rays causing these symptoms? Can the chemicals which he has used for a period of years without any difficulty now be responsible for these symptoms?

M. D., Pennsylvania

*ANSWER*—The sneezing, nasal discharge and bronchial congestion are almost certainly not due to the fluorescent lamp. They may, however, be caused by naphtha or carbon tetrachloride and perhaps by alcohol, as inhalation of these vapors is not infrequently responsible for similar symptoms. Chemicals may begin to cause symptoms after a prolonged period of exposure.

A letter of inquiry to the Lighting Research Laboratory of the General Electric Company confirms the statement that exposure to the fluorescent lamps cannot cause these symptoms. Matthew Luckiesh, the director of this department, writes as follows:

The radiant energy emitted by the fluorescent lamp is entirely within the spectral range of natural sunlight or natural skylight. The fact that it is a low pressure mercury arc is of no consequence as far as the radiant energy is concerned. The phosphors with which the inner surface of the glass tube is coated transform the short wave ultraviolet energy into visible energy or light. These are opaque to ultraviolet energy not found in sunlight and in addition we design the spectral transmission of the glass so that no measurable amount of energy shorter than the short wave end of the spectrum is transmitted.

So much for the light from the fluorescent lamp. Of course, the light can be misused, that is, the lighting may be bad. There may be glare direct from the light source or specularly reflected from the work. However, I know of no reason why glare should produce the results complained of. I am certain that the effects which the patient experiences have nothing to do with the light from the fluorescent lamp. He should experience the same effects outdoors in the sunlight if light is the cause. I have traced down a variety of complaints and none of them are traceable to the light and radiant energy from the fluorescent lamp."

### OCCCLUSION OF RETINAL ARTERY IN PREGNANCY

*To the Editor*—A patient had an occlusion of the central retinal artery of the left eye which resulted in almost total blindness of that eye. This occlusion occurred when the patient was three to four months pregnant. Except for the eye, the physical examination is negative. Should the patient have more children? Would occlusion be likely to occur in the other eye if she should again become pregnant? What was the relation, if any, between the retinal vessel occlusion and the pregnancy?

Henry W. Ten Pas, M.D., Holland, Mich.

*ANSWER*—It is exceedingly unusual to have thrombosis of the central artery occur during uncomplicated pregnancy. If there was an acute rise of blood pressure during the pregnancy, such an event may have been due to or precipitated by arterial spasm. If there was no rise of blood pressure, however, there would be some doubt whether the closure of the central artery had any relation to the pregnancy. In view of this doubt it would probably not be necessary to prevent further pregnancies, since the likelihood of such an event occurring during the subsequent pregnancy would be exceedingly slight.

### CALCIUM DEFICIENT DIET AS AID IN CORRECTING BONE DEFORMITIES

*To the Editor*—Can you discuss the reduction of deformity of the long bones by a diet poor in calcium and rich in phosphorus and the application of casts to the straightened bone as soon as the absorption of calcium has been sufficient? J. W. Hopkins, M.D., Glendale, Calif.

*ANSWER*—In an article published in the *Archives of Surgery* (28 742 [April] 1934) Ghormley and Stuck described an experiment in which Ghormley had been assisted by Aub and Bauer of Boston. This consisted in the feeding of a low calcium diet with the development of a definite negative calcium balance for a patient in whom correction was being attempted for a severe scoliosis. It was the opinion of the authors that this aided in obtaining correction and that the bones at the time of operation were found to be much softer than normal. Furthermore, it was their opinion that calcification and new bone formed more rapidly in this patient after operation when the patient was again placed on an adequate diet than had been seen in patients who had not gone through an initial period of decalcifying of bone through diet. Several other surgeons have attempted to make bones sufficiently soft to be able to reshape them by feeding a diet poor in calcium and rich in phosphorus or through the administration of ammonium chloride.

As an addition to this program, Nachlas of Baltimore found that, if a plaster cast was applied to the extremity in which there was a deformity which the surgeon wished subsequently to correct while the patient was being given a diet insufficient in calcium, the bones in that extremity atrophied more rapidly than did those of the rest of the body because of the immobilization. Nachlas expressed the opinion that in certain cases it was possible to correct these deformities, which otherwise probably would not have been correctable without open surgery. This work was not published but was discussed before several groups of physicians.

The methods referred to, however, have not been accepted as practicable by a vast majority of orthopedic surgeons. As far as the literature would indicate, and from discussion with orthopedic surgeons, it seems probable that the method will never be used widely.

### MICROSEDIMENTATION TESTS OF BLOOD

*To the Editor*—How do the Landau-Adams microsedimentation apparatus and the Brandenburg microsedimentation apparatus compare in accuracy with the macromethods such as the Westergren and the Wintrobe-Landsberg? I shall appreciate any information on this subject that you can give me.

Wesley R. Heard, M.D., Pasadena, Calif.

*ANSWER*—The Landau-Adams and the Brandenburg microsedimentation tests represent the modification of the Linzenmeier-Raunert method described by Landau (*Am. J. Dis. Child* 45 691 [April] 1933). Landau's extensive studies with the method demonstrated its reliability and its simplicity, particularly after the introduction of the check syringe as a means of mechanical aspiration. The chief criticism of this method is that the column of citrated blood sediments within a capillary pipet whose inside bore is 1 mm. In this respect this method shares the inadequacy of other types of sedimentation apparatus in which a capillary pipet is employed. Wintrobe and Landsberg (*Am. J. M. Sc.* 189 102 [Jan.] 1935) and Ham (*Medicine* 17 447 [Dec.] 1938) have pointed out that the settling of the red cells in tubes with an internal diameter of 2 mm or less may be slow and uneven. Since the Westergren and the Wintrobe-Landsberg macromethods employ tubes with internal diameters of 25 mm, greater accuracy is assured. The ideal micro method, from the standpoint of accuracy, is one which utilizes capillary blood but which employs a sedimentation tube with the basic specifications of a standard venipuncture method. Such methods have been described by Cutler (*Am. J. M. Sc.* 173 687 [May] 1927) and by Smith (*ibid.* 192 73 [July] 1936).

### PREPUTIAL ULCER FROM AMMONIACAL DERMATITIS

*To the Editor*—I have just come on the note on "Stenosed Urethral Meatus in Young Boy" (*The Journal*, June 5, 1943, p. 409). To me the crusty about the glans penis and terminal urethra sounds much like a preputial ulcer from an ammoniacal dermatitis. It would be important to know if the child still has enuresis and if there is a strong ammonia odor about the child on awakening. If this is so all one has to do is rinse the clothing in a final rinse of 1:5,000 mercury bichloride after washing and this will have a bacteriostatic effect on the urethra-splitting organisms, which form ammonia (NH<sub>3</sub>) from the urea in urine. This, of course, is a common finding in pediatrics and responds beautifully to this method of therapy. Locally nothing really needs to be done, because as soon as ammonia ceases to be formed the ulcer heals.

Henry F. Saunders, M.D., Cleveland



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## INTENSIVE METHODS OF TREATING SYPHILIS

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E. B. HEISEL, M.D.  
AND  
GEORGE STROUD III, M.D.  
CLEVELAND

Paul Ehrlich worked for years synthesizing an arsenical compound to cure syphilis. The *therapia magna sterilisans*, he thought had been achieved with his six hundred and sixth preparation, arsphenamine (introduced as salvarsan), to be injected intramuscularly, one injection sufficing. Relapses as well as reactions disclosed differently and he synthesized another arsenical neoarsphenamine, and later still others. When none of these worked he and his collaborators suggested use of more than one injection. Every physician agreed to the effect of the trivalent arsenical salts on *Treponema pallidum*, but it required trial and error as well as evaluation of enormous amounts of case material before medicine finally awakened to the profound effect of these compounds on syphilis. Injections of the arsenical were at first widely spaced between other forms of therapy—mercury. Later a physician here and there had the temerity to use injections perhaps once a month later once a week. It was one of our American dermatologists, Sigmund Pollitzer, who suggested three daily injections of an arsenical followed by a course of mercury, then a rest and repetition of the foregoing. Unfortunately, the worthwhile part of Pollitzer's advice was ignored since his cases relapsed far more frequently than other cases treated in a continuous fashion, the relapse being due to the rest period as we now see it. However, Pollitzer's idea was not forgotten. Quite early the Cooperative Group studies showed that it was not only type of therapy but also amount of therapy given in a continuous manner that played so great a role in "cure." Probably the crystallization of all these studies was the statistical survey of Padgett's<sup>1</sup> indicating the importance in acute syphilis of the number of arsenical injections and conversely the time span in which they were given after inception of the disease.

## INTRAVENOUS DRIP THERAPY OF SYPHILIS

A further great stride in syphilotherapy was worked out by Chargin, Hyman, Leifer and their collaborators.<sup>2</sup> They found that when active or inert chemicals, drugs and biologic products are injected intravenously in a rapid manner they may give rise to alarming symptoms so-called speed shock. On the other hand, by regulating the rate of flow of the preparation by means of an intravenous drip so that not more than 2 to 3 cc a minute was injected, they were able to introduce even toxic substances like histamine without difficulty. Experiments were then tried on man with like results and Chargin felt that the method might be applied to the use of larger doses of the arsenicals than are ordinarily employed in treating syphilis. First observations were made with neoarsphenamine and results were very promising, but reactions, especially peripheral neuritis and cerebral symptoms, were high and after some ineffectual attempts to use arsphenamine they turned to mapharsen. The dose employed was 240 mg daily dissolved in 2,000 to 2,400 cc of 5 per cent dextrose solution administered by the rectal drip. Among 283 patients there were 5 mild cases of peripheral neuritis and, while there were no fatalities from its use 1 patient developed convulsions two days after termination of therapy and lapsed into a stupor for forty-eight hours. In 2 other cases there were mild cerebral symptoms, all 3 interpreted by them as varying grades of hemorrhagic encephalitis. Therapeutically, of 176 patients followed for at least a year 69 received the full dose of 1,200 mg and 86 per cent were serologically negative and clinically well. Of another 107 patients receiving less than the full dose of mapharsen for one reason or another, 74 per cent apparently were cured.

Rightfully stimulated by the results, this form of therapy was immediately taken up by other workers in various centers. Thus Dr D. C. Elliott of the United States Public Health Service reported to Dr Herbert Rattner<sup>3</sup> of Chicago that more than 1,150 patients had been treated by this method under the auspices of the Middle Western Cooperative Group, and still more recently Dr R. A. Vonderlehr in a personal note said that some 1,700 patients had received the intravenous drip in a group of midwestern clinics through November

Read before the one hundred and sixty second annual meeting of the Massachusetts Medical Society, May 26, 1943, in Boston.

Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL. The complete article appears in the authors' reprints.

From the Department of Dermatology and Syphilology, Western Reserve University School of Medicine and the Cleveland City St Vincent's Charity and University hospitals.

Drs. George Binkley, C. L. Cummer, J. R. Driver, Winthrop Hubler, Max Kraus and C. G. LaRocco gave assistance in completing records as well as in supervising and caring for patients in this study.

Asst. Surg. Gen. R. A. Vonderlehr, Division of Venereal Disease, U. S. P. H. S., and Miss Lida J. Usilton, chief statistician, U. S. P. H. S., gave help and guidance in assembling the material presented in this paper.

<sup>1</sup> Padgett, Paul. Long Term Results in the Treatment of Early Syphilis. J. A. M. A. 116: 711 (Jan. 1943).

<sup>2</sup> Hirschfeld, Samuel, Hyman, H. T. and Wanger, Justine R. Influence of Velocity on the Response to Intravenous Injections. Arch. Int. Med. 47: 284 (Feb.) 1931. Hyman, H. T. and Hirschfeld, Samuel. The Therapeutics of the Intravenous Drip. J. A. M. A. 100: 303 (Feb. 4) 1933. Hyman, H. T. and Touroff, A. S. W. Therapeutics of the Intravenous Drip (Further Observations). ibid. 104: 776 (Feb. 9) 1935. Chargin, Louis, Leifer, William and Hyman, H. T. Studies of Velocity and the Response to Intravenous Injections. ibid. 104: 878 (March 16) 1935. Hyman, H. T., Chargin, Louis and Leifer, William. Massive Dose Arsenotherapy of Syphilis by the Intravenous Drip Method. Five Year Observations. Am. J. M. Sc. 19: 480 (April) 1939. Hyman, H. T., Chargin, Louis, Rice, J. L. and Leifer, William. Massive Dose Chemotherapy of Early Syphilis by the Intravenous Drip Method. J. A. M. A. 115: 1208 (Sept. 23) 1939.

<sup>3</sup> Rattner, Herbert and Fell, A. B. Severe Arsenical Reactions Encountered in the Five Day Treatment for Early Syphilis. J. A. M. A. 115: 1368 (April 18) 1942. Rattner, Herbert. Personal communication.



1942 and several hundred more since Dr Rattner was one of the earliest to evaluate the possibilities of the technic. He has completed the study of 481 cases at the Cook County Hospital. His technic was above reproach and there were no fatalities, though he did observe an acute glomerulonephritis, anuria, uremia, hepatitis, ileus and pericarditis. There were also 3 cerebral reactions, 2 of them encephalopathy, fortunately all with recovery. Rattner observed 12 to 15 per cent of failures from one five day treatment and he believes this has been materially reduced in his later cases through simultaneous use of soluble bismuth—the latter with no added reactions. Dr Earl Osborne<sup>4</sup> of Buffalo has thus far treated between 250 and 300 cases, the first 100 prior to Jan 1, 1942. There was 1 fatality from hemorrhagic encephalitis in a young healthy girl. There were 2 other near fatalities with recovery, 1 of them a male alcoholic. Dr Osborne quotes Dr Udo Wile with having made the keen observation that women either before or during the menstrual period should not be treated with the intravenous drip as at this time the vascular structures would be more affected by a vasculotoxic drug. He states that this was the condition with his patient. He feels that for a large city hospital clientele this is the preferred form of therapy. With other methods two thirds of the patients have absconded before the first year of treatment, whereas at the end of the first year the spinal fluid was not positive in any of his first hundred cases. There have been 2 infectious relapses and 3 serorelapses, a really remarkable result.

Dr Henry Michelson<sup>5</sup> of Minneapolis, a very careful and skilled clinician, has had two deaths and one near death in 45 cases, making him rather hesitant about intravenous drip therapy. He feels it is too dangerous and that intervals between injections—perhaps with some form of combined fever therapy—is preferable. He leans more to biologic than to chemical therapy.

Drs Guy and Jacobs<sup>6</sup> of Pittsburgh have treated 21 patients with no ill effects. Dr Udo J Wile<sup>7</sup> of Ann Arbor states that he has thus far treated almost 200 cases over a period of two years. There have been no severe reactions and he is favorable to it as the best for rapid treatment procedures.

Dr Paul O'Leary<sup>8</sup> of Rochester, Minn, has done no work with intravenous drip therapy, feeling that the incidence of serious complications and death was too great. Dr John Stokes<sup>9</sup> of Philadelphia has done little with it. The personnel problem and setup were difficult for this additional endeavor along with the heavy teaching schedule. Moreover, an aplastic anemia almost in the inception of the work did not help his attitude. They are doing some work with chemotherapy plus fever, using Warren's bath tub technic, but here again the shortage of personnel is difficult. Dr Charles Dennie<sup>10</sup> of Kansas City, Dr Joseph Earl Moore<sup>11</sup> of Baltimore and Dr Dudley Smith<sup>12</sup> of University, Va, have not been using the procedure. Dr Loren Shaffer<sup>13</sup> of Detroit feels that the five day intensive therapy has a very definite place, particularly for the uncooperative

clinic type of patient, but does not think it is universally applicable in all cases of early syphilis. But more in regard to his views later.

Following the report of Baer, Chargin, Hyman, Leifer and others in November 1940 this form of treatment was employed in our City Hospital clinic on 5 patients with early syphilis. They were given daily injections of 1 mg of mapharsen per pound of body weight for five days. Half of the total dosage was dissolved in 500 cc of 5 per cent dextrose in distilled water and given by rapid intravenous drip every morning and afternoon. One patient experienced a rather severe headache after the second injection on each of the first three days of therapy. Aside from this there were no reactions.

Three of the patients have been followed for fifteen months or longer. All had strongly positive serologic reactions when the treatment was given. The serologic reactions became negative in from three to five months after the therapy. One was seronegative at fifteen months, another at eighteen months and another at thirty months after completion of the treatment. Two patients were lost from observation. Because of reactions observed in other centers the technic was discontinued for the time, even though we had had no difficulties.

Recently we have treated 5 patients with daily injections of 0.200 to 0.240 Gm of mapharsen in 2,400 cc of 5 per cent dextrose in distilled water by slow (twelve hour) intravenous drip for five days. All these patients experienced rather severe phlebalgia. Other than this there were no complications.

In August 1940, moreover, 6 patients with early syphilis were given daily injections of 1 mg of mapharsen per pound of body weight in 1,000 cc of 5 per cent dextrose in distilled water by rapid intravenous drip each morning for five days. There were no untoward reactions with this Shaffer technic, which will be described later.

Two patients have been followed for over two years. Both were dark field positive and seropositive when the therapy was given. The serologic reaction on both became negative forty to fifty days after the therapy and remained so twenty-four months later. One, who received a total of 600 mg of mapharsen, was examined thirty-two months after therapy and found to have strongly positive serologic reactions for syphilis but there were no signs of a secondary relapse. Four patients were lost from observation.

Stimulated by the results from the intravenous drip technic others have adopted a somewhat different technic, the idea in all of them being the introduction of as large and yet safe an amount of trivalent arsenical as the patient with acute syphilis can stand in a limited amount of time.

Thus Schoch and Alexander<sup>14</sup> in Dallas, Texas, have treated over 350 patients. In the beginning they gave twenty daily intravenous injections of 0.060 Gm of mapharsen. However, the vast majority were treated with ten consecutive daily injections of mapharsen, each 0.120 Gm, the total dosage being 1.200 Gm. There was hemorrhagic encephalitis with death in 1 case and 2 other cases of mild encephalitis with recovery. The only other severe reaction was a case of icterus with recovery. Schoch's reappraisal of a group of 103

4 Osborne, Earl Personal communication to the authors  
5 Michelson, Henry Personal communication to the authors  
6 Guy, W H, and Jacobs, Fred Personal communication to the

7 Wile, Udo J Personal communication to the authors  
8 O'Leary, Paul Personal communication to the authors  
9 Stokes, John Personal communication to the authors  
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14 Schoch, A G, and Alexander, L J Short Term Intensive Arsenotherapy of Early Syphilis Preliminary Report Am J Syph Gonorr & Ven Dis 25 607 609 (Sept) 1941 Intensive Arsenotherapy of Early Syphilis Follow Up Report on the Ten Day Syringe Method of Treatment, Arch Dermat & Syph 46 128 (July) 1942

patients treated with the ten day syringe method five months after the article was written, showed 83 per cent satisfactory results, 12 per cent failures and 15 per cent still remaining seropositive. They are now using the Eagle technic and think there is a greater margin of safety than with the ten day technic. It is his impression, however, from preliminary results, that they were better with his technic. Time will tell the story. They have since recorded 10 cases of rein-

TABLE 1—*Detroit Plan (Early Cases Only)*

- 1 Mapharsen (0.06 to 0.07 Gm according to body weight) three times weekly for twenty doses (six and two thirds weeks)
- 2 Bismuth sub salicylate 0.9 Gm twice weekly for eight doses (four weeks)
- 3 Mapharsen twice weekly for ten doses (five weeks)

fection. Four patients sustained reinfections following orthodox antisyphilitic therapy. The known period of clinical and serologic negativity was four and one-third years for 1 patient and greater than five for 3. Six of the 103 patients noted in the second report sustained reinfections following ten day intensive arsenotherapy for early syphilis (1.2 Gm of mapharsen). Dark field and quantitative reagin titer findings were furnished to support clinical observations. All the cases were observed by them in both infections and in 1 of them it was believed that there had been three infections in one year. The authors feel that, following intensive arsenotherapy, reinfection is more frequently observed than formerly.

Dr Loren Shaffer<sup>15</sup> in Detroit tried five daily doses of approximately 1.2 mg of arsenoxide per pound of body weight administered in 1000 cc. of 5 per cent dextrose and given by intravenous drip. This required about seventy-five minutes. The maximum daily dose was limited to 0.180 Gm and the total dose for the course ranged from 0.750 to 0.900 Gm. Some 430 cases have thus far been treated, there have been 2 cases of encephalitis, 1 of them fatal. Later the dosage of arsenoxide was slightly lowered. The incidence of encephalitis was about the same as has been observed with other technics. The incidence of relapses, both clinical and serologic, was somewhat high. In January, 1942 an ambulatory intensive method<sup>16</sup> of treatment was adopted by the Detroit Department of Health. It is used only for patients with primary and secondary syphilis who have refused hospitalization for five day treatment or have been considered poor risks. It calls for thirty mapharsen and eight bismuth injections over a period of approximately four months. It is too early to announce results of its use. Dr Shaffer has been one of the earliest and most vigorous proponents of intensive therapy for early syphilis.

With the Detroit plan (table 1) a spinal fluid examination should be made during the bismuth course or at least on the completion of treatment. After treatment is finished early cases are rechecked at monthly intervals for one year and early latent cases every three months. Thereafter, if negative, both types are checked every six months. Naturally, with early cases a complete physical examination is also in order. If the serologic reaction remains positive for one year, further study is in order.

Shaffer's plan is perhaps somewhat more intensive than the Army plan issued by the Surgeon General of the Army in circular letter 74. Much the same follow-up

and routine is used in the Army plan as with the Shaffer Detroit plan.

The Army plan (table 2) calls for forty mapharsen and sixteen bismuth injections in a period of twenty-six weeks.

Shaffer is already disappointed with the Detroit plan because of the high percentage of patients lapsing therapy. Consequently he thinks the five day hospital plan is preferable, though it is hardly suitable to all cases and must be carried out by expert personnel. He thinks that, until more experience can be gained, when one is dealing with the ordinary run of mine clinic patient, who is none too cooperative, either the Army plan or the Detroit plan should be adopted for general use.

Dr A. B. Cannon<sup>17</sup> of the Vanderbilt Clinic in New York still has great faith in arsphenamine, and since July 1941 he has completed the treatment of 226 persons. The patients are hospitalized and of the 189 whom they have been able to follow 123 had negative serologic tests within a period of two weeks to one year, the average being three and one-half months. The plan of treatment has been changed four different times. The present one necessitates four daily intravenous injections of arsphenamine in concentrated form. The total dosage runs from 3.0 Gm minimum to 3.6 Gm maximum. Patients are started on large doses, getting almost half of their treatment in the first two days. There have been 2 cases of encephalitis, with survival in both, 2 of moderate neuritis and 3 cases of icterus, 1 of them a toxic hepatitis. There have been twenty-five mucorecurrences and two persisting serologic reactions.

Eagle and Hogan undoubtedly correctly approached the treatment of early syphilis by the experimental route,

TABLE 2—*Army Plan (For Early and Latent Cases)*

Mapharsen		Bismuth	
Week 1		Week 1	
2		2	Bismuth subsalicylate
3		3	0.2 Gm intramuscularly
4		4	once weekly 5 doses
5	Mapharsen intravenously	5	
6	0.06 to 0.07 Gm adjusted		
7	to weight twice weekly for		
8	10 weeks total 20 injections		
9			
10			
11		11	
12		12	Bismuth as above once
13	Omit mapharsen	13	weekly for 6 doses
14	6 weeks	14	
15		15	
16		16	
17			
18			
19			
20			
21	Mapharsen as in first	21	
22	course twice weekly total	22	
23	20 injections	23	Bismuth as above
24		24	once weekly for
25		25	5 doses
26		26	

working with rabbit syphilis. It would be impossible in this paper to review all the work they have done.<sup>18</sup> While rabbit syphilis is not necessarily human syphilis, a great number of the truths applicable to the one will

17 Cannon A. B. Personal communication to the authors.

18 Eagle Harry and Hogan R. B. The Intravenous Drip and Other Intensive Methods for the Treatment of Syphilis. *Science* 95: 360 (April 3) 1942. Eagle Harry Hogan R. B. and Kemp J. E. The Importance of the Time Factor on the Evaluation of Cure in Syphilitic Rabbits. *Am. J. Syph. Gonorr. & Ven. Dis.* 26: 557 (Sept.) 1942. Eagle Harry and Hogan R. B. An Experimental Evaluation of Intensive Methods for the Treatment of Early Syphilis. I. Toxicity and Excretion. *Ven. Dis. Inform.* 24: 33 (Feb.) 1943. An Experimental Evaluation of Intensive Methods for the Treatment of Early Syphilis. II. Therapeutic Efficacy and Margin of Safety. *ibid.* 24: 69 (March) 1943.

15 Schoch A. G. and Alexander L. J. Reinfection in Syphilis. *Am. J. Syph. Gonorr. & Ven. Dis.* 27: 15 (Jan.) 1943.

16 Shaffer Loren W. and Salechow P. T. Report of Social Hygiene Division. Detroit Department of Health. September 1942.

apply with the other and vice versa. One very important item that they have brought out is with regard to "cure" in rabbit syphilis. They find that "until time limits within which infectious relapse may occur in the rabbit have been more clearly defined the absolute curative dose of arsenicals in rabbit syphilis cannot be determined by lymph node transfer."

Even data as to the relative efficacy of various treatment procedures must be interpreted in the light of the time allowed to elapse between treatment and the following lymph node transfer. Their study showed that six months after treatment in a large series of rabbits, apparently cured at three months as judged by node transfer, 37 per cent of them were still infectious.

Apparently the disease was actually quiescent at three months after treatment but not cured. Is there a lesson for us in this in considering human syphilitic therapy? They find in rabbit syphilis that the time factor has much to do in determining the toxicity of a treatment system. Thus the same treatment of syphilis may be intensified, the treatment period may be shortened by various methods, but they have definite and predictable effects on the margin of safety. In the short term intravenous drip, treatment is concentrated within a few days but the mapharsen is given in a continuous slow infusion for many hours daily. Such a slow infusion is less toxic than single daily syringe injections of the same amount of mapharsen, but it is only slightly less toxic than multiple syringe injections (e g four times daily) distributed over the same time period. Moreover, in rabbits the therapeutic efficacy of mapharsen given by slow intravenous drip was usually less than if the same amount of the drug was given by repeated syringe injections, whether triweekly, daily or four times daily. Another method of intensifying treatment is to give the same number of injections but at shorter intervals. Thus, instead of twenty weekly injections one may give injections three times weekly for seven weeks daily for twenty days or twice daily for ten days. It is clear that, the shorter the time interval between injections, the more pronounced will be their cumulative toxicity. The intravenous drip was significantly less effective than multiple syringe injections administered over the same time period in rabbit syphilis. An appreciable condensation of treatment beyond that permitted by triweekly, daily or multiple daily injections can be accomplished only at the cost of safety by an arbitrary decrease in the total number of injections.

Eagle and Hogan have suggested a clinical adaptation of their studies in human beings with early syphilis. The patients are given a weekly intramuscular injection of bismuth subsalicylate 0.2 Gm and triweekly intravenous injections of mapharsen for six, eight, ten or twelve weeks. Thus far, March 5, between 1,900 and 2,000 patients have been treated at various cooperating clinics throughout the country. In the Cleveland area we have treated the patients at the University Hospital and Charity Hospital with the eight week method and at the Cleveland City Hospital with the ten week method. Naturally it is too early to evaluate the results of this therapy, though it appears to be quite promising. The great difficulty has been to keep the patients on regular treatment. At the first two institutions a total of 114 patients have thus far been treated and at the City Hospital a further 95, of whom 107 have completed their course of treatment. Of these 22 missed no treatments, 34 missed one to five treatment days, 20 missed six to ten treatment

days and 31 over ten treatment days, a total of 107 patients. Unfortunately 34, or 16.2 per cent, have already been lost from observation or treatment, fortunately, 11 of these were after completion of therapy, but this does not help future evaluation of the data. Moreover, in 12 of the cases under the eight week regimen and in 12 under the ten week regimen it has been necessary to discontinue the treatment because of reactions. Seventeen were much alike, characterized by nausea, vomiting, general malaise, photophobia, chills and fever from 39 to 40 C (102.2 to 104 F). Shortly after onset of the symptoms the patients showed some conjunctival injection and edema of the face. These symptoms came on after the fifth or sixth injection and from nine to twelve days after the first injection of mapharsen. One patient developed an icterus lasting fifteen days. Another patient after the fifth injection developed a daily asymptomatic, spiking temperature to 39.5 C (103 F). He was found to have moderately far advanced pulmonary tuberculosis. Following this case a preliminary chest plate was taken in all cases on intensive therapy.

To illustrate what we speak of as our "fever-conjunctival injection-facial edema syndrome"

A Negro woman with early mucocutaneous syphilis was started on intensive therapy on July 9, 1942. After the fifth injection of 0.06 Gm of mapharsen she had a slight headache. Several hours after the sixth injection of mapharsen she developed nausea and vomiting followed by circumocular edema, conjunctival suffusion, headache, weakness and fever of 39 C (102.2 F). It then took five days for her fever to subside. A week after onset of this reaction she received 0.01 Gm of mapharsen with immediate recurrence of the previous symptoms. Twelve days after this reaction 0.1 Gm of neosarsphenamine intravenously produced the same reaction and, in addition, profound muscular weakness. She recovered from this fairly well over the period of a week. Subsequently she received eight injections of iodobismutol every week. Three months after the original reaction 0.01 Gm of mapharsen produced no untoward result. A few days later she moved to Kansas and has not been heard from since.

There has been one relapse at City Hospital, mucocutaneous in type, in a woman who during the course of treatment missed thirteen treatment days. There was also one in a woman under the eight week regimen. She also had missed twenty-four treatment days.

There is a further meningitic type of relapse.

A man aged 57, an Italian, was seen with a chancre and early mucocutaneous syphilis which was dark field positive. At the beginning of therapy on July 16, 1943 his Wassermann and Kline reactions were 4 plus. He then received regular therapy for eight weeks with the exception of one visit, which he lapsed. At the completion of therapy his Wassermann reaction was 4 plus, Kline diagnostic 1 plus and Kline exclusion 3 plus. Six weeks after therapy his Wassermann reaction was 1 plus, Kline diagnostic negative and exclusion 2 plus. Two months after therapy his Kline diagnostic and exclusion reactions were negative. Seven weeks after therapy his spinal fluid showed 300 cells, positive Ross-Jones, 432110 colloidal mastic curve and 4 plus Wassermann reaction in 0.5 and 1.0 cc.

#### FEVER THERAPY IN SYPHILIS

We now come to another milestone in the therapy of syphilis—fever treatment. Wagner Jauregg was the first to use a form of hyperthermia, malaria, for treating dementia paralytica. Later this treatment was tried in early syphilis and found to be unsuccessful. From malaria therapy we have drifted to the use of other fever producing implements, foreign protein therapy, e g typhoid-paratyphoid intravenous injections, hot baths, the inductotherm and the hypertherm. Their

value in central nervous system syphilis is unquestioned, and investigators have naturally turned to them in the treatment of early syphilis. It was an American dermatologist J. F. Schramberg<sup>19</sup> who as long ago as 1926 reported the beneficial effects of hot baths in experimental rabbit syphilis. In 1935 Epstein and Cohen<sup>20</sup> and in 1936 Neumann Lawless and Osborne<sup>21</sup> found such treatment to be ineffective in human syphilis. This has been confirmed by Bork, Carpenter, Jones, Kampmeier, McCann, Warren and Williams<sup>22</sup> and by Simpson, Rose and Kendall<sup>23</sup>. However, when this fever therapy is combined with chemotherapy it may be a different story. The interested reader may consult the recent review of Simpson, Kendall and Rose.<sup>24</sup> These authors<sup>24</sup> have a group of 27 patients with early syphilis observed for four to eight years who have had no clinical or serologic relapse. They received fever therapy consisting of either twelve three hour or ten five hour sessions (rectal temperature 105 to 106 F) administered once or twice weekly. With each treatment an arsenical preparation (neovarsphenamine 0.3 Gm or mapharsen 0.04 Gm) and a bismuth compound (containing 0.2 Gm of metallic bismuth) were administered. Following the fever therapy, injections of the chemotherapeutic agents were continued for an additional twenty weeks, injections of the arsenic and bismuth being concurrent. They further report on a series of 23 patients observed from six months to two and one-half years. The patients were given a preliminary injection of 0.25 Gm of bismuth subsalicylate then placed in a hypertherm and given a ten hour session of artificial fever at 106 F. Mapharsen was used in all the cases. Two patients received 240 mg by intravenous drip during the period of fever at 106 F. This was abandoned in favor of administration of injection by the syringe method in 60 mg doses at intervals of three hours. Six patients were given two injections (120 mg), five received three injections (180 mg) and 3 received four injections (160 mg). The first injection was given when the rectal temperature first reached 106 F, the second at the end of the third hour, the third at the end of the sixth hour and the fourth at the end of the ninth hour. No other treatment was given. Serologic reversal was dependent on the height of the initial pretreatment titer. It occurred in from twenty-one to one hundred and seventy-six days. The authors state that the number of patients is small and the period of observation insufficient to permit adequate clinical evaluation. They believe, however, that the results are sufficient to justify further investigation. There can be little doubt about the value of their observations, and they are to be congratulated on their conservative approach. As we understand it, a quite similar procedure is being carried on by Dr. Nathaniel Jones and

S. L. Warren<sup>25</sup> at the Duval County Hospital, Jacksonville, Fla., where they have treated well over 100 cases, and at the Chicago Intensive Treatment Center under the direction of Dr. H. Worley Kendall,<sup>26</sup> where they have in a period from October 1942 to date treated a total of 350 or 400 patients. At the latter institution treatment consists in eight hours of fever at 105.6 to 106 F and there is given arbitrarily to men 0.090 Gm of mapharsen and to women 0.060 Gm. One third of the mapharsen is given when the temperature reaches its height and one third at approximately three hours and six hours afterward. They also administer 1.5 cc of 10 per cent suspension of bismuth subsalicylate before treatment is started in the morning. Dr. Kendall furnished the information thus far available and urges extreme conservatism until sufficient material has been treated and carefully evaluated. He is quite emphatic that their work is still in the experimental stage. They plan on gradually increasing the dosage.

#### THE COMBINED SYRINGE METHOD THERAPY PLUS FEVER

In 1937 Thomas and Wexler in New York City<sup>27</sup> increased the number of injections of mapharsen from one to two a week and by 1938 to three a week for four weeks for all patients with early infectious syphilis. In the light of the intensive therapy they determined to attempt rapid massive treatment without the continuous drip—their facilities at Bellevue did not easily allow the latter. Later they stepped up their dosage still further using the standard syringe method for injection giving at first 0.060 Gm of mapharsen twice daily for ten days, the same dose, 1.200 Gm, used by the Mount Sinai group. Later they tried 0.100 Gm twice daily, which worked nicely until the 111th patient, who had a fatal encephalitis. Since then they have endeavored to keep the total dosage of mapharsen under 0.800 Gm in a period of ten days. Dr. Thomas feels, however, that such a dosage to be therapeutically effective must be supplemented with fever. He states that the program they have used now for six months and which is quite satisfactory consists of ten daily injections of mapharsen 0.060 Gm each with four fevers induced by typhoid vaccine. The fevers are given as a rule on the second, fourth, sixth and eighth days. The dosage is varied somewhat according to weight. Originally Thomas felt that fever prevented toxic reactions<sup>28</sup> of arsenical drugs. He later reversed this opinion.<sup>29</sup> Dr. Thomas thinks that intravenous drip therapy has no advantage over the syringe technic and certainly their results are even as good. Intravenous drip therapy is also probably more toxic. He has also treated 50 patients with Eagle and Hogan's three injections of mapharsen a week for six or eight weeks. He thinks the treatment is therapeutically effective but that it is a most unsatisfactory plan and impractical in their work in which they have so many Negroes and irresponsible patients. To this we heartily agree. All their work has been most painstaking, very carefully planned and carried through and presents a most convincing argument in favor of the syringe technic plus fever treatment.

19 Schramberg J. F. and Rule, Anna. Studies of the Therapeutic Effect of Fever in Experimental Rabbit Syphilis. Arch. Dermat. & Syph. 13: 243 (Sept.) 1926.

20 Epstein N. and Cohen, Maurice. The Effects of Hyperpyrexia Produced by Radiant Heat in Early Syphilis. J. A. M. A. 104: 883 (March 16) 1935.

21 Neumann C. A., Lawless T. K. and Osborne S. L. The Treatment of Early Syphilis with Electropyraxia. J. A. M. A. 107: 194 (July 18) 1936.

22 Bork, Ruth A., Carpenter C. M., Jones, Nathaniel, Kampmeier R. H., McCann W. S., Warren S. L. and Williams J. R., Jr. The Inadequacy of a Single Prolonged Fever for the Treatment of Early Acute Syphilis. Am. J. Syph. Gonorr. & Ven. Dis. 26: 291 (May) 1942.

23 Simpson, Walter M., Kendall H. W. and Rose, Donald I. Quantitative Serologic Studies in Early Syphilis. I. Treatment with Artificial Fever Alone. II. Treatment with Artificial Fever Combined with Chemotherapy. III. Treatment with a Single Intensive Session of Combined Fever Chemotherapy. Ven. Dis. Inform. 23: 403-415 (Nov.) 1942.

24 Simpson W. M., Kendall H. W. and Rose, Donald. Developments in the Treatment of Syphilis with Artificial Fever Therapy Combined with Chemotherapy During the Past Decade. Brit. J. Ven. Dis. 17: 1 (Jan-April) 1941.

25 Jones, Nathaniel and Warren S. L. Personal communication from Dr. R. A. Vonderlehr.

26 Kendall H. W. Personal communication to the author.

27 Thomas E. W., Wexler Gertrude and Dattner, Berthard. Central Reactions Associated with Massive Mapharsen Treatment of Early Syphilis. Am. J. Syph. Gonorr. & Ven. Dis. 26: 529 (Sept.) 1942.

28 Thomas E. W. and Wexler Gertrude. Treatment of Early Syphilis with Rapid Injections of Mapharsen. Am. J. Pub. Health 31: 545 (June) 1941.

29 Thomas E. W. Personal communication to the authors.

COMMENT

It is fair to say that from the data given here evidence is presented showing that early syphilis is being cured by intensive treatment methods, whether it be intravenous drip, the syringe technic, multiple injections of Eagle, or fever therapy and intravenous drip or syringe treatment plus fever. The patients are not only cured but, as Schoch and Alexander show, they are even being reinfected in appreciable numbers.

Stokes<sup>10</sup> has recently reviewed the difficult problem. He points out that a new system of treatment of syphilis must equal or surpass the curative expectancy of the older ones, lead to less infectious relapses, cure more mothers and protect more children and lessen the incidence of cardiovascular and central nervous system syphilis. On the other hand, when we talk about the relatively benign character of much early syphilis, 40 to 50 per cent, and the fact that with relatively small amounts of treatment, if it doesn't disturb the defense mechanism, this may even be raised to as high as 70 per cent, here we are completely ignoring the public health problem of syphilis, especially in wartime. He quite properly insists that evaluation of a system of treatment requires two to four years as far as relapse is concerned and ten years for evidence of progression. A new system must be cheap and rapid, control the lapse problem and allow treatment of more persons per unit of time, personnel and equipment. All these arguments are, of course, in favor of intensive methods though, as Stokes notes, the man cured with intravenous drip or with fever plus chemotherapy must be followed afterward even as much as his lady friend treated by the longer but safer eighteen months method. And too he states that with intensive methods wherein patients are even paid for follow-up visits the loss rate is 17 per cent and in some clinics 6 to 20 per cent up to six months. He thinks that long term treatment in the modern syphilis clinic is carried through in 25 per cent of the early cases and 50 per cent ultimately receive satisfactory irregular treatment. Moreover, that in really good clinics with effective case holdings it may be raised to 50 per cent with 70 to 80 per cent ultimately receiving satisfactory irregular treatment. In this connection one should remember that we are not dealing with a half dozen top clinics but with the run of mine clinic throughout the United States. How well is this clinic holding its cases? It is not necessary to answer the record is bad, spelled with a capital B. He is probably right in his contention that the percentage of relapse is about the same with intensive methods as with conventional treatment. We agree that for the present, at least, intensive therapy should be reserved for relatively acute syphilis—not later than early latent.

We now come to the real problem with intensive methods. Stokes says that for 4,871 patients treated with all the intensive methods there was a mortality of 1/220 and a morbidity of nonfatal encephalitis of 1/160. Shaffer makes the figure for mortality 0.3 per cent. It is true that with older methods encephalitis is a very rare, he puts it 1/20,000. Deaths from mapharsen are thus a demonstration of millions of doses. The rate is probably one hundred to two in a million from older methods. In reply to this the ultimate mortality or morbidity of an individual early uncooperative syphilitic patient takes a few treatments and lapse. And, too, how

new infections do they pass on and thus keep the syphilitic ball rolling? How many mothers and how many babies are infected by them before their disease gets so old that it is no longer transmissible? Moreover, would not such an intensive technic be a partial answer to our expert help problem in our clinics? The patient receives his treatment and then is through except for follow-up and occasional examinations.

Vonderlehr and Usilton<sup>31</sup> have recently analyzed the 1,895,778 serologic reports of men aged 21 to 35 who were examined under the Selective Service Act of 1940. The rate of prevalence of syphilis among the entire male population between 21 and 35 is estimated to be 47.7 per thousand. However, the rate of prevalence among Negro selectees is 253.3 per thousand and among white selectees 17.4 per thousand. Moreover, if one turns to urban centers in the South it is found that the rate of prevalence among Negro men ran 413 per thousand in Florida, 407 in Georgia, 358 in Arkansas, 339 in Maryland, 431 in Mississippi, 384 in Texas, 417 in South Carolina, and so on. Unfortunately, these data present the crux of the whole syphilis problem. The rate of prevalence is highest among the most ignorant and least cooperative part of our population. In the Cleveland district it is just this portion of our patients that are hardest to hold, that are easiest lost, in fact so effectually that even their draft boards cannot find them. The common complaint from all workers in syphilotherapy is difficulty in getting the uncooperative patient. A few treatment

With those forms of treatment hospitalized and receives his at least one or she, skin, numbed to a small amount, amidst war in which syphilis, for the daily syphilis, be he the intensive method, medical. Stokes dose of two massive injections the answer Eagle technic treated while Thomas and mapharsen C typhoid on the five day bismuth intravenous chemotherapy that such experts in treatment points at to do it.

30 Stokes, John. The Wartime Control of Venereal Disease. J A M A 120:1093 (Dec 5) 1942



THE SYNTHETIC ESTROGEN OCTO-  
FOLLIN (IN OIL)

## REPORT OF CLINICAL INVESTIGATION

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Although there is no doubt concerning the efficacy of estrogen therapy in the female climacteric there is considerable uncertainty about the optimal preparation to be used. The criteria for effective treatment are two: subjective relief and vaginal smear response. To the practitioner interested primarily in the welfare of his patients the relief of symptoms is of more importance and rightly so, than the results of any objective tests which may be made. Until such time as some investigator has at his disposal a group of young women from whom all ovarian tissue has been removed by surgical means evaluation of the activity of estrogens in human therapy by the vaginal smear technic can never be a precise laboratory procedure. It is true, of course that some estimate of the degree of response to the therapy can be gained by the smear technic, and we have used such tests to supplement our subjective findings. In choosing an estrogen the physician must consider also other factors—cost (to him or to the patient) of adequate therapy and the extent to which toxicities or side reactions occur following oral or parenteral therapy.

There would seem to be nothing to be gained by a lengthy discussion here of the voluminous literature representing the experiences of investigators and clinicians with diethylstilbestrol. The report of the Council on Pharmacy and Chemistry<sup>1</sup> together with the review articles mentioned therein must be familiar to all workers in the field. It would appear to be universally accepted that diethylstilbestrol is a remarkably effective estrogenic drug when administered either orally or parenterally. There has been considerable controversy, however, over the degree to which toxicities or side reactions are manifest during the administration of this synthetic estrogen.

During the last year I have been using a new synthetic estrogen, octofollin,<sup>2</sup> on a large group of climacteric patients. This compound, which is not a derivative of stilbestrol, has the chemical name 2,4-di-(para-hydroxyphenyl)-3-ethyl hexane. The steps leading to the development of this compound have been outlined by Blanchard, Stuart and Tallman,<sup>3</sup> and reports of the physiologic studies of this estrogen were presented in 1942 from the same laboratory.<sup>4</sup> Freed and his co-workers,<sup>5</sup> and Greenhill<sup>6</sup> reported satisfactory results with this compound in menopausal patients and indicated that it was much less toxic than stilbestrol or hexestrol. Murphy<sup>7</sup> reported that satisfactory results have been obtained with the use of octofollin in the relief of the symptoms of the menopause, in gonorrheal vaginitis in children and in the suppression of lactation.

Jaeger and his co-workers<sup>8</sup> mentioned its use in gonorrheal vaginitis and believed it to be a most efficient estrogen.

## EXPERIMENTAL MATERIAL AND RESULTS

It was my intention at the outset to test the efficacy of octofollin both by oral and by parenteral administration. At the start, the memory of side reactions with stilbestrol therapy resulted in overcaution in the oral administration of this new synthetic, and as a consequence the clinical response was not encouraging. However, not one of the patients reported any untoward reaction of any kind during the course of therapy. The average daily dose by mouth in this series of patients was 1.0 mg. Therapy with octofollin in oil was begun by deep intramuscular injection and the results were very satisfactory. In all the cases to be reported here the estrogen was administered by this route. Therapy was given to a series of 21 women with various symptoms indicative of estrogen deficiency. The summary of the results on these cases, giving dosage data is given in the accompanying table. Not one of these patients ever demonstrated any toxic symptoms or local reaction at the site of injection. Gastrointestinal disturbances which were not at all uncommon with diethylstilbestrol were absent, and there was no evidence of pelvic pain or discomfort, no vaginal bleeding during therapy and no dermatitis. The amount and frequency of the dosage are determined by the type of patient and the severity of the symptoms.

The cases in this series ranged from mild menopause types to those with the more severe symptoms of the surgical menopause. The majority of the patients had similar symptoms with an average degree of severity.

In the accompanying table the five starred patients had liver function tests. Four of these showed completely normal function both before and after considerable therapy. The fifth patient, D M, having latent syphilis and chronic cholecystitis, exhibited a 2 plus cephalin flocculation test at the beginning of therapy and there was no change following six months of octofollin therapy.

Vaginal smears were done on all the patients shown in the table. I have been using the iodine staining reaction as a measure of estrogen response. In the majority of cases there was a moderate to pronounced reduction in the number of iodophilic cells before therapy. Following therapy there was an improvement in the appearance of the smear in almost all cases, although complete cornification was observed in but 2 cases. It is quite apparent that definite, or complete, relief of menopausal symptoms can follow estrogen therapy without the necessity of producing completely cornified vaginal smears.

Space does not permit the insertion of detailed protocols on all the patients. One typical protocol is given here, however, with the idea that it will give a better idea of the way in which treatment was carried out on the average patient.

E W, white, aged 44 except for a sacroiliac strain and some hypertrophic arthritis of the sacroiliac joint had no illness or operation. When first seen in October 1941 the patient complained of low backache also spells of hot flashes and vertigo exhaustion and at times some precordial discomfort. The physical and x-ray examination revealed no serious pathologic condition, however, there was some moderate hypertrophic reaction of the right sacroiliac joint. The Kahn reaction, blood count and urinalysis were essentially negative. Liver function tests

1 Diethylstilbestrol. Report of Council on Pharmacy and Chemistry. J. A. M. A. 119: 632 (June 20) 1942.

2 Octofollin is a development of the Research Laboratories of Schiefelin & Company, New York and was supplied through the courtesy of Dr. E. W. Blanchard of that organization.

3 Blanchard E. W., Stuart A. H. and Tallman R. C. Endocrinology to be published.

4 Blanchard E. W. Endocrinology 30: S1026 (June) 1942. Stebbins A. B. and Blanchard E. W. ibid 30: S1041 (June) 1942.

5 Freed S. C., Eissin W. M. and Greenhill J. P. J. Clin. Endocrinol. 2: 213 (April) 1942.

6 Greenhill J. P. Am. J. Obst. & Gynec. 44: 475 (Sept.) 1942.

7 Murphy J. A. Am. J. Obst. & Gynec. to be published.

8 Jaeger A. S., Moenning W. P. and Bowman G. W. U. S. A. Clin. Rev. 47: 81 (Feb.) 1943.



were made. The cephalin-cholesterol and bromsulphalein tests were negative, and four weeks after the use of the synthetic estrogen octofollin the tests still showed completely normal liver function. The menstrual history was normal. In the past six months the periods had been growing more scanty and becoming a little irregular. Vaginal examination showed a perfectly normal cervix and fundus and no evidence of tumors or inflammation. The vaginal smears revealed quite a few round or oval atrophic cells.

The patient received therapy of natural estrogenic hormone 10,000 international units parenterally twice a week for six injections. This was followed by a definite symptomatic improvement for four or five weeks. The vaginal smears made during the time of greatest improvement showed little cornification with the atrophic cells still present to a moderate degree, notwithstanding the subsidence of clinical symptoms. With the

The hypertension which seems to be present in certain menopause patients seemed also to be improved with octofollin therapy. This is particularly noted in one patient, M. L. M. in the table, whose blood pressure before the start of treatment varied between 180/110 and 200/120. After three months of therapy the blood pressure was 150/90 to 160/98. Similar decreases in blood pressure, though less striking, were noted in other patients in this series.

#### COMMENT AND CONCLUSIONS

Octofollin in my experience provides prolonged beneficial effects. This means sustained as well as additional comfort for the menopausal patient.

#### Summary of the Clinical Results of the Investigation of the Action of Octofollin

Patient	Age	Conditions and Symptoms for Which Treatment Was Given	Dose and Frequency	Clinical Results
G. H.	45	Natural menopause, hot flashes, sweats, palpitation	2 mg twice a week for 3 weeks then 2 mg once a week for 6 weeks	Almost complete control of symptoms
J. G.	44	Postoperative menopause, hot flashes, depressed feeling, exhaustion	5 mg twice a week for 4 weeks then 5 mg once a week for 8 weeks	Complete control of symptoms
C. W.	37	Early menopause, scanty irregular periods, hot flashes, nervousness, low basal metabolic rate	2 mg twice a week for 3 weeks then 2 mg once a week for 6 weeks	Complete control of vasomotor disturbances
G. I.	48	Natural menopause, menses irregular, hot flashes, depression	2 mg once a week for 8 weeks	Pronounced clinical improvement in symptoms
H. DeV.	78	Approaching menopause, scanty periods, precordial pain and heart consciousness	5 mg once a week for 5 weeks, then 5 mg every 2 weeks for 3 months	Almost complete control of symptoms
H. M.	51	Postmenopausal, no hot flashes, but pressure pain in head and neck	5 mg once every 2 to 3 weeks	Complete control of subjective symptoms
P. W.	42	Dilation and curettage and x-rays to uterus for menorrhagia following this depressed feelings and headache, no flashes	5 mg once a week for 4 weeks then 5 mg once every 2 to 4 weeks	Partial relief of exhaustion and back ache
F. S.	39	Hot flashes and exhaustion following high voltage x-rays	2 mg once a week for 7 weeks	Complete relief of symptoms after 4th dose and no return of symptoms until 3 months after last injection
F. S.	46*	Natural menopause, severe and frequent hot flashes, day and night	5 mg twice a week for 3 weeks then once a week for 4 weeks now once every 4 to 6 weeks	Complete control of symptoms vaginal smear returned to more normal appearance
C. M.	52	Menopause, menses scanty and irregular, severe hot flashes, sweats and choking feeling, palpitation of heart	5 mg twice a week for 1 month then once every 1 to 2 weeks for 4 months	Complete control of symptoms with the frequent doses and fair control with doses every 2 weeks
L. D.	47	Menses irregular and infrequent for past year, exhaustion, nervousness and few hot flashes	5 mg a week for 1 month then 2.5 mg every 2 to 3 weeks	Satisfactory control of subjective symptoms and improvement in vaginal smear
R. A.	52	Two year postmenopausal, exhaustion and pressure in head	5 mg once every 4 to 6 weeks as necessary	Almost complete control of symptoms for 4 to 6 weeks with one 5 mg dose
M. H.	52	Hysterectomy in 1934, hot flashes and vaginal irritation since in varying degree	5 mg every 1 to 2 weeks for 3 months, then once a month	Quite complete relief of symptoms if dose is given once a month
F. W. K.	52	Menopause, severe hot flashes since menses ceased in 1941, headache and bloating	5 mg a week for 12 weeks, then once a month	About 50 per cent relief in subjective symptoms
A. B.	36	Hysterectomy in 1941, severe and frequent hot flashes in 1942	5 mg a week for 1 month, then every 3 to 4 weeks	Satisfactory relief of hot flashes for 2 to 4 weeks with 5 mg
R. B.	33	Miscarriage in 1941 followed by dilation and curettage, hot flashes and depression began in 1942	5 mg twice a week for 8 weeks then once a week for 2 months	Hot flashes stopped after 34 days after first injection, relief of depression with 20 injections
H. V. D.	40	Hot flashes, depression and irregular menses	2 mg once a week for 2 months	Quite satisfactory reduction in symptoms for 6 months after treatment
M. L. M.	51*	Menopause, infrequent and scanty menses, hot flashes	5 mg once a week for 1 month, then every 2 to 5 weeks for past 4 months	Almost 100 per cent relief of hot flashes
D. M.	50*	Menopause, hot flashes, latent syphilis, treated, chronic cholecystitis, intolerant to diethylstilbestrol	2 to 5 mg at irregular intervals	Control of hot flashes with 2 to 5 mg for varying lengths of time. 5 mg will stop hot flashes 2 to 3 weeks
E. W.	44*	Early menopause, hot flashes, night sweats, dizzy, intolerant to diethylstilbestrol	2 mg twice a week for 1 month then 5 mg a week for 6 to 8 weeks	Complete relief of symptoms, complete cornification of vaginal smear
H. L.	44	Early menopause, flushing, sweating, headaches	2 mg twice a week for 6 weeks then 2 mg a week for 6 weeks	Gradual and complete in 6 weeks with cornification

return of symptoms such as hot flashes and vertigo the patient was placed on diethylstilbestrol orally 0.5 mg per day. The symptoms subsided within a few days, but the patient became nauseated and had a sense of soreness and fullness of the breasts after eight days, so that it became necessary to discontinue the therapy. The injection of diethylstilbestrol 0.5 mg twice a week also gave clinical improvement but also created the toxic symptoms as before and was discontinued.

In May 1942 the patient was placed on injections of the synthetic estrogen octofollin, receiving 2 mg twice a week for one month without there being the least sign of toxic symptoms. She received thereafter 5 mg a week and later every two weeks for two months more. Complete relief of hot flashes, sweats and dizziness resulted and the patient generally was better after the fourth injection. This improvement continued for over six months without further injection and with no return of symptoms. An apparent improvement in the arthritic condition was also reported by the patient.

Undesirable side reactions, such as headache, nausea, vomiting, dizziness, soreness of the breasts, pelvic pain and excessive or frequent uterine bleeding, were not encountered in my experience. Such reactions were encountered frequently in therapy with diethylstilbestrol both by the oral and by the parenteral routes of administration.

In general also there seemed to be quite a decided improvement in the vague arthropathies and hypertension associated with the menopausal syndromes in this series of patients.

The results given here indicate that the new synthetic estrogen octofollin, when administered parenterally in oil to menopausal patients, is an effective estrogen and is nontoxic in therapeutic doses.

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OCTOFOLLIN A NEW SYNTHETIC  
ESTROGENHAROLD K. ROBERTS, M.D.  
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AND  
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Since Dodds and his associates<sup>1</sup> synthesized the estrogenic substance diethylstilbestrol in 1938 numerous clinical studies have demonstrated that this compound is a powerful and therapeutically effective estrogen when administered either by injection or by mouth. Many investigators have shown that it may produce some undesirable reactions. The commonest clinical objection to diethylstilbestrol has been nausea, and in various series from 10 to 60 per cent of the patients treated have complained of this possibly toxic reaction. Usually nausea can be avoided by reducing the dose<sup>2</sup> or by giving the medication at bedtime<sup>3</sup> or by using interrupted treatment.<sup>4</sup> A few patients do not tolerate even small doses and Finch<sup>5</sup> has suggested that nausea may be an allergic reaction. Infrequent occurrence of vomiting, headache, vertigo, abdominal distress, diarrhea or dermatoses has been reported following the administration of diethylstilbestrol. Thus the dosage and therefore the therapeutic effectiveness of this synthetic estrogen is limited to some extent by possible toxic gastrointestinal disturbances and occasionally by other side reactions.

Attempts have been made to produce stilbestrol modifications and to synthesize other estrogenic compounds which would not cause nausea or the other untoward symptoms sometimes occurring with diethylstilbestrol. Geschickter and Byrnes<sup>6</sup> demonstrated that stilbestrol monomethyl ether is an estrogen of clinical value, and Elden<sup>7</sup> reported that only 10 per cent of his patients received no benefit from this medication. Abarbanel,<sup>8</sup> however, found that when stilbestrol monomethyl ether was given in doses estrogenically equivalent to those of diethylstilbestrol the incidence of nausea was similar with the two compounds. According to Bieren and Compton<sup>9</sup> dihydrostilbestrol (hexestrol) is a powerful estrogen, but its effective dose in adults was ten times that of diethylstilbestrol, and nausea occurred in over 8 per cent of their cases.

New synthetic estrogens which are not related to the natural estrogens or to the stilbenes have been reported recently. Robson and Schonberg<sup>10</sup> dem-

onstrated that triphenylethylene produced complete estrous response in ovariectomized mice and found this preparation to have a prolonged effect. Later these authors reported good estrogenic effect in animals with  $\alpha$ -di-(*p*-ethoxyphenyl)- $\beta$ -phenyl bromoethylene.<sup>11</sup> Macpherson and Robertson<sup>12</sup> in 1939 announced that triphenyl chorethylene had estrogenic activity. They recommended that the dose of this compound for adults be 200 mg daily. The duration of action was approximately that of diethylstilbestrol, and no nausea or other side reactions were observed.

## SYNTHESIS OF OCTOFOLLIN

Blanchard<sup>13</sup> studied the response of rats to a new synthetic estrogen 2-4-di-(*para*hydroxyphenyl)-3-ethyl hexane, later named octofollin. This compound is not related to stilbestrol. He found that it produced responses in rats similar to those elicited by the natural estrogens except that it was highly active when administered by mouth. Certain natural and synthetic estrogens when given parenterally or orally in large repeated doses will produce hypoplasia of the bone marrow of dogs.<sup>14</sup> Stebbins and Blanchard<sup>15</sup> observed hypoplasia of the bone marrow of rats receiving either a natural estrogen diethylstilbestrol or octofollin. The incidence and degree of the hypoplasia of the bone marrow was not as great with octofollin as it was with either of the two other estrogens.

Freed, Eism and Greenhill<sup>16</sup> found satisfactory therapeutic response to this new synthetic estrogen in patients receiving 10 to 25 mg daily. Results were judged chiefly by the relief of hot flashes. They reported nausea in only 3 of a small series of cases.

In 1940<sup>2</sup> and again in 1941<sup>4</sup> two of us summarized our studies with diethylstilbestrol in which the subjective, objective and possible toxic responses of patients to the medication were investigated. We report here a similar study with the new synthetic estrogen octofollin.<sup>17</sup>

## CLINICAL MATERIAL AND METHODS

During the past fourteen months we have treated over 60 persons having estrogen deficiency with octofollin. Forty-four case studies are analyzed in this report, since the attendance of the remaining patients at the clinic was irregular. Of the 44 women, 30 suffered from symptoms of spontaneous menopause, 11 from artificial menopause following operation, and 3 from primary hypogonadism. No patient was treated who did not complain of severe symptoms of vasomotor instability.

The subjective symptoms of each patient were analyzed as carefully as possible and recorded in specially prepared charts prior to and during the admin-

From the Department of Medicine, Washington University School of Medicine, and the Washington University Clinics.

<sup>1</sup> Dodds E. C., Goldberg L., Lawson W. and Robinson R. Estrogenic Activity of Certain Synthetic Compounds. *Nature* London 141: 2-7 (Feb. 5) 1938.

<sup>2</sup> MacBride C. M., Freedman Harold, Loeffel Ellen and Castrodale Dante. The Synthetic Estrogen Stilbestrol. *J. A. M. A.* 115: 440-443 (Aug. 10) 1940.

<sup>3</sup> Rock John and Menkin M. F. Stilbestrol. *New England J. Med.* 222: 552-556 (Oct. 8) 1942.

<sup>4</sup> MacBride C. M., Castrodale Dante, Loeffel Ellen and Freedman Harold. The Synthetic Estrogen Stilbestrol. *J. A. M. A.* 117: 1240-1242 (Oct. 11) 1941.

<sup>5</sup> Finch J. W. The Nausea and Vomiting Following Administration of Diethylstilbestrol. *J. A. M. A.* 119: 400-402 (Mar. 30) 1942.

<sup>6</sup> Geschickter C. F. and Byrnes E. W. Menopausal Syndrome. *J. Clin. Endocrinol.* 2: 19-25 (Jan.) 1942.

<sup>7</sup> Elden C. A. Monomethyl Ether of Stilbestrol and Menopausal Syndrome. *J. Clin. Endocrinol.* 2: 287-289 (Mar.) 1942.

<sup>8</sup> Abarbanel A. R. Clinical Evaluation of Adjunctive Therapy with Stilbestrol Monomethyl Ether with Comments on Toxicity. *J. Clin. Endocrinol.* 2: 386-390 (June) 1942.

<sup>9</sup> Bieren R. E. and Compton B. C. The Estrogenic Properties of Dihydrostilbestrol (Hexestrol). *Am. J. Obst. & Gynec.* 44: 287-297 (Aug.) 1942.

<sup>10</sup> Robson J. M. and Schonberg A. Estrous Reactions Including Mating Produced by Triphenyl Ethylene. *Nature* London 140: 196 (July 31) 1937.

<sup>11</sup> Robson J. M. and Schonberg A. A New Synthetic Estrogen with Prolonged Action when Given Orally. *Nature* London 150: 22-23 (July 4) 1942.

<sup>12</sup> Macpherson A. E. S. and Robertson E. M. Clinical Use of Triphenylchorethylene. *Lancet* 2: 1362 (Dec. 30) 1939.

<sup>13</sup> Blanchard E. W. Responses of Laboratory Animals to a New Synthetic Estrogen. *Endocrinology* 30: S1026 (June) 1942. Blanchard E. W., Stuart A. H. and Tallman R. C. Studies on a New Series of Synthetic Estrogenic Substances, *ibid.* 32: 307-310 (April) 1943.

<sup>14</sup> Castrodale Dante, Bierbaum Olga, Helwig E. B. and MacBride C. M. Comparative Studies of the Effects of Estradiol and Stilbestrol on the Blood, Liver and Bone Marrow. *Endocrinology* 29: 36-37 (Sept.) 1941.

<sup>15</sup> Stebbins R. B. and Blanchard E. W. Changes in the Peripheral Blood and Bone Marrow of Rats Treated with a New Synthetic Estrogen. *Endocrinology* 30: S1041 (June) 1942.

<sup>16</sup> Freed S. C., Eism W. M. and Greenhill J. P. Assay in the Human Female of Synthetic Estrogens. *J. Clin. Endocrinol.* 2: 213-214 (April) 1942. Greenhill J. P. The Use and Power of Synthetic Estrogens. *Am. J. Obst. & Gynec.* 44: 47-61 (Sept.) 1942.

<sup>17</sup> The octofollin was supplied by the Research Laboratories of Schieffelin & Company, New York.

istration of octofollin Vaginal smears were taken before medication was given and at frequent intervals during the course of therapy

In the early part of the studies each patient was given 0.5, 1.0 or 2.0 mg daily of the estrogenic substance by mouth for six to eight weeks, however, these doses gave little therapeutic effect Therefore the doses were gradually increased to 5 mg or more daily A few

TABLE 1—Subjective Responses of Twenty-Six Women Receiving Continuous Treatment with Octofollin

Response	Dose in Milligrams			
	1 Mg	2 Mg	4 Mg	5 Mg
None	14	10	2	
Slight	4	4	7	5
Fair		2		6
Good			3	8
Excellent				4
Total	18	22	12	23

of the patients with severe symptoms required from 10 to 15 mg daily to obtain relief Continuous therapy was employed in 26 cases Of the 26 patients receiving continuous medication, 5 received the estrogen from one to three months, eight between three and six months, five from six to nine months, and 8 for nine months or longer

Eighteen patients were given interrupted treatment The patients at first received 1 mg daily for fourteen days, then the octofollin was omitted for two weeks The next month the dose was increased to 2 mg daily for the two week period The patients obtained slight or no relief from these doses The following month the dose was increased to 5 mg, then to 10 and 15 mg in the succeeding months Of the 18 patients given interrupted medication, 7 received this type of treatment for five months and 11 for seven months or more

For comparison with the studies on diethylstilbestrol reported in 1941, hepatic function tests were done on 9 patients receiving large doses of octofollin The two tests employed were bromsulphalein excretion and hippuric acid synthesis

In 26 cases complete counts of the formed elements of the peripheral blood (excluding platelets) were performed prior to and during the administration of octofollin Repeated urine examinations were done in all cases

RESULTS

1 Subjective Effects—Good relief of symptoms of vasomotor instability was observed in 23 of the total of 44 patients receiving either continuous or interrupted treatment Fair relief was obtained in 10 patients, poor in 4 and no improvement in 1 Hot flushes were eliminated or diminished greatly in 15, and headaches were relieved in 11 patients in whom they had been prominent complaints Of 26 patients, nervousness was diminished in 16 and fatigability in 14

In table 1 are presented the subjective effects of four different levels of dosage of octofollin on the 26 patients given continuous treatment The table shows that the majority of the patients received little or no benefit with doses of 1 to 4 mg daily Only 2 of 22 patients were fairly satisfactorily relieved of symptoms with 2 mg daily Among 12 patients receiving 4 mg daily, symptoms were greatly diminished in 3, while in 7 only slight relief occurred, and in 2 there appeared to be no change

With 5 mg daily, 5 patients obtained slight relief, 6 fair, 8 good and 4 excellent alleviation of symptoms When 1 patient was given 6 mg and another 10 mg daily, each one obtained complete relief of symptoms of the menopause

The subjective effects of interrupted therapy on 18 patients are presented in table 2 There was little or no effect from either 1 or 2 mg daily, given two weeks out of four With 5 mg daily, 6 patients obtained good relief of symptoms, 4 fair and 8 poor, while with 10 mg for the two week period there was excellent relief of symptoms in 4 patients, good in 7 and fair in 7 When the daily dose was increased to 15 mg, the same 4 patients obtained excellent results, 7 good and 7 fair

From these results it would seem that from 5 to 10 mg of octofollin daily is required in the majority of cases to relieve satisfactorily the symptoms of vasomotor instability occurring in the menopause. This conclusion is at variance with the observations of Freed, Eism and Greenhill,<sup>16</sup> who found that the satisfactory daily dose of octofollin was from 1.0 to 2.5 mg Taylor and Thompson,<sup>18</sup> however, had to give from 30 to 50 mg by mouth daily to produce the same estrogenic effect as 1 mg daily of diethylstilbestrol Nausea, vomiting, heartburn and leg cramps were much less frequently observed than with diethylstilbestrol but were noted in some instances in their series of patients receiving octofollin

We observed few untoward reactions Three women receiving 10 mg doses of octofollin over a long period complained of mild discomfort in the lower part of the abdomen Five patients given 10 to 15 mg daily observed an increase in the white seromucoid vaginal discharge This occurs much more frequently with diethylstilbestrol

Nausea did not occur in any of the 44 women we treated, even with doses as large as 10 to 20 mg every twenty-four hours Greenhill,<sup>16</sup> however, reported nausea recently in 2 of 18 patients receiving 5 mg daily of octofollin When the dose was reduced to 2 mg daily he found that the incidence of nausea of 39 patients decreased to 2.6 per cent

A number of our patients had received diethylstilbestrol two to three months prior to octofollin treatment, and many of the patients felt that diethylstilbestrol had produced greater improvement in strength and energy than did the new synthetic estrogen

TABLE 2—Subjective Responses of Eighteen Women Receiving Interrupted Treatment with Octofollin

Response	Dose in Milligrams				
	1 Mg	2 Mg	5 Mg	10 Mg	15 Mg
None	10	8	8		
Slight	8	10	4	7	7
Fair			6	7	7
Good				4	4
Excellent					

ment, and many of the patients felt that diethylstilbestrol had produced greater improvement in strength and energy than did the new synthetic estrogen

2 Objective Effects—We employed the vaginal smear as a simple objective means to measure estrogenic activity, although we believe that the subjective results are clinically more important than the exact degree of estrogenic response determined by any objective test Among 18 women obtaining some relief of symptom

18 Taylor, S G, III, and Thompson W O Experiences with New Synthetic Estrogen for Oral Administration, Endocrinology 30 S1042 (June) 1942

on continuous therapy with 5 mg daily of octotollin for six to eight weeks there was an increase in the estrous activity of the vaginal smear in 3 from an inactive type or a 1 plus to a 2 plus or more while the cellular changes in the vaginal smears of 6 patients showed a rise of only 1 plus and in 9 there was no change. Sixteen women of the total group of 26 patients on continuous therapy showed no discernible change in their vaginal smears, however 4 of these patients had 3 plus smears at the beginning of the experiment. Thus the administration of the estrogenic substance did not produce any significant change in the vaginal smears in approximately 50 per cent of the 26 women treated with this method and in no instance was a complete (or 4 plus) vaginal smear response produced.

Of the 18 patients given interrupted treatment, 12 had negative (inactive) vaginal smears 4 showed 1 plus and 2 showed 2 plus smears before octotollin was given. After five to seven months of therapy beginning with 10 then 20, 50, 10 and eventually reaching 15 mg daily doses for a two week period each month, 8 women had 1 plus vaginal smears, 7 had 2 plus and 3 had 3 plus.

Since in a number of the women experiencing satisfactory alleviation of their menopausal symptoms there was little if any change in the cells in the vaginal smear after prolonged therapy, it was impossible to correlate symptomatic relief with objective results.

Several patients given 10 to 15 mg of octotollin daily noted some tenderness of the breasts and an increase in pigmentation of the areolae. We have observed similar changes more frequently in patients receiving 10 mg daily of diethylstilbestrol.

Uterine bleeding was produced in 3 of the 18 women given interrupted treatment. It usually occurred seven to ten days after the discontinuance of daily doses of 5 to 15 mg of octotollin. It did not appear when smaller doses were employed.

#### STUDIES OF TOXICITY

1 *Hepatic Function Studies*—Hepatic function was studied both by hippuric acid synthesis and by the bromsulphalein excretion of 8 women given an average of 4 to 5 mg daily of octotollin for five months. The tests were performed in all of the cases before any treatment was given and repeated after a period of five months of therapy. In 7 cases the results of the hippuric acid synthesis tests were within normal limits both before and after treatment. The values for this test in 1 case were below the level of normal both before and after therapy. The results of the bromsulphalein excretion tests on each of the 8 patients were within normal limits both before and after treatment. There was therefore no significant change in hepatic function attributable to the administration of octotollin. We<sup>19</sup> have previously shown that neither diethylstilbestrol nor estradiol in the doses used in the treatment of the menopause produce any demonstrable change in the function of the liver in human beings.

2 *Blood Studies*—During octotollin therapy no abnormality in the number of erythrocytes or leukocytes among 26 patients studied was observed while the total grams of hemoglobin and the differential counts of the leukocytes remained within the range of

normal values. The only bleeding tendency that occurred was the uterine bleeding produced in 3 women by the withdrawal of the estrogenic substance.

3 *Urine Studies*—Repeated examinations of the urine of 38 patients showed no changes that could be attributed to the medication.

#### ANIMAL EXPERIMENT

For comparison with the studies made by one of us<sup>20</sup> on the changes in the bone marrow of dogs following the administration of estradiol or diethylstilbestrol, an experiment was done to determine the effect on the bone marrow of dogs of intramuscular injections of octotollin.

Studies were performed on 2 mature healthy male dogs, weighing 11.5 and 14.5 Kg. As in the previous experiments the animals were kept for a conditioning period of three weeks prior to injection of the octotollin. Red and white cell and platelet counts were done on the peripheral blood two to three times a week during the control and experimental periods.

Each dog was given a daily intramuscular injection of 5 mg of octotollin in oil for fifty days. There occurred a slight rise in the number of leukocytes in the peripheral blood of each animal at about the eighteenth to the twenty-fifth day of treatment. We did not observe the simultaneous decrease in the number of thrombocytes which occurs with much smaller doses of estradiol or of diethylstilbestrol. The amount of octotollin injected was increased to 15 mg daily for fourteen days, and there occurred a fall in the number of thrombocytes in the peripheral blood of the smaller dog. Each animal was then given 20 mg daily for sixteen days. At the end of this period there was a definite reduction in the number of thrombocytes and leukocytes in the circulating blood of the smaller dog. A slight thrombocytopenia was demonstrated in the peripheral blood of the larger animal. An autopsy was done on each dog at the end of eighty days of treatment, and a mild hypoplasia of the bone marrow of the smaller animal was found. There was no significant change from normal in the bone marrow of the other animal.

Each dog received approximately 780 mg of octotollin in sesame oil in eighty days but pronounced changes were seen in the peripheral blood of only 1 animal. A total of 210 mg of diethylstilbestrol dipropionate in olive oil injected during twenty-one days, or an estrogenically equivalent dose of alpha estradiol in sesame oil injected during thirteen days has been shown to produce leukocytosis, thrombocytopenia and death in dogs<sup>20</sup>. Our observations would indicate that diethylstilbestrol and estradiol are by this test, much more potent than octotollin.

#### SUMMARY

The majority of 44 women obtained relief of the vasomotor symptoms of hypogonadism when given octotollin by mouth in doses of 5 to 15 mg daily. Of 26 patients given continuous treatment 15 (58 per cent) obtained good relief of symptoms, 6 (21 per cent) fair, 4 (15 per cent) poor and 1 (4 per cent) no relief. Satisfactory alleviation of symptoms was secured in 11 of the 18 patients given interrupted therapy. The

19. Castrodale, Dante, Bierbaum, Olga, Hevner, F. B. and MacIntyre, C. M. Comparative Studies of the Effect of Estradiol and Stilbestrol on the Blood, Liver and Bone Marrow. *Endocrinology* 29: 20-22 (Ser.) 1941.

19. MacBrady, Freedman, Loessel and Castrodale. MacBrady, Castrodale, Loessel and Freedman.

required larger daily doses for the two week period each month than the patients on continuous treatment. Among the 18 patients receiving 15 mg daily for two weeks each month 11 (61 per cent) obtained good subjective response while 7 (39 per cent) obtained only a fair effect.

Nausea did not occur in any of the patients studied. Three patients (8 per cent) had discomfort in the pelvis, and several women noted tenderness of the breasts and increased pigmentation of the areolae when given 10 to 15 mg daily. Vaginal bleeding occurred after interruption of treatment in 3 of 18 cases.

The majority of our patients required from 5 to 10 mg daily for adequate relief of symptoms. In the series given interrupted treatment the average daily dose for the two week period was 10 to 15 mg.

Objective studies gave less definite evidence of estrogenic activity. Only 9 of 26 women (35 per cent) receiving 5 to 10 mg daily had any change in the vaginal smears, and not one of these developed a complete estrous response. A slight to moderate change in the cellular type of the vaginal smears of each of the 18 patients on interrupted treatment was observed. Twelve of these patients had inactive vaginal smears before octofollin was given. In our experience 1 mg daily of diethylstilbestrol produces in the average case complete response in the vaginal smear in twenty-one days. Our observations indicate that, per milligram, diethylstilbestrol is at least five to ten times as potent when given orally as octofollin.

The very low incidence of side reactions particularly of nausea is of clinical importance. Disadvantages of octofollin are that comparatively large doses are required and that it is more expensive per milligram than diethylstilbestrol. It is however less expensive per clinically effective unit than oral preparations of "natural" estrogens.

Liver function tests, blood studies and urine examinations showed no toxic effects of the new synthetic substance. Octofollin in the doses used in this experiment is apparently a safe therapeutic estrogen.

#### CONCLUSIONS

- 1 The new synthetic estrogen octofollin is effective in treatment of hypogonadal symptoms in women.
- 2 It appears to be relatively nontoxic, since nausea did not occur in this series of 44 patients, and no other toxic manifestations were observed.
- 3 The effective oral dose is from 5 to 10 mg daily when continuous treatment is used or from 10 to 15 mg daily for interrupted treatment.

**Infantile Paralysis**—The normal and usual method of travel of the virus throughout the body is reported to be by the pathways provided by the nerves. This is a neurotrophic or neuronotrophic virus. It leaves no demonstrable histologic change as it travels over or through the nerve fibers, yet its spread by way of neurons is dependent on healthy normal fibers and nerve cells. For example, it cannot progress in nerve tissue that has not fully regenerated after traumatic changes. The rate of the progression of the virus in peripheral nerves to the central nervous system has been calculated by Howe and Bodian to be at the rate of 24 mm per hour in the experimental animal. Such travel occurred in both the motor and the sensory fibers—Gudakunst, Don W. *New Developments in Infantile Paralysis*, *New York State J Med* 43 1514 (Aug 15) 1943.

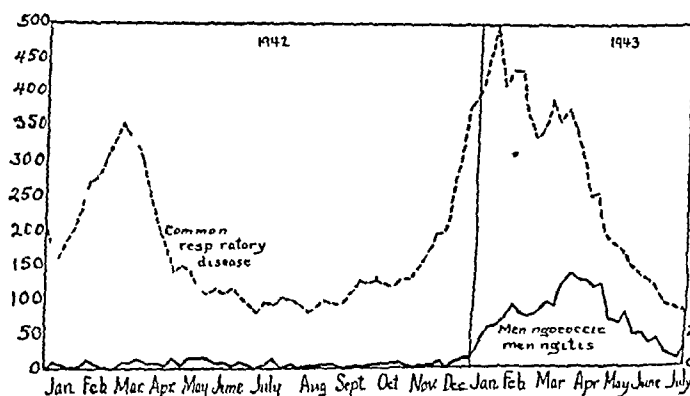
## MENINGOCOCCIC MENINGITIS AND SEPTICEMIA

REPORT OF OUTBREAK IN FOURTH SERVICE  
COMMAND DURING WINTER AND  
SPRING OF 1942-1943

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Cerebrospinal meningitis has occurred wherever large numbers of troops have been brought together. During and after World War I there were in the United States Army a little less than 6,000 cases in the course of thirty-three months.<sup>1</sup> The over all mortality for that series of cases was 39 per cent. Following the war the cases in the civilian population of the United States continued for ten years at a high rate, but by 1930 the incidence of cases had fallen to its usual prewar level.<sup>2</sup> For the years 1939, 1940 and 1941 slightly less than 2,000 civilian cases per year were reported for the whole country. The year 1942, however, showed an increase with 3,400 cases during the first eleven months.

In the Fourth Service Command sporadic cases of meningitis occurred during the years 1941 and 1942.



Relation of weekly incidence of meningococcic meningitis to that of common diseases of the upper respiratory tract as observed in 1942-1943 in the Fourth Service Command. Each figure at the left or the right represents the number of cases per thousand annually.

The case rate per thousand troops began to increase in December 1942 and what might be termed a clearcut outbreak was well on its way by the first of January. At this time simultaneous outbreaks occurred at an army station in North Carolina, at one in South Carolina and at one in Alabama, and two weeks later a camp a few miles from the first one in Alabama reported an outbreak. A large preponderance of new troops were on duty at these posts during this time.

The chief of the Medical Branch, Headquarters Fourth Service Command, has encouraged and expedited all the work mentioned in this report.

This article in brief form was read at the regional meeting of the American College of Physicians, New Orleans, April 16, 1943. The statistics have been revised to include April, May and June 1943.

Members of some fifty station hospital staffs have contributed observations and studies on cases occurring in their respective camps. A majority of the cases have come from the services of Lieut. Col. W. B. Daniel, J. E. Knighton, O. B. Mayer, Louis Ochs Jr. and A. W. Wall. Majors M. R. Buchman, R. W. Houser, A. C. McCarty and A. J. Sullivan, and Capt. W. B. Malcolm. Treatment has been entirely under their control and has followed with minor modifications the recommendations contained in Surgeon General's Official Circular Letter No. 1, and memoranda from the Chief of the Medical Branch, Headquarters Fourth Service Command. This article does not completely express the views of the medical staff of any one station hospital but is the result of a study of their work supplemented by personal clinical and epidemic observation of the cases as they occurred at many of the posts.

1 Simmons, James S. and Michie, Henry C. *Cerebrospinal Meningitis*, chapter IV in *The Medical Department of the United States Army in the World War*, U. S. Gov. Printing Office, 20, 1928.

2 Mitchell, Roscoe I. *Epidemic Meningitis*, *J. Maine M. A.* (March) 1943.

In three of these four camps no 2 patients came from the same company or barracks and the outbreak presented the epidemiologic appearance of being merely an increase in sporadic cases. In the fourth camp two companies had 6 and 8 cases respectively in addition to the sporadic cases elsewhere on the post. The pattern of outbreaks of meningitis is clearcut and may be stated as follows. Simultaneously at distant points an increase in sporadic cases occurred reaching a peak in several months and declining after several more months.

In this outbreak as in previous ones the increase in case rate followed a pronounced increase in infections of the respiratory tract. This is well shown in the accompanying chart. It is to be noted that the rate of meningitis is plotted on a scale one twenty-fifth of that of diseases of the upper respiratory tract.

During World War I definite advances were made in the epidemiology of meningococcic infections. It was found that there is constantly in nonepidemic periods a carrier rate between 1 and 2 per cent. During epidemics, however, this carrier rate rises to the neighborhood of 30 per cent or higher depending on local circumstances. Since the last war these facts have been corroborated frequently and it has further been learned that if a high carrier rate is to be significant the organism involved must be group I meningococcus since during epidemics 90 per cent or more of all cases are caused by this organism.<sup>4</sup>

The facts described, namely increase in sporadic cases and localized epidemics following a wave of infections of the upper respiratory tract associated with a great increase in the meningococcus carrier rate among large groups of troops, provide evidence for a concept of the epidemiologic nature of meningococcic outbreaks. Among the new troops brought into an army post there is a rate of at least 1 to 2 per cent meningococcus carriers. If their arrival at camp occurs during the months when diseases of the upper respiratory tract are prevalent an extremely high rate of such diseases soon develops among the new troops and includes the carriers. The coughing and sneezing distribute not only the virus responsible for the diseases of the upper respiratory tract but also the meningococci introduced by the carriers. In this way the carrier rate builds up rapidly. In susceptible persons during periods of fatigue and exposure the carrier state may progress into one of the clinical forms of meningococcic infection.

These facts have been carefully considered by various physicians interested in lowering the case rate of meningitis and recommendations have been made<sup>6</sup> which if possible to be carried out would undoubtedly greatly lower the case incidence. For instance Glover<sup>7</sup> in 1918 showed that avoidance of crowding by adequate spacing of cots reduced the carrier rate from 29 to 4 per cent. Others have recommended in addition avoiding exposure fatigue and too rapid inoculation for typhoid and other diseases. However, all of these rules must be broken when it becomes necessary to build a huge army with the utmost speed. Under these conditions it is impossible to avoid all or even one of these conditions. It is fortunate therefore, that modern methods of treatment of the patients and more

recently prophylactic treatment have reached such a degree of excellence that the problem is in a fair way toward being solved by chemotherapy.

#### STATISTICAL REVIEW

The present study comprises the cases of meningococcic infection which occurred in troops of the United States Army throughout the seven Southeastern states during the months of December 1942 and January, February, March, April, May and June 1943, the total

TABLE 1—Cases of Meningococcic Infection by Four Week Periods with Death Rate

	Meningitis	Septicemia	Total	Mortality
December	—	14	89	12.5%
January	161	90	251	7.5%
February	216	76	292	1.7%
March	51	118	169	2.3%
April	224	158	382	2.7%
May	187	69	256	2.3%
	1271	515	1786	3.5%

TABLE 2—Cases of Meningococcic Infection by Weeks with Deaths and Death Rate

Week Ending	Cases	Deaths	Mortality
December 4	4	1	
11	13	0	
18	14	2	
25	15	0	
January 1	40	8	12.5%
8	—	—	—
15	40	6	
22	51	4	
29	62	3	
February 5	—	—	—
12	57	2	
19	71	0	
26	73	2	
March 5	—	—	—
12	74	2	
19	132	2	
26	142	2	
April 2	171	5	
9	—	—	—
16	469	11	2.3%
23	—	—	—
April 30	133	1	
May 7	124	3	
14	120	6	
21	53	2	
May 28	—	—	—
June 4	402	12	2.7%
11	—	—	—
18	71	2	
25	91	0	
June 1	50	2	
8	54	2	
15	—	—	—
22	246	6	2.4%
29	39	0	
June 5	40	1	
12	26	0	
19	23	1	
26	—	—	—
July 3	13	2	1.5%
10	16	0	
17	16	0	
24	—	—	—
31	163	64	3.9%

number of cases for this period being 1935. Table 1 shows the cases by months and it will be seen that the incidence of cases has decreased (table 2).

Table 3 shows the distribution of deaths from meningitis and septicemia in new and in seasoned troops. An arbitrary period of three months' service was taken to define new from seasoned troops. It will be seen that slightly more than two thirds of the total cases developed among new troops (table 4). It must be remembered however that the final significance of this fact can be determined only when the numbers of new and old troops can be compared and to military reasons this information is not yet available. Ordinarily

Branham S. E. The Meningococcus (Neisseria Intracellulans). *Bact. Rev.* 4: 59, 1940.  
Kuhn D. M. Fourth Service Command Laboratory, personal communication to the author.  
Zinsler Han and Bayne-Jones Stanhope. A Text Book of Bacteriology. New York: D. Appleton Century Company, 1940.  
Hitchens A. P. The Control of Infectious Disease in Rapidly Mobilized Troops. *Ann. Int. Med.* 15: 122 (Aug.) 1941.  
Glover J. A. The Cerebrospinal Fever Epidemic of 1917 at A. Depot J. H. g. 1: 50 (July) 1918.



cases showing a clearcut increase in cells in the spinal fluid would be classified as cases of meningitis but the fatal cases have been divided according to the principal cause of death. If the count in the spinal fluid had not reached more than 400 cells before death the patient was classified as dying of meningococcic septicemia, although it is realized that this may be a distinction without a difference. Nearly half the deaths (23 of 51 cases coming to necropsy) occurred in cases in which meningitis had not developed to a point where the cellular response in the spinal fluid was impressive. That response is interpreted as an index of severity of infection, and this is borne out by the finding of hemorrhages in the adrenals in 16 of these cases.

At several posts Major John J. Poutas obtained information on the proportion of cases coming from urban or rural districts and found that there was no difference. This suggests that during nonepidemic periods urban dwellers are no more exposed to group I meningococcus than rural dwellers.

**Mortality.**—At first glance (table 1) there seems to be some discrepancy between the general mortality and the higher mortality during the months of December

TABLE 3—*Distribution of Deaths from Meningitis and from Septicemia Among New and Seasoned Troops (Dec. 1, 1942 to March 26, 1943)*

	Total	New	Seasoned
Meningitis	23	23	15
Septicemia	26	21	5
Total	49	44	20

TABLE 4—*Mortality from Meningococcic Infection in New and in Seasoned Troops (Dec. 1, 1942 to March 26, 1943)*

	Cases	Deaths	Mortality
New	1,210	42	3.44%
Seasoned	567	20	3.53%

and January. If this is broken down into individual weeks (table 2) it will be seen that the mortality for the 40 cases during the week ended January 1 was 20 per cent. This unusual occurrence gave rise to immediate activity in the Fourth Service Command Headquarters and notices were sent out to all surgeons of the Fourth Service Command warning them about the presence of meningitis and meningococcic septicemia and advising prompt therapeutic measures. In retrospect it seems that the high mortality for that one week was caused by a combination of circumstances, since the virulence of the disease and the number of new troops have remained essentially the same. The deaths occurred largely at new posts, where the medical personnel was new to military medicine. In addition to this, sodium sulfadiazine for intravenous use was not available at most of the hospitals at that time. Some of the patients were admitted in the evening and were seen only by the officer of the day, who in many instances was a member of one of the surgical branches of the staff and therefore not thoroughly familiar with cases of meningococcic septicemia. Finally, and perhaps most important, few of the reserve officers on duty in the medical corps had had previous experience with cases of meningitis, and most of them had never seen a case of meningococcic septicemia.

Active interest was aroused in the entire subject of meningococcic infections. Local scientific meetings

were held, and discussions in regard to therapeutic measures were engaged in. Improved cultural technique for isolating the meningococcus was prepared and distributed to laboratory officers at station hospitals by the Fourth Service Command Laboratory. This interest spread also throughout the unit medical officers with troops so that within ten days all medical officers of the command were on the lookout for cases, and directions prepared for the treatment of patients brought into hospitals during the night were posted by the chiefs of the medical services of the various station hospitals. At station hospitals where cases were numerous a member of the contagious disease section of the medical service was placed on night duty, so that all details of diagnosis and treatment were carried out promptly and accurately. In addition to this the nurses on night duty throughout the hospital were alerted to the possibility of patients developing signs of coma or exhibiting cutaneous rashes. Whether the additional therapeutic measures which were used and are described later as adjuncts in the section on treatment added anything to the reduction in mortality is not perfectly clear, but this remains as a distinct possibility. It seems probable that all members of the medical corps on duty in the zone of interior during the past few months will continue to be on the watch for cases of meningococcic infection and will be familiar with proper treatment so that it is safe to prophesy that the mortality rate for the remainder of this war will be held to a low level.

The mortality figures for this series include a number of patients who died in the hospital before their condition was recognized and who received no specific therapy. In addition one patient is included who died before he was admitted to a hospital. These facts suggest that a perfect system of early diagnosis leading to prompt treatment would reduce the mortality still further. That this has already been attained to a high degree may be seen from the statement that at one post while 108 patients were being treated with a mortality of under 3 per cent there were in the county 8 civilians with the disease, 4 of whom died—a mortality of 50 per cent.

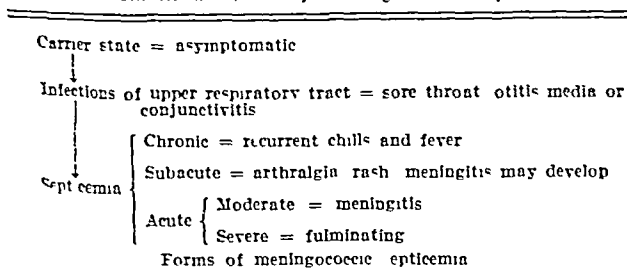
The report of meningitis throughout the state of Maine for the year 1942 gives a mortality of "something over 14 per cent, which is very low."<sup>2</sup> There are eight rather large posts in the Fourth Service Command where an aggregate of 161 patients with meningococcic infection were treated without a death. There were 49 other patients scattered throughout twenty-one small posts without a death. These facts are brought out to show merely that even in a single command mortality rates differ from post to post, depending on the number of cases of fulminating infection that are encountered. Eight patients with meningitis received no specific treatment, and in 8 others treatment was started so late as to be almost hopeless. With regard to the 17 remaining patients, retrospective improvements in therapeutic technique are possible. The improvements fall into all the various aspects of modern therapeutic procedures such as proper administration of sulfonamide compounds, control of fluid balance, control of electrolyte balance, control of intracranial pressure, avoidance of distention of the bladder, sedation and nourishment. Fulminating infection may require certain adjunctive measures as well. In no large hospitals one or two medical officers have become expert in these procedures and have been given complete responsibility for the entire treatment of

patients with meningococcic infection. This specialization has produced noticeable improvement in methods and results. Any comparison of army mortality with civilian mortality requires consideration of various factors but the excellence of army practice remains a matter for justifiable satisfaction.

#### CLINICAL VARIETIES OF MENINGOCOCCIC INFECTION

During the course of the years 1941 and 1942 sporadic cases of meningococcic infection were encountered in the army throughout the entire country. The infection consistently conformed to the usual pattern of cerebro-spinal meningitis with a history of chilliness, frequently of chills, sore throat, headache and occasionally a gastrointestinal upset. Examination of the patients revealed fever, leukocytosis, drowsiness, stiff neck and often petechial lesions of the skin and the spinal fluid contained between 1,000 and 20,000 cells, predominantly polymorphonuclears. Blood cultures were positive in some cases and the spinal fluid usually contained visible intracellular or extracellular gram-negative organisms although occasionally these were demonstrable only by culture. Spinal puncture was performed once for diagnostic purposes and occasionally

#### A Schematic Diagram of Meningococcic Infections



a second time to prove cure or to differentiate drug fever from persistence of meningitis. In a few cases relief of excessive intracranial pressure by spinal tap quieted extreme restlessness for some hours, and in 1 case it was performed with benefit four times in the course of twenty-four hours. In another case extreme Biot breathing was relieved by several taps during the early hours of the disease and one or more patients might in retrospect have been saved by this procedure. Otherwise no useful purpose was gained by repeated spinal taps. In 2 cases death seems certainly to have been precipitated by the production of a pressure cone causing sudden unexpected death.

During December a few cases of meningococcic septicemia made their appearance and the number rapidly increased during January, so that during the last two weeks in January there was a total of 61 cases. It seems fairly certain now that every clinical meningococcic infection with the possible exception of a variety of infection of the upper respiratory tract consists at some stage of an invasion of the blood stream by the causative organism. In most instances the organism localizes in the meninges producing clinical meningitis but in certain cases this does not eventuate. Meningococcic septicemia can be divided into acute, subacute and chronic forms as shown in the accompanying outline.

**Acute Forms**—Acute meningococcic septicemia early in its course presents a picture similar to grip or streptococcic sore throat with headache, chilliness or chills,

backache and muscle ache. Soon this picture is apt to change, however, and restlessness and drowsiness supervene, often progressing rapidly to coma. Frequently the patients are brought into the hospital in a comatose state. The most fulminating type of infection ends fatally in the course of a few hours. One patient at a Southern camp was drilling at 10 a.m. when he reported feeling bad and at 1 p.m. he died. This same fulminating type of disease has been observed throughout the command in about 12 instances. In 6 of these cases organisms were seen in the peripheral blood smear.

Many of the patients with fulminating infection were admitted to the hospital in a state of shock with blood pressure between 50 and 80 mm. of mercury. Frequently such patients had evidence of widespread hemorrhages throughout the skin and mucous membranes. Usually the spinal fluid of patients with this type showed few if any cells. Many of the patients were thought to have had hemorrhages into the adrenal glands (Waterhouse-Friderichsen syndrome). Among patients with fatal infection there were 26 who died during the period of acute septicemia before meningitis developed. Autopsy was performed on 23 who died of septicemia and hemorrhages into the adrenals were present in 17. In an additional patient edema and congestion of the adrenal glands were noted.<sup>8</sup> Great efforts have been made to evolve a form of treatment which would enable such patients to be cured and this regimen includes the various adjunct measures described in the paragraph dealing with treatment. Bacteriologic correlation has not been worked out but all three groups of meningococci are represented in this small series of 14 fatal cases. It will be recalled that in children organisms other than meningococci are held to be responsible for fulminating septicemia associated with hemorrhage into the adrenal glands. The only organism other than the meningococcus which has been encountered in such cases in this group is *Neisseria catarrhalis*, which in 1 fatal case was the only organism recovered. Its exact significance is unknown but it was thought probable that the meningococcus had been present but was not demonstrated in the cultures.

Patients with slightly less severe septicemia lapse into coma from which they are aroused only by rapid and heroic treatment. They may show petechial or ecchymotic cutaneous lesions which in some develop into huge purpuric areas. These lesions of the skin are apt to develop rapidly, and on many occasions medical officers have noted that new lesions developed under their observation while they were performing spinal tap. An entirely different cutaneous eruption has been observed in many cases of both chronic and acute septicemia. This has been described in the British literature and in the *Lancet* in 1941. Majors Dickson and McKinnon and Captains Wagner and McGillivray<sup>9</sup> gave an excellent account of it as it occurred in a Canadian army general hospital. The lesions appear in groups of a few or dozens and most commonly on the limbs or trunk. They are round, well defined, maculopapular, often tender, 5 to 35 mm. in diameter usually with dark red or purple centers. The pink area fades on pressure but the dark central spot does not. These lesions are apt to become more hemorrhagic in the

<sup>8</sup> In 3 fatal cases of meningitis hemorrhages into the adrenal glands were discovered at necropsy.

<sup>9</sup> Dickson, R. C., McKinnon, A. E., Wagner, D., and McGillivray, A. B. Meningococcal Infection. *Lancet* 2: 631-634 (Nov. 2) 1941.

course of a day or two, and as the patient improves they fade in two to four days, leaving small pigmented areas. Excellent descriptions of this form of eruption have been made by several medical officers in the Fourth Service Command.<sup>10</sup> At posts where many such cases have been seen this rash is recognized as characteristic enough to establish the diagnosis of meningococcic septicemia. The Canadian authors emphasized the fact that localized pain or tenderness of muscles is a symptom which differentiates meningococcic septicemia from other forms of acute infection. In many of our army posts it has been noticed that acutely inflamed joints or merely exquisitely painful joints have been complained of in many instances.

Differing from the acute severe and the acute fulminating infections are others which can be called acute mild meningococcic septicemia. The onset is like that already described but the patients do not seem to be particularly ill; they respond immediately to treatment with sulfonamide compounds and are well in a day or two. In fact 3 patients, each having a blood culture positive for meningococci of group I, recovered spontaneously without drug or serum therapy before the culture was known to be positive. Many similar patients with characteristic cutaneous eruptions but with negative blood cultures are believed to have a meningococcic infection falling in this mild group but have not been included in the statistical study.

**Chronic Forms**—Chronic meningococcic septicemia presents a picture which frequently may be mistaken for malaria, either tertian or quartan or some form of relapsing fever. The patient suffers from episodes of chilliness, fatigue, headache, general malaise, fever, leukocytosis and usually one or the other of the cutaneous lesions described in the foregoing paragraphs. The disease may continue on its relapsing course for several months unless the patient is treated, although spontaneous recovery occasionally occurs. The diagnosis is frequently aided by a special technic blood culture which is most apt to yield organisms if taken while the patient is having a chill.

**Subacute Forms**—Subacute meningococcic septicemia simulates rheumatoid arthritis or acute rheumatic fever and is frequently associated with fluid in the knee joints. The patients occasionally improve under nonspecific symptomatic treatment but more often they develop in a week or two signs and symptoms of meningitis, at which time the diagnosis becomes apparent. Routine cultures from the joint fluid sometimes provide the diagnosis, and in a few cases culture of the joint fluid has been positive after several days of chemotherapy. In other instances the characteristic cutaneous eruption gives rise to the correct diagnosis.

In epidemiologic circles the carrier state is considered as a subclinical, asymptomatic form of meningococcic infection. In addition to this it is thought by many that nasopharyngitis can be produced by meningococci and a number of cases of conjunctivitis (7 cases have been confirmed bacteriologically at one station hospital) and otitis media have been shown to be caused by this organism.

#### COMPLICATIONS

In patients receiving early chemotherapy complications are extremely rare. Statistics are not yet available, but a personal survey of this service command

has left me with a recollection of a few patients with deafness (3 such patients have been discharged from the army on account of residual deafness), a few with diplopia who recovered, and a few with stiff joints, who recovered completely or partially. One patient was left with a persistent paralysis of the right serratus maximus muscle. Hematuria is seen frequently before any therapy is started but no nephritis has been seen during convalescence. Retention of urine with distention of the bladder is frequently seen in comatose patients, and in these catheterization may reduce restlessness. Accompanying encephalitis has produced coma early and a few of the patients with the fulminating form of septicemia have been brought to the hospital following the initial symptom of convulsions. Several others have died before the true nature of the condition was discovered. Bronchopneumonia occurred occasionally and was seen at necropsy. In most of the patients who recovered from meningitis cure was complete, although a few soldiers continued to complain of recurrent headache for some weeks or months and psychoneurosis has been noticed in some.

Four patients have had large sloughs involving the skin and subcutaneous area in the location of confluent purpuric areas. Two of these required skin grafting.

On the whole, complications have been conspicuous by their rarity.

#### POSTMORTEM OBSERVATIONS

Final reports of the postmortem examinations have not been received. Several facts stand out from the gross examinations. Usually in septicemia there were widespread petechial hemorrhages in the meninges and many other organs and often also gross hemorrhages into the adrenal glands. Hemorrhage was associated with, or secondary to, localized thrombosis of the vessels in some cases. In many of the thoroughly treated patients with meningitis clearcut evidence of the exact cause of death was lacking. One finds such statements as "In summary, the remarkable thing about this autopsy was the absence of positive findings." In cases in which there was a high cell count in the spinal fluid during life—sometimes as high as 19,000 polymorphonuclears—as well as visible and recoverable meningococci, little evidence of meningitis was apparent in the gross specimens at postmortem examination. The meningitis might be said to have been practically cured, but irreversible effects of sepsis seem to have caused death. In every fatal case several possible causes of death presented themselves. Some patients seem to have died of respiratory failure either from toxic effect on the respiratory center or from increased intracranial pressure with Biot breathing. Patients who die of septicemia die in shock, and most of them also develop acute pulmonary edema. This pulmonary edema occurs in untreated as well as treated patients and may be part of the picture of shock or it may be produced by the acute myocarditis seen in some cases. Liberal quantities of fluids injected intravenously and large doses of sulfonamide compounds, which are capable of producing myocardial and renal lesions, may be considered also as contributing causes, but I have seen no worth while evidence that can incriminate these therapeutic agents. Of 64 fatal cases 51 were examined post mortem. In 2 cases crystals were present in the renal substance although anuria had not developed. In a number of cases tubular lesions were present and many had been produced by sulfadiazine. It is all to be remembered that nephritis is a complication.<sup>11</sup>

<sup>10</sup> In the older American writings these lesions are spoken of as resembling rose spots or erythema nodosum.<sup>11</sup>  
<sup>11</sup> Herrick, W. W. Text Book of Medicine by American Authors, edited by R. L. Cecil, Philadelphia, W. B. Saunders Company, 1942.

meningococcic disease. Further light on this subject is hoped for from careful clinical and pathologic study of fatal cases. Correlation of the types of organisms with the different varieties of fatal cases is being undertaken. From present information 13 fatal cases of meningitis yielded group I *Neisseria intracellularis*, 2 group II and 1 *N. catarrhalis* while from 12 cases of septicemia there were 7 with group I, 2 with group II, 2 with group II A and 1 with *N. catarrhalis* (table 5).

#### FACTS OF LOGY

Studies of organisms encountered in the outbreak have yielded the usual percentage for each of the various groups. The organism most often recovered is group I meningococcus. Group II meningococcus has been found in only 2 or 3 cases. Group II A was found in about one tenth of the cases. These findings are similar to those reported in other outbreaks.

In more than half of the instances in which the diagnosis of meningococcic meningitis was made there was bacteriologic confirmation in the laboratories of the various station hospitals. A large number of the patients with positive spinal fluid cultures also had positive blood cultures. The numbers of positive cultures reported are directly related to the grades of efficiency of the individual laboratory units and in view of the wide distribution of the reported material the average level of laboratory diagnoses appears high. During an epi-

TABLE 5—Thirty Three Fatal Cases Divided According to Type of Organism

Meningococcus Group	I	II	II A	<i>N. Catarrhalis</i>
Meningitis	16	1	2	0
Septicemia	8	1	4	1

demic there may be more clinical diagnoses unconfirmed by bacteriologic studies than would be permissible in a period of sporadic meningitis. Several specimens of spinal fluid containing only from one to five cells have yielded meningococci on culture. In the case of one of these the fluid was tapped six hours later and then contained 4,000 pus cells.

#### TREATMENT

The amazing reduction in mortality from 39 per cent in the last war<sup>1</sup> to less than 3.5 per cent in the present war is due entirely to chemotherapy.<sup>12</sup> It is true that the most desperately ill patients may require additional therapeutic measures but for over 95 per cent of all patients chemotherapy properly administered is the only specific form of treatment necessary.

Of the various sulfonamide compounds sulfadiazine has up to the present proved to be the most satisfactory in the treatment of meningococcic infections. It is more efficacious than sulfanilamide and with one important exception it is much less toxic than sulapyridine and sulfathiazole. The sodium salt is available for intravenous treatment and can be administered in 5 per cent concentration in distilled water or in 1,000 cc of isotonic solution of sodium chloride. If all patients could be given a diagnosis and treated at the onset of the first symptom, it is my firm belief that the mortality would be reduced to zero. However the disease is often masked by the absence of pathognomonic symptoms and by the simultaneous occurrence of many infections

of the upper respiratory tract presenting similar symptoms. This leads inevitably to loss of time in treatment in a few cases. In other cases the infection is so virulent that the patient dies before treatment can be given or before treatment has an opportunity to stem the tide of infection.

Treatment of carriers with sulfonamide compounds has been reported from England,<sup>13</sup> Australia and various small groups in the United States.<sup>14</sup> Fairbrother<sup>13</sup> found only one carrier in a group of 139 patients in a British military hospital who were undergoing treatment for another disease with sulapyridine (total dose about 22 Gm.) while a control group contained 22 per cent carriers. He then treated 13 known carriers with 10 Gm. in three days and eliminated meningococci from the nasopharynx in all 13. Mueller<sup>14</sup> during the course of a rather sharp outbreak of type I infections in New England treated 200 persons, of whom between 60 and 70 per cent were carriers and was unable to recover the organisms from a single one three days after cessation of the drug therapy. The dosage was 3 Gm., 2 Gm. and 2 Gm. in three days. Similar results have been obtained with even smaller doses. Prophylactic treatment has been used successfully in the United States Army in the course of the past few months. Thus one may see that small doses of sulfadiazine are capable of killing the organisms in persons designated as carriers. Patients with acute mild meningococcic septicemia can be cured by 8 to 10 Gm. in divided doses and some have been observed to recover spontaneously. Chronic septicemia clears up on doses of 3 or 4 Gm. a day given for from five to seven days and subacute septicemia responds to about the same dosage. Full blown meningitis responds more consistently than does acute severe septicemia. In most cases meningitis is controlled by an initial oral dose of 4 Gm. of sulfadiazine followed every four hours with 1 or 1.5 Gm. by mouth. In cases in which the infection has progressed further with more organisms and the development of pus somewhat larger doses may be required and more prolonged treatment may be necessary. The more severe form of meningitis may require an initial intravenous dose of sodium sulfadiazine 5 to 8 Gm. depending on the patient's weight to be followed by further intravenous therapy if the drug does not persist at an adequate level in the blood. Finally the patients with fulminating septicemia those who if untreated frequently die within two to four hours after first reporting off duty need immediate adequate intravenous treatment supplemented by active treatment for the dehydration and shock in which they are seen. Here again 5 to 8 Gm. of sulfadiazine is given as soon as the clinical diagnosis is reached. From these remarks it is clear that the varying degrees of severity of meningococcic infection require different forms of treatment (table 5). If the infection is of the milder type the blood may be cultured and the spinal fluid examined before treatment is begun but if the infection is overwhelming, not a single minute should be lost in starting treatment. In large station hospitals where most of the patients with fulminant infection have been treated slight variations in the routine have been elaborated. There is uniform agreement as to the need for immediate intravenous treatment and equally uniform agreement as to the need for restoring body fluids as rapidly as possible. Lieut. Col. Worth B. Daniels finds that

<sup>12</sup> Schwentker, F. F., Celman, Sidney and Long, P. H. The Treatment of Meningococcic Meningitis with Sulfanilamide. *J. A. M. A.* 105: 140 (April 24) 1937.

<sup>13</sup> Fairbrother, R. W. Cerebrospinal Meningitis. The Use of Sulfonamide Derivatives in Prophylaxis. *Brit. M. J.* 2: 89 (Dec. 21) 1937.

<sup>14</sup> Mueller, J. H. The Relation of the Carrier to Epidemic Meningitis to be published.

giving the sodium sulfadiazine in 1,000 cc of isotonic solution of sodium chloride starts both chemotherapy and restoration of fluids at the same time. At the station hospital where he is chief of the medical service the best results were thought to be obtained by a somewhat smaller initial intravenous dose (3 Gm or 3.5 Gm). In most cases this is followed by 1,000 cc of 5 per cent dextrose solution, and fluid is given thereafter in amounts adequate to insure abundant urinary output.

**Complications.**—The one disturbing complication encountered in treatment with sulfadiazine is hematuria which is often associated with retention of nitrogen and only rarely with oliguria and anuria. It is caused by crystallization of the superconcentrated form of the drug in the tubules of the kidneys. It has been known for some time that this crystallization will not take place in alkaline solutions and that crystallization depends on a combination of concentration and acidity of the solution. That this holds true for human urine was shown graphically by Fox, Jensen and Mudge.<sup>15</sup> Two patients treated at the Presbyterian Hospital, New York, were given enough of the drug intravenously to produce blood levels of 69.5 mg and 138 mg per hundred cubic centimeters respectively. Extremely large doses of alkali, 10 to 20 Gm of sodium bicarbonate daily, were given to keep the urine at pH 7.5, and fluids were forced diligently. As soon as the pH fell slightly the crystals appeared in the urine. In cases of meningococcic infection one is not dealing with such extremely high blood levels, but it is thought by most clinicians who have treated these patients for fulminating disease that it is essential to obtain promptly levels between 15 mg and 20 mg per hundred cubic centimeters. It must be pointed out, however, that these particular patients when first seen are dehydrated and in a condition of shock which tends to lessen renal blood flow. If the body is conserving fluids the urine will be extremely concentrated so that the percentage of drug in the tubular fluid may reach disproportionately high levels. This concentrated urine has a tendency also to be strongly acid, and forcing fluids must be undertaken at the very earliest moment. It has been the experience throughout the entire southeastern section that a large percentage of patients given intravenous medication develop hematuria, often gross hematuria, soon after the first intravenous injection. Retention of nitrogen may or may not accompany hematuria and occasionally develops even in the absence of hematuria.<sup>16</sup> It should be emphasized, however, that when an adequate urinary output has been established and a change made at the same time from sulfadiazine to sulfanilamide treatment, with the use of alkali, the hematuria promptly clears up and retention of nitrogen disappears. In no case has there been evidence of more than temporary functional renal impairment, and I have seen nothing in the literature to suggest permanent renal damage from sulfadiazine.<sup>17</sup> At one post this problem seems to have been solved successfully.<sup>18</sup> Desperately ill patients are treated intravenously immediately with 1,000 cc of a sixth-molar solution of sodium lactate, followed by 5 Gm of sodium sulfadiazine in 5 per cent concentration in distilled water, followed by 1,000 cc

of a sixth-molar solution of sodium lactate, followed more slowly by 1,000 cc of a 5 per cent dextrose solution in 0.9 per cent saline solution. No patient treated by this technic has developed hematuria, in every one the urine was alkaline, diuresis was abundant and the blood level the following morning was usually in the region of 12 to 14 mg per hundred cubic centimeters. There is every reason to believe that this or some modification of this technic will eliminate hematuria from crystallization of a sulfonamide compound and at the same time afford a prompt high blood level of the drug.

At certain stations the subcutaneous injection of sulfadiazine in 0.5 per cent concentration in isotonic solution of sodium chloride has been advocated, and this injection is often given soon after the first intravenous injection. It is thought that such a procedure effects a slower rate of absorption and possibly a steadier blood level. At other stations excellent results have been obtained by using a Levine tube. Through this tube fluids, nourishment and salt as well as medication can be administered. In some of the more desperately ill patients adequate blood levels have not been obtained by oral use of the drug even when extremely large doses were given. For this reason when the ordinary dosage of 1 to 1.5 Gm every four hours does not maintain an adequate blood level intravenous medication with doses of 2 Gm should be employed as an extra. Usually after one or two doses have been given intravenously the patient regains consciousness to a degree which permits subsequent doses to be given by mouth.

Additional therapeutic measures have been used and should be mentioned. In cases of shock due to toxemia blood transfusion and plasma infusion have been used with apparent benefit. Also in cases of shock adrenal cortex extract has been used in doses of 30 cc to 50 cc followed by smaller doses at frequent intervals with much benefit in the eyes of six observers. Other observers have not been able to convince themselves of beneficial effects. Epinephrine administered by the constant drip method seems to have had brilliant results in a few cases. Desoxycorticosterone acetate has been used but with a more delayed action and without clear-cut evidence of benefit. It seems possible that in patients whose adrenal glands have been damaged by hemorrhage, but who have been cured of the bacterial infection, this synthetic drug might play a beneficial role after the early stages. Three such patients are thought to have been cured in the series now being reported, and possibly many others.

**Blood Level of the Drug.**—Exact information is not at hand as to what blood level of the sulfonamide compound is adequate in the treatment of each of the various clinical forms of meningococcic infection outlined in this article. In the literature are reports of cures from a dose as low as 1 Gm.<sup>19</sup> At the opposite end of the scale is the widespread experience that in desperately ill patients large doses by mouth fail to give levels over 2 or 3 mg per hundred cubic centimeters. In the middle of the scale is a large group of patients who have recovered from clearcut meningitis on ordinary oral doses, whose blood level either reached 10 to 12 mg or stayed down between 3 and 5 mg per hundred cubic centimeters. Attention should be drawn to an article

15 Fox, C. L., Jensen, O. J., and Mudge, G. H. The Prevention of Renal Obstruction During Sulfadiazine Therapy, *J. A. M. A.* 121: 1147 (April 3) 1943.

16 Houseil, Major R. W. Personal communication to the author.

17 Harries (G. E.) Cerebrospinal Fever. A Review of 500 Cases Treated by Chemotherapy Without Intrathecal Serum, *Brit. M. J.* 2: 423-425 (Oct. 10) 1942. He reported that a patient treated in the Cardiff City Isolation Hospital died from anuria.

18 Peters, Lieut. M. A. Personal communication to the author.

19 Quoted by Dingle, J. H. and Finland, Maxwell. *Dis. Treatment and Prevention of Meningococcic Meningitis*. War No. 2: 158 (Jan.) 1942.



In Dowling Hartman Feldman and Jenkins<sup>20</sup> comparing the mortality rates from lobar pneumonia in two series one treated with an initial dose of 5 Gm by mouth and 1 Gm every four hours and the other series with just half this dose. It was shown that the mortality rates were identical. It seems likely then that in many instances of meningitis excessive doses have been given and an excessive blood level has been maintained. On the other hand it seems clear that the more severely infected patients require higher blood levels than the patients whose disease is mild and moderate. This was shown to hold true for laboratory animals (mice) by Long Bliss and Feinstein<sup>21</sup> who stated that "It is to be noted that the larger the dose of the drug the greater was the survival rate of the mice and that the average duration of life was longer for the more heavily treated mice." Patients have been observed who after two or three days on ordinary dosage have shown noticeable improvement when the size of the dose was increased. No harm has been seen from blood levels of between 15 and 25 mg per hundred cubic centimeters, and hematuria can be avoided by forcing fluids and alkalis. The problem arises as to whether or not administration of excessive amounts of fluid washes large amounts of the drug out of the system, thereby reducing the effectiveness of the treatment. It is thought that in most infectious diseases the urinary output should be maintained at between 1,500 and 2,000 cc in twenty-four hours and this has proved satisfactory in cases of meningitis. The intravenous injection of fluid in the form of isotonic solution of sodium chloride and 5 per cent dextrose and sodium lactate and the administration of fluids by mouth or Levine tube should be regulated to the needs of the individual patient. Until further evidence is at hand the best rule is to obtain promptly a blood level of 12 to 15 mg per hundred cubic centimeters and maintain a level of 10 to 12 mg per hundred cubic centimeters until the patient is out of danger. After the first few days levels of 7 to 10 mg per hundred cubic centimeters or even lower will suffice to complete the cure. It is my impression that the level of the drug in the spinal fluid has little practical significance since the systemic, cerebral and meningeal locations of the infection are supplied with the drug by the blood stream and those organisms which reach the spinal fluid are essentially harmless.

**Antimeningococcus Serum and Antitoxin**—The problem of serum therapy has been largely discussed. My colleagues and I have nothing to add except that it is the universal opinion throughout the Fourth Service Command that ordinary antimeningococcus serum has been of no additional value in treatment. There is one group of patients who seem to have been benefited by meningococcus antitoxin namely the group with septicemia. Some of these are so toxic that they die in a few hours. It is clear that antibacterial treatment must have time to become effective and this time can be lengthened it is thought, by the use of antitoxin. This whole subject is in the course of being evaluated, and at the present time the supply of meningococcus antitoxin is extremely limited. The antitoxic property is contained also in concentrated rabbit antimeningococcus serum but here again the supply of this product is extremely limited. Answers from a recent question-

nare throughout the army hospitals of the southeastern area reveal that 10 of 17 medical officers who have used antitoxin in more than one case believe it has had a distinct beneficial effect, noticeable within a few hours. One hundred and thirty-six of the desperately ill patients were given antitoxin, and at ten station hospitals the effect was thought to be either beneficial or extraordinarily beneficial in 56 cases. In 3 cases an immediate beneficial effect was noted. Those who are not impressed by its value point out that similar improvement is noticed in a few cases within two or three hours after the injection of sodium sulfadiazine. Final proof of the benefit of antitoxin therapy is not at hand. A warning must be issued that every precaution in the use of serum must be scrupulously observed, and patients with a history of allergy or recent serum treatment or those showing a positive cutaneous test should not be treated with serum or treated only after careful desensitization has been effected. There is no reason to believe that serum therapy properly administered is more dangerous to a patient in shock than to any other patient. Nor is there any reason to believe that intravenous injection of serum places any more strain on the heart and the peripheral vessels than intravenous injection of any other fluids. As long as anaphylaxis is avoided and fluids are injected into the vein slowly, no particular fear of this form of treatment need be entertained.

It is interesting to observe a graphic example of what early diagnosis and prompt efficient treatment can effect. During the first two months of this outbreak many unusual cases of meningococcic infection escaped early recognition by unit medical officers, various officers of the day and members of various sections of the hospital staffs until the disease was fairly far advanced. This with other factors is reflected in the mortality rates of 12.8 per cent for the month of December and 7.3 per cent for the month of January. During these two months only 317 patients with meningococcic infection were seen. In the next two months, after the technique of early diagnosis and treatment was learned 761 patients were treated with a mortality of only 2.1 per cent. This excellent result was obtained by close cooperation among all the members of the army medical corps and by the individual personal attention of one or more officers who have been in charge of the patients at each of the various station hospitals. Cases of fulminating infection are still occurring, however, and are the ones which form the basis for the present mortality rate. In the month of April (which includes five weeks) there were 15 deaths out of 531 cases so that although the outbreak is definitely receding in some areas it is continuing with full virulence in others.

#### COMMENT

The experience with a large number of cases of meningococcic infection during the past two months has provided opportunity for wide employment of modern chemotherapy. The mortality rate in the first two months was reduced to one fourth of the rate in the last war and as experience and proficiency in diagnosis and treatment were gained this low rate was cut to one fourth, or 2.1 per cent, in 761 cases occurring in the Army throughout the seven Southern states during the months of February and March. The feasibility and effectiveness of large scale prophylactic use of sulfadiazine in the reduction of carriers and the prevention of cases are being demonstrated. It has been possible then to compensate by improved methods of

<sup>20</sup> Dowling H F, Hartman C R, Feldman H A and Jenkins F A. The Comparative Value of High and Low Doses of Sulfadiazine in the Treatment of Pneumococcal Pneumonia. *Am J M Sc* 205: 197-201 (Feb.) 1943.

<sup>21</sup> Long Perrin H, Bliss Eleanor A and Feinstein W. Pharmacologic Action, Clinical Use and Toxic Manifestations of Sulfanilamide. *J A M A* 112: 115-121 (Jan. 14) 1939.



treatment and prophylaxis for the rapid training program which necessitated fatigue exposure and crowding of unseasoned troops. It seems safe to prophesy that in succeeding years the case rate can be greatly reduced by prompt prophylactic treatment at suitable points, particularly among unseasoned troops. It seems equally safe to prophesy that the mortality from the cases that do develop will be held to low levels although the occasional cases of fulminating disease probably will continue to produce a small number of deaths.

#### SUMMARY AND CONCLUSIONS

In a series of 1518 cases of meningococcic meningitis and septicemia the early mortality rate of 88 per cent in 317 cases was lowered during February and March to 21 per cent in 761 cases.

Two thirds of the cases developed among new troops. Of 55 fatal cases 80 per cent developed among new unseasoned troops.

Of 46 cases coming to autopsy 18 showed hemorrhage into the adrenal glands. This is regarded as an index to the severity of the septicemia and presents an additional feature for therapeutic consideration.

Early diagnosis and prompt skilful treatment based primarily on administration of suitable sulfonamide compounds will still be important even if prophylactic chemotherapy proves highly effective.

## THE TREATMENT OF BURNS OF THE EXTREMITIES

WITH CLOSE FITTING PLASTER OF PARIS CASTS

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Plaster casts have been used occasionally for many years by many surgeons for special indications in the care of surface burns. They have had particular use as splints to prevent deformity. For the most part such casts have been used in the secondary treatment of burns and have been well padded and loose fitting. Frequently they have been bivalved early to provide for frequent changes of whatever dressings were used under them. Lohr<sup>1</sup> in 1934 advocated the use of plaster casts over applications of cod liver oil ointment in the treatment of early burns. He attributed his good results chiefly to the cod liver oil. Roulston<sup>2</sup> in 1941 applied casts to burned extremities after maximum swelling had already occurred and infection was present. It was his opinion that epithelization and return of function were more rapid in these cases than in similar cases treated by other methods. Stonham<sup>3</sup> in India treated old burns in closed plaster and gave the opinion that there was more maceration and persistence

of infection than when the wounds were left open. Zeno<sup>4</sup> between 1937 and 1939 published a number of articles in several countries on the use of plaster casts in fresh burns. In the two of these articles studied<sup>5</sup> the articles and one illustration indicate that tightly fitting casts were not used. Joints above and below the burn were immobilized but the cast was not closed over the end of the extremity. Casts were used for body burns as well as for burns of the extremities. Zeno felt that the good results obtained resulted from the immobilization provided by the casts. Afonso<sup>6</sup> uses fairly close fitting casts over a thin tannic acid eschar. He presents abstract case reports on 8 cases with good results. Trueta<sup>7</sup> recommends a close fitting cast for burns of the extremities, back and neck. He applies them over a thin tannic acid eschar after debridement. Most of his experience was with cases in which maximum swelling had occurred before the cast was applied. Cohen<sup>8</sup> also treated a few similar cases with casts but without tannic acid. Barnes<sup>9</sup> has recently reported the use of close fitting casts for burns of the hands, using a technic identical in principle to that reported here. It differs only in the use of debridement, in the use of less gauze to absorb secretions and in the insistence on suspension.

The possibility that plaster casts might serve a useful function besides providing rest and protection in the treatment of burns was not appreciated until the physiologic studies of Glenn, Peterson and Drinker<sup>10</sup> and of Glenn, Gilbert and Drinker<sup>11</sup> indicated the harm produced by the swelling of the burned tissues. They also showed that the application of a close fitting plaster cast immediately after the burn would prevent swelling and at the same time the circulation in the burned extremity was unimpaired, whereas the circulation in the untreated foot showed definite indications of impaired capillary flow. Barnes and Trueta<sup>12</sup> had already shown that swelling could be prevented in this way.

In their experiments Glenn and his co-workers<sup>11</sup> pointed out certain specifications that must be followed if the closed plaster cast treatment is to be fully successful. First, the burn must be so located that the plaster may extend a few inches above the upper edge of the burn. Second, the plaster must be closed at the lower end and fit evenly and closely to the skin at all points. Third, compression of the tissues at

4 Zeno, L. Tratamiento de las quemaduras simples y complicadas mediante el enyesamiento, Bol. y trab. de la soc. de cir. de Buenos Aires 22 712 722 (Sept.) 1938. Zeno, L., and Berenboym, S. Plaster of Paris Bandage in Therapy of Burns of Extremities, Nov. Khir. Arkh. 38 485, 1937. Zeno, L., and Kaplan, A. V. Plaster of Paris Bandage in Therapy of Burns of Extremities, Vestnik Khir. 51 16 18, 1937. Zeno<sup>5</sup>.

5 Zeno, L. Tratamiento de las quemaduras simples y complicadas mediante el enyesamiento, Arch. Urug. de med. cir. y espec. 11 322 324, 1939. Tratamiento biológico das queimaduras, Arq. Brasil de cir. e ortop. 6 295 301, 1938.

6 Afonso, J. Técnica de Zeno para o tratamento das queimaduras, Arq. Brasil de cir. e ortop. 6 302 309, 1938.

7 Trueta, J. The Principles and Practices of War Surgery, St. Louis, C. V. Mosby Company, 1943 pp. 405 413.

8 Cohen, Solly, M. The Treatment of War Burns, Brit. M. J. 2 251 (Aug. 24) 1940.

9 Barnes, J. M. Treatment of Burns, Brit. M. J. 1 408 410 (April 3) 1943.

10 Glenn, W. W. L., Peterson, D. H., and Drinker, C. K. The Flow of Lymph from Burned Tissue with Particular Reference to the Effects of Fibrin Formation on Lymph Drainage and Composition, Surgery 12 685 (Nov.) 1942.

11 Glenn, W. W. L., Gilbert, H. H., and Drinker, C. K. The Treatment of Burns by the Closed Plaster Method with Certain Physiological Considerations Implicit in the Success of this Technic, J. Clin. Investigation 22 609 (July) 1943.

12 Barnes, J. M., and Trueta, J. Absorption of Bacteria Toxins and Snake Venoms from the Tissues, Importance of Lymphatic Circulation, Lancet 1 623 (May 17) 1941.

From the Burn Assignment of the Surgical Services of the Boston City Hospital and the Department of Surgery of the Harvard Medical School.

The work described in this paper was done under a contract recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and Harvard University.

Drs. Glenn and Drinker and Mrs. Gilbert of the Harvard School of Public Health allowed us to see many of their animal experiments made their manuscript available to us in advance of publication, showed interest and gave us advice in the treatment of our clinical cases.

1 Lohr, W. Ueber die Lebertransilbenbehandlung (mit und ohne Gipsverband) bei frischen Verletzungen Verbrennungen und phlegmonösen Entzündungen, Zentralbl. f. Chir. 61 1686 1695, 1934.

2 Roulston, T. J. Closed Plaster Treatment of Burns of the Extremities, Brit. M. J. 2 611 (Nov. 1) 1941.

3 Stonham, Franklin. Closed Plaster Treatment of Burns of the Limbs, Brit. M. J. 1 737 (June 13) 1942.

the time of application must be avoided. Fourth the benefits of the treatment decrease according to the amount of swelling that precedes the application of the plaster. Their demonstration of the safety, comfort and good end results secured by this method were so impressive that application of the method to human burns has been made although it is seldom possible to treat the latter before some swelling has occurred.

#### METHOD

If shock or other systemic disturbance is present it is treated by accepted practices at the time the cast is applied. There is but little shock caused by the treatment itself as no anesthesia, debridement nor cleaning is done except for the removal of large pieces of loose, hanging skin. This preliminary procedure is recommended for human burns by Cope<sup>13</sup> and has been demonstrated by him to give good results when combined with the pressure dressings of Allen and Koch.<sup>14</sup>

One layer of sterilized petrolatum gauze is applied to the skin over the whole area to be covered by plaster. This is fitted exactly and is carefully placed between the fingers. This petrolatum gauze is cut from 44 mesh 3 inch wide rolls of bandage. This layer is covered with four layers of sterile open mesh gauze fitted carefully without overlapping. The gauze does not go between the fingers but does surround the thumb. Boston City Hospital abdominal sponges happen to be



Fig 1 (case 1) — Appearance of hand before treatment. Note broken and unbroken blisters. Sooty appearance from electric flash.

folded in such a way, 24 inches long and 4 inches wide, that they are convenient for this purpose. Very thin plaster slabs are then moistened and molded over the extremity front and back. A thin layer of rolled plaster completes a nearly skin tight, light well fitting plaster which extends 3 to 4 inches above the burn. The fingers are placed in a semiflexed position. Fifteen hundred units of tetanus antitoxin is given at once and this dose is repeated in five days. Sulfadiazine is started in twelve to twenty-four hours only in the cases in which in addition severe burns are present in other parts of the body. It is continued as long as it seems to be indicated. The original cast is left in place for fourteen days. If the burn has not healed at the time of its removal, another is applied at once and left on for a further period of fourteen days, since infection it present sets in motion a train of events (increased lymph flow, swelling and so on) fundamentally similar to that following the original thermal injury. Further treatment if necessary after the fourth week is by other methods. Surface cultures are taken on admission and at each subsequent dressing.

#### REPORT OF CASES

All the burns studied in this series were of the hands and arms. It is our intention to treat burns of the feet and legs in the same way but no suitable cases have been available to date. The cases are numbered in order of admission to the hospital. They are divided



Fig 2 (case 1) — After five days. Note median position of fingers. Slight exudate stains the cast.

into two groups. Group 1 is made up of those with burns that proved not to have total destruction of skin in any areas of the hands or arms (second degree burns) and group 2 of cases with burns of the hands that have proved to have destruction of full thickness of the skin in one or more areas (third degree burns).

#### GROUP 1

CASE 1 (Figs 1-5) — An electrical worker aged 33 swung a lantern against a third rail. The electric flash knocked him down. Examination showed the left hand covered on both sides with soot, slight swelling and a few intact and many ruptured blebs of skin. The surface area involved was about 2 per cent. Cultures were taken from the surface and petrolatum gauze strips and a cast applied ninety minutes after the time of injury. During the first forty-eight hours there



Fig 3 (case 1) — After twenty-four days. Second cast removed. Note ability to flex hand.

was a dull pain in the hand and wrist but no throbbing or paresthesia. At twenty-four hours there were slight edema and redness proximal to the cast for 2 inches on the mesial side. Because of the swelling he was given oral sulfadiazine for one week, starting at thirty-six hours. The swelling subsided in two days. There was no lymphadenitis or lymphangitis. He was afebrile throughout. A small area of staining from exudate appeared on the cast. The culture from the burn

13. Cope, Oliver. Care of the Victims of the Coconut Grove Fire at the Massachusetts General Hospital. New England J. Med. 229: 138 (July 22) 1943.

14. Allen, H. S. and Koch, S. L. Treatment of Patients with Severe Burn. Surg. Gynec. & Obs. 74: 914-924 (May) 1942.

surface was reported to show alpha hemolytic streptococcus, hemolytic *Staphylococcus aureus* and *Bacillus subtilis*.

At eleven days the cast was removed. This was a painless procedure. There were small amounts of moist exudate present, particularly on the interior wrist. The layer of soot and dirty epithelium was intact on the hand. Because of the deeper burn at the wrist which had not completely healed a new

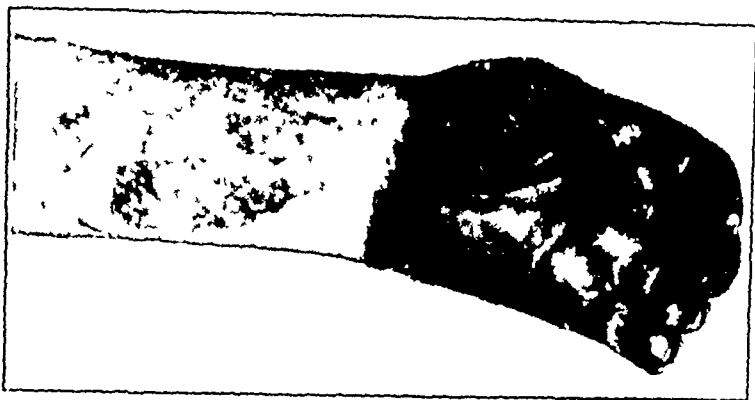


Fig. 4 (case 1)—After twenty four days. Second cast removed. Note hand in median position.

cast was applied. Culture at the wrist showed alpha hemolytic streptococcus, hemolytic *Staphylococcus aureus*, *Clostridium perfringens* and *Pseudomonas aeruginosa*, with the latter predominating.

During the next two weeks absence of fever and pain continued and there was no swelling proximal to the cast. At twenty-four days from injury the second cast was removed. The wrist burn was partly healed.

The burns of the hand had completely healed under the dark layer of desquamating epithelium. Motion of the fingers was fairly good. There was no pain. A small petrolatum dressing was applied to the wrist. At five weeks all desquamating epithelium was off the hand, the wrist was healed and motion in the hand and fingers was normal.

CASE 4 (Figs. 6 and 7)—An electrician aged 34 was burned in an explosion of an oil heater. He had burns with blisters and broken blisters of both sides of all fingers, both hands and both wrists and of the right forearm, elbow, part of the arm and part of the face. About 10 per cent of the surface area was involved. There was also some respiratory irritation from inhalation. Surface cultures were not taken on admission. Casts were applied over petrolatum gauze dressings ninety minutes after the accident. The patient was moderately dyspneic

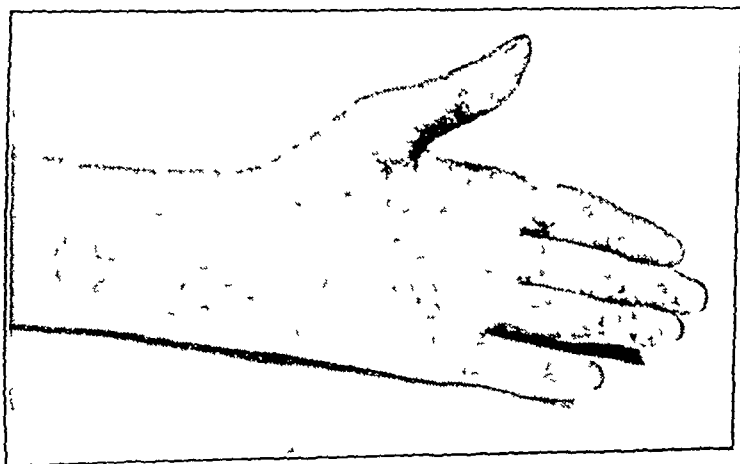


Fig. 5 (case 1)—After forty days. Complete healing with excellent function was present for ten days before this picture was taken.

and there were crepitant rales throughout the lung fields. The temperature rose to 102.0 F the first two days, fell to 100 on the fourth day and remained normal thereafter. Oral sulfadiazine was started at twelve hours. It is our impression that this fever was of pulmonary origin. The casts were removed on the eleventh day and second casts were applied. There was no swelling or sepsis, and minimal exudate was present. Motion was good. Cultures at this time showed alpha hemo-

lytic streptococcus, hemolytic *Staphylococcus aureus*, *Bacillus subtilis* and *Pseudomonas aeruginosa* present on both hands. At twenty-three days, when the second casts were removed, healing was complete and function was good.

CASE 5—A member of the fire department aged 43 had to escape from a roof through a wall of flame. He received a first degree burn of his face, small second degree burns of both knees and second degree burns of both hands. The surface area involved was about 5 per cent. Many broken blebs were present. The dorsum of the right hand and fingers was covered with large unruptured blebs. Without cleaning, petrolatum gauze and casts were applied to both hands and forearms two hours after the injury. His hands were very comfortable in the casts and there was no fever. At two weeks the casts were removed. The left hand was healed and normal. The right hand was covered with a thick layer of desquamating epithelium. Motion of wrist was normal and of fingers 60 per cent. A cast was applied to this hand for two weeks more. At four weeks healing was complete and motion of fingers was very good.

CASE 6—A member of the fire department aged 30 was burned at the same time and in the same way as patient 5. His burns were less severe. There were burns with blisters of the dorsal aspect of all fingers and of both hands and additional burns of the face. The total area was about 3 per cent. Casts were applied to both hands up to the midforearm

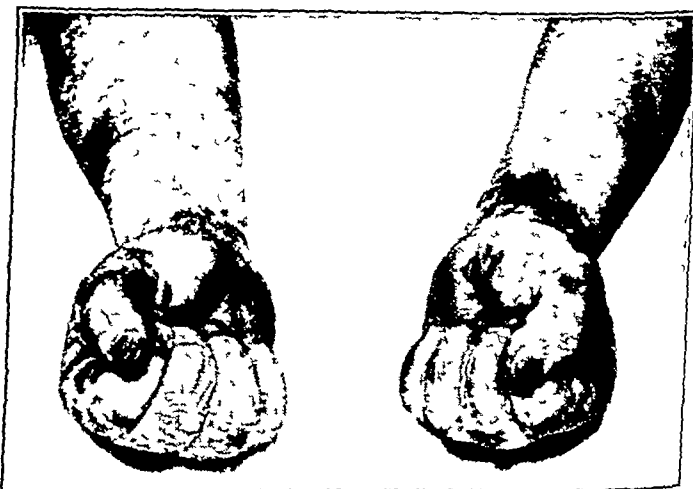


Fig. 6 (case 5)—Eleventh day. Condition on removal of first cast. Note free flexion.

Cultures on admission showed "no growth." Normal recovery occurred. On removal of the casts at fourteen days complete healing had occurred. Motion was normal. There was no exudate on the dressing.

CASE 7—A schoolboy aged 9 years lighted a pile of gun powder and received burns of the right hand and face. There were blisters on the right hand and fingers and a large denuded blister of the right wrist. A moderate amount of soot was present in the burned skin. The total area was 4 per cent. Cleaning was not done. Petrolatum gauze and a plaster cast were applied two hours after the accident. Culture showed "no growth." The temperature went daily to 100 F for one week, with no rise thereafter. The cast was removed on the fourteenth day, when healing was complete and function normal.

CASE 8—A man aged 63 received gasoline flame burn of the second and third degree of the entire right leg and thigh, the inner aspect of the left leg and thigh, the lower part of both buttocks, and a long narrow strip across the abdomen. Parts of these burns were dirty dead white, parts were leathery and still other parts were oozing from broken blisters. The right hand also was burned and showed blebs and broken blebs over the dorsum of all fingers, the hand and wrist. The total area of the body burned was 25 per cent. A cast was applied to the hand and forearm, but other treatments to the leg and abdomen. He was given 1,500 cc of plasma in the first twenty-four hours.

The hand was very comfortable in the cast. On the fourth day he developed bronchopneumonia, although on sulfadiazine

treatment from the twelfth hour. After a week he began to improve but remained a very sick man. On removal of the casts at fourteen days the hand was completely healed and motion was normal.

#### CASES WITH DEEP BURNS OF THE HAND

**CASE 2**—A chronic alcoholic addict aged 32 set his bed on fire smoking. He was moderately intoxicated and had a blood plasma alcohol level of 0.026 Gm per hundred cubic centimeters. There was a deep burn of the whole circumference of the right arm from the finger tips to the axilla. It extended over the shoulder and down the flank to the lateral abdominal wall. This whole area was burned so that the skin was leathery and not weeping. There was a less severe burn of the left hand from the finger tips to the upper forearm. The total area was 20 per cent. Both hands and arms were placed in plaster casts. On the right arm a petrolatum dressing compressed with an Ace bandage was continued above the cast to cover the remainder of the burn on the shoulder and axilla and over the flank.

During the first twenty-four hours he was given 4000 cc of plasma and in the second 1,000 cc. His blood pressure was always maintained but his urine output was only 300 cc the first twenty-four hours. He went into very severe delirium tremens that did not respond well to very large doses of vitamins or to the usual doses of paraldehyde. On the fourth day he had some symptoms of pneumonia but adequate chest

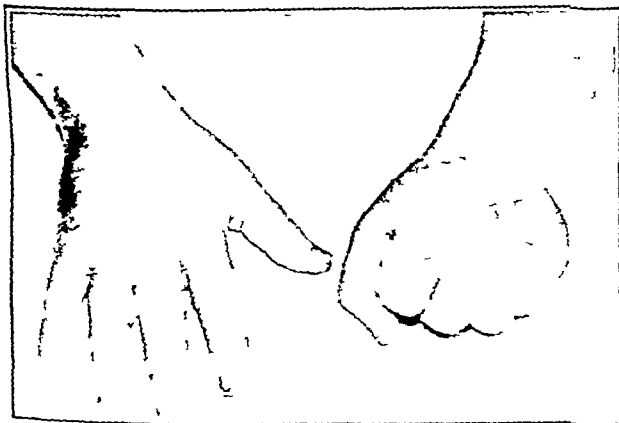


Fig 7 (case 2)—Twenty third day. Condition after removal of second casts and cleaning. Complete healing and complete return of function.

examination could not be made because of large body dressings. On the eighth day spastic symptoms suggested meningitis, but a lumbar puncture secured normal spinal fluid. This stiffness did not suggest tetanus and improved steadily up to the time of his death. Death occurred on the ninth day.

The casts were removed post mortem. Complete destruction of the skin over nearly all the burned area was seen. This destruction was as severe where no cast was applied as it was under the cast. There was much more moisture and other evidence of infection in the areas not treated with the cast than under it. However the skin of the third fourth and fifth fingers of the right hand was almost completely destroyed, so that the posterior tendons were exposed as well as the proximal interphalangeal joints. In spite of this destruction there was obvious circulation still maintained to the tips of these fingers on the palmar surface. The autopsy showed that death had occurred as a result of massive bronchopneumonia.

**CASE 3** (Figs 8, 9 and 10)—A housewife aged 35 was removed deeply intoxicated and burned from a burning apartment. A strong odor of alcohol was present and the blood plasma alcohol level was 0.056 Gm per hundred cubic centimeters. Crepitant rales were present in both lung fields. There was definite exposure to smoke inhalation. There were burns of the whole hand and forearm to 1 inch above the elbow. Over this area most of the blisters had broken and the epidermis

was missing. Much of the skin was leathery and dry, especially the last three fingers and a large area below the elbow. These areas appeared to be third degree burns. There was also a burn of the lateral surface on the left leg and buttock that was dry brown and leathery in appearance. There were other severe burns of the right buttock and slight burns of the face. The surface area involved was 15 per cent. A cast



Fig 8 (case 3)—Thirteenth day. Cast and dry gauze removed. Petrolatum strips in place. Note small amount of exudate.

was applied to the arm up to the axilla with the elbow extended to 120 degrees. Other dressings were applied to other areas. During the next few days the patient was very sick with delirium tremens and pulmonary irritation.

At thirteen days the cast was removed. It was remarkable in two ways. First there was but little pain in removing it and secondly there was very little discharge on the dressing. There was dry leathery natural eschar of the skin of the medial three fingers. Another cast was applied and left on ten days. When removed, it was seen that the extensor tendons of the medial three fingers were exposed over the proximal interphalangeal joints. There was but little pain and tenderness and little swelling. Motion was good even in these fingers. Following removal of the second cast, treatment was shifted to irrigation in a "Bunyan" envelop. She was ready for grafting on the fifty-second day but the presence of scarlet fever in the ward caused a delay. On the sixty-sixth day Padgett dermatome grafts were applied to all areas of granulation on the hand forearm and leg. On the seventy-sixth day at the first dressing of the grafts all had taken except over the exposed bones of the three lateral fingers.

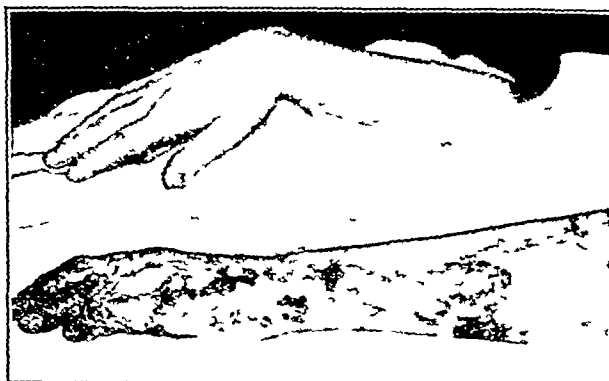


Fig 9 (case 3)—Thirteenth day. Petrolatum strip removed. Note minimal swelling.

#### COMMENT

A satisfactory treatment for burns should be locally and generally harmless, comfortable and easy to apply from widely available materials of minimum bulk. It should also give protection against the invasion of harmful organisms and protect the natural defenses of the body in their contest to control those already present. It should reduce as much as possible the

flow of plasma or exudate from the burned surface or the collection of edema under it. It should also need a minimum of attention after application. Finally it should allow the natural healing processes of the body to create and maintain as nearly optimum conditions for the removal of dead tissue and for the growth of new cells as possible. This will be recognized by most readers as practically identical with the position that H. W. Orr has maintained for years in connection with infections. He has just published a fine discussion of this subject.<sup>15</sup>

#### ABSENCE OF LOCAL HARM

It is difficult in clinical studies of burns to prove whether a given treatment is harmful or not because of the impossibility of estimating accurately in all cases at the time of initial treatment the extent of the damage already done by the burns. Certainly the early return of function that has been seen in these cases immediately after removing the casts is an indication that the method is usually harmless. It is further our impression that no areas of second degree damage have been converted to third degree by this method and that epithelization takes place at a rapid rate.

A certain warning concerning the technique of application should be given as it is theoretically possible to

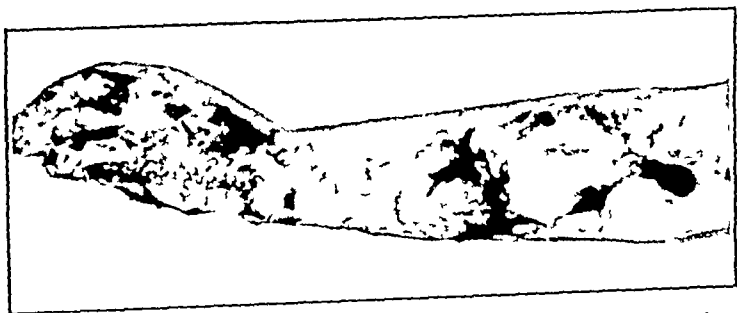


Fig. 10 (case 3)—Twenty-third day. Large areas of skin have sloughed, exposing tendons. At this time there was a surprising range of motion.

do great damage by the improper application of these casts. The cast must extend over the tips of the fingers or toes even when the burn does not, and it must not provide any zones of increased pressure at any point. Glenn, Gilbert and Drinker<sup>11</sup> present a photograph of a badly swollen foot when a cast was applied to the lower part of the leg of a dog without including the foot.

#### ABSENCE OF TOXIC ABSORPTION

Tannic acid and picric acid have been absorbed from burns treated with these materials to such an extent that liver necrosis and death have been attributed to this absorption.<sup>16</sup> Nothing harmful can be absorbed from the surface of burns treated with this method except the products of the burn itself or the products of bacterial invasion. Barnes and Trueta<sup>12</sup> have shown that absorption of foreign materials is greatly delayed from immobilized tissues. This finding is easy to understand in the light of the work of Glenn<sup>10</sup> and his associates, who have shown definite decreases in the flow of lymph from burns treated with casts compared with ones not thus treated. A cast also protects against reinfection from new organisms. At the same

time, according to Barnes and Trueta,<sup>12</sup> the organisms already present either die out or become harmless. This point of view is confirmed by the experience of Cope,<sup>13</sup> who found a remarkable tendency for organisms to become harmless under the pressure dressings that he used.

#### COMFORT

From the start of treatment to complete healing the lack of pain experienced by these patients has been remarkable. As soon as the cast is applied, pain disappears. There may be a slight dull ache, experienced by 3 of the 8 patients in the first three days. After this there is no discomfort and the arm in the cast can be moved freely. No throbbing pain, anesthesia or paresthesia has been noted. The patient can move the fingers a millimeter or so inside the cast, but this motion is painless. Removal of the cast at fourteen days is done without the aid of analgesia or anesthetic as practically no pain results, even during the use of a cast cutter. Apparently the lack of edema or the absence of active infection in the tissues avoids the condition of extreme sensitivity to handling that is frequently seen at this time in comparable burns.

#### EASE OF APPLICATION

Close fitting plaster casts are relatively easy to apply, and the bulk of material (excluding water) is very little. Most doctors need no additional training in methods of applying plaster casts, although some may need encouragement before they will leave out the bulky materials customarily used in padded casts. Any man who has applied a satisfactory "skin tight" plaster to a fracture will have no difficulty at all with these casts. In our experience it is difficult for the ordinary physician to apply a Koch dressing to a burn. It necessitates quite a long experience with such dressings before a really satisfactory one is made. The bulkiness of the materials needed, especially the mechanic's waste, cellucotton or sheet wadding, may make it difficult to stock sufficient supplies where transport or storage is scanty.

#### LOSS OF PLASMA

The minimal subcutaneous edema in and adjacent to the burned area possible under the cast, and the small amount of surface ooze that occurs, reduce to some extent the need for plasma replacement. If the area treated by the cast is extensive, the saving should be considerable.

#### INFECTION

Superficial sepsis was minimal in all cases, with only a small amount of exudate present on the dressings. Cultures showed a mixture of organisms, with none predominating except in 1 case in which *Pseudomonas aeruginosa* was predominant. Self-limited cellulitis unaccompanied by systemic reaction, was present in 1 case. None of the 3 patients whose burns were limited to the hands and arms developed any fever.

#### AFTER-CARE

During the time the cast is on, no time need be spent in doing dressings to the casted area. If the cast cracks from being made too thin, repair is easy (The cast should be as thin as possible.) If the patient has to be moved during the period when the cast is on, no better protection against the normal trauma of transportation can be devised.

<sup>15</sup> Orr, H. W. The Physiologic Factors Involved in Protecting the Patient Against Infection in the Healing of Fractures in Compound Wounds, *Tr. & Stud. Coll. Physicians Philadelphia* 10: 187, 1943.  
<sup>16</sup> Glenn, Peterson and Drinker.<sup>10</sup> Glenn, Gilbert and Drinker.<sup>11</sup>

## HEALING

In the last analysis healing can take place only when natural defenses have created such conditions at the site of healing or temperature, pH, salt content of the fluids, oxygen and carbon dioxide tension, nutritive elements and enzymes that tissue cells can grow. In addition toxic substances must be absent. Interference or disturbance of the environment of the injured area is therefore very important because with each change or dressing one or more of these factors may be upset and hours or days must elapse before proper conditions can again be achieved. Under one of these casts such disturbances of accidental nature are almost entirely prevented and those of deliberate nature (which may be just as harmful as the accidental ones or even more harmful) such as arise from the curiosity of the doctor to see what is happening are largely discouraged. We believe that the healing of the skin has been as rapid as in similar cases treated in other ways and that return of motion has been more rapid.

## INDICATIONS FOR THIS TREATMENT

In this series cases with burns of the hands, forearm and arms have been treated. In only 1 instance (case 2) did the burn extend above the cast. A pressure dressing was applied above this cast. There was no evidence of impairment of circulation. Zeno<sup>5</sup>, Alonso<sup>6</sup> and Trueta<sup>7</sup> have all used plaster casts on areas that we have not treated as yet. We are sure that this treatment is indicated for burns of the feet and legs. As we gain experience in the method we may well extend the indications more widely.

## SUMMARY AND CONCLUSIONS

1. Close fitting plaster of paris casts have been used in the treatment of burns of twelve hands on 8 patients.

2. The physiologic experiments of Glenn and his associates formed the scientific background for this treatment.

3. The treatment is easy of application. The materials needed are widely available and of little bulk. Ideal protection against intercurrent infection and against the trauma of transportation is afforded.

4. The prevention of swelling and the protection provided by the treatment have resulted in comfortable, rapid, uncomplicated convalescences and in excellent functional results.

## ADDENDUM

Up to September 7, 14 additional patients have been treated by this method with casts applied to sixteen arms and hands, four chests and four legs. Four of the arms and hands and all the legs had third degree burns. The results of these applications of plaster have been very satisfactory.

319 Longwood Avenue

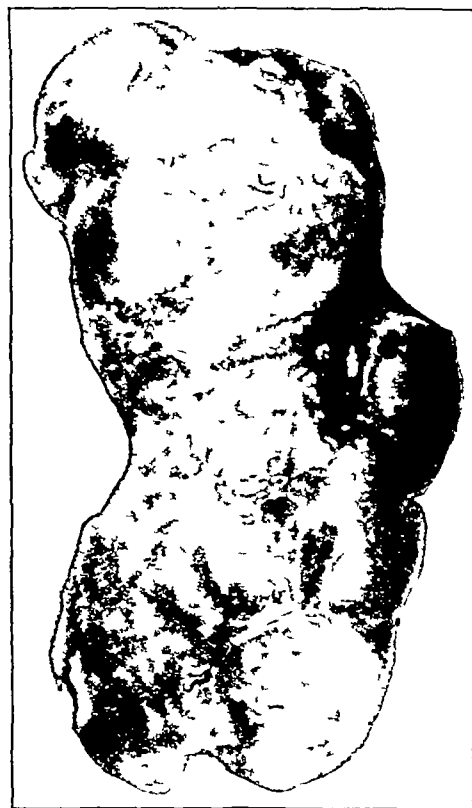
**By-Products from Sewage**—Trucks rumbling through the streets of oil-starved Germany today are operating on methane gas, obtained as a by-product from municipal sewage treatment plants. In Bradford, England, sewage disposal processes are yielding 500 tons weekly of vitally needed grease. In the United States a big steel plant is buying huge quantities of liquid effluent from a city sewage plant because existing industrial water supplies are inadequate to meet expanded output. These three examples dramatize what might be considered the ultimate in driving salvage from waste. They focus attention on one of the least suspected sources of valuable by-products—the city sewage disposal system.—Cleary, Edward I. Dollars from Sewers. *Scientific American*, September 1943, p. 103.

## Clinical Notes, Suggestions and New Instruments

### FAILURE OF NEPHRECTOMY TO INFLUENCE HYPERTENSION IN UNILATERAL KIDNEY DISEASE

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Experimental production of hypertension by partial occlusion of the blood supply to one kidney<sup>1</sup> has suggested that intrinsic unilateral renal disease in man can similarly cause arterial hypertension. The acceptance of this thesis has led to the search for unilateral disease in hypertensive patients and when found to nephrectomy of the suspected kidney. Seventy-six published case reports of attempts to cure hypertensive disease in man by removal of a diseased kidney have been reviewed in detail by Smith, Goldring and Chasis.<sup>2</sup> In the opinion of



Pelonephritic left kidney weighing 53 Gm.

these authors, in only 7 of the 76 patients has nephrectomy been successful in reducing the elevated blood pressure to the normal range.

It has been argued that failure to reduce the blood pressure in a patient with a long-standing unilateral kidney disease and hypertension might be explained on the basis of irreversible vascular changes in the remaining kidney capable of maintaining the hypertensive process. This report is made because nephrectomy failed to reduce the blood pressure of a patient in whom postoperatively the remaining kidney is not diseased and has a normal blood flow per unit of functioning renal tissue.<sup>3</sup>

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<sup>1</sup> Goldblatt, Harry, Lynch, Jerome, Hanzal, R. F. and Summerkill, W. W. Study on Experimental Hypertension. I. The Production of Persistent Elevation of Systolic Blood Pressure by Means of Partial Ischemia. *J. Exper. Med.* 59: 47 (March) 1934.

<sup>2</sup> Smith, H. W., Goldring, William and Chasis, Herbert. Is Essential Hypertension of Renal Origin? Publ. New York Acad. Med. to be published.

<sup>3</sup> Smith, H. W., Goldring, William and Chasis, Herbert. The Measurement of the Renal Excretory Mass. Effective Filtrate and Filtration Rate in the Normal Human Kidney. *J. Clin. Invest.* 23: 263 (May) 1935.



## REPORT OF CASE

**History**—S. H., a white woman aged 34, seen in October 1941, complained of high blood pressure, headache and slight fever. She had been in good health until a year and a half before, when her fourth and last child was born. Following delivery she had a fever which lasted three weeks, and during this time there were occasional chills. For about six months she was relatively well, and then she began to feel weak and listless. She complained of headaches in the temporal region, described as dull, and at the top of the head, described as burning. Other aches and pains had been present and she also suffered from insomnia. The temperature and blood pressure were both found to be slightly elevated.

There were no other serious illnesses in the previous history. After the third pregnancy five years before there had been a febrile illness diagnosed as a "slight touch of pneumonia." The patient had been ill for only a week and was quite well afterward. The systematic review disclosed nothing of importance.

She did not know of any history of hypertension or cardiovascular renal disease in her family.

Unconscious feelings of guilt and hostility seemed to be important features of her personality. Outwardly passive and pleasant inwardly she exhibited a great deal of resentment toward her husband and her mother.

*Effective Renal Blood Flow, Glomerular Filtration Rate and Maximal Tubular Excretory Capacity Before and After Left Nephrectomy*

	Renal Plasma Flow (Cc per Minute)	Filtration Rate (Cc per Minute)	Maximal Tubular Excretory Capacity (Mg. Iodine per Minute)	Renal Plasma Flow (Max. Tub. Excret. Cap. (Cc/Min.))
Preoperative Observations—March 21, 1942				
Right kidney	86.2	81.2	4.34	87
Left kidney	4.7	17.0	3.0	18.4
Total	91.9	101.2	48.4	91
Postoperative Observation—June 5, 1942				
Right kidney	592.6	95.8	48.4	12.2
Normal*	191 ± 102.4	117 ± 15.6	42.6 ± 9.10	11.2 ± 2.0

\* The diodrast clearance was used to measure the effective renal blood flow; the mannitol clearance to measure the rate of glomerular filtration; and the diodrast saturation method to determine the maximal tubular excretory capacity. Values given at the bottom of the table are based on observations in normal female subjects.

**Physical Examination and Laboratory Studies**—The general physical examination did not disclose any abnormalities. Gynecologic examination was negative. The eyegrounds showed mild attenuation of the retinal arterioles. There was no evidence of arteriosclerosis and no retinitis. There was moderate elevation of blood pressure, which varied between 150 to 170 systolic and 90 to 120 diastolic. There was an occasional slight elevation of the temperature to 99.3 F. Urinalysis and Wassermann tests were negative and the blood count was normal. The sedimentation rate was 14 mm and the basal metabolic rate was minus 6 per cent.

Culture of the urine showed many coliform bacilli, and an intravenous urogram showed that the left kidney was much smaller than normal with a deformity of the calices which suggested pyelonephritic contraction. The right kidney was larger than normal and presented a normal appearance.

Retrograde pyelography of the left side was then done, and this showed irregular and distorted major and minor calices which suggested a cicatricial deformity. This was in keeping with the diagnosis of chronic pyelonephritis. The same type of organism was obtained from direct culture of the left kidney.

The patient was placed on sulfathiazole medication, and the Addis count showed a slight excess of white blood cells and many sulfathiazole crystals. Medication was then changed to sulfadiazine, which was well tolerated. Cultures of the urine following the administration of sulfadiazine were negative.

The patient was studied again in December 1941. The blood pressure was higher than before, 185/135. Slight fever (99.5 F) continued. A left retrograde pyelogram was the same as before. Culture of the urine was negative.

**Operative Findings**—A small left kidney weighing 33 Gm was removed in April 1942 (shown in the illustration). The capsule was thin and stripped with ease. The capsular surface was definitely lobulated. The cut surface of the kidney showed a normal relationship of cortex and pyramids. The pelvic mucosa seemed of normal thickness and there was no gross evidence to suggest inflammation or scarring. The larger blood vessels showed nothing abnormal on gross examination. The lining was smooth and the contents resembled old blood.

Sections of the kidney were studied by Dr. E. E. Aegerter and by Dr. Irving Graef. It was agreed that the scarring was of the type commonly seen in healed or chronic pyelonephritis. This was confirmed by microscopic examination which showed that the indentations were the result of scarring typical of the late stage of pyelonephritis.

The glomeruli seemed almost normal in appearance and number. There were 47 glomeruli in a low power field compared with 62 in a normal adult kidney. Individual glomeruli showed no replacement fibrosis or reduction in size. There was no patchy cortical atrophy or failure of development of the tubules. There was arteriosclerotic involvement of the medium sized branches of the renal artery and hypertrophy of the afferent arterioles.

The section which included the pelvis and calices showed rich lymphocytic infiltration beneath the epithelium. The tubular remains in the scarred areas also exhibited the typical dilatation and colloid type of cast seen in pyelonephritic scars.

**Postoperative Course**—Following the operation the blood pressure was even higher than before, with levels of 170 to 200 systolic and 120 to 140 diastolic. The patient was seen about every two months. The last observation was in April 1943, twelve months after the operation. Symptoms were no different, although there had been a slight gain in weight. She "loses one ache and gets another." Fatigue and shortness of breath (sighing respirations) were now a prominent part of the clinical picture. It was concluded that the occasional slight rise of temperature did not indicate infection but was normal for the patient.

The glomerular filtration rate,<sup>4</sup> the effective renal blood flow<sup>5</sup> and the maximal tubular excretory capacity<sup>6</sup> were measured in the separate kidneys preoperatively and in the remaining right kidney postoperatively.<sup>6</sup> The results of these observations are presented in the accompanying table.

## COMMENT

The preoperative observations on this patient revealed extreme functional impairment of the left kidney. The glomerular filtration rate, effective renal blood flow and maximal tubular excretory capacity were definitely reduced. The functional size of the diseased kidney was approximately one-seventh the normal kidney. These measurements also indicated the presence of a large number of impotent nephrons, that is, nephrons which had lost their excretory power but continued to act as conduits in conveying urine to the collecting tubules.

The glomerular filtration rate, the effective renal blood flow and the maximal tubular excretory capacity in the right kidney was increased above one half the mean normal value. This was interpreted as indicating hypertrophy of the right kidney, the stimulus probably being long-standing disease of the contralateral kidney. The ratio of renal blood flow to tubular excretory capacity, which expresses the amount of blood going to functioning tubular tissue, was decreased, indicating relative ischemia in this hypertrophied right kidney.

Postoperatively the right kidney shows an increase in effective renal blood flow, glomerular filtration rate and maximal tubular excretory capacity, this one kidney, functionally speaking, is now the equal of two normal kidneys. The ratio of blood flow to functional tubular tissue is now in the normal range.

4 Smith, W. W., Finkelstein, Norma, and Smith, H. W. Excretion of Hexitols (Sorbitol, Mannitol and Dulcitol) and Their Derivatives (Sorbitan, Isomannide and Sorbide) and of Endogenous (resembling Chromogen in Dog and Man), *J. Biol. Chem.* 155: 211 (1947).  
5 Goldring, William, Chasis, Herbert, Ransley, H. A., and Smith, H. W. Relations of Effective Renal Blood Flow and Glomerular Filtration to Tubular Excretory Mass in Normal Man, *J. Clin. Invest.* 19: 739 (Sept. 1940).  
6 Chasis, Herbert, and Redish, Jules. Function of the Secretory Nephrons in Hypertensive Subjects, *Arch. Int. Med.* 70: 758 (1940).

The persistence of hypertension in this patient postoperatively indicates that the unilateral atrophic pyelonephritis was not causally related to the hypertensive process. Furthermore, the fact that the renal blood flow per unit of functioning tissue is in the normal range in the remaining kidney excludes the possibility that chronic irreversible vascular changes resulting in ischemia of this kidney is maintaining the abnormal elevation of blood pressure. The fact that the hypertensive process was of relatively short duration strengthens this view. It appears that the intrinsic unilateral disease present in this patient was not the cause of the arterial hypertension.

#### CONCLUSION

The removal of a chronic atrophic pyelonephritic kidney failed to lower the blood pressure of a hypertensive patient. The remaining kidney cannot be indicted for this failure since it is neither diseased nor ischemic. It is concluded that the intrinsic unilateral renal disease in this patient was not causally related to the arterial hypertension.

209 South Nineteenth Street—44 East Sixth-Seventh Street

### THE USE OF HUMAN FIBRINOGEN IN RECONSTRUCTIVE SURGERY

COMMANDER PAUL MICHAEL, MC V (S), USNR  
AND

LIEUT. COMMANDER WALTER ABBOTT, MC V (S), USNR.

The successful application of the principles involved in the use of human fibrinogen is thought of sufficient and timely interest to report at this time. Work on animals has proved that both bovine and human fibrinogen may be used to good advantage as a bridge for tissue regeneration. The present case report presents the successful use of this substance in the treatment of a human patient.

#### REPORT OF CASE

**History.**—P. B., a man aged 27, was injured by a high explosive fragment on Nov. 19, 1942, sustaining a laceration of the right thigh. He developed a foot drop with paresthesias over the outer aspect of the thigh and foot. A month later he complained of a severe burning pain in the foot. X-ray examination revealed a foreign metallic body in the soft tissues at the middle third of the thigh. On March 23, 1943, a small

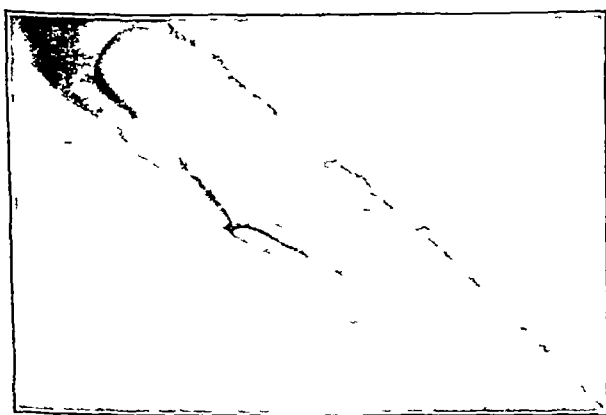


Fig. 1.—Microscopic section ( $\times 150$ ) taken through the fibrinogen after being used in the body for over four weeks. There is very little inflammatory reaction and no evidence of absorption of the fibrinogen.

piece of shell fragment measuring 10 by 0.7 cm. was removed from the sciatic nerve and because of the denuded sheath human fibrinogen film was applied. (Fibrinogen was supplied to Comdr. R. R. Mazet (MC), USNR, by the Physiologic

Laboratory, Harvard University.) The film of fibrinogen was wrapped round the nerve and six weeks later the operative site was opened and the film removed. At this time healthy nerve tissue was observed with an excellent healing process in progress. The pain in the foot now had subsided.

**Pathologic Examination.**—The first specimen received in the laboratory (March 23, 1943) consisted of a piece of metal measuring 15 by 0.7 cm. Also present were several irregular

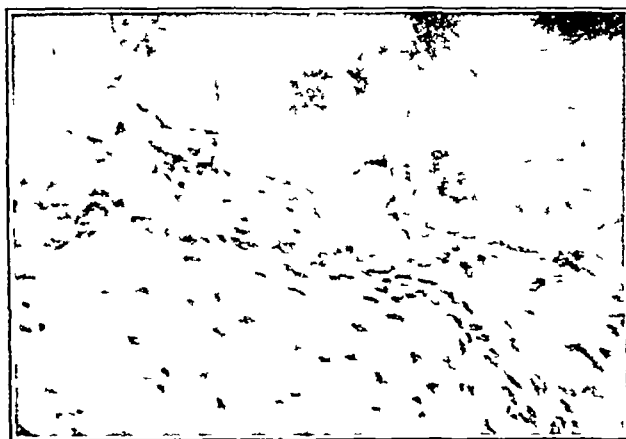


Fig. 2.—Section ( $\times 100$ ) taken through the nerve sheath with attached fibrinogen on the surface. Note the glassy homogeneous structure of the fibrinogen with no apparent irritation. The nerve sheath shows a normal growth. Note the absence of any foreign body reaction in the tissue.

small fragments of gray tissue said to be removed from the sheath of the sciatic nerve.

On microscopic examination the fragments were seen to consist of dense fibrous connective tissue in which were large collections of amorphous hyaline refractile granular pigment. These pigment granules were surrounded by whorls of hyperplastic fibrocytes and lymphocytes and occasional giant cells. The adjacent muscle fibers did not appear to be involved in the process.

The diagnosis was granulation tissue, nerve sheath foreign body reaction (high explosive fragment).

The pathologic report on the second operation (April 24) was as follows:

**Gross.** The submitted specimen consisted of a small pearly white glistening fragment of tissue removed from a nerve sheath measuring 1 by 0.5 mm. a small mass of muscle measuring 1 by 0.8 cm. and some thin sheets of fibrinogen measuring 3 by 1.5 cm. These were sectioned for microscopic study.

**Microscopic.** The microscopic sections taken from the fibrinogen showed glassy amorphous structure with a pronounced acidophilic staining reaction. There was very little in the way of evidence which would suggest an irritation reaction from this substance. The nerve sheath showed some clearcut fibrinogen on the surface with a few round cells and fibroblasts in the sheath but very few neutrophilic polymorphonuclear cells or other indications of irritation.

The diagnosis was fibrinogen nerve sheath fragment.

#### COMMENT

From the description it may be said that the fibrinogen placed around the sciatic nerve on March 23 gave little evidence of tissue irritation. A small section of nerve sheath revealed evidence of growth of a rather normal nature. There was no evidence of any foreign body reaction in the usual sense of the word and the fibrinogen showed little in the way of absorption. There was no evidence of inflammatory cells in the fibrinogen.

#### CONCLUSIONS

The application of this substance opens up many new possible uses in reconstructive surgery, especially in neurosurgery and tendon repair work. The microscopic sections of the nerve sheath and fibrinogen after removal show the lack of irritation or foreign body reaction yet healing has gone on normally. This procedure may be adapted to meet other needs in reconstructive surgery.

*Special Article*

## HANDBOOK OF NUTRITION: XXIV

## NUTRITION IN PREVENTIVE MEDICINE

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BETHESDA, MD

*These special articles on foods and nutrition have been prepared under the auspices of the Council on Foods and Nutrition. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the Council. These articles will be published later as a Handbook of Nutrition.—ED*

The prevention of malnutrition and the deficiency diseases is probably the greatest and most complex problem in public health that this country has ever had. The exact extent of physical disability, economic loss and disease directly or indirectly related to nutrition are unknown and yet there is every indication that malnutrition is very widespread. Some physicians who do not see many cases of advanced deficiency disease feel that the importance of nutrition is being overemphasized. However, in every clinic in which close observations are made and the more refined methods of diagnosis used, many unsuspected cases of malnutrition are recognized, and every study reveals the importance of mild degrees of deficiency in producing symptoms the cause of which was hitherto unrecognized. Furthermore, it is significant that almost all practicing physicians are prescribing vitamin preparations for more and more of their patients.

Even before our food supply was disturbed by the conditions incident to war, a number of surveys had all shown that a large part of our population was eating foods which failed to provide the essentials in amounts recommended for optimum nutrition. For example, a survey of the diets of more than a thousand workers in a large aircraft factory<sup>1</sup> revealed that more than four fifths of the diets studied fell below the amounts of certain nutrients recommended by the Food and Nutrition Board of the National Research Council.<sup>2</sup> Nutritionists who have watched workers select their lunches in cafeteria lines report that not more than half of them choose good lunches even when foods needed to provide good lunches are on the counters. It was also observed that women usually made poorer choices than men. The method of food preparation also greatly affects its food value. In a study of food as it was served<sup>3</sup> it was shown that as much as 90 per cent of the thiamine ( $B_1$ ) present in the fresh raw food was lost before the food was eaten. Keeping food hot for long periods of time is really overcooking it, and the vitamins destroyed by heat and oxidation are thus lost. The hot lunch prepared and kept hot for hours before consumption may not be as satisfactory nutritionally as a cold one.

The effect of such inadequate diets on the ability of the civilian worker to do his part in the war effort must be of serious concern to us at this time. As a nation we are not as well fed as we once believed. Physicians

and health officers must recognize that here is a whole new sphere of responsibility in the field of preventive medicine as great as or greater than the field of sanitation or control of communicable diseases.

The growing recognition of the importance of nutrition in health has gone hand in hand with the development of the science of nutrition. Most of what may be called the modern knowledge of nutrition has developed during the present century and much of it since World War I. The discovery of new vitamins, the recognition of the great physiologic importance of various mineral salts and better methods of diagnosis have made the entire world increasingly aware of the enormous amount of ill health, poor development, disease and disability due either directly or indirectly to malnutrition. An indication of the extent of the problem is given just by a survey of the fragmentary reports in the medical literature on the prevalence of the vitamin deficiency diseases.

The principal dietary deficiency diseases are nutritional edema, vitamin A deficiency, vitamin D deficiency, vitamin  $B_1$  (thiamine) deficiency, nicotinic acid deficiency (pellagra), riboflavin deficiency (ariboflavinosis), vitamin C deficiency (scurvy) and vitamin K deficiency. These diseases occur to some extent throughout the world, although there are frequently wide variations in geographic distribution.

Although reports in many instances indicate an extensive occurrence of deficiency disease, they most probably represent only a small proportion of the cases actually occurring in the world.

## NUTRITIONAL EDEMA

Nutritional edema is an invariable accompaniment of famine and rapidly disappears when the patient is given enough food of good quality. Together with the prolonged undernutrition a deficiency of protein appears to be the most important factor in the production of this syndrome, although it is recognized that strenuous exercise, exposure to cold and probably other influences are contributory.

In mild cases the edema may be confined to the lower limbs, but when it is more severe it extends to all parts of the body. It is accompanied by emaciation, muscular weakness, depression, anemia and very frequently gastrointestinal disturbances. The swollen extremities are cold and painful when touched, the pulse is slow and the blood pressure is low.

This disease is very common in prison camps and during periods of famine. It has been especially prevalent in India and in China. During the latter years of the first world war it reached epidemic proportions among the poorer classes of the civilian populations of the central European countries. In Bohemia alone 22,842 cases were listed. In the Russian famine of 1921-1922 every single surviving inhabitant of certain towns was affected. During the present nutritional crisis in Europe and in China we may be certain that the incidence of nutritional edema is extremely high although no accurate figures are as yet available.

## VITAMIN A

Vitamin A deficiency is manifested in human beings by lesions found chiefly in the epithelial structures. The most readily recognized symptoms are those of the severe deficiency states. Xerophthalmia is associated with atrophy of the paraocular glands, hyperkeratosis of the conjunctiva and finally involvement of the cornea leading to softening or keratomalacia and blindness.

<sup>1</sup> Wiehl, Dorothy G. Diets of a Group of Aircraft Workers in Southern California, Milbank Mem. Fund Quart. 20: 329, 1942.

<sup>2</sup> Recommended Dietary Allowances, National Research Council, Reprint and Circular Series No. 115, January 1943.

<sup>3</sup> Goodhart, Robert. Dietary Conditions in Industry, J. A. M. A. 121: 93 (Jan. 9) 1943.

Nyctalopia or night blindness is due to a functional failure of the retina in the proper regeneration of visual purple. The characteristic skin lesions were first recognized in Chinese soldiers in 1931.<sup>4</sup> The lesions consist of epidermal hyperplasia and glandular atrophy and are represented by papular eruptions around the pilosebaceous follicles. Unlike the ocular manifestations, cutaneous eruptions occur in persons between 16 and 30 years of age and not in infants. It is common among men and 90 per cent of those showing the dermatoses have obvious ocular manifestations of vitamin A deficiency.<sup>5</sup>

The symptoms of milder deficiency states are more difficult to detect. Early stages of conjunctival xerosis occur which may be discovered only by biomicroscopic examination.<sup>6</sup> Incipient night blindness may be demonstrable only by careful studies of dark adaptation for which a variety of photometric instruments and techniques have been introduced. Mild dermatoses resembling the

Xerophthalmia and nyctalopia have been reported from almost every part of the world. In most countries it is infrequent except under unusual circumstances. It is prevalent, however, in India,<sup>13</sup> China,<sup>14</sup> the Dutch East Indies,<sup>15</sup> other Asiatic areas,<sup>16</sup> British Guiana<sup>17</sup> and sections of Africa.<sup>18</sup> A study in South India<sup>19</sup> in 1937 found as many as 15 per cent of 4,000 school children showing xerophthalmia and keratomalacia. In Bengal<sup>20</sup> xerophthalmia and nyctalopia were found in 9 per cent of 2,000 persons. In Tientsin, China,<sup>21</sup> a survey of school children uncovered the presence of xerophthalmia in 83 per cent of certain groups. Five per cent of children admitted to a Batavia hospital<sup>22</sup> were xerophthalmic and in Groot-Atjeh<sup>23</sup> it was found to be "widespread." In Ceylon<sup>24</sup> 65 per cent of the blindness was attributable to xerophthalmia, the latter being noted as "common." Of 500,000 persons in Java<sup>25</sup> about 1 per cent of blindness was found, and here too xerophthalmia was the chief cause. In

TABLE 1—Reports of Occurrence of Nutritional Edema

Area	Year	Incidence or Number of Cases Reported % of hospital patients	Comment	References
United States (South)				The Food and Nutrition of Industrial Workers in War time Nat. Res. Council Reprint and Circular Series No. 110 April 1947
United States (Tennessee)	1941	Relatively small number	900 people studied, 20% of adults had hypoproteinemia	Youmans Am J Pub Health 31 704 1941
United States	1936	41 cases	9 years' observation	Dodd and Minot J Pediatr 8 419 1936
United States	1936	Not now common	Possibly increased during first years of depression	McLester J A M A 106 1565 1936
India (Rangoon)	1934	Increasing	With increasing trade depression	Kundu Indian M Gaz 69 439 1934
China	1942	139 children 14%	Of 903 patients admitted to hospital	Chen Am J Dis Child 63 552 1942
China (Manchuria)	1937	12 cases		Doi J Orient Med 27 115 1937
Spain	1942	1%	Of 270 persons	Robinson Janney and Grande J Nutrition 24 557 1947
Spain	1940	One of a main deficiency diseases	3116 people studied, 64% of women and 36% of men had a deficiency disease	Jimenez Garcia and Grande Corvan Rev clin española 1 41 313 318 373 1940
Netherlands East Indies	1940	Cases reported	Due to failure of harvest of 1937 and 1938 April to October 1937	Streef Streef Spann and Ismangil Geneesk tijdschr v Nederlandisch Ind 80 690 1940
East Africa (Kenya)	1938	12 cases		Bell East African M J 14 327 1938
Egypt	1938	18 infants		Shukry Mahdi and El Cholmy Arch Dis Childhood 13 264 1938
Uganda	1939	Considerable in prisons up to about 1934		Report of Committee on Nutrition for British Colonial Empire 1939
Northern Rhodesia	1939	Reported		
British Honduras	1939	Reported		
Fiji	1939	Reported		
Sierra Leone	1939	Extensive in prisons barracks and asylums		
Bechuanaland	1939	Frequent		
Leeward Island (Antigua)		Not uncommon		

more florid eruptions of advanced vitamin A deficiency and responding to treatment with vitamin A preparations have been described.<sup>7</sup> Levels of carotene and vitamin A in the blood and tissues have been determined in an effort to use them as criteria of deficiency states, either manifest or subclinical. Vitamin A has also been given a role in disorders of the respiratory tract,<sup>8</sup> genitourinary tract,<sup>9</sup> central nervous system,<sup>10</sup> teeth,<sup>11</sup> thyroid gland<sup>12</sup> and other organ systems and structures.

Sumatra<sup>26</sup> 20 to 61 per cent of 3,684 children showed evidences of xerophthalmia and in 1939 1 per cent of 8,677 children examined in the Philippine Islands<sup>27</sup> had this disease. In 1937 keratomalacia xerophthal-

13 Kirwan E O, Sen K and Biswas R B Indian J M Re arch 29 110 (Jan) 1941. Eddy and Dalldorf and references given in footnotes 19, 20 and 21.

14 References given in footnotes 1, 21 and 28.  
15 Hadikoe oemo G A Geneesk tijdschr v Nederl Indie 78 935 (April 19) 1938. Ceylon Sectional Papers II February 1927 and references given in footnotes 22, 23, 24, 25, 26, 28, 29 and 62.

16 J Malaya Branch Brit M A 2 115 1938. Tupas A V and Pecache L J Philippine Islands M A 18 147 (March) 1938 and references given in footnotes 27 and 28.

17 Report Director Medical Services of British Guiana 1938 (1940) p 61.

18 McKenzie<sup>29</sup> Loewenthal<sup>30</sup>

19 League of Nations Report on Health Organization in British India Geneva 1937 p 51.

20 Biswas R B Indian M Gaz 76 77 (Dec) 1941.

21 Nicholl L Indian M Gaz. GS 681 (Dec) 1937 69 241 (May) 1934.

22 DeHaas and others Geneesk tijdschr v Nederl Indie 80 928 1940.

23 Gompert C E Geneesk tijdschr v Nederl Indie 80 1192 (May) 7 1940.

24 League of Nations Health Organization Report Geneva 1937.

25 Tij en J Geneesk tijdschr v Nederl Indie 79 79 (Jan 10) 1939.

26 Maa Geneesk tijdschr v Nederl Indie 79 1512 (June 13) 1937.

27 Ubaldo A R and de Camero G I Philippine Islands M A 19 453 (Aug) 1939.

4 Frazier C N and Hu Chuan Kwei Cutaneous Lesions Associated with a Deficiency in Vitamin A in Man Arch Int. Med 48 507 (Sept) 1931.

5 Frazier C N and Hu Chuan Kwei Nature and Distribution According to Age of Cutaneous Manifestations of Vitamin A Deficiency Arch Dermat & Syph 33 825 (May) 1936.

6 Wicli Dorothy G and Kruse H D Milbank Mem Fund Quart 19 241 1941.

7 Youmans J B The Present Status of Vitamin Deficiencies in Practice J A M A 105 1 (Jan 2) 1937.

8 Blackfan K D and Wolbach S B J Pediatr 3 679 1933.

9 Shibley G S and Spies T D The Effect of Vitamin A on the Common Cold J A M A 103 2021 (Dec 29) 1934. Cameron H C J Am Dietet A 11 159 1935.

9 Higgins C C Production and Solution of Urinary Calculi J A M A 104 1296 (April 13) 1935.

10 Mellanby Edward Brain 58 141 1935.

11 Mellanby May Physiol Rev 5 545 1928. Beeves O H and Wolbach S B Vitamin A J A M A 110 1072 (June 18) 1938.

12 Wendt H Munchen med Wchnschr 82 1679 1935.

TABLE 2—*Reports of Occurrence of Vitamin A Deficiency*

Country and Year	Deficiency Symptom	Incidence	Groups Studied	References
NORTH AND SOUTH AMERICA				
Newfoundland, Labrador 1930-1939	Xerophthalmia, 0, dark adaptation, 8%, nyctalopia, 7%	"Probably more extensive use of controlled procedures will show that even very mild vitamin A deficiency ordi- narily is rare in occidental population"	353 adults	Steven and Wald <sup>40</sup>
Canada (Edmonton) 1939	Dark adaptation 21%	Evidence of vitamin A defi- ciency	1,000 university students	Pett <sup>53</sup>
United States (Kansas) 1942	Clinical evidence	None	1,265 workmen	Schneider, Weber and Glendenning <sup>44</sup>
United States (Chicago) 1941	Dark adaptation, blood levels	"Mild deficiency is rare or not detectable by these methods"	Children	Oldham, Roberts MacLennan and Schlutz <sup>53</sup>
United States (New York City) 1941	Fluorescopic slit lamp examination	4.6% showed evidence of vitamin A deficiency	Poor school children	Wiehl and Kruse <sup>6</sup>
United States (California) to 1942	Clinical deficiencies	None	757 hospital patients	Krupp <sup>44</sup>
United States (general) to 1941	Xerophthalmia	One case in several years re- ported in literature		Youmans and Patton <sup>44</sup>
United States (general) to 1941	Nyctalopia, <i>derma-</i> <i>to</i> anatomical changes 'mild deficiency'	'Not uncommon'		Youmans and Patton <sup>44</sup>
United States (North Carolina) 1939-1941	Clinical deficiencies Blood level at lower limits	None "Common"	Mill village com- munity of 400	Milam <sup>44</sup>
United States (Tennessee) 1941	Dark adaptation	"High incidence" of vitamin A deficiency	900 rural people	Youmans, footnote 52 first reference
United States (Florida) 1941	Follicular conjunc- tivitis	21.7% had vitamin A defi- ciency	1,011 school children	Sandels, Cate, Wilkinson and Graves <sup>45</sup>
United States (New York City) 1940	Dark adaptation	One case	144 children	Lewis and Haig <sup>44</sup>
United States (Tennessee) 1938	Dark adaptation	50% showed vitamin A deficiency	54 adults in Nashville	Corlette, Youmans, Frank and Cor- lette <sup>45</sup>
United States to 1937	Dark adaptation	3.7% showed vitamin A deficiency	Medical students	Jeghers <sup>52</sup>
United States to 1937	Dark adaptation	50% showed vitamin A deficiency	Clinic patients	Youmans, footnote 52, second reference
United States (Iowa) to 1936	Dark adaptation	26 to 70% showed vitamin A deficiency	Children	Jeans, Blanchard and Satterthwaite <sup>51</sup>
Brazil 1932-1933	Nyctalopia	"A number of cases were ob- served during a period of drought"	General popu- lation	Cavalcanti <sup>47</sup>
British Guiana 1938	Xerophthalmia, nyctalopia	"Common"		Footnote 17
Yucatan and Labrador to 1937	Xerophthalmia, nyctalopia	"Common"	General popu- lation	Eddy and Dalldorf <sup>45</sup>
United States (general) to 1934	Xerophthalmia	"Rare"		Thorson J. A. M. A. 103:1438 (Nov 10) 1934
Trinidad 1941	Xerophthalmia, nyctalopia	"Rare"		Mettivier <sup>48</sup>
EUROPE				
England 1940	Hyperkeratosis	5% had this evidence of vitamin A deficiency	General popu- lation	Pemberton <sup>50</sup>
England (Newcastle upon Tyne) 1938-1939	Clinical deficiencies	None	138 (poor in come group) children	Brewis and others <sup>54</sup>
France (Marseilles) 1941	Clinical deficiencies, 'Laboratory data indicating mild deficiencies'	None Widespread	Several hundred of school children and general population	Youmans <sup>50</sup>
France 1940	Total deficiency partial deficiency (Dry skin, digestive disturbance, nycta- lopa, irritability)	Rare Prevalent	Adults and children	Chevallier <sup>54</sup>
France to 1939	Xerophthalmia	Only 7 cases described to date	General litera- ture	Clement and Delon <sup>55</sup>
France (Paris) 1940-1941	Xerophthalmia	Same as before (?)	In hospitals	Minoli <sup>54</sup>
France 1938	Dark adaptation	"Relatively frequently"	210 school children	Caussade and others <sup>57</sup>
Spain (Madrid) 1941	Nyctalopia, 2%, dermatosis, 13%, blood level at or below borderline 33%	Evidences of vitamin A deficiency	106 families or 561 persons	Robinson, Janney and Grande Corlan <sup>54</sup>
Italy (Turin) 1939	Nyctalopia	45% showed this vitamin A deficiency	500 school children	Mathis <sup>59</sup>
Italy (Venice) 1939	Low blood levels, nyctalopia	Frequent incidence of these vitamin A deficiencies		Brettl and Tria <sup>40</sup>
Italy (Venice) 1939	Nyctalopia	"Common" occurrence of this vitamin A deficiency	Children	Tria <sup>40</sup>
Czechoslovakia (Prague) 1938	Clinical deficiencies	"No serious deficiency (vita- min A) but a slight lack of the vitamin was indicated by dry affections of the skin and nyctalopia"	Replies to 1,218 questionnaires sent to health officers	Charvat <sup>42</sup>
Sweden (Djuroholm) 1939	Dark adaptation	28% showed this vitamin A deficiency	67 school children	Abramson and Uggard <sup>53</sup>
Finland (Helsinki) 1940	Dark adaptation	29% showed this vitamin A deficiency	71 persons	Nylund <sup>53</sup>

TABLE 2—*Reports of Occurrence of Vitamin A Deficiency—Continued*

Country and Year	Deficiency Symptom	Incidence	Groups Studied	References
EUROPE—Continued				
Finland (Helsinki) 1938-1940	Dark adaptation	16% showed this vitamin A deficiency	1377 persons	Simola and Sakela <sup>29</sup>
Denmark (Copenhagen) 1937	Dark adaptation	24% uncommon	300 hospital patients	Mowinkel Reistrup and Røtter <sup>33</sup>
Denmark (Copenhagen) 1935	Dark adaptation	71% showed this vitamin A deficiency	63 children	Frandsen <sup>36</sup>
Germany (Posen) 1941	Dark adaptation	None	173 persons	Widenbauer <sup>30</sup>
Germany (Halle) 1939	Nyctalopia	17% showed this vitamin A deficiency	718 persons	von Drigalski and others <sup>43</sup>
Sweden Norway Finland Czechoslovakia Yugoslavia 1939	Nyctalopia dermatitis	Frequently reported	Rural population	Bull Health Organ <sup>42</sup>
Egypt (Cairo) 1938	Xerosis of conjunctiva and cornea nyctalopia	0.4% 0.0%	Patients in general ophthalmic hospital	Giza Memorial <sup>31</sup>
Tanganyika Territory 1939	Dark adaptation, nyctalopia 10%	9% showed this vitamin A deficiency	94 native patients and convicts school boys	Mckenzie <sup>32</sup>
Uganda (Teso) 1935	Xerophthalmia phrynoderma	700 cases 30% in children 5% in adults	1112 persons	Loewenthal <sup>30</sup>
Union of South Africa 194	Keratomalacia Bitot's spots Phrynoderma	None Considerable number	841 children	Brock and Latzky <sup>32</sup>
Falkland Islands 1937	Xerophthalmia	None		Annual report <sup>35</sup>
ASIA				
India (Calcutta) 1941	Dark adaptation nyctalopia	6% of these vitamin A deficiencies	138 persons	Roy and Bauerges <sup>41</sup>
India (Calcutta) 1941	Lesions from nyctalopia to xerophthalmia	5%	1400 persons in eye infirmary	Kirwan Sen and Biswas <sup>13</sup>
India (Bengal) 1941	Xerophthalmia nyctalopia	9%	2000 persons	Biswas <sup>9</sup>
India (Bengal) 1941	Dark adaptation	25% were below standard	301 school boys	Basu and De <sup>41</sup>
India (general) to 1937	Xerophthalmia nyctalopia	Common	General population	Eddy and Dalldorf <sup>45</sup>
India (Kashmir) 1939	Phrynoderma	10% showed this vitamin A deficiency	Children	Nicholls and Nimalasuriya <sup>40</sup>
South India 1937	Xerophthalmia keratomalacia	Up to 15%	4000 school children	League of Nations <sup>10</sup>
China to 1937	Xerophthalmia, nyctalopia	Common	General population	Eddy and Dalldorf <sup>45</sup>
China (Tientsin) 1939-1930	Xerophthalmia	Eye clinic patients 6% charity boarding schools 83% poor vernacular schools 29% upper class schools 5% mental asylums 44% mental asylums (Europe) 2%		Nicholls <sup>41</sup>
Malaya (Singapore) 1935	Xerophthalmia	Not uncommon	Children	Malaya Journal <sup>16</sup>
Dutch East Indies (Batavia) 1935-1940	Xerophthalmia	5%	Children admitted to hospital	De Haas and others <sup>22</sup>
Dutch East Indies (Groot Atjeh) 1937	Xerophthalmia	Widespread		Gomperts <sup>23</sup>
Dutch East Indies (Batavia) 1937-1939	Dark adaptation	60 to 80% showed this vitamin A deficiency	430 persons	Gorter <sup>42</sup>
Dutch East Indies 1938	Xerophthalmia	13%	3000 children under 15 years	Hadikoesoemo <sup>18</sup>
Dutch East Indies 1937	Xerophthalmia keratomalacia nyctalopia	Common		League of Nations Conference <sup>15</sup>
China 1937	Xerophthalmia keratomalacia	Common		
British Solomon Islands 1937	As above	Common		
New Hebrides (Condominium) 1937	As above	Unknown		
Tonga Island 1937	As above	Exists		
Fiji Islands 1937	As above	Almost complete absence		
Dutch East Indies (W. Java) 1939	Xerophthalmia	About 1% blindness of which xerophthalmia is chief cause	500 000 persons	Tjissen <sup>15</sup>
Dutch East Indies (Sumatra) 1939	Xerophthalmia (mild and severe)	88% to 2 years 51-61% 2-15 years 20% 15 years	3684 children	Maas <sup>16</sup>
Ceylon (Southern) 1939	Phrynoderma Bitot's spots	21% 5.6%	9% children 1497 children	Nicholls and Nimalasuriya <sup>40</sup>
Ceylon (Northern) Ceylon 1937	Bitot's spots Xerophthalmia	Less than above 6% of blindness caused by xerophthalmia		Nicholls and Nimalasuriya <sup>40</sup>
Ceylon 1937	Xerophthalmia	Common	Prisoners	Ceylon Sectional Paper <sup>17</sup>
Philippine Islands 1939	Xerophthalmia	1%	867 persons	Ubaldo and de Campo <sup>27</sup>
Philippine Islands 1937-1937	Keratomalacia	47 cases noted	Pediatric service of General Hospital in children—5 yrs	Tupas and Pasache <sup>14</sup>



nia and nyctalopia were reported as "common" in the British Solomon Islands,<sup>28</sup> as "unknown" in the New Hebrides Condominium,<sup>29</sup> as "existing" in the Tonga Islands<sup>28</sup> and "almost completely absent" in the Fiji Islands.<sup>28</sup>

Reports<sup>29</sup> from Tanganyika Territory in 1939 showed 10 per cent of the school boys to be suffering from night blindness. In Leso, Uganda,<sup>30</sup> a 30 per cent incidence of xerophthalmia was found among children in a group of 1,112 persons of all ages. In Cairo, Egypt,<sup>31</sup> only 0.2 per cent of persons attending a general ophthalmologic hospital were nyctalopic, and 0.4 per cent showed xerosis of the conjunctiva and cornea. No cases were found in a thorough 1942 survey of 841 children in the Union of South Africa<sup>32</sup> and none were noted in the Falkland Islands.<sup>33</sup>

In Europe, xerophthalmia is uncommon.<sup>34</sup> Up to 1939 only 7 cases had been reported in the French medical literature,<sup>35</sup> and reports up to 1941<sup>36</sup> failed to add any further cases. Under unusual circumstances the disease appeared in epidemic form, as in Denmark<sup>37</sup> during World War I, when dairy products were replaced in the diet by fats lacking in vitamin A. A recent survey of 106 families including 561 persons in Madrid, Spain,<sup>38</sup> uncovered only 2 per cent with nyctalopia. In Italy, however, the incidence is reported to be much higher. In Turin in 1939<sup>39</sup> 45 per cent of 500 school children had night blindness, and it was also found to be common in Venice.<sup>40</sup> A study of rural populations<sup>41</sup> revealed that nyctalopia and dermatosis were "frequently reported" from Sweden, Norway, Finland, Czechoslovakia and Yugoslavia. A year earlier, in 1938, a report<sup>42</sup> from Prague based on a questionnaire survey found no serious deficiencies, although dermatoses and nyctalopia were noted. In Halle, Germany,<sup>43</sup> in 1939 17 per cent of 218 persons were found to be night blind.

In the United States<sup>44</sup> xerophthalmia, keratomalacia and nyctalopia due to vitamin A deficiency are rarities. In Yucatan<sup>45</sup> and British Guiana<sup>47</sup> they are reported as "common." A recent study in Newfoundland and Labrador<sup>46</sup> uncovered no cases of xerophthalmia and only 3 per cent of night blindness among 353 adults. In Brazil<sup>47</sup> a number of cases of nyctalopia were noted

during a period of drought. The conditions were reported from Trinidad<sup>48</sup> as of "rare" occurrence.

The severe dermatoses of vitamin A deficiency are found in the same geographic distribution as the advanced ocular manifestations. Reports from China<sup>49</sup> and other countries<sup>40</sup> indicate the incidence of this symptom to be as high as or higher than that of ocular symptoms. The occurrence of mild dermatoses as evidence of low grade vitamin A deficiency has been reported widely. Five per cent of a general population group in England<sup>50</sup> in 1940 showed such a hyperkeratosis, and 13 per cent of a similar group in Madrid, Spain,<sup>38</sup> in 1941 had such lesions. It has been frequently reported from the Scandinavian countries,<sup>41</sup> central Europe,<sup>51</sup> Asia<sup>49</sup> and South Africa.<sup>32</sup>

The failure of the eye to adapt properly to darkness has been reported as a mild vitamin A deficiency symptom and has been subjected to refined biophotometric measurement. Reports of such studies have been at variance as the result of the multitude of techniques and instruments employed, the failure to consider other etiologic factors of dysadaptation and the unavailability of universally accepted criteria of subclinical vitamin A deficiency disease to serve as standards.

A high incidence of dark dysadaptation has been reported widely in the United States<sup>52</sup> and throughout the world.<sup>53</sup> Among 120 Iowa school children<sup>54</sup> almost 20 per cent showed abnormal adaptation in the winter and 5 per cent in the fall. Of 54 adults studied in Tennessee<sup>55</sup> 27 had subnormal abilities to adapt to darkness. In Copenhagen<sup>56</sup> 46 of 65 healthy school children showed this impairment. Similar findings have been reported from France,<sup>57</sup> Sweden,<sup>58</sup> Finland,<sup>59</sup> Germany,<sup>60</sup> India,<sup>61</sup> Africa<sup>29</sup> and the Dutch East Indies.<sup>62</sup> However, reports indicating a very low incidence of dark dysadaptation are also available. A study of Chicago children<sup>63</sup> in 1942, augmented by determinations of vitamin A blood levels, led to the conclusion that "mild vitamin A deficiency is rare or not detectable by these methods." Only 1 case of dark dysadaptation<sup>64</sup> was found among 144 New York City school children.

Very mild degrees of conjunctival xerosis recently have been attributed to a deficiency of vitamin A. By means of a biomicroscopic slit lamp, 86.6 per cent<sup>6</sup> of poor school children in New York City were found to exhibit such lesions. A follicular conjunctivitis also

28 League of Nations Health Organ, Intergov. Conference of Eastern Countries on Rural Hygiene, Geneva, 1937.

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42 Charvat. *Bull. Office internat. hyg. pub.* **30**: 591, 1938.

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45 Eddy, Walter and Daildorf, Gilbert. *The Avitaminoses*, Baltimore, Williams and Wilkins, 1937.

46 Steven, D., and Wild, G. *J. Nutrition* **21**: 461 (May) 1941.

47 Cavalcanti, J. *Arq. braz. d. nut. & psiq.* 1934, p. 7.

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49 Nicholls, Lucius, and Nimalasuriya, Ananda. *Lancet* **1**: 1432 (June 24) 1939.

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51 Charvat<sup>42</sup> *Bull. Health Organ.*

52 Youmans, J. B. *Am. J. Pub. Health* **31**: 704 (July) 1941. *The Present Status of Vitamin Deficiencies in Practice*, *J. A. M. A.* **108**: 15 (Jan. 2) 1937. Jeghers, Harold. *The Degree and Prevalence of Vitamin A Deficiency in Adults* *ibid.* **109**: 756 (Sept. 4) 1937. Corlette, Youmans, Frank and Corlette<sup>53</sup> *Jeans and Zentmire*<sup>61</sup>.

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60 Widenbauer, F. *Ernahrung* **7**: 97, 1942. von Drigalski and others<sup>43</sup>.

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Basu, N. M., and De, N. K. *Indian J. M. Research* **29**: 591 (July) 1941.

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Schlutz, F. W. *J. Pediat.* **90**: 740 (June) 1942.

64 Lewis, J. M., and Haig, C. *J. Pediat.* **16**: 283 (March) 1940.

thought to be etiologically related to vitamin A deficiency was present in 21.7 per cent of 1,041 Florida<sup>65</sup> school children

#### VITAMIN D DEFICIENCY

Nutritional diseases due to deficiencies of vitamin D and calcium may be divided into three important categories, namely rickets, osteomalacia and tetany. The three conditions, though usually separated for descriptive purposes, have ramifications that make it difficult to separate them completely.

and severity in various localities. The greatest local prevalences were found in larger cities where poor housing, inadequate diets and limited exposure to sunshine exists. The disease has been reported to be, as a rule, most prevalent in the north temperate zone and least prevalent in the tropical and subtropical areas.

An incidence of 75 to 97.6 per cent of children having symptoms of rickets has been reported in certain areas of the United States,<sup>67</sup> in Germany,<sup>68</sup> Italy,<sup>69</sup> Sweden,<sup>70</sup> the British Isles<sup>71</sup> and Egypt,<sup>72</sup> in from 25 to 75 per

TABLE 3—Occurrence of Rickets

Area Reported	Year	Number Examined	Number or Percentage of Cases Found	References
Incidence of 75 to 97.6%				
Portland Ore	1911	1,000	75.6%	Moore and Dennis <sup>69</sup>
Hamburg Germany			85.6%	
Riga			86.5%	
Bo ton			89.5%	
Dresden Germany			89.5%	McIntosh <sup>71</sup>
Durham England	1913	1,087 boys	81.8%	
Durham England	1913	1,112 girls	76.2%	
Lund Sweden	1914	141	108 or 76.6%	
Portland Ore and San Diego Calif	1917	917	93.5%	Moore and others <sup>67</sup>
Frankfurt Germany	About equal number in each city	309	80.8%	Craser <sup>68</sup>
Reich Germany	1939	309	75.5%	Rott <sup>68</sup>
Germany	Winter of 1940	500	75.5%	Graser <sup>68</sup>
Incidence of 25 to 74.9%				
Egypt	1913		50.5%	Sabri <sup>72</sup>
Egypt	1915	240	104 or 43.3%	Huldchinsky <sup>72</sup>
Lausanne Switzerland	1917	478	271 or 64.7%	Meserli <sup>72</sup>
King Lynn England	1913	651 boys	291 or 44.7%	McIntosh <sup>71</sup>
Buenos Aires Argentina	1912	1,000	326 or 32.6%	Sujoy <sup>72</sup>
Buenos Aires Argentina	1934	408	32.5%	Garraban <sup>75</sup>
Buenos Aires Argentina	1934	156	36.5%	Gordano <sup>75</sup>
Nomad Laplanders	1939	140	44 or 31.4%	Gezelum <sup>76</sup>
Cantons of Colmar and Andolsheim	1916	100	43.5%	Zillhardt <sup>76</sup>
Baltimore	1943	230	46.5%	Follis, Jackson, Elliot and Park <sup>74</sup>
Norway (inland)	Not given	917	Under 1 yr 30.5% 1 to 3 yrs 40.5%	Rustung <sup>78</sup>
City of Freiburg Germany	1937	1,431	4.7%	Viethe <sup>79</sup>
Adjoining rural districts	1936		70.5%	
Sudetenland	1940		30 to 70.5%	
Reich Germany	Summer of 1940	412	50.5%	
Germany	June and July 1941	412	42.5%	Rott <sup>68</sup>
Austria Germany	1933-1939	4,439	2,918 or 65.8%	Graser <sup>68</sup>
Incidence of 0 to 24.9%				
Hong Kong China	1933		None	Wellington <sup>80</sup>
Panama Canal Zone	1933	100	8 or 8%	Elliot and Jackson <sup>81</sup>
Puerto Rico	1933	564	5 or 0.9%	
Palestine	1937	950 sick children in hospitals	11 or 1.1%	Gruenfelder <sup>82</sup>
Palestine	1937	6,203 outpatients	57 or 0.9%	Gruenfelder <sup>82</sup>
Uruguay	1937	Children hospitalized in early infancy	15 to 12%	Carran and Bazzano <sup>83</sup>
Africa	1939	2,000	4 or 0.2%	Noss <sup>84</sup>
France	1936	In schools in cities and villages	4 to 6%	Freyss <sup>85</sup>
Haiti	1936		Relatively rare	Armand M. Gaz med Paris 43 53 1937
Swedish Laplanders	1936		Practically no rickets	Schwenk E. München med Wchnschr 83 1330 1936
Hamburg Germany	1929	608	101 or 15.1%	Zell W. ibid 84 190 1937
Hamburg Germany	1936	1,245	21.2%	
Italy	1938		0.5 to 1.5%	Petragnane <sup>86</sup>
Ecuador	1936		Rickets in exceptional cases	Vela co <sup>87</sup>
Haiti	1916		Relatively rare	Armand <sup>8</sup>
Honduras	1936		Very rare	Ordonezdiaz <sup>89</sup>
Peru	1913	3,000	0.1%	Suarez <sup>90</sup>
Peru	1934	3,000	0.1%	

**Rickets**—Neff<sup>66</sup> defines rickets as a "nutritional and metabolic disease of the first two years of life, the chief characteristic of which is a failure to appropriate or retain calcium in the bones, which become soft and deformed."

The existence of rickets has been demonstrated throughout most of the world varying in its frequency

cent of children in Switzerland,<sup>73</sup> in the United States,<sup>74</sup> the British Isles<sup>71</sup> and Argentina,<sup>75</sup> among nomad Laplanders<sup>76</sup> in the cantons of Colmar and Andolsheim,<sup>77</sup> in Norway<sup>78</sup> and Germany<sup>79</sup> and from 0 to

<sup>65</sup> Sandels Margaret R. Cate Helen D. Wilkenson Kathleen P. and Graves L. J. Follicular Conjunctivitis in School Children as an Expression of Vitamin A Deficiency Amer J Dis Child 62 101 (July) 1941

<sup>66</sup> Neff Frank C. Rickets in Tice's Practice of Medicine, 9 Sec. VIII chapter VIII Hagerstown Md W F Prior Company

<sup>67</sup> Moore C U. Brodie Jessie L. Thornton A J. Leem A M. and Cordua Olive B. Failure of Abundant Sunshine to Protect Against Rickets. Am J Dis Child 54 1227 (Dec.) 1937. Moore and Dennis<sup>69</sup>

<sup>68</sup> Graser E. Ztschr f Kinderh 61 520 1910. Rott H J. Reichs-  
reidil 1940. Graser E. Klin Wchnschr 21 82 1942. Moore and

<sup>69</sup> Moore C U. and Dennis H G. California & West Med 44 288 (April) 1936

<sup>70</sup> Siwe S. Acta paediat. 17 1 137 18, 193-

<sup>71</sup> McIntosh J W. J State Med 43 187 (April) 1935

<sup>72</sup> Huldchinsky K. Brit. J. Phys. Med. 1 297 (Sept.) 1917

<sup>73</sup> Sabri S. J. Egyptian M. A 18 138 (Feb.) 1932

<sup>74</sup> Follis R H Jr. Rev. d'hyg 59 6-10 1937

<sup>75</sup> E. A. Prevalence of Rickets in Children Between Two and Fourteen Years of Age. Am J Dis Child 66 1 (July) 1943

<sup>76</sup> Sujoy E. Semana med. 40 6-6 1935. Garraban J P. and Muzio E. ibid 41 392 1935. Gio doro J J. ibid 46 60 1937

<sup>77</sup> Gezelum G. Acta paediat. 26 184 1937

<sup>78</sup> Zillhardt A. Bull. Soc. ped. Paris 34 173 1936

<sup>79</sup> Rustung E. Acta paediat. 163 1 1937

<sup>80</sup> Viethe A. Arch. f. Kinderh 115 1 1936. Hofmeier K. ibid 120 49 1940. Zell W. München. med. Wchnschr 84 50 1917. Rott H J. Graser

<sup>81</sup> Elliot and Jackson<sup>81</sup>

<sup>82</sup> Gruenfelder<sup>82</sup>

<sup>83</sup> Carran and Bazzano<sup>83</sup>

<sup>84</sup> Noss<sup>84</sup>

<sup>85</sup> Freyss<sup>85</sup>

<sup>86</sup> Petragnane<sup>86</sup>

<sup>87</sup> Vela co<sup>87</sup>

<sup>88</sup> Armand<sup>88</sup>

<sup>89</sup> Ordonezdiaz<sup>89</sup>

<sup>90</sup> Suarez<sup>90</sup>

25 per cent in localities in China,<sup>80</sup> the Panama Canal Zone,<sup>81</sup> Puerto Rico,<sup>81</sup> Palestine,<sup>82</sup> Uruguay,<sup>81</sup> Africa,<sup>81</sup> France,<sup>83</sup> Italy,<sup>84</sup> Ecuador,<sup>85</sup> Haiti,<sup>86</sup> Honduras<sup>80</sup> and in Peru<sup>80</sup>

The disease in itself is rarely fatal, but intercurrent infections may develop that are difficult to control, owing to the low resistance of the individual. The Bureau of the Census<sup>91</sup> for the United States lists rickets as a cause of death in each of nine years from 1933 through 1941 as ranging from 339 to 139. In England and Wales<sup>92</sup> it was listed as the cause of death for eleven years from 1928 through 1938 as ranging from 493 to 121. There were 554 deaths in Italy in 1937,<sup>93</sup> 129 in Colombo, Ceylon, in 1939,<sup>94</sup> 21 deaths of 57 patients with rickets admitted to all hospitals in the Malaya States in 1938<sup>95</sup> and 170 deaths of 195 patients with rickets in hospitals in Chile in 1942.<sup>96</sup>

**Osteomalacia**—This is a nutritional disease of adults resulting from deficiency of vitamin D and the failure of utilization of calcium. It is characterized by pro-

TABLE 4—Deaths from Rickets

Area Reported	Year	Number of Deaths	References
United States	1933	339	U. S. Bureau of the Census <sup>91</sup>
	1934	292	
	1935	261	
	1936	270	
	1937	271	
	1938	244	
	1939	143	
	1940	161	
	1941	139	
England and Wales	1928	493	Register General Statistical Review of England and Wales for 1938 <sup>92</sup>
	1929	416	
	1930	316	
	1931	461	
	1932	501	
	1933	213	
	1934	180	
	1935	159	
	1936	148	
Italy	1937	554	Statistica, 1937 <sup>93</sup>
	1938	129	
Malaya States	1938	21 of 57 hospitalized	Straits Settlements report <sup>95</sup>
Colombo, Ceylon	1939	170 of 195 hospitalized	
Chile	1942	170 of 195 hospitalized	Alimentacion in Chile <sup>96</sup>

nounced softening of bones, so much so that they become flexible and cause deformities, especially of the limbs, spine, thorax and pelvis. It is attended by the rheumatic type of pain and general weakness. Although it is occasionally seen in men it is most often encountered in women, especially among those who are pregnant.

- 80 Wellington, A. R. Hong Kong M. & San. Report for Year 1932, p. 60.  
 81 Elliot, Martha M., and Jackson, Edith B. Bone Development of Infants and Young Children in Puerto Rico, *Am. J. Dis. Child.* **46**: 1237 (Dec.) 1933.  
 82 Gruenfelder, B. M. *Rec.* **146**: 176, 1937.  
 83 Carran, A., and Bazzano, H. C. *Arch. pediat. Uruguay* **8**: 428, 1937.  
 84 Niosi, A. *Minerva Med.* **30**: 454, 1939.  
 85 Freyss, M. M. *Bull. Soc. pediat., Paris* **34**: 374, 1936.  
 86 Petraghian, G. *Bull. Off. internat. hyg.* **30**: 2257, 1938.  
 87 Velasco, C. *Bol. Inst. Intern. Am. Prolec. Infan.* **9**: 3, 1936.  
 88 Armand, M. *Bol. Inst. Intern. Am. Prolec. Infan.* **9**: 3, 1936.  
 89 Ordonez Diaz, P. H. *Bol. Inst. Intern. Am. Prolec. Infan.* **9**: 3, 1936.  
 90 Soares, L. A. *Bol. Inst. Intern. Am. Prolec. Infan.* **9**: 3, 1936.  
 91 Bureau of the Census of the United States.  
 92 The Register General Statistical Review of England and Wales for the year 1938.  
 93 Statistica de la causa di morte, 1937.  
 94 de Pinto, C. E. Report on Vital Statistics, 1939.  
 95 Ann. Report of Medical Dept. Straits Settlements Federated Malay States and Unfederated Malay States, 1938.  
 96 La Alimentacion, in Chile, 1942, p. 260.

Although osteomalacia has become an exceptional disorder among peoples living under modern civilizations, there are still large areas where it constitutes a medical problem. It was reported to be widely distributed in India,<sup>97</sup> in the province of Shansi, China,<sup>98</sup> in the province of Toyama, Japan,<sup>99</sup> and in an isolated district of Bosnia,<sup>100</sup> where 3,510 cases were seen in the twelve years previous to 1910. The disease is most frequently found in India among women of the upper and middle classes who practice seclusion or purdah after marriage. It is seldom found among the lower classes who have to work outdoors.

This disease and rickets have the same etiologic factors, viz. vitamin D deficiency and disturbance of calcium metabolism, also no sharp distinction can be drawn between late or adult rickets and osteomalacia. It has been reported<sup>101</sup> that among 1,000 children of well-to-do parents whose mothers observe purdah 25 per cent had rickets, whereas among 2,300 children of low caste Hindus only about 5 per cent were affected.

"*War Osteopathy*," or "*Hunger Osteomalacia*."—A nutritional disorder which was generally termed "*war osteopathy*" or "*hunger osteomalacia*" made its appearance among the peoples of central Europe shortly after World War I. It was common in Austria, Germany and Poland. This disorder was characterized by pains in the back, groins and legs, by a somewhat characteristic gait, by difficulty in climbing stairs and by some tenderness of the bones. The age and sex distribution was peculiar. Beninde<sup>102</sup> stated that there was pronounced susceptibility of adolescents, mainly males, almost no cases occurred between the ages of 20 and 35, whereas the high incidence was in the period from 40 to 60 years, confined almost entirely to women. Hess<sup>103</sup> states that the condition "developed to a degree and extent such as had never been experienced in the history of medicine. Marked deformities of the spine and the extremities, multiple fractures, and functional disabilities by the thousand, were observed throughout the land." He reasons that from the very close resemblance between this condition and the classic osteomalacia it would seem of advantage to class them as one and the same disorder.

**Tetany**—This is a syndrome manifested by sharp flexion of the wrists and ankle joints, muscle twitchings, cramps and convulsions. It is due to abnormal calcium and phosphorus metabolism. It may be associated with several conditions, but consideration here is given only to its association with vitamin D deficiency in relation to rickets and osteomalacia. As in rickets, the peak of the incidence of tetany is in late winter and early spring.<sup>104</sup>

Tetany has often been noted in cases of rickets and osteomalacia. In one report<sup>105</sup> it was recorded that one fifth of the cases of rickets and one third of their cases of osteomalacia showed signs of tetany. In another report<sup>106</sup> it was stated that 30 of 63 patients with

- 97 Scott, A. C. *Indian J. M. Res.* **4**: 140, 1916.  
 98 Maxwell, J. P. *China M. J.* **37**: 625, 1923.  
 99 Ogata, M. *Beitrage z. Geburtsh. u. Gynik* **17**: 23, 1911.  
 100 Januszewski, G. *Wien klin. therap. Wchnschr.* **17**: 503, 1910.  
 101 Huchison, H. S., and Shah, S. J. *Quart. J. Med.* **15**: 167, 1922.  
 102 Beninde, M. *Ver. a. d. Geb. d. Medizin. Verwaltung* **10**: 1, 1920.  
 103 Hess, A. F. *Rickets, Osteomalacia and Tetany*, Philadelphia: L. & Febiger, 1929.  
 104 Kassowitz, M. *Praktische Kinderheilkunde*, Berlin: Springer, 1910.  
 105 Frankl-Hochwart, L. *Die Tetanie der Erwachsenen*, Wien: Haetder, 1907.  
 106 Japha, A. *Arch. f. Kinderh.* **12**: 66, 1908.  
 107 Huchison, H. S., and Stapleton, G. *Brit. J. Dis. Child.* **21**: 1, 1924.  
 108 Stapleton, G. *Lancet* **1**: 1119, 1925.

rickets had tetany, while in another<sup>100</sup> it was noted that tetany occurred in 338 of 3,510 cases of osteomalacia seen in Bosnia.

Tetany in rickets may be the immediate cause of death. This comes about either by the result of heart failure following spastic contraction of the heart muscle or by respiratory failure of cerebral origin. Happily this result is infrequent, as there are many therapeutic measures available for rapidly controlling the convulsive seizures. Some cases, however, resist all measures.

Reports in recent years on incidence of tetany in various localities are limited as a rule to individual case reports. Snelling and Brown<sup>107</sup> reported 32 cases in 1928 and 28 in 1935 at the Hospital for Sick Children in Toronto, Canada. Hennig<sup>108</sup> observed 79 cases of manifest tetany in central Europe from 1933 to 1937.

(To be continued)

## Council on Pharmacy and Chemistry

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT

ALSTIN E. SMITH, M.D., Secretary

### THE USE OF VITAMIN D IN THE TREATMENT OF REFRACTORY RICKETS

The Council has given consideration to the use of relatively massive doses of vitamin D in the treatment of refractory rickets and has accepted at least one preparation designed for such use. As a result of this consideration and acceptance the Council has voted to revise the statement on vitamin D (New and Nonofficial Remedies, 1943, pages 582-583) by the addition of the following paragraph:

Another suggested use of massive doses of vitamin D is in the treatment of refractory rickets, that is, occasional cases of rickets which do not respond to treatment with the usual dosages or even much larger dosages of vitamin D. In some of these cases the rickets is due to a disturbance of the acid base balance and has been successfully treated by administration of sodium bicarbonate or a sodium citrate-citric acid mixture. Massive doses of vitamin D have proved effective in the control in others. The quantity of vitamin D needed may be so large that it borders on the dosages of vitamin D that are definitely toxic, and such treatment should not be undertaken without first exploring other possibilities or without careful observation for signs of toxicity. Some investigators believe it desirable to examine the urine daily for calcium casts, albumin and red blood cells while the maintenance dose is being established. Others believe less frequent examination is necessary. After the dose is established weekly examination, using the Sulkowitch test for excessive excretion of calcium is sufficient. The blood should be examined weekly or oftener to avoid a rise of calcium above 12 mg. per hundred cubic centimeters if the dosage exceeds 20,000 units daily for the infant or 50,000 units for a child. If anorexia or nausea should appear the child must be brought promptly to the attention of the physician and vitamin D administration should be discontinued. When the maintenance dose has been established operative procedures to correct rachitic deformities may precipitate a temporary state of toxicity and the blood levels of calcium must be watched closely.

The Council voted further to revise the Allowable Claims<sup>1</sup> which appear on pages 583-584 by the addition of the following sentence to claim 6, which appears on page 584:

If representations are made for use of massive doses of vitamin D in the treatment of refractory rickets they must be accompanied by adequate precautions with respect to the danger of toxic effects and how they can be avoided.

<sup>107</sup> Snelling, C. E. and Brown, Alan. J. Pediat. 10: 167 (Feb) 1937.

<sup>108</sup> Hennig, E. Ztschr. f. Kinderh. 61: 379, 1939.

## NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

ALSTIN E. SMITH, M.D., Secretary

### VITAMIN B COMPLEX PREPARATIONS (See New and Nonofficial Remedies, 1943, p. 588)

The following products have been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

**Brewers' Yeast Powder Fortified with Riboflavin and Nicotinic Acid.** Contains dried brewers' yeast (Saccharomyces cerevisiae), debitterized, fortified with crystalline riboflavin and nicotinic acid to contain in each gram vitamin B<sub>1</sub> 50 U. S. P. units (0.15 mg.), riboflavin 0.3 mg. and nicotinic acid 15 mg. Daily prophylactic dose for infants, 1/2 level teaspoon; children 1 to 6 years old, 1 level teaspoon; children 6 to 12 years old, 1 1/2 level teaspoons; older children and adults, 2 level teaspoons mixed with water, milk or fruit juices.

**Brewers' Yeast Tablets, 0.4 Gm. (6 grains), Fortified with Riboflavin and Nicotinic Acid.** Each tablet contains Abbott's Brewers' Yeast Powder Fortified with Riboflavin and Nicotinic Acid 0.4 Gm. providing in each tablet vitamin B<sub>1</sub> 20 U. S. P. units (0.06 mg.), riboflavin 0.12 mg., nicotinic acid 0.6 mg. Average daily dose, as a supplement to the diet for children 6 to 12 years old, 6 tablets; older children and adults 9 tablets; therapeutic doses must be determined for each patient.

### DIGITALIS\* (See New and Nonofficial Remedies, 1943, p. 289)

The following dosage forms have been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

**Tablets Digitalis.** 32 mg. (1/2 grain) (1/2 U. S. P. unit), 65 mg. (1 grain) (1/2 U. S. P. unit) and 0.1 Gm. (1 1/2 grains) (1 U. S. P. unit) (keratin coated).

**Pulvo-Caps Digitalis.** 0.1 Gm. (1 1/2 grains) (1 U. S. P. unit) and 65 mg. (1 grain) (1/2 U. S. P. unit).

**Tincture Digitalis.** Four fluidounces and 1 pint bottles.

### OLEOVITAMIN A (See New and Nonofficial Remedies, 1943, p. 587)

The following dosage form has been accepted:

INTERNATIONAL VITAMIN SALES CORP., NEW YORK

**Oleo Vitamin A Capsules.** Each capsule contains 25,000 U. S. P. units of vitamin A derived from fish liver oils.

### PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1943, p. 82)

The following dosage forms have been accepted:

E. S. MILLER LABORATORIES, INC., LOS ANGELES

**Sterile Solution Procaine Hydrochloride 1% W/V.** 30 cc., 50 cc. and 100 cc. vials and 2 cc. and 5 cc. ampuls. Preserved with 0.5 per cent chlorobutanol.

**Sterile Solution Procaine Hydrochloride 2% W/V.** 30 cc., 50 cc. and 100 cc. vials and 2 cc. and 5 cc. ampuls. Preserved with 0.5 per cent chlorobutanol.

### RABIES VACCINE CHLOROFORM KILLED (See New and Nonofficial Remedies, 1943, p. 543)

The following dosage form has been accepted:

THE GILLILAND LABORATORIES, INC., MARIETTA, PA.

**Rabies Vaccine (Chloroform Killed Virus).** 0.5 cc. vials packaged in units of seven and fourteen vials.

### SULFADIAZINE (See New and Nonofficial Remedies, 1943, p. 169)

The following dosage forms have been accepted:

E. R. SQUIBB & SONS, NEW YORK

**Tablets Sulfadiazine.** 0.5 Gm.

**Sulfadiazine Powder (Sterilized).** 5 Gm. vial.

### SULFADIAZINE SODIUM (See New and Nonofficial Remedies, 1943, p. 188)

The following dosage forms have been accepted:

E. R. SQUIBB & SONS, NEW YORK

**Sulfadiazine Sodium Powder (Sterilized).** 5 Gm. vial.

**Sulfadiazine Sodium Powder (Nonsterilized).** 50 Gm. bottle.

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SATURDAY, OCTOBER 2, 1943

## INFLUENZA RECEPTOLYSIN

New facts regarding the mechanism of virus infections of the respiratory epithelium have resulted from studies of virus hemagglutinins recently reported by Hirst<sup>1</sup> of the International Health Division, Rockefeller Foundation. Two years ago Hirst noted that influenza virus grown in the allantoic fluid of chick embryos would agglutinate adult fowl erythrocytes. This hemagglutinin could be used as a reliable quantitative index of the mouse infectious titer of influenza virus and for the titration of anti-influenza serums. The observation was promptly confirmed by other investigators,<sup>2</sup> who reported evidence that the influenza virus is actually adsorbed on fowl erythrocytes, from which it can be partially or wholly recovered by elution.

Quantitative studies of the rate and completeness of this virus adsorption yielded surprising results. For example, Hirst found that addition of the Lee strain of influenza B virus to a 15 per cent suspension of chicken erythrocytes caused the titer of the free, or uncombined, virus to fall from 128 units to less than 4 units by the end of ten minutes, a 94 per cent adsorption of the virus on the red blood corpuscles. This adsorption, however, did not result in a permanent chemical union between virus and erythrocytes, release of the adsorbed virus was noted within twenty minutes, increasing to a measurable amount by the end of two hours. There was no demonstrable multiplication of the virus in the blood suspension to account for this release.

The released virus was apparently unaltered as a result of its previous adsorption on the erythrocytes.

1 Hirst, G. K. The Agglutination of Red Cells by Allantoic Fluid of Chick Embryos Infected with Influenza Virus, *Science* **94** 22 (July 4) 1941, The Quantitative Determination of Influenza Virus and Antibodies by Means of Red Cell Agglutination, *J. Exper. Med.* **75** 49 (Jan.) 1942, Adsorption of Influenza Hemagglutinins and Virus by Red Blood Cells, *ibid.* **76** 195 (Aug.) 1942.  
2 McClelland, Laurella, and Hare, Ronald. The Adsorption of Influenza Virus by Red Cells and a New In Vitro Method of Measuring Antibodies for Influenza Virus, *Canad. Pub. Health J.* **32** 530 (Oct.) 1941.

The blood cells, however, were definitely changed, as shown by their acquired insusceptibility to subsequent agglutination with influenza virus. To account for this insusceptibility, Hirst postulated the existence of specific haptens or receptor materials on the fowl erythrocytes, which he had reason to believe were complex polysaccharides. He assumed further that this receptor substance is destroyed by enzymes (or functions) of the influenza virus. Release of the virus was therefore pictured as a result of receptor hydrolysis, the resulting dehaptenized erythrocytes being incapable of adsorbing influenza virus. This is essentially a renaissance of the original Pasteur exhaustion theory of acquired immunity.

It seemed likely to Hirst<sup>3</sup> that this in vitro adsorption and release of influenza virus might have its counterpart in the reactions between influenza virus and respiratory epithelium. He therefore repeated the experiments using mouse, rabbit and ferret lungs in place of fowl erythrocytes. The lungs were first perfused free from blood and then suspended in an Erlenmeyer flask with a side arm by means of which the external pressure could be increased or decreased. Virus infected allantoic fluid was introduced into the trachea of the suspended lungs, and the lungs were alternately expanded and compressed to insure uniform mixture. Samples of the allantoic fluid were removed at intervals and titrated for hemagglutinins and for their lethal effects on mice. These titrations showed an extremely rapid adsorption of the virus on the respiratory epithelium. With the PR8 virus less than 1 per cent remained unabsorbed after five minutes of the simulated respiratory movements. This was followed by a fairly rapid release of the virus, the original titer of the allantoic fluid being restored almost quantitatively in from two to five hours. As in previous tests with red blood cells, the rapidity of the adsorption and subsequent release of the virus varied with different viral strains. Heat inactivated and formaldehyde inactivated influenza viruses were also adsorbed and at the same rate, but there was no evidence of their subsequent release, presumably owing to inactivation of their enzymic function.

In order to test possible clinical applications of these observations, the tests were repeated on the intact lungs of living ferrets. In the case of ferrets killed at stated intervals after intratracheal inoculation, adsorption of the virus had taken place in the viable lung in much the same way as in the isolated blood free lung. The adsorbed virus, however, remains permanently adsorbed on the epithelial cells of the living lung.

3 Hirst, G. K. Adsorption of Influenza Virus on Cells of the Respiratory Tract, *J. Exper. Med.* **78** 99 (Aug.) 1943.

release being still absent at the end of eight hours. A slight apparent release of one virus was noted at the end of twenty-four hours, presumably because of multiplication.

Assuming that virus release is due to enzymic hydrolysis of the specific receptor substance, one might be tempted to postulate that this nonrelease is due to enzyme inhibitors in the living tissue cells or adjacent blood plasma. Hirst, however, is inclined to attribute it to aggressive growth of the attached virus under natural conditions of infection, destruction of the specific receptor substance being a necessary preliminary to parasitism on or within susceptible tissue cells.

Aside from its theoretical interest, isolation and identification of the postulated specific receptor substance have numerous suggestive practical applications. Hirst's work, therefore, may well lead to new methods of influenza prophylaxis and therapy. The work is being continued in the International Health Laboratory.

#### THE INTERNATIONAL RED CROSS IN TIME OF WAR

The International Red Cross was born of war and still serves most actively in wartime. The International or Geneva Red Cross movement rests on the foundation of the individual national organizations even though these vary widely in structure and importance in different countries. Since 1928 the International Red Cross has been a three headed organization which includes the national societies of the Red Cross, the International Committee and the League of the Societies of the Red Cross.<sup>1</sup>

During the war of 1870 the International Committee assumed for the first time the assistance to prisoners of war and created an agency for prisoners at Basle. Later this agency was removed to Geneva. Past experiences were reviewed in 1929, this resulted in the adoption of the revised convention of Geneva in that year regarding the treatment of prisoners of war. This convention was ratified by most countries except Finland, Japan, Russia and certain countries of Latin America.

The principal features of this code relate to the visiting of camps for prisoners of war by delegates of the International Committee. The official delegates may consult with trusted prisoners ("hommes de confiance") who have been selected by their comrades and who represent them. These visits to camps make it possible for the delegates of the committee to request the camp authorities for improvements, they allow for the intervention of the International Committee itself.

By reciprocity these visits permit equal improvements to be made in the conditions of prisoners of war held by the other side.

The Central Agency for Prisoners in Geneva is concerned not only with prisoners of war but with all categories of war victims including wounded and sick, civilian internees, military internees in neutral countries, refugees in their own countries and civilians separated from their families by hostilities. This agency is consequently a vast organization with four big buildings in Geneva and 3,500 workers, it has received over 19 million letters and telegrams and has dispatched some 20 million. Some 60 thousand letters are received by this agency each day.

Cards of notice of capture are worded by the prisoners themselves. The prisoners are permitted to send these cards to their families and at the same time to the central agency after they reach camp. The agency also carries through special inquiries for prisoners, notably when sick, or for those who have disappeared. These inquiries allow more complete information to be transmitted to the families. Another function of the International Committee is to arrange for the repatriation of the severely wounded. This ordinarily involves an exchange, usually through a neutral country. The interests of civilian internees and civilians in general are also represented by the International Committee. The committee collaborates with the diplomatic representatives of the powers, aids in problems of transportation, reports all violations of the conventions and is sometimes called on to enter into relations with governments, National Red Cross Societies or in unusual judicial situations.

A monthly journal in French records much of the current work of the International Red Cross. Of particular interest to Americans are the reports of visits to military prison camps and civilian internees in Japan proper and in such places as Shanghai and Hong Kong. Japan, although not a signatory of the Geneva Convention, previously indicated its intention of complying with its provisions. In most camps visited, conditions for both military personnel and civilians appear to be satisfactory. One recent report concerning the Stanley Camp for interned civilians at Hong Kong makes the somewhat enigmatic statement that the composition of rations has been recently improved. Reports on Japanese camps for Chinese and vice versa and on Russian camps for Axis prisoners and the reverse are missing.

Altogether the International Red Cross exerts a powerful force toward the amelioration of the effects of war and represents an extension of the endeavors of the medical profession throughout its long history.

<sup>1</sup> Hictet Jean S. *Revue Internationale de la Croix Rouge* Geneva  
February 1943



## Current Comment

### WAR SURGERY IN THE MIDDLE EAST

During the last nine months of 1942, 3,279 battle casualties were admitted to one military hospital on the lines of communication in the Middle East. Because of the enemy's rapid advance to El Alamein the arrival of wounded was so rapid that the hospital had to act as a casualty clearing station rather than as a base hospital. The mortality rate for the 300 casualties from Tobruk was 3 per cent and for the 500 casualties from the second battle of El Alamein it was 10 per cent. The mortality rate for 2,679 casualties from the first battle of El Alamein, when the hospital acted as a casualty clearing station, was only 1.3 per cent. The high mortality rate for the casualties from Tobruk and from the second battle of El Alamein is due to the fact that seriously ill patients were sent to the hospital. The figure 1.3 per cent is approximately accurate for most casualty clearing stations. In analyzing the results, Lieut Col R. K. Debenham<sup>1</sup> emphasizes that all of the wounds dealt with were a result of fighting in dry sandy desert that the amount of clothing worn was very small so that only rarely was clothing found in a wound, and that sulfanilamide was used prophylactically. As a routine 10 Gm was dusted into the wound and another 10 Gm after operation, 5 tablets (2.5 Gm) were given by mouth at 6 a. m. and 6 p. m. daily for four days. The good results obtained in abdominal cases, particularly in those with bowel perforation, were due to early operation. Of the 11 patients with bowel perforation, the 9 who recovered were operated on in forward areas and were kept there from five to sixteen days, the cardinal points seem to be early operation, late evacuation, intravenous saline drip, continuous gastric suction and sulfadiazine. This is difficult with mobile warfare but was possible when the line of battle was static. The worst cases of burns came from fighting in tanks. Because facilities for preliminary cleansing were not obtainable, tanning was discarded in favor of cleansing and powdering the area with sulfanilamide and dressing with petrolatum gauze. Patients traveled best with plenty of padding, and for wounds of limbs a light, well padded plaster of paris cast was definitely beneficial. In the early stages intravenous plasma or serum was considered essential. Blood transfusions were used for secondary anemia a week or ten days later. Patients with severe burns traveled badly, even up to two weeks after burning. After a long journey they arrived toxic and ill. It is easy to put too much sulfanilamide powder on the burns, especially in severe cases, as sulfanilamide is readily absorbed from burned areas and gives rise to profound toxemia. Blood and plasma or serum transfusions were used for shock, for burns and during

convalescence when the hemoglobin fell below 60 per cent. Gas gangrene has been rare and gas infection uncommon. No case of tetanus has been seen. Among the "don'ts" to be observed are listed:

Don't suture wounds. Don't suture amputation stumps.  
Don't amputate at the site of election, go below it.  
Don't use packing except to stop hemorrhage.  
Don't use drainage tubing.  
Don't use unpadded plasters.  
Don't forget to give morphine before a long bumpy journey.  
Don't forget to give plenty of fluids by mouth.  
Don't forget that the ligature of a main vessel should be prominently recorded on the field medical card and underlined.

The salient features of war surgery in the Middle East are based on the principles which have been in the process of evolution since the beginning of the war. They are summarized as follows: organized resuscitation and the use of local and general sulfanilamide, thorough immobilization, conservative surgery and wound trimming instead of wound excision, avoidance of tension around wounds and provision of a good blood supply in damaged limbs, and the necessity to adapt and improvise articles to fulfil functions for which they were not intended.

### PERSONAL LIABILITY TO ACCIDENT

The toll from accidents in 1942 was 93,000 killed and 9,200,000 injured. According to the National Safety Council<sup>2</sup> two out of three industrial accidents—and many of the nonindustrial ones—have personal as well as mechanical causes. The importance of identifying accident-prone persons preferably before the occurrence of the accident is hence obvious. Dunbar<sup>3</sup> discusses a series of tests based on educational and vocational histories, family relations and information from personal observations, especially with regard to interests and addictions, attitude toward authority and impulsive behavior, by means of which it is believed that accident-prone persons can be identified with reasonable accuracy. The major sphere of difficulty of the accident-prone person appears to lie in the frequency of conflict with authority and the means by which such conflict is resolved. The tendency toward impulsive behavior, on which evidence may be gathered both from past history and from observation of actual behavior under stress, is also of importance, Dunbar says. If the validity of the proposed methods of selecting accident-prone persons can be confirmed—and ample opportunities are available to do so both in industry and in military life now—much may be learned concerning the possibilities for reeducation and the selection of persons for exclusion from certain occupations. Under the stress of war the available techniques can be more readily evaluated just as the problem of accident prevention becomes even more than usually acute.

<sup>1</sup> Accident Facts, 1943 Edition, National Safety Council, Inc. Chicago.  
<sup>2</sup> Dunbar, Flanders. Medical Aspects of Accidents and Mistakes in the Industrial Army and in the Armed Forces, War Med 1: 161 (1943).

<sup>1</sup> Debenham, R. K. War Surgery in the Middle East, Brit M J 2: 223 (Aug 21) 1943.

# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## ARMY

### EXAMINATION DATES FOR CANDIDATES FOR MEDICAL CORPS, REGULAR ARMY

The War Department announced on September 7 that examinations for the purpose of qualifying candidates for appointment as first lieutenants in the Medical Corps, Regular Army, to fill vacancies occurring during the fiscal year 1945 will be held on Jan 24 through Jan 27, 1944. The examinations are open to all male citizens of the United States who are graduates of acceptable medical schools in the United States and Canada, who have completed one year's internship in an approved hospital and who will not be over 32 years of age at the time it will be possible to tender a commission. The examinations will be conducted by boards of medical department officers and will consist of a physical examination, a written examination in professional subjects and a determination of the candidate's adaptability for military service. Candidates who fail a first examination will not be permitted to take more than one subsequent examination.

Full information and application blanks will be furnished on request by the Adjutant General, War Department Washington 25, D. C. Applications from candidates in the continental limits of the United States received after Jan 7, 1944 will not be considered.

### TWENTY-FOURTH CLASS OF MEDICAL ADMINISTRATIVE CORPS OFFICERS

The twenty-fourth class of Medical Administrative Corps Officers at the Officer Candidate School, Camp Berkeley, Texas, graduated on September 16. This class was the last to graduate under the twelve week training schedule. Future classes will complete a sixteen week program which does not include any more material but emphasizes the physical aspects of training with more field exercises and bivouacs. The graduation address was delivered by Brig Gen Roy C Heflebower, school commandant, and the oath of office was administered by Major Miles G Ball M. A. C. executive officer.

### ENLISTED WACS OFFERED OPPORTUNITY TO BECOME PHYSICAL THERAPY AIDES

The War Department announced on September 13 that qualified enlisted members of the Women's Army Corps will be given an opportunity to become physical therapy aides, with the relative rank of second lieutenant serving in the Medical Department of the Army of the United States. The training courses in physical therapy will begin in October under the direction of the Surgeon General who will select the WAC personnel to be trained. On successful completion of the study and three months practice, the Wacs will be discharged from the Women's Army Corps and will be appointed as physical therapy aides. To be eligible for this course applicants must be under 44 years of age, must have completed the WAC basic training and must have a degree in physical education or two years of college study emphasizing the biologic sciences. Successful applicants will receive six months of training in physical therapy in classes at universities and hospitals. On completion of those studies they will be assigned to selected army hospitals for practical experience in the treatment of wounded soldiers. The first groups selected will be sent to Leland Stanford Uni-

versity at Palo Alto, Calif, the University of Wisconsin at Madison, and the D. T. Watson School of Physical Therapy at the University of Pittsburgh. They will be trained at government expense and be quartered on or near the university campuses. Later it is expected that Walter Reed General Hospital, Washington, D. C. and other army general hospitals will participate in the training. Major Emma E. Vogel is the director of physical therapy aides.

### MICHAEL REESE HOSPITAL UNIT IN ITALY

An army evacuation hospital built around the original Michael Reese Hospital which was formed in Chicago is reported to have landed in Italy with the American Fifth Army. The hospital was immediately set up and can handle 1,000 patients and treat every type of casualty. Hundreds of tons of equipment were landed with the unit, and the personnel includes specialists in every branch of surgery. Lieut Col Philip A. Daly of Chicago is in command of the unit, and other medical personnel are as follows:

Major Alfred E. Jones Chicago	Capt. Saul A. Mackler Chicago
Major Manuel E. Lichtenstein, Chicago	Capt. Philip M. Marcus Chicago
Major Samuel Perlman Chicago	Capt. William H. Parker Oak Park Ill.
Major Laurence M. Weinberger, Chicago	Capt. Alfred J. Platt Chicago
Capt. Harry E. Barnett Chicago	Capt. Arthur H. Schoenwetter
Capt. Richard M. Bendix Chicago	Capt. Morris J. Shapiro Chicago
Capt. David Z. Berger Chicago	Lieut. Sol Z. Draznin Chicago
Capt. Ernest D. Bloomenthal Chicago	Lieut. Samuel H. Fraerman
Capt. Joseph A. Carbone Gary Ind.	Lieut. Jesse G. Garber Chicago
Capt. Melvin R. Cohen Chicago	Lieut. Wilbur Gordon Chicago
Capt. Norman R. Cooperman Chicago	Lieut. Ralph R. Landes Chicago
Capt. Sol Ralph Friedlander Chicago	Lieut. Samuel M. Marcus Chicago
Capt. Richard E. Heller Chicago	Lieut. Manuel L. Stillerman Chicago
Capt. Harold Laufman Chicago	Lieut. Leonard A. Stine Chicago
	Lieut. Leonard Weinstein Chicago

### DR MEYER AWARDED SILVER STAR

Capt. Alred C. Meyer Chicago of the Army Medical Corps has been awarded the Silver Star for heroism and outstanding achievement in operating on wounded soldiers while under Japanese gunfire in New Guinea. He is said to be serving with the first portable hospital to be established by the Army. A portable hospital is understood to be one in which the medical equipment and supplies are so packed and arranged that in jungle warfare they may be carried forward near the front lines, if necessary by hand.

### PRISONER OF THE JAPANESE

The first direct word from Capt. Gerald M. Greenspahn formerly of Chicago since Nov. 27, 1941 was recently received by his family indicating that he is being held as a prisoner of the Japanese in the Philippines in prison No. 1. Captain Greenspahn graduated from Northwestern University Medical School Chicago in 1935 and was staff physician of the American Hospital before entering the service.

### FLIGHT SURGEONS ASSISTANTS

A class of ninety-nine flight surgeons assistants completed the six weeks course in aviation medicine at the School of Aviation Medicine Randolph Field Texas Aug. 21. Brig Gen Eugen G. Rumartz U. S. Army is commander of the school.

## NAVY

COMMISSIONING OF APPRENTICE SEAMEN  
IN MEDICAL SCHOOLS ON COMPLETION OF MEDICAL EDUCATION

The Bureau of Naval Personnel of the Navy Department, Washington, D. C., has announced that apprentice seamen, Class V-12(S), who are medical students will, on satisfactory completion of their medical education, be appointed to the rank of Lieutenant (jg), (MC) U. S. Navy, or Lieutenant (jg), MC-V(G), U. S. Naval Reserve, in accordance with the following procedures:

(a) For appointment in the grade of Acting Assistant Surgeon rank of Lieutenant (junior grade) (MC), U. S. Navy:

1 Students, within three months of completion of their junior year and at any time thereafter may submit application to the Bureau of Medicine and Surgery via the commanding officer for examination for appointment as Acting Assistant Surgeon for intern training in the U. S. Navy. Commanding officers of Navy V-12 units at medical schools have been provided with a supply of the appropriate application forms.

2 The Bureau of Naval Personnel, on the recommendation of the Bureau of Medicine and Surgery, will authorize qualified applicants to participate in examinations which will be conducted at all continental U. S. naval hospitals during January, May and September of each year.

3 Candidates will receive official notification via their commanding officer of the results of their examination approximately two months following the date thereof.

(b) For appointment as Lieutenant (junior grade), MC-V(G), U. S. Naval Reserve:

1 Students who did not apply or failed to qualify on examination for a naval internship and have contracted for a civilian internship in lieu thereof will be eligible for this appointment on satisfactory completion of their medical education.

(c) Commanding officers of Navy V-12 units at medical schools are requested to submit to the Bureau of Naval Personnel via the Bureau of Medicine and Surgery sixty days prior to established graduation dates two lists in triplicate of senior class V-12(S) medical students under their command who have been reported by medical school deans as scheduled to graduate. One list should include only the names of those students who have qualified for appointment as Acting Assistant Surgeon for intern training in the U. S. Navy and the second list the names of those students committed to a civilian internship and thus qualified for appointment as Lieutenant (jg), MC-V(G), U. S. Naval Reserve. It is desired that there be incorporated in these reports data constituting the commanding officer's recommendation as to the possession of requisite officer-like qualities in each case together with remarks on the following points:

1 Whether any student who participated in an examination for appointment as Acting Assistant Surgeon has failed to receive official notification as to the results of his examination.

2 Whether each student who has qualified for appointment as Acting Assistant Surgeon intends to accept the appointment on graduation or to decline for the purpose of attending a civilian internship. In the latter case, graduates will be appointed Lieutenant (jg), MC-V(G), U. S. Naval Reserve, and released to an inactive duty status.

3 The names and locations of the hospitals in which Naval Reserve appointees will serve civilian internships indicating the type and duration (dates of commencement and completion) of the internship contracted for in each case.

4 The necessary delay, not to exceed thirty days, in reporting at the initial permanent duty station required by each individual for the purpose of taking state board medical examinations. (In cases in which state board medical examinations will not be completed during the thirty day period following graduation, newly appointed officers will report to assigned stations of duty and, at the appropriate time after reporting, submit a request to the commanding officer of the station to which assigned for such leave as may be necessary to participate.)

Commanding officers of V-12 units at medical schools where graduation dates have been established for October 1943 will forward the lists requested as soon as possible.

(d) The commanding officers are directed to forward a completed report of physical examination, form Y, in duplicate for each student named in the foregoing lists who is recommended for appointment.

(e) On receipt of this report from commanding officers, the Bureau of Medicine and Surgery will make appropriate recommendation by endorsement to the Bureau of Naval Personnel. Appointments will be issued for fully qualified applicants and will be forwarded to commanding officers for delivery on graduation.

(f) Appointments in the grade of Acting Assistant Surgeon for internship with the rank of Lieutenant (junior grade), (MC), U. S. Navy, will be accompanied in each case by active duty orders to the naval hospital to which such appointees have been assigned for intern training.

(g) Appointments as Lieutenant (junior grade), (MC-V(G)), U. S. Naval Reserve, will be written with date of rank approximately ten days after graduation. If appropriate, commanding officers will furnish a transportation request and meal tickets covering return of these men as Apprentice Seamen, class V-12(S) or SV-12(S) to the place to which initial orders to active duty were addressed or they will be granted a travel allowance of 5 cents a mile in lieu thereof in accordance with the provisions of reference (a). These men will be instructed by the commanding officer to appear before a naval officer qualified to administer oaths or before a notary public on the date specified as "date of rank" in order to execute the acceptance and oath of office. The commanding officer shall explain clearly that a man cannot execute an acceptance and oath of office as a naval officer and subsequently use transportation forwarded to him as an enlisted man.

(h) The appointment for any man who fails to graduate will be returned by the commanding officer to the Bureau of Naval Personnel for cancellation and appropriate disposition of the man.

(i) Additional information relative to this subject will be found in references (b) and (c).

FOREIGN LANGUAGE REQUIREMENTS FOR  
PREMEDICAL STUDENTS

The Bureau of Naval Personnel of the Navy Department, Washington, D. C., announced on September 9 the interpretation of the foreign language requirements for premedical students as referred to in References (a) V-12 Bulletin No. 1, (b) V-12 Bulletin No. 22, and (c) V-12 Bulletin No. 2.

1 Reference (b), page 12c, language requirement for subject students shall be interpreted as follows:

V-1 and V-7 transfers to V-12, who are pursuing a premedical program shall complete the equivalent of twelve college semester hours of a single foreign language. French, German or Spanish is preferred, but other languages may be substituted at the discretion of the college authorities. A high school unit (one year) is to be considered equivalent to six semester hours.

2 In accordance with reference (c), page 3, paragraph 8 other premedical students entering the V-12 program with advanced standing must meet minimal requirements prescribed for V-1 and V-7 transfers to V-12.

3 Only premedical students entering the V-12 program as freshmen will be required to take the fully prescribed course outlined in reference (a). Attention is invited to the fact that French, German or Spanish is preferred, but other languages may be substituted under exceptional circumstances. Interpretation of "exceptional circumstances" shall be the responsibility of the college authorities.

## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

### INTERN-RESIDENT PROGRAM FOR HOSPITALS

Considerable confusion seems to have arisen regarding the number of internships and residencies which may be maintained by hospitals under the new intern resident program which has been made possible by the deterrent of certain numbers of interns and residents holding reserve commissions in the Army and Navy.

To meet the minimum needs of hospitals nationally twice as many residents as will be deferred by the Army and Navy will be required. The remaining half (those not deferred by the Army and Navy) must be made up of physically disqualified men and women in order to give the hospitals minimum adequate house staff coverage.

This program definitely does not state that a hospital may only or will necessarily return one third of its interns to serve as junior residents nor does it mean that a hospital may only or will necessarily return one half of its junior residents as senior residents. These fractions were published to show the overall proportion of commissioned officers now under the jurisdiction of the Army and Navy who would be deferred by the military services to serve as one source of personnel for civilian hospital appointments.

The program does state that, generally speaking hospitals will be able to return about two thirds of their 1940 house staffs, provided there has been no pronounced decrease or increase in patient load since that time. This two thirds will comprise those ineligible for military service as well as those deferred by the Army and Navy.

The first fraction represents the proportion of deterrents by the armed forces of commissioned officers (9-9-9). The second figure concerns the allocation—the combined deferred officers and those physically disqualified—to the hospitals (approximately 66 2/3 per cent of the 1940 staff). Each hospital should procure as many physically disqualified men as possible, and only the remainder unable to be procured from this source can be obtained from those deferred by the Army and Navy.

The hospital questionnaires, which the Procurement and Assignment Service urgently requests hospitals to return, will give the needed information to determine a general basis for estimating the number of interns and residents which each hospital should have on the basis of the 1940-1942 house staff. There will probably be some necessary changes in individual hospitals which have peculiar or particular problems, but the formula will apply to all general hospitals.

## MISCELLANEOUS

### NATIONWIDE CAMPAIGN FOR QUININE

In a nationwide campaign which began seven months ago for the conservation of quinine for the armed forces, more than eleven million 5 grain doses of quinine have been collected and are now en route to army and navy fighting fronts. The campaign was supported by thousands of retail pharmacists, wholesale druggists and hospitals and exceeded its goal by nearly 50 per cent. More than sixteen thousand packages have been received at the National Quinine Pool, American Pharmaceutical Association, Constitution Avenue and Twenty-Second Street NW, Washington, D. C. The quinine arrived in the form of powder, plain and sugar coated tablets, crystals and liquid and was of both foreign and domestic manufacture. The medical departments of the Army and Navy have assigned pharmacists to assort and classify the contributions which will be accepted until October 15.

### NEW FEE SCHEDULE FOR THE EMERGENCY MATERNITY AND INFANT CARE PROGRAM

Under a new fee schedule effective August 18, medical care was authorized for 974 wives and children of enlisted men of West Virginia for the first fifteen weeks operation of the plan proposed by the state health department for the emergency Maternity and Infant Care Program. This plan was approved by the Children's Bureau of the Labor Department in Washington. As of August 19, a total of 361 West Virginia doctors had qualified for participation in this program, which is under the direct supervision of Dr. Lenore Patrick, director of the Division of Maternal and Child Hygiene. Fifty-five approved hospitals were taking part.

### SCHOOLS DETERMINE POLICY IN REGARD TO MARRIAGE OF MEMBERS OF THE U S CADET NURSE CORPS

According to the Division of Nurse Education of the U. S. Public Health Service, in many schools marriage does not prevent the admission and retention of students. In some schools maternity leave is granted, in a few schools married applicants are not admitted and married students are not retained. The fact that a school is receiving federal funds under the Bolton act does not alter a school's policy in regard to marriage. An applicant before enrolling in any school of nursing as a U. S. cadet nurse should understand the school's policy on marriage.

If a school admits and retains married students, the "health permitting" clause in the application signed by the cadet nurse allows the school to provide maternity leave. This clause applies in the same fashion to the graduate nurse who has pledged herself to render essential nursing service throughout the war. Students who are enrolled in schools in which marriage of students is prohibited if they wish to marry before completion of the program, might consider the possibility of transfer to another school although the preferable course to follow would be that of waiting to marry until after graduation.

### PUBLIC HEALTH UNDER HITLER

The Greek government has decided to supply all consumptives insured at social insurances with better food consisting of meat, eggs, sugar and butter. *Donauzeitung* Belgrade, July 16, reports. Previously this allowance was granted in grave cases only. In Athens consumptives are estimated to number 20,000.

According to DNB of July 24 a commission sent by the Spanish minister of labor to study the German health insurance system is at present staying in Berlin. The members of the commission have the task of acquainting themselves with the statutory regulations and the organization of German health insurance. The Spanish government intends to introduce a health insurance system in Spain. The Spanish visitors will have the opportunity to study all institutions concerned in the great German reich and in the protectorate and to acquaint themselves with the working of the German health insurance system. The reich minister of labor, Franz Seldte, received the members of the commission. In his address he spoke of his pleasure at Spain's intentions to organize a health service for the Spanish workers. The reich ministry of labor would gladly cooperate to help Spain to realize these aims.

*12-Uhr Blatt* of July 10 prints a description of the largest underground hospital in Berlin. Operations are carried out in this hospital every night in order to be prepared in case of an emergency. Expectant mothers are accommodated here every night and many babies have already been born in this hospital.

Rumania *Curentul* of July 22 states that medical students must do one month's military service plus one month's medical practice during the summer vacation.

# ORGANIZATION SECTION

## MEDICAL LEGISLATION

### MEDICAL BILLS IN CONGRESS

*Change in Status*—H J Res 159 has passed the House and has been favorably reported without amendment by the Senate Committee on Appropriations, making available an additional sum of \$18,020,000 to provide obstetric and pediatric care to the wives and infants of enlisted men of the fourth, fifth, sixth and seventh grades in the armed forces of the United States. An effort was made on the floor of the House to amend the joint resolution so that the federal money could be made available in the form of allotments to the wives of servicemen, but the amendment was defeated by a vote of 115 to 8.

*Bills Introduced*—The President has submitted to Congress a supplemental estimate of appropriation for the Veterans' Administration, for the fiscal year 1944, in the amount of \$10,350,000, to provide 3,950 additional beds for neuropsychiatric patients at thirteen existing facilities of the Veterans' Administration (H Doc 280). H R 3204, introduced by Representative Lynch, New York, undertakes to provide a system of old age and survivors' insurance for employees of certain organizations not at present within the coverage of the Social Security Act, such as religious, charitable, educational and scientific organizations. H R 3293, introduced by Representative Peterson, Florida, provides that, notwithstanding any provision of law or veterans' regulation, the pension, compensation or retirement pay of a veteran of the war with Spain, including the Philippine Insurrection and the Boxer Rebellion, shall not be reduced while such veteran is being furnished hospital treatment or institutional or domiciliary care by the United States or any political subdivision. H R 3294, introduced by Representative

Talbot, Connecticut, provides that any blind person who is traveling on a train being operated by any common carrier by railroad subject to the Interstate Commerce Act may keep his seeing eye dog with him in any coach or Pullman car of such train.

### DISTRICT OF COLUMBIA

*Change in Status*—S Res 178 has been agreed to, authorizing the Senate Committee on the District of Columbia to investigate conditions at Gallinger Municipal Hospital, with particular reference to sanitation, food, diet and the treatment and care of tuberculous patients. The committee will be authorized to call on the United States Public Health Service for such professional, technical or other assistance as it may deem necessary for the purposes of the investigation.

*Bills Introduced*—S 1340, introduced by Senator McCarran, Nevada, proposes to establish a sanitary code governing the operation of restaurants in the District of Columbia. Among other things the bill provides that, when suspicion arises as to the possibility of transmission of infection from any restaurant employee, the health officer will be authorized to require (1) the immediate exclusion of the employee from all restaurants and (2) the immediate closing of the restaurant concerned until no further danger of disease outbreak exists. H R 3314, introduced by Representative Randolph, West Virginia, provides for the disposition of funds collected by District of Columbia examining, licensing and other boards and commissions, including the Commission on Licensure to Practice the Healing Art.

## MEDICAL ECONOMIC ABSTRACTS

### OHIO RURAL MEDICAL SERVICE PLAN

Several governmental and private organizations asked the Ohio State Medical Society to join in setting up a prepayment medical service plan for farmers in Logan County. The council of the Ohio State Medical Society asked the Public Relations Committee to investigate the situation. The chairman of that committee submitted the following recommendation, which was adopted by the council.<sup>1</sup>

"That the council authorize the use of an amount, not to exceed \$15,000, from the reserve fund of the association for the organization and establishment of a medical service plan in

Logan County under the terms of the Ohio Enabling Act, provided the establishment of a plan in that county has the approval and active support of the Logan County Medical Society, that \$10,000 of this amount would be advanced for the purpose of meeting the financial provisions of the Enabling Act and that the balance would be used under the direction of the Committee on Public Relations and Economics for preliminary organizational work and activities."

In submitting the foregoing recommendation, Dr. Hem pointed out that the question will be discussed by the Logan County Medical Society as soon as that society is informed as to what assistance, financial and otherwise, the Ohio State Medical Association will contribute.

<sup>1</sup> Proceedings of the Council, Ohio State M J 39 756 (Aug.) 1943

## WOMAN'S AUXILIARY

### Louisiana

The annual meeting of the Woman's Auxiliary to the Louisiana State Medical Society was held in Baton Rouge recently with the president, Mrs. Clarence B. Erickson, presiding. Mrs. Richard H. Clark, president of the Southern Medical Association auxiliary, and Mrs. Sam Houston, wife of the governor of Louisiana, were guests of honor. Mrs. Houston extended an invitation to all those present to attend a reception at the executive mansion that evening.

Dr. Emmet Irwin, president of the Louisiana State Medical Society, visited the auxiliary meeting and outlined plans for

the coming year. Mrs. George Taquino is the incoming president and Mrs. Rhodes Spedale is the president-elect.

### Colorado

The board of the Woman's Auxiliary to the Denver County Medical Society has asked each member to contribute \$2.00 in excess of dues to the student loan and emergency funds this year. The fund will be used to assist medical students who are unable to pass the Army or Navy physical requirements and who are on their own resources to complete a medical education. The emergency fund is to be available for aiding the families of young doctors in service.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

### CALIFORNIA

**Gift for Library**—Dr Theodore S Kimball, pathologist at the 47th General Hospital group, Modesto, recently presented the White Memorial Medical Library of the College of Medical Evangelists, Los Angeles, with \$500 to buy books for the hematology section of the library. Dr Kimball was associate professor of pathology at the College of Medical Evangelists.

**Universities and the Medical Profession**—The San Francisco County Medical Society devoted its September 14 meeting to a discussion of 'The Universities and the Medical Profession.' The speakers were Drs Loren R Chandler, dean, Stanford University School of Medicine, on 'The Place of the Practicing Physician in Medical Schools,' Francis Scott Smith, dean, University of California Medical School, 'Some Features of Medical Education Under the Present Circumstances,' and Donald B Tresidder, president, Stanford University, 'Some Major Problems of Education Confronting a Private University Now and in the Postwar Period.'

**Public Health Officials and Industrialists Cooperate**—A committee called the Industrial Division of the City of Los Angeles and County Defense Council has been formed to bring about a closer understanding by public health officials in the area and the industrialists. The tentative program of the committee aims (1) to establish and maintain an advisory council of public health officers and representatives of the private medical profession, (2) to provide a common point of initial contact for industrial management on all problems of industrial health, (3) to effect practical procedures for prompt reference of these problems to the proper medical authorities, and (4) to undertake an educational campaign using the press and direct mail to convince industrial management and employees (a) of the importance of preventing interference with the war production program by preventable employee illnesses, (b) of the possibility of serious epidemics under present and anticipated conditions of housing and inadequate nourishment and resulting from the migration of workers from other sections of the country where health supervision has not been provided, (c) of the necessity for preemployment medical examination not as a basis of applicant exclusion but first, to aid persons with communicable diseases to contact corrective medical procedures and, second, to assure the placement of new employees in occupations suitable to their health status, and (d) of the advisability of providing continuing medical inspections to discount the possibility of the spreading of diseases into industry from outside sources.

### DISTRICT OF COLUMBIA

**Personal**—Mr Edward K Funkhouser has been appointed executive secretary of the District Tuberculosis Association. According to *Medical Annals*, Mr Funkhouser has served for the past eighteen years as executive secretary of the Passaic County, N. J., Tuberculosis and Health Association. Dr Charles C Chapple has been appointed chief medical gas officer in the Office of Civilian Defense and Abraham N Franzblau, P. A. Surgeon, U. S. Public Health Service, has been relieved as acting medical gas officer to be assigned as assistant to the chief medical officer.

**New Blood Donor Center**—The dedication of the new District Red Cross blood donor center at the Acacia Building, Washington, took place on July 31. The center is operated under the direction of the District Red Cross and is staffed by Army and Navy medical officers and Red Cross personnel, both paid and volunteer. Lieut Eugene W Higgins (MC), U. S. Naval Reserve, is physician in charge. The invocation was delivered by Capt Robert D Workman, chief of the navy chaplains, and the speakers included Major Gen Norman T Kirk, surgeon general of the U. S. Army, Rear Admiral Harold W Smith (MC), U. S. Navy, and Fred M Vinson, director of economic stabilization, who read an address by James F Byrnes, director of war mobilization. The center is housed in the building of the Acacia Mutual Life Insurance Company, which presented space for the center to the Red Cross.

### FLORIDA

**Time Limit Set to Register Medical Licenses**—Licenses to practice medicine in Florida must henceforth be registered within sixty days of the date shown on the license, in accordance with an amendment to the Florida statutes which became effective June 11. The original law required that every license to practice medicine be registered in the office of the clerk of the circuit court of the county in which the licensee resides or in which his practice is intended to be carried on but no time limit was specified. Licenses have been recorded as late as twenty years after the date of issuance. All unregistered licenses which were in effect on June 11 of this year when the new law became effective, must be recorded within six months of that date. It is expected that the new law will help prevent the recording of fraudulent licenses.

### ILLINOIS

**Occupational Therapy**—A new curriculum on occupational therapy has been set up by the University of Illinois. Students will spend their first five semesters of study on the Urbana-Champaign campus and four semesters in the college of medicine, Chicago.

**Botulism Antitoxin Now Available**—The state department of public health is now making available to Illinois physicians, without charge, botulism antitoxin combined types A and B, for emergency use in the care of persons who have eaten food that is so poisoned. The antitoxin may be obtained from the department's offices at Springfield and from the department's laboratories at Carbondale, Champaign and Chicago.

**Dr Fitzgerald Named Supervising Ophthalmologist for Public Aid Commission**—Dr James Robert Fitzgerald, clinical associate in ophthalmology, Lovola University School of Medicine, Chicago, has been appointed supervising ophthalmologist of the Illinois Public Aid Commission. In this capacity, he will review the reports made of examining ophthalmologists on applicants for aid under the blind assistance program and will determine the eligibility of these applicants on the basis of loss of sight. He will also provide the commission's staff with technical advice on general policy and on individual problems in the administration of the program. Initial grants under the program, which is being financed jointly by the state and federal governments, were to be started on October 1. Under the program aid will be furnished on the basis of need to blind residents of Illinois who are 18 years of age and over. Where possible treatment will be given to restore the sight of recipients of this aid. Special efforts will be made to assist recipients to become self supporting.

### Chicago

**Dr William Hibbs Made Medical Director at Presbyterian**—Dr William G Hibbs, associate clinical (Rush) professor of medicine, University of Illinois College of Medicine, has been appointed medical director of Presbyterian Hospital. He began his work on August 1. Dr Hibbs graduated at Rush Medical College in 1920 and served his internship at Presbyterian where he has been a member of the regular staff since 1925. He represents the American Medical Association on the joint committee on hospital library service.

**Nutrition in Wartime**—The Institute of Medicine of Chicago will conduct a postgraduate assembly on 'Nutrition in Wartime,' November 17-18. The program will be devoted to phases of nutrition that are of particular interest to practicing physicians, dentists, nutritionists and dietitians. Among the speakers will be:

- Frank L Gunderson, Ph.D., Washington, D.C., 'The Impact of the War on the Diet of the City and Rural Dweller.'
- Dr Leonard G Rowntree, Washington, D.C., 'The State of Nutrition in Urban and Rural Populations as Reflected by Selective Service Rejection.'
- Dr John B Youmans, Nashville, Tenn., 'Early Clinical Recognition of Nutritional Deficiencies.'
- Dr Paul R Cannon, Chicago, 'Some Pathologic Aspects of Undernutrition.'
- William A Perlzweig, Ph.D., Durham, N.C., 'Laboratory Aids in the Evaluation of Nutritional Deficiency.'
- Ledia J Roberts, Ph.D., Chicago, 'Present Day Concepts of Nutritional Requirement.'
- William C Roe, Ph.D., Urbana, Ill., 'The Role of Protein in the Diet.'
- Dr George H Whipple, Rochester, N.Y., 'Food Protein, B Vitamins and Dietary Therapy.'
- Dr Samuel Sokol, Chicago, 'The Role of Calcium in the Diet.'
- Dr Anton J Carlson, Chicago, 'Some Obstacles in the Path to a Good Optimum Diet.'
- Dr Julian D Boyd, Iowa City, 'Teeth as an Index of Nutritional Deficiency.'
- Maya Hoobler, Ph.D., Detroit, 'Nutritional Requirements in Pregnancy and Lactation.'
- Dr Edward H Kneasson, Rochester, Minn., 'Overweight and Underweight.'
- Dr Henry T Rickett, Chicago, 'The Use of Calorimetry in the Treatment of Disease.'
- Dr Morris Fishbein, Editor of THE JOURNAL, 'Uses and Abuses of Vitamins.'



There will be six panel discussions on therapeutic diets and rationing current practices in infant feeding pre-natal nutrition methods and indications the proper place of accessory vitamins in the diet on dental caries in the young and in pregnant women be controlled by diet? and controversial aspects of diet in diabetes. Another feature will be a "Nutrition Information Please" with Dr. Fishbein acting as moderator and Drs. Gunderson, Perlzweig, Rose, Rowntree, Whipple and Youmans comprising the board of experts.

### INDIANA

**Dr. Lawson Observes Ninety-Fourth Birthday**—Dr. Wilson L. Lawson, Danville, said to be the oldest practicing physician in Indiana and the oldest living graduate of Wabash College, Crawfordsville, observed his ninety-fourth birthday on September 3. Dr. Lawson is health officer of Hendricks County and still takes care of his own office work, making some calls, newspapers report.

**Personal**—Frank G. Laird, who has been acting as president of the Indianapolis Board of Health since the retirement of Dr. Maurice J. Barry, was elected president of the board at the annual business meeting on July 16. Dr. Leonard A. Insinger was elected vice president and Dr. Herman G. Morgan was elected secretary and city health officer for the thirty-second year.—Dr. Charles C. Crampton, Delphi, on June 22 observed his completion of fifty years in the practice of medicine. His associates in the Arnett-Crockett Clinic in Lafayette presented him with a diamond pin denoting that he had served as commander of the American Legion. He has been a past president of both the Monon and Wabash railroads' associations, of the county medical society and of the eleventh councilor district of the state medical society.—Dr. Stanley A. Dowlat, Cicero, Ill., has been appointed superintendent of the Smith-Esteb Memorial Hospital, Richmond, to succeed Dr. Henry Vernon Madsen, resigned.—Philip S. Wunick, formerly of Stamford, Conn., has become director of research of Pitman-Moore Company, Indianapolis, pharmaceutical and biologic manufacturers.

### MASSACHUSETTS

**Dr. Harry Solomon Named Professor of Psychiatry at Harvard**—Dr. Harry C. Solomon, clinical professor of psychiatry, has been appointed professor of psychiatry at Harvard Medical School and medical director of the Boston Psychopathic Hospital succeeding the late Dr. C. Macfie Campbell. Dr. Solomon graduated at Harvard in 1914 and has been on the faculty there since 1915.

**Grant for Work in Immunochemistry**—The Rockefeller Foundation has awarded a grant to William C. Boyd, Ph.D., associate professor in biochemistry, Boston University School of Medicine, to enable him to continue his research work in immunochemistry for a two year period. A former grant received from the Guggenheim Foundation enabled Dr. Boyd to do original research in Egypt. He graduated at Harvard University, Boston, in 1925. He has been a teaching fellow in the Boston University School of Medicine since 1926 and received his Ph.D. there in 1930.

### MICHIGAN

**Personal**—Dr. Edward L. Collins, Grand Rapids, has been appointed superintendent for the Michigan Institute for the Blind at Saginaw. Dr. Collins has been blind since a child.—Dr. Albert A. Hughes, Detroit, has been elected Most Worshipful Grand Master of Michigan Masonry.—Dr. David H. Burley recently completed fifty years of practice in Almont, he is also a registered pharmacist.—Dr. Wesley H. Mast, Petoskey, has been appointed a member of the state advisory council of health for a six year term ending June 30, 1949.—Dr. Leslie E. Coffin, Painesdale, was installed as president of the Upper Peninsula Medical Society at its recent meeting in Iron Mountain and Dr. Nathan J. Frenn, Bark River, was chosen president-elect. Dr. Robert J. McClure, Calumet, secretary of the Houghton-Baraga-Keweenaw County Medical Society, will be the secretary of the Upper Peninsula Medical Society during the ensuing year.

**Committees on Workers' Health**—The Michigan State Medical Society and the United Auto Workers have agreed to set up committees to confer on medical and health problems of Michigan's industrial workers, newspapers report. Members of the committee appointed by the state medical society include Drs. Robert L. Novy, Detroit, chairman, Gustave L. McClellan, Detroit, Patrick L. Ledwidge, Detroit, Earl F.

Carr, Lansing. Samuel W. Donaldson, Ann Arbor, and Otto K. Engelke, Ann Arbor. The formation of the United Auto Workers C. I. O. committee had not been completed at the time of this report, but tentative plans indicated that George J. Addes, secretary-treasurer of the U. A. W.-C. I. O., will be ex officio chairman. The arrangement was worked out after an appeal had been submitted to the medical society by the union for a list of medical and surgical specialists who would accept patients referred by the union's own medical department.

### MISSOURI

**Personal**—Robert Bruce Moffett, Ph.D., since 1941 post doctorate research associate at Northwestern University, has been appointed senior research chemist in the laboratories of George A. Breon & Company, Kansas City.—Dr. Richard E. Banner, Kansas City, has been named head of the health unit in Johnson County with headquarters at Warrensburg.

**Grant to Finance Research in Caudal Anesthesia**—The U. S. Public Health Service has made a grant to Washington University School of Medicine, St. Louis, to help finance a cooperative study of the gross anatomy of the spinal dura mater and the conformation of the posterior surface of the sacrum. The project is under the supervision of Mildred Trotter, Ph.D., and Dr. Virginia S. Lanier of the department of anatomy and Dr. Howard E. McKnight of the department of obstetrics and gynecology. It is anticipated that the results will be a contribution to the procedure of the administration of continuous caudal anesthesia in childbirth.

### NEW JERSEY

**State Department Creates Tuberculosis Division**—The New Jersey State Department of Health has organized a division of tuberculosis to combat a sharp increase in the disease in the industrial areas. According to the Bulletin of the National Tuberculosis Association, 507 cases of tuberculosis have been found in 42,000 chest x-ray films taken in nine industrial areas of the state.

**Industrial Physicians Wanted**—The Department of Health of the State of New Jersey, Trenton, whose industrial health activities have expanded rapidly during the present war, has announced its need for two full time industrial hygiene physicians for its industrial hygiene service. The principal duties of the selected physicians will be consultations in regard to the control of occupational diseases, industrial toxicologic problems, evaluation of adequacy of plant medical services, promotion of measures which will reduce absenteeism from non occupational causes, and conduct of industrial health education activities.

### NEW YORK

**Fifty Years of Practice**—The *News Letter* of the Suffolk County Medical Society for September was dedicated to members who had completed a half century in the practice of medicine and who participated in a celebration in July. The members who were honored include Drs. William Newton Barnhardt, Toronto, Ont., George Herbert Carter, Huntington, William Elliott Foster, Babylon, Frank Diah Peterson, Cutchogue, and Frank Overton, Patchogue.

**Personal**—Dr. Theodore G. Klumpp, president of the Winthrop Chemical Company, has been elected a member of the Academia de Ciencias Medicas, Fisicas y Naturales de la Habana, Cuba. Presentation of the academy's medal will take place at a future date in Havana, where Dr. Klumpp will go to deliver a scientific paper.—Dr. Thomas M. Holmes, Delmar, has been appointed a member of the medical board of the State Employees Retirement System, succeeding Dr. Clarence E. Mullens, Albany.

**Dr. Burton Simpson Retires from State Institute**—Dr. Burton T. Simpson, director of the State Institute for the Study of Malignant Diseases, Buffalo, retired on August 1. He had after having reached the compulsory retirement age. He had been in the service of the state since 1910, first as resident pathologist of the institute and since 1924 as its director. In 1931 he was appointed director of the newly created division of cancer control, combining the duties of that position with those of the administration of the institute. He continued until 1939, when the division was reorganized and its headquarters transferred to Albany, primarily to amplify the resources available to practicing physicians throughout the state for the diagnosis and care of cancer. Since then Dr. Simpson has devoted full time to administering the institute. He was president of the American Society for the Control of Cancer, 1935.

## PENNSYLVANIA

**University Bulletin Honors Oldest Graduate**—The *Pennsylvania Gazette*, official journal of the University of Pennsylvania, Philadelphia, paid special tribute in its September issue to Dr John A Tell, Doylestown, who is 93 years of age and the oldest living graduate of the university's medical school. Dr Tell graduated at the medical school in 1874. He is also the oldest living graduate of Lafayette College, which he attended two years before entering Pennsylvania. After graduating from the Doylestown English and Classical Seminary Dr Tell taught school for two years and was principal of the Hughesian Free School, Buckingham. He not only has served his community for many years as a practicing physician but also has been a member of the Doylestown School Board, the Doylestown Board of Health and at one time served as assistant surgeon of the Sixth Regiment of the Pennsylvania National Guard. In 1933 the state medical society paid tribute to him in recognition of his fifty-nine years of medical service faithfully performed to his community in the traditional ideals of the medical profession.

## Pittsburgh

**Colonel Dabney Named Assistant Dean**—Col Albert S Dabney, M C, U S Army, assistant commandant of the Medical Field Service School at Carlisle Barracks, Pennsylvania has been appointed assistant dean at the University of Pittsburgh School of Medicine, effective October 1. Colonel Dabney was relieved from his duties at Carlisle Barracks on August 31 in order to take advantage of accrued leave before being placed on the compulsory retirement list, November 30 at the age of 64. Col Guy B Dent, M C, U S Army, who recently returned from a six months tour of duty as chief surgeon of a base section in the African theater of operation, will temporarily replace Colonel Dabney as assistant commandant at the field service school. A ceremonial retreat parade was held on August 31 in honor of Colonel Dabney, and Brig Gen Addison D Davis commanding general of Carlisle Barracks, commended Colonel Dabney for his loyal and efficient services. A veteran of two world wars and a medical officer for twenty-seven years, Colonel Dabney had been at Carlisle Barracks since June 27, 1939, first as director of the medical department equipment laboratory and on Jan. 10, 1942 as assistant commandant. Previous to his service at Carlisle Barracks he had been executive officer in the Surgeon General's Office at Washington D C.

## SOUTH CAROLINA

**Personal**—Dr Luther A. Riser, Sedgefield, N C, has been named director of the bureau of vital statistics of the state board of health to succeed Dr Martin B Woodward, Aiken, who resigned to accept a similar position in West Virginia.—A bronze bust of Dr Frank H McLeod, founder of the McLeod Infirmary at Florence, was recently presented to the infirmary to mark his many years' service to the community. Although not in practice, Dr McLeod still serves as medical superintendent of the infirmary.

**Refresher Course**—The Alumni Association refresher course of the Medical College of the State of South Carolina, Charleston, inaugurated last year, will be held November 3-4 at the Baruch Memorial Auditorium, Charleston. Speakers will be

Dr Harrison F Flippin Philadelphia The Uses and Abuses of the Sulfonamides.  
Dr Charles C Wolferth Philadelphia Differential Diagnosis of the Anginal Syndrome  
Dr Leroy U Gardner Saranac Lake N Y The Essentials of Pneumoconiosis  
Dr Alfred Blalock Baltimore Traumatic Shock  
Dr Virgil P W Sydenstricker Augusta Ga Deficiency Diseases  
Dr George W Thorn Boston Physiologic Considerations in the Treatment of Nephritis.  
Dr J T King Washington D C Calcific Aortic Stenosis  
Dr Roy R Kracke Emory University Ga Diagnosis and Treatment of the Hemorrhagic Diases

There will be round table discussions on 'The Sulfonamides' 'Treatment of Heart Disease,' Pulmonary Diseases and one on 'Thyroid Disturbances.' Surgical round table discussions will be held as will pathologic conferences. At the founder's day banquet, Thursday evening Dr Henry E Melenev, New York, will discuss Tropical Medicine Present and Future.

**Investigation of Medical Education and Medical Service Launched**—The investigation of medical education and medical service in South Carolina started on August 25 in the senate chamber when a specially selected joint committee met to begin the taking of testimony. The committee is composed of Senators James E Leppard Chesterfield chairman O T Wallace Charleston and C S McCall Marlboro Representatives J Claude Fort Cherokee and James B Mor-

rison Georgetown, and from the medical association Dr Walter R Merd, Florence, and Dr William R Wallace, Chester. Morning and afternoon sessions were held. It is expected that another meeting will be held in Charleston and probably a third in Columbia, after which a report will be made to the general assembly in January. The committee, under a resolution creating it, is to ascertain the cause of "present acute shortage of medical doctors and medical services in this state" and recommend "such measures as shall be necessary to procure and maintain an adequate supply and proper distribution of physicians and surgeons" and also to determine whether the state medical college in Charleston "should be enlarged so as to provide a sufficient supply of medical doctors to serve the needs of the state" and also whether a medical college should be established at the University of South Carolina. The committee is also to determine "whether it is necessary or desirable that the state should subsidize the cost" of educating medical students and whether it is necessary "for the state to provide in whole or in part public medical services." Among those appearing before the committee at this first meeting were Dr Robert Wilson, dean of the medical college of the state Dr Kenneth M Lynch, chairman of the state board of health and Dr Carl B Epps of Sumter (THE JOURNAL, July 10, p 757).

## TENNESSEE

**New Health Set Up in Nashville**—Dr Thomas V Woodring, assistant health officer of Nashville for more than fifteen years has been appointed director of health of Nashville a position recently created under a revision of the charter for the city. Dr John Overton will continue as city health officer. The creation of the position of director of health was a recommendation of the public administration service to obtain a better and more efficient government.

**Personal**—Mrs Dorothy Davis Bryan Nashville, has been appointed to succeed the late Dr Hale E Cullom as director of sight conservation and prevention of blindness for the state of Tennessee.—New appointments to the Public Health Council include those of Dr Walker L Rucks, Memphis and Dr Thomas R Ray, Shelbyville. Dr Rucks succeeds Dr Webster B Key, who is now a lieutenant commander in the U S Naval Reserve.—Dr David Galloway Memphis, has been appointed superintendent of the Western State Hospital.

## WISCONSIN

**Physician Named to New Veteran Recognition Board**

—Dr Charles A Dawson, River Falls has been appointed by Acting Governor Goodland as a member of the newly created Veteran Recognition Board. The state medical journal reports that the board will have charge of handling the \$6,300,000 earmarked by the legislature for the educational medical and economic rehabilitation of World War II veterans of Wisconsin and their families, as well as any other state or federal funds set aside for such rehabilitation. Members of the board will receive no salary for their services but will be paid their expenses. A director and staff will be created to administer their funds, the staff to be under civil service.

**The Dr William Beaumont Foundation**—At the first meeting of the Dr William Beaumont Memorial Foundation in Prairie du Chien September 18, Dr William D Stovall, Madison director of the state laboratory of hygiene was elected chairman of the board of directors and M J Dvurd, Prairie du Chien, was chosen president. The foundation was incorporated in May and its purpose is to perpetuate the name and memory of Dr Beaumont and his memorable experiments in the physiology of digestion and to recognize noteworthy contributions made by other physicians and surgeons of the United States. Organization of the foundation was planned and carried through by the Crawford County Medical Society and the local Kiwanis club. Other officers include Dr Olaf E Satter vice president Dr Thomas F Farrell treasurer and J Alvin Druvor secretary all of Prairie du Chien. Other members of the board of directors are Mayor F W Clanton F A Otto and Paul H Schmidt all of Prairie du Chien. Walter J Meek Ph D acting dean of the University of Wisconsin Medical School, Madison was appointed chairman of the advisory board by the directors at their meeting after the membership meeting. Other appointments made by the board of directors were Cal Peters curator Dr Peter L Scanlin Dr Henry H Kleinpell Dr John J Kane Dr Charles A Armstrong and Dr Emil H Leichtenberg medical advisers to the curator and Mr Dvurd, general manager. The first meeting of the new foundation was held in the hospital section of the second Fort Crawford built in 1829 in which Dr Isaac Ross served as post surgeon under Col Zachary Taylor and was commandant at the fort. This building which is now used by

the city of Prairie du Chien and leased by the D A R, is being considered as the home of the foundation. Tentative plans call for the restoration of the building to its original state as it was when Dr Beaumont was in charge. Dr Beaumont performed fifty-six of his noted experiments on Alexis St Martin in the hospital section of Fort Crawford between 1826 and 1832. A number of important books and papers of Dr Beaumonts are available in Prairie du Chien and will be turned over to the foundation when it has a suitable home.

### GENERAL

**Better Parenthood Week**—The sixth annual Better Parenthood Week will be observed nationally, October 25-31. Parent-teacher, child care welfare and various civic organizations and study groups will cooperate through programs dealing with parent and child care problems, especially those which confront the nation during wartime.

**International Medical Assembly**—The twenty-eighth annual International Medical Assembly of the Inter-State Postgraduate Medical Association of North America will be held at the Palmer House, Chicago, October 26-29, under the presidency of Dr Frank H. Lahey, Boston. Among the speakers will be

Dr Edmund B. Spruth, Philadelphia, Removal of Metallic Foreign Bodies from the Eyeball and from the Orbit  
Dr James L. Poppo, Boston, The Management of Ruptured Intervertebral Disks  
Dr George B. Justerman, Rochester, Minn., The Treatment of Gastric and Duodenal Ulcer  
Dr Fraser B. Gurd, Montreal, Canada, Treatment of Burns  
William H. Headlee, Ph.D., Indianapolis, Precautions Against the Introduction of Tropical Diseases into the United States  
Dr Major G. Seelig, St. Louis, The Talcum Problem in Surgery and Its Solution

At the assembly dinner Dr Lahey will discuss "Some of the Problems of the War" and Brig Gen Fred W. Rankin, M. R. C., "Current Considerations of Postgraduate Medical Education."

**Dearholt Medal Awarded**—Will Ross, president of Will Ross, Inc., Milwaukee, was presented on September 8 with the Dearholt Medal awarded annually by the Mississippi Valley Conference on Tuberculosis. The medal is awarded for outstanding work and service in combating tuberculosis. Mr Ross was a patient in a sanatorium founded by the late Dr Hoyt E. Dearholt, for whom the medal is named, and in 1911 published a book titled "My Personal Experience with Tuberculosis." New officers of the Mississippi Valley Conference include Mrs. Blanche H. de Koning, executive secretary of the Grand Rapids Anti-Tuberculosis Society, Grand Rapids, Mich., president, Dr Robert H. Hayes, Chicago, a member of the board of directors of the Tuberculosis Institute of Chicago and Cook County, vice president, and A. W. Jones, executive director of the St. Louis Tuberculosis and Health Society, St. Louis, secretary-treasurer. Officers of the Mississippi Valley Trudeau Society, which met jointly with the conference, are Dr Loren L. Collins, Ottawa, Ill., president-elect, Dr Henry S. K. Willis, Northville, Mich., president, Dr Oscar Lotz, Milwaukee, vice president, and John H. Scavlen, Cincinnati, secretary-treasurer.

**American Public Health Association**—The seventy-second annual business meeting of the American Public Health Association and its wartime public health conference will be held at the Hotel Pennsylvania, New York, October 11-14. An extensive program has been prepared covering public health and including general sessions and section meetings. A special session will be held Tuesday afternoon on "New Ventures Toward Health Security," at which the speakers will include Nathan Smail, DPH, Ann Arbor, Dr John J. Heagerty, Ottawa, Ont., and Homer Folks, LL.D., New York. "Latin America Looks Toward the Future" will be discussed by a speaker to be announced later. A second special session will be held Wednesday on "Public Health Implications of Tropical and Imported Diseases" at which the speakers will be Dr Henry E. Meleney, New York, Dr Wilbur A. Sawyer, New York, Surg Gen Thomas Parran of the U. S. Public Health Service, and one other to be announced later. On Wednesday afternoon a special session will be devoted to "Current Health Department Problems in War," the panel leader to be Dr Huntington Williams, Baltimore. Thursday a special session will be devoted to "The Evolving Pattern of Tomorrow's Health," the speakers to be Dr Joseph W. Mountin, Washington, D. C., Dr William P. Shepard, San Francisco, C. E. A. Winslow, Dr P. H., New Haven, Conn., Henry F. Vaughan, Dr P. H., Ann Arbor, and Dr Felix Hurtado. Other features at the meeting will include symposiums on cancer, on the impact of the war on sanitary engineering, the recent

developments in sanitary engineering, postwar opportunities and responsibilities of the sanitary engineer and on gonorrhea. Other speakers will include

Selman A. Waksman, Ph.D., New Brunswick, N. J., Antibiotic Substances: Production by Microorganisms, Nature and Mode of Action  
Colonel Edgar L. Hume, M. C., U. S. Army, The Problem of Rickettsial Diseases Among the Armed Forces  
Dr Felix J. Underwood, Jackson, Miss., Planning Today for Public Health Administration Tomorrow  
Dr Carl A. Wilzbach, Cincinnati, Results of Medical and Dental Examinations of 2,500 Senior High School Students  
George R. Congill, Ph.D., New Haven, Conn., Nutrition—A Factor Important for Industrial Hygiene  
Dr Frank G. Boudreau, New York, Food and Nutrition Policy Here and Abroad

Other groups meeting at this time will include the American School Health Association, the American Social Hygiene Association and on Monday an inter-American conference on health education.

**Academy of Ophthalmology and Otolaryngology**—The annual session of the American Academy of Ophthalmology and Otolaryngology will be held at the Palmer House, Chicago, October 10-13, under the presidency of Dr James A. Babbitt, Philadelphia. Among the speakers will be

Dr Harry S. Griddle, Chicago, A Program of Ophthalmic Service for Small Plants  
Dr Alton E. Briley, New York, Epidemic Keratoconjunctivitis: Results of Therapy  
Dr Walter B. Lancaster, Boston, The Present Status of Eye Exercises for Improving Visual Functions  
Dr William F. Hughes Jr., Baltimore, Chemical Burns of the Eyes  
Dr Robert Von Der Heydt, Chicago, A Clear Corneal Implant Acquires Dystrophy from Its Host  
Olof Larsell, Sc.D., Portland, Edward McCrady Jr., Ph.D., Sewanee, Tenn., and Dr John F. Larsell, The Development of the Organ of Corti in Relation to the Inception of Hearing  
Dr Anderson C. Hilding, Duluth, Minn., The Role of Ciliary Action in Production of Pulmonary Atelectasis and Vacuum in Sinuses  
Dr Stuart C. Cullen, Iowa City, Anesthesia in Otolaryngology

On Sunday a feature will be a symposium on "Seeing, Hearing, Thinking and Doing—A Problem of American Youth," presented by Drs Joseph E. Raycroft, Princeton, N. J., Albert D. Ruedemann, Cleveland, and Albert C. Furstenberg, Ann Arbor, Mich. Sunday evening there will be the fourth annual symposium on orthoptics conducted by the American Association of Orthoptic Technicians. In addition to the scientific papers there will be a series of conference periods for members of the academy, continuance courses and a series of motion picture films.

### FOREIGN

**Social Security in New Zealand**—New Zealand's ambitious social security setup is costing the government only one third the sum expected, Health Minister Arthur H. Nordmeyer, chairman of the House of Representatives committee which first endorsed the plan five years ago, declared in a review of the first four years of its operations. Before the social security plan went into gear New Zealand was paying out around \$23,000,000, at current exchange rates, in yearly pensions. All these except war pensions are now a liability of the social security fund. In addition, that fund now pays out bonuses to industry under employment promotion plans, and benefits to unemployed, according to the New York Times. The Times stated that the principal field in which social security has exceeded expected costs is that in which the government was warned it would do so—the hospital field. New Zealand has the habit of putting sick soldiers into nonmilitary hospital, which has added to the strain and helped raise costs at the expense of owners of real estate, on which local government taxes are raised to meet one third of the annual charges. Another third is met by a national government grant from general taxation, and the remaining third, or rather less, from the social security fund, it was stated. The Times further reported that this practice might be thought to obscure the results of the social security plan in its public health aspects. According to the report "Dr John Cairney, medical superintendent of Wellington Hospital, stated eighteen months ago that 'even without military patients all beds and facilities would be taken up by patients on the long waiting list.' The fact is that the health plan has never operated fully since it was started owing to the shortage of doctors and hospital accommodation, and government spokesmen have admitted that wartime pressure has kept down its cost. Shortage of physicians has also kept family doctors from doing the tremendous business which was expected when medical consultation became free. Shortage of materials and labor has helped keep down hospital costs as high as these are today. Minister Nordmeyer recently told the government newspaper the Standard that 'during the depression many hospitals allowed building programs to fall behind when faced with the need for emergency accommodations' and the civilian population they found themselves suddenly committed to quite extensive alterations and additions."

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Aug 13 1943

#### Functional Diseases of the Colon and Rectum

Opening a discussion on functional diseases of the colon and rectum at the Section of Proctology of the Royal Society of Medicine, Sir Arthur Hurst said that the conditioned reflex which led to regular morning defecation might begin in the education of the infant and develop in such a way that the normal individual as he got older did not think about it at all. The most common cause of constipation, especially in women, was neglect of the normal call to defecate. If not acted on, the muscular wall of the rectum relaxed and the desire disappeared and did not return until the next quantity of feces passed into the rectum. With persistent neglect of the call the rectum became completely relaxed and distended. Well over half the cases of constipation were due not to any deficiency in the activity of the colon but to interference with the reflex. Another large group of people imagined themselves constipated when they were not. Many would report that they had a liquid stool and for years had not passed a solid one. They had been taking the aperients which figured so largely in advertisements. The symptoms of autointoxication were not produced by constipation but by the diarrhea due to the aperients taken. Another cause of upset of normal bowel activity was the procedure common some years ago and now revived—not the old fashioned Plombieres douche but successive washings by one pipe after another, taking perhaps a couple of hours, in the vain expectation that eventually clear water would be returned. The procedure ignored the physiologic fact that feces were constantly coming down and mixing with the water. Mucus could be regarded as significant of a pathologic condition only if present with spontaneous diarrhea. With a loose stool caused by an aperient it was merely a protective secretion and of no importance. Mucous colitis was an imaginary complaint based on a wrong diagnosis, it was due to the idea that the presence of mucus was itself significant of disease.

The taking of aperients was the commonest cause of the low abdominal pain associated with spasm. But when such conditions as real ulcerative colitis and diverticulitis were excluded there remained a small number of cases in which colon spasm was the primary thing—a condition corresponding in some ways to asthma and not easy to diagnose or treat. He warned strongly against X-ray examination as a method of diagnosis.

Hurst finally mentioned paroxysmal proctalgia first described as rectal crises of nontabetic origin. At intervals the patient had severe pain, always perineal, not at the anus but apparently 3 or 4 inches up the rectum. Usually it departed spontaneously after ten to fifteen minutes. It was not associated with any particular condition of the bowel but often with sexual activity. It was almost certainly due to a muscular contraction, probably at the junction of the pelvic colon and rectum. Physicians who were patients had obtained relief by having an enema syringe at their bedsides and blowing air up into the rectum.

#### Leprosy in the British Empire Today

At the annual meeting of the British Empire Relief Association the incidence of leprosy in Nigeria was reported to be high, the cases being estimated at over 200,000. In northern Rhodesia the work started there by certain missionary societies on lines suggested by Dr Ernest Muir, medical secretary of the association, had been satisfactory. In a medical address Major General Sir Cuthbert Sprawson reviewed the progress made during the nineteen years since the foundation of the association. He contrasted the leprosy asylum in India then

with that of today. The care of patients had greatly improved, the scientific classification of cases, their laboratory investigation and efficient treatment were now matters of routine. Patients were kept usefully employed and the atmosphere was one of hope, stimulated by the sight of many leaving the hospital fit to return to the outside world. The improvements in treatment included Rogers's introduction of active derivatives from the oil of various species of *Hydnocarpus* seeds, better method of educating the native population in the disease and the proper mode of living for those who had contracted the disease, and increased knowledge of nutrition, malnutrition being a predisposing cause. The purely laboratory side of research on the whole yielded disappointing results, but the new leprolin and the iodide test had proved of value. More leprosy settlements and clinics were required, also separate institutions for those who had passed through the contagious stage but were too old and feeble to work. They occupied room in hospitals which was required for cases needing more urgent treatment.

#### Filling the Gaps in Medical Libraries After the War

In a letter to the *Times* C. C. Barnard, librarian of the London School of Hygiene and Tropical Medicine, describes the position of learned and scientific libraries as faced with the problem of attempting to fill gaps in their sets of periodicals due to the war. As stocks in European countries may also have suffered there may not be sufficient copies to go round. To prevent an unseemly scramble by the libraries for the available copies it is desirable that a representative and impartial body should decide, on a national scale, to which institutions the available copies should be allotted. This allocation should form part of a much larger scheme whereby the present holdings of learned periodicals in all libraries would be surveyed and, where necessary, redistributed in the interest of research. The obvious body to do this is the Library Association though the actual work might be most economically done at the National Central Library. Not until this task is completed will it be possible to compile a satisfactory union catalogue of periodicals in British libraries.

#### Friendly Societies and the Beveridge Scheme

In previous letters the views of the medical profession have been given regarding the Beveridge scheme. As a result of what is described as a successful and profitable meeting with members of Parliament, the National Council of Friendly Societies announces the fundamentals on which it would be willing to collaborate. The following five essentials have been tabulated and are in the hands of the government ministers concerned. 1 The scheme must be susceptible of responsible administration by friendly societies. 2 It must provide for effective self government by members of the society. 3 The rates of benefits and contributions must be such as to allow a reasonable margin for voluntary insurance. 4 There must be direct contact between societies and the insured population. 5 Medical certificates must be issued free of charge to insured persons.

#### First Aid for Fractured Spine

Some difference of opinion has been expressed as to whether a person suspected to be suffering from fracture of the spine should be carried in the prone position. The question of first aid in such cases has been submitted to the British Orthopedic Association. After discussion at the last meeting the following opinion was given. The executive committee decided to give authoritative support to the view that patients with suspected spinal fracture should be shifted and moved in such a way as not to be folded either backward or forward. The patient should be disturbed as little as possible being transported as he lies. From the point of view of the spinal injury we are of the opinion that there is no indication for change of position from face to back or vice versa.

## Deaths

**William Fessenden Wesselhoeft, III**, N H, Harvard Medical School, Boston 1887, formerly professor of clinical surgery at the Boston University School of Medicine, fellow of the American College of Surgeons and a member of the Boston Surgical Society, served in France as a lieutenant colonel and as a commanding officer of Base Hospital number 41 during World War I, introduced a new surgical knot and devised a method of sterilizing catgut that was long in use at the Massachusetts Memorial Hospitals, Boston, consulting surgeon to the Memorial Hospitals, where he at one time worked his way through the grades to the position of surgeon, and where he died, June 27, aged 81, of arteriosclerosis and chronic myocarditis.

**Edward William Jones & Mitchell S D**, Northwestern University Medical School, Chicago, 1906, past president of the South Dakota State Medical Association and the Mitchell District Medical Society, served overseas as a captain in the medical corps of the U S Army during World War I, coordinator of Civilian Defense and examining physician for the Selective Service Board of Davison County, on the staffs of the Methodist State and St Joseph hospitals, for many years examining physician for the Milwaukee Railroad, treasurer of the city library board, aged 64, died, July 5, of coronary occlusion.

**Harland W Long**, Mattoon, Ill, Missouri Medical College St Louis 1898, University and Bellevue Hospital Medical College, New York, 1904, member of the Illinois State Medical Society and the American Psychiatric Association, veteran of the Spanish-American and World wars, received a medal from the French government for his fight against an epidemic of influenza, formerly associated with the U S Veterans Bureau, Pittsburgh, and on the staff of the Veterans Administration Facility in Aspinwall, Pa, aged 73, died, July 18, of myocardosis.

**Stoddard Linnaeus Anderson**, De Kalb, Ill, Rush Medical College, Chicago, 1896, member of the Illinois State Medical Society, member of the draft board, on the staffs of the De Kalb Public and St Mary's hospitals, De Kalb, and the Sycamore (Ill) Municipal Hospital, aged 67, died, July 10, in Chicago of diverticulitis of the sigmoid.

**Stephen Victor Balderston & Evanston, Ill**, University of Pennsylvania Department of Medicine, Philadelphia, 1895, associate in medicine at the Northwestern University Medical School, Chicago, specialist certified by the American Board of Internal Medicine, served in the medical corps of the U S Army during World War I, health commissioner of Evanston from 1907 to 1914, for many years on the staff of the Evanston Hospital, aged 74, died, July 11, of coronary occlusion.

**Mack W Ball**, New Bern, N C, Atlanta (Ga) School of Medicine, 1909, aged 75, died, July 6, in the Duke Hospital, Durham, of angina pectoris.

**Sydney Elon Bateman**, Mifflinburg, Pa, Medico-Chirurgical College of Philadelphia, 1904, formerly a Lutheran minister, served as a major in the medical corps of the U S Army during World War I, aged 79, formerly adjunct professor of histology and embryology at the Temple University School of Medicine, Philadelphia, died, July 7, in the Geisinger Memorial Hospital, Danville, of acute cholelithiasis, uremia and coronary occlusion.

**Everett Charles Beach**, Oxnard, Calif, Baltimore Medical College, 1907, member of the California Medical Association, formerly supervisor of physical education in the city schools of Los Angeles and at one time director of physical education in the summer school at the University of California, Berkeley, on the staff of St John's Hospital, aged 63, died, July 8, in the California Hospital, Los Angeles, of brain tumor.

**Harold Kohli Begg & Cleveland**, Northwestern University Medical School, Chicago, 1918, for many years physician for the Rams and Barons, professional football and hockey teams, aged 48, died, July 13, in the Huron Road Hospital of virus pneumonia following a thyroid operation.

**Theodore S Blakesley & Kansas City, Mo**, Rush Medical College, Chicago, 1902, specialist certified by the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology, served during World War I, member of the staffs of the Trinity Lutheran, St Luke's, St Joseph, Research and the Kansas City General hospitals, aged 65, died, July 14, in Columbus, Ohio, of coronary occlusion.

**Charles James Carden**, Tewksbury, Mass, Harvard Medical School, Boston, 1896, member of the Massachusetts Medical Society, served as a major in the medical corps of the U S Army during World War I, formerly on the staff of the Tewksbury State Hospital and Infirmary as assistant physician, aged 70, died, July 4, of arteriosclerotic heart disease, lobar pneumonia and diabetes mellitus.

**Douglas Aymar Cater & East Orange, N J**, Columbia University College of Physicians and Surgeons, New York, 1896, fellow of the American College of Surgeons, consulting physical therapist and formerly senior member of the staff of the Orange Memorial Hospital, aged 73, died, July 13, of coronary thrombosis and arteriosclerosis.

**Andrew D Clark & Adrian, Mich**, Illinois Medical College, Chicago, 1910, aged 70, died, July 2, of heart disease.

**R Garn Clark**, Provo, Utah, College of Physicians and Surgeons, Baltimore, 1904, member of the Utah State Medical Association, served for two years as mayor of Richfield, at one time medical director of the Richfield General Hospital, aged 66, died, July 8, in the Utah Valley Hospital of coronary occlusion.

**John Hamilton Cooper**, Massillon, Ohio, University of Pittsburgh School of Medicine, 1913, also a pharmacist, member of the American Academy of Ophthalmology and Otolaryngology, specialist certified by the American Board of Otolaryngology, on the staff of the Massillon State Hospital, aged 61, died, July 15.

**Isham E Cottingham**, Evansville, Ind, University of Louisville (Ky) Medical Department, 1879, Bellevue Hospital Medical College, New York, 1881, member of the Indiana State Medical Association, aged 85, died in the Welborn Walker Hospital, July 9, of heart disease.

**William Edward Cramm**, Mansfield Center, Conn, University of Vermont College of Medicine, Burlington, 1895, served in the medical corps of the U S Army during World War I and as a captain in the medical reserve corps not on active duty, health officer of Mansfield for many years, a member of the visiting staff of the Windham Community Memorial Hospital, Willimantic, one of the founders and first president of the Mansfield Center Library, aged 73, died, July 7, of generalized abdominal carcinoma.

**James Edward Daley**, Porterville, Calif, California Medical College, San Francisco, 1895, aged 72, died, July 3, in a San Francisco hospital of paralysis of the throat and auricular fibrillation.

**Edgar Childes Dawson**, Niles, Calif, University of California Medical School, San Francisco, 1932, served on the staff of the Alameda Hospital, aged 35, died at Mount Eden, July 7, of multiple sclerosis.

**Thomas J Draper**, Warrensburg, Mo, University Medical College of Kansas City, Mo, 1894, served as public health officer of Johnson County, aged 87, formerly on the staff of the Warrensburg Clinic, where he died, July 6, of an infection of the bladder.

**Austin Ray Edwards**, Sidney, Ohio, Ohio State University College of Medicine, Columbus, 1916, member of the Ohio State Medical Association, served overseas during World War I, formerly coroner, on the staff of the Wilson Memorial Hospital, aged 55, died, July 10, of congestive heart disease.

**Roland A Felt**, Virginia, Ill, Barnes Medical College, St Louis, 1899 and 1909, member of the Illinois State Medical Society, served in the medical corps of the U S Army during World War I, on the staffs of the Passavant Memorial and Our Saviour's hospitals, Jacksonville, aged 66, died, July 9, in St John's Hospital, Springfield, of right pyelonephritis and urinary sepsis.

**James Hudson Fiscus & Greensburg, Pa**, University of Maryland School of Medicine, Baltimore, 1910, served as a captain in the medical corps of the British army during World War I, dermatologist on the staff of the Westmoreland Hospital, aged 58, died, July 4, of acute myocarditis.

**Edward James Fitzgibbon**, Boston, Harvard Medical School, Boston, 1904, formerly associated with the U S Veterans Bureau, aged 79, died in the United States Naval Hospital, Chelsea, Mass, July 12.

**Tilden P Fowler**, Harrison, Ark (licensed in Arkansas in 1903), member of the Arkansas Medical Society, aged 66, died, July 4, of cerebral hemorrhage.

**Louis Morris Green**, Maywood Ill, University of Illinois College of Medicine, Chicago, 1912, examining physician for the Baltimore and Ohio Railroad, served during World War I.



I aged 62 died in the Veterans Administration Facility Downey July 18 of chronic myocarditis myocardial degeneration and cerebral arteriosclerosis

Theodore Laurence Gregg Lewisburg, Ohio Eclectic Medical Institute Cincinnati 1897, aged 68, died July 21, in Los Angeles of cerebral hemorrhage

Edward William Grosser, Chicago Chicago Homeopathic Medical College, 1901 Rush Medical College Chicago, 1902, the Hahnemann Medical College and Hospital Chicago 1905, aged 69 died, July 24 of chronic myocarditis and operation for carcinoma of the left kidney

Benjamin Franklin Gumbiner, Gary Ind., Rush Medical College Chicago 1920 member of the Indiana State Medical Association aged 47, on the staffs of St Mary's Mercy and Methodist Hospital where he died July 17 of pulmonary edema

Charles Joseph Hart \* New York University and Bellevue Hospital Medical College New York 1921, director of the x-ray department of the Wickersham Hospital, aged 43, died in the Rutland (Vt) Hospital July 13 of acute dilatation of the heart following radical sinus operation

Emil Frank Hartung, Rockville Centre N Y, Long Island College Hospital Brooklyn 1884 at one time coroners physician in Brooklyn member of the draft exemption board during World War I formerly on the staff of the Trinity Hospital Brooklyn aged 81 died July 17 of senility

Stanley Morton King \* Brooklyn Albany Medical College 1915 specialist certified by the American Board of Otolaryngology served as a captain in the medical corps of the U S Army during World War I aged 52 a member of the staffs of the New York Eye and Ear Infirmary New York and the Methodist Hospital where he died July 27 of carcinoma of the kidney

Alfred Coleman Kinney \* Seaview, Wash Bellevue Hospital Medical College, New York 1872 an Affiliate Fellow of the American Medical Association member, the founder and the first and fiftieth president of the Oregon State Medical Society one of the first members of the Oregon State Board of Health mayor of Astoria Ore. from 1894 to 1896 in 1938 received the honorary degree of doctor of laws from the Linfield College McMinnville, Ore., aged 93 died, July 13 in St Vincent's Hospital Portland Ore

Frank Ambrose Lagorio, Chicago Northwestern University Medical School Chicago 1911 member of the Illinois State Medical Society for many years chief physician of the Illinois Athletic Commission a member of the board of the Chicago Public Library and head of the Chicago Pasteur Institute on the staffs of the Columbus and Cuneo hospitals aged 58 died suddenly in Winnetka, Ill July 18 of coronary thrombosis

Nathan Lane Brooklyn Columbia University College of Physicians and Surgeons New York, 1902 member of the Medical Society of the State of New York aged 58 died in the Harkness Pavilion of the Presbyterian Hospital New York July 18 of chordoma.

Robert Leroy Leighton \* Spring Lake, N J Hahnemann Medical College and Hospital of Philadelphia 1913 served overseas as a captain in the medical corps of the U S Army during World War I member of the borough council of Spring Lake on the staff and member of the board of governors of the Fitkin Memorial Hospital, Neptune aged 53 died July 5 of bronchogenic carcinoma

Charles P Leuthart, New Albany, Ind Kentucky School of Medicine Louisville 1901 member of the Indiana State Medical Association for many years secretary of the Floyd County Board of Health aged 70 died July 16 of prostatism and myocarditis

Gustav Edward Liebrecht, Chicago National Medical University Chicago 1906 veteran of the Spanish-American War, on the staff of the Lutheran Deaconess Home and Hospital, aged 72 died July 26 of chronic myocarditis

Frank Ford McDede \* Paterson N J College of Physicians and Surgeons Baltimore 1901 served as a captain in

the medical corps of the U S Army during World War I, examining physician for the Selective Service System, aged 75, on the staff of St Joseph Hospital, where he died, July 9, of intestinal obstruction

Stanley Willis Osgood, Clawson, Mich., Detroit College of Medicine and Surgery, 1931, member of the Michigan State Medical Society, commissioned as a captain in the medical corps Army of the United States, in September 1942 and relieved from active duty on account of physical disability in March 1943 served on the staffs of Mount Carmel Mercy Hospital, Detroit, and St Joseph Mercy Hospital Pontiac, aged 37 died, July 21, of carcinoma of the thyroid

John Breckenridge Overall, Springfield, Ky., Louisville Medical College, 1892, member of the Kentucky State Medical Association, served during World War I, major in the medical reserve corps not on active duty, mayor of Springfield, charter member of the Rotary Club and a member of the board of directors of the Springfield State Bank, aged 74, died, July 1, of cerebral hemorrhage

William Gerard Paradis \* Crookston, Minn., University of Minnesota Medical School, Minneapolis, 1926, past president of the Minnesota Sanatorium Association and the Red River Valley Medical Society, fellow of the American College of Chest Physicians member of the staffs of St Vincent's and Bethesda hospitals, medical director and superintendent of the Sunny Rest Sanatorium, where he died, July 7 of coronary thrombosis

Thomas Francis Patterson, Brooklyn Long Island College Hospital, Brooklyn 1896 member of the Medical Society of the State of New York aged 71 died, July 24

Benjamin William Peck, Burnsville, W Va Maryland Medical College Baltimore 1905 aged 69 died July 8 of nephritis

William Peters, Nicasio Calif., College of Physicians and Surgeons of San Francisco 1900 formerly on the staff of the Franklin Hospital San Francisco, aged 69 died, July 2 of heart block.

Samuel Benjamin Pond, Patton, Calif University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis 1907 member of the California Medical Association and the American Psychiatric Association on the staff of the Patton State Hospital formerly on the staff of the Middletown (N Y) State Homeopathic Hospital, aged 60 died in St Bernardine's Hospital San Bernardino, July 20 of cerebral embolus following a prostatectomy

Dallas Case Ragland, Los Angeles, Washington University School of Medicine St Louis 1907 formerly professor of pathology and hygiene at the College of Physicians and Surgeons aged 58, died July 10 of cerebral hemorrhage.

Charles Henry Reinhardt, Chicago, University of Illinois College of Medicine Chicago 1915 served during World War I aged 51 died July 25 in the Wesley Memorial Hospital of carcinoma of the lung

Hugo August John Siebeneichen, New York University and Bellevue Hospital Medical College, New York 1916 for many years diagnostician for the department of health aged 49 died July 22 of coronary occlusion

James F Waltz \* Capac Mich Detroit College of Medicine 1907 served during World War I president of the village of Capac 1931-1932 on the staffs of the Bishop Hospital Almont Harper Hospital Detroit, and Port Huron (Mich) Hospital aged 57 died June 24 of coronary occlusion

## KILLED IN ACTION

Walter Wytowich Detroit Wayne University College of Medicine, Detroit, 1941 served on the staff of the Grace Hospital commissioned a first lieutenant in the medical corps of the Army of the United States in March 1942, received the Purple Heart aged 27 was killed in action in the North African area July 11



LIEUT WALTER WYTOWICH  
1916-1943



## Bureau of Investigation

## MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the  
Food and Drug Administration of the  
Federal Security Agency

[EDITORIAL NOTE—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D D N J and foods, F N J. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

**Atop Nerve Tonic**—W J Gilmore Drug Company, Pittsburgh Shipped between Sept 15 and Oct 20 1941. Composition essentially chloral hydrate (12 grains per fluid ounce) and sodium bromide (29 grains per fluid ounce). Misbranded for the following reasons: Label lacked the warning that the product should not be taken by persons having kidney diseases and that not more than the recommended dose should be taken, absence of warning that frequent or continued use might lead to mental derangement, skin eruptions or other harmful effects, label represented that product was an appropriate treatment for nervous exhaustion and relief from symptoms of irritability, sleeplessness, head ache and eye fatigue would overcome fear and prove an efficacious treatment for the delicate mental and emotional disorders of children, prevent functional disturbances of the gastrointestinal tract, cardiac system and pelvic organs, relieve auto-intoxication, help correct disorders of the endocrine glands, be an appropriate treatment for the effects of alcoholic indulgence, be conducive to quick recovery from surgical shock, invaluable in anginal cases and exceedingly helpful in other cardiac conditions and prove of value in convalescence by increasing the appetite and assisting in regaining vitality, which representations were declared false and misleading—[D D N J, F D C 610 February 1943]

**Ayds Candy**—Shipped between May 4 and Dec 10, 1940, by the Carlay Company, Fuller Laboratories or Fuller Company, Chicago. Misbranded because the name 'Ayds', the designs of slender female figures superimposed on obese female figures and 'before and after' pictures in and on the trade package falsely represented that this product and the alleged reducing 'plans' accompanying it would bring about a lessening of body weight, and the user to reduce pleasantly and without effort and enable her to keep to a desired weight once it was attained, besides helping her to cut down the amount of food eaten without feeling pangs of hunger, distress, faintness or debilitation—[D D N J, F D C 592 Noember 1942] D D N J 593 involved the charge of misbranding brought against another lot of Ayds Candy found on sale at the Vita Health Food Company, Washington, D C. Ayds Candy also was misbranded under the provisions of the law applicable to foods, as reported in F N J 2976 and 3625.

**Ches O Kol**—William A Webster Company, Memphis, Tenn., and Ches O Kol Company, Spartansburg, S C Shipped Jan 21, 1941. Composition essentially camphor, menthol, eucalyptol and turpentine in a petrolatum base. Misbranded because of false and misleading label misrepresentations that the product would be effective in treating chest colds, head colds, sore throat, pneumonia, rheumatism or skin diseases, sinus trouble, hay fever, influenza and some other conditions and would penetrate and relieve congestion—[D D N J, F D C 612 February 1943]

**Dean's Vitamin Concentrate Capsules**—Purity Drug Company, Inc., Passaic, N J Shipped April 18, 1941. Composition in each capsule, not more than 800 units of vitamin D and an inconsequential amount of vitamin G (B<sub>2</sub>), namely, approximately 1/80 of the minimum daily requirement, whereas labeling declared a content per capsule of 1,000 units of vitamin D and represented that there was present a substantial amount of vitamin G (B<sub>2</sub>). Hence adulterated and misbranded—[D D N J, F D C 627 February 1943] Adulterated and misbranded also under the provisions of the law applicable to foods as reported in F N J No 3642.

**Earles Vital Vim**—W H Earles Company, address not given Shipped April 25, 1941. Composition essentially wheat germ, as labeled. Misbranded because label represented that product was efficacious in restoring and maintaining health and vigor, in preventing and treating overweight, and underweight, fatigue, colitis, constipation, neuritis, arthritis, stomach disorders, indigestion, high blood pressure, hardening of the arteries and sleeplessness, in strengthening digestive organs, assisting intestinal activity and lessening, in strengthening and proper assimilation, in soothing the nerves, bringing about digestion and proper assimilation, in invigorating the heart muscle, improving the circulation, toning the arteries, warding off or preventing common colds or la grippe. These representations were declared false and misleading—[D D N J, F D C 633, February 1943] Also misbranded under provisions of the law applicable to foods as reported in F N J No 2994.

**Hoyt's Compound**—Hoyt Chemical Company, Denver Shipped May 27, 1941. Composition essentially water, alcohol, sugar and extracts of plant materials including a laxative. Misbranded because label did not give adequate directions for use but provided for continuous administration, whereas the product was a laxative and should not be so given. Further misbranded because substances that were not active ingredients were represented to be such on the label. Also misbranded because label represented that the product was an appropriate treatment for diseases of the stomach, bowels and kidneys, would be efficacious for rundown conditions and skin and blood diseases, and would relieve such symptoms as sour stomach, bloating, indigestion, nervousness, dizziness and muscular aches and pains—[D D N J, F D C 616 February 1943]

**Lacto Kelpol and Evitades**—Seal Ins Laboratories, Inc., Los Angeles. Shipped between Aug 15, 1940, and Jan 4, 1941. Composition "Lacto Kelpol" is essentially an emulsion of mineral oil, agar agar, lactic acid (about 1 per cent) and water, "Evitades" consisted of tablets containing extracts of plant drugs. Lacto Kelpol was misbranded because label and carton failed to give adequate directions for administration to children and because the supplementary name, "Lactic Acid Emulsion" was false, since the product owed its therapeutic action to ingredients other than lactic acid and kelp was not one of these. Also misbranded because accompanying circular falsely represented that the mixture would be of value in treating certain types of diarrhea, colitis, dysentery and constipation. Evitades was misbranded because of false and misleading statements in accompanying circular that the product was "mild in sedative action, useful in treating insomnia, also nervous disturbances of the menstrual period"—[D D N J, F D C 617, February 1943]

**Mackenzol**—R and F Schweickhardt, St Louis Shipped Jan 16, 1941. Composition a viscous liquid containing chiefly mineral oil and small amounts of volatile oils, including eucalyptol, thymol and methyl salicylate, with compounds of guaiacol and benzoic acid. Bacteriologic examination showed that it was not an antiseptic and hence was adulterated, especially in view of the claim "Antiseptic and Germicidal Compound". Misbranded for the same reason and because represented in labeling to be guaranteed under the Food and Drugs Act, to be antagonistic to all pathogenic organisms and to be healing, to be efficacious in the treatment of chronic laryngitis due to tuberculosis and acute and chronic nasal catarrh, especially where there was great discharge, to be of much value in the treatment of ulcerations and inflammation of the nose and throat and to possess true healing virtues after the application of an aqueous alkaline or boric acid wash or douche, to be the best antiseptic for consumption, catarrh, cough, sore throat, burns, scalds, hemorrhoids, leucorrhea, uterine infections, eczema and all disorders of the skin. These representations were declared false and misleading—[D D N J, F D C 624, February 1943]

**Quaker Puffed Wheat Sparkles**—Quaker Oats Company, Cedar Rapids, Iowa Shipped March 18, 1941. Misbranded because designs, devices and statements in the labeling created the false impression that this product contained vitamins A, B<sub>1</sub>, C, D and G in consequential amounts, would be effective in preventing colds and infections, in producing healthy nerves, normal growth, good teeth, strong bones and other desirable attributes whereas it contained no vitamin A or C and only inconsequential amounts of vitamins B<sub>1</sub> and G and would not be effective in producing the claimed results. Further misbranded under the provisions of the law applicable to foods—[D D N J, F D C 580, Noember 1942]

**Ritamine**—American Dietetics Company, Inc., Yonkers, N Y Shipped between March 28 and May 13, 1941. Composition black capsules containing vitamin A (12,800 units), vitamin B<sub>1</sub> (200 units), vitamin C (226 units) and vitamin D (600 units), and brown capsules containing compounds of calcium, iron, phosphorus, copper and iodine, with small amounts of compounds of other elements and an oil, such as wheat germ oil. Misbranded because labeling falsely represented that the product would supply vitamins and minerals needed for various tissues, organs and functions, whereas it did not fulfil the promises of benefits stated and implied—[D D N J, F D C 578 November 1942]

**Rua Balm**—Van Pelt and Brown, Inc., Richmond, Va Shipped between Sept 12, 1940 and Jan 9, 1941. Composition chiefly methyl salicylate and 14 per cent of alcohol. Adulterated because alcoholic strength was below that represented on label, which was 25 per cent. Misbranded for the same reason and because product contained two or more ingredients and label did not give the common or usual name of each. Further misbranded because label did not bear adequate warnings against unsafe methods or duration of administration for protection of users, since Rua Balm consisted chiefly of methyl salicylate and might cause excessive irritation to the skin, particularly if applied with rubbing and should not be permitted to get into the eyes and mucous membranes.—[D D N J, F D C 609 February 1943]

**Slend R-Form Candy**—Riley Products, Inc., Chicago Many shipments of different dates in 1940 and 1941. Misbranded because represented on labels to be an effective treatment for reducing body weight. Also misbranded under the provisions of the law applicable to foods as reported in F N J 2977 and 2978—[D D N J, F D C 591 and 595 November 1942]

**Theobarb**—Van Pelt and Brown, Inc., Richmond, Va Shipped between Sept 12, 1940, and Jan 9, 1941. Composition each tablet represented to contain 1/4 gram of phenobarbital, whereas it contained no more than 0.056 gram of this substance. Hence adulterated and misbranded—[D D N J, F D C 609 February 1943]

**Virgitalis**—Van Pelt and Brown, Inc., Richmond, Va Shipped between Sept 12, 1940, and Jan 9, 1941. Composition each tablet was represented to possess an activity equivalent to that of 1 1/2 grains of digitalis leaf. Adulterated and misbranded because this representation was false and misleading—[D D N J, F D C 609 February 1943]

**Vitagen**—College International Inc., Denver Shipped April 22 1941 Composition approximately 70 per cent deficient in vitamin A and 50 per cent deficient in vitamin C, from figures claimed on label Adulterated because valuable constituents namely vitamins A and C had been wholly or partly omitted or abstracted therefrom Misbranded because statements, "two tea spoons of Vitagen contains approximately 2810 international units of A 450 units of C were false and misleading when applied to an article of lower vitamin content"—[D D N J F D C 630 February 1943]

**West Point Hair Tonic**—Associated Brands Inc Brooklyn Shipped Jan 22 1941 Composition essentially alcohol water castor oil benzyl benzoate and benzoic acid Misbranded because of false and misleading statements (on carton) "Natural Vegetable Oil Hair Tonic" and "West Point Hair Tonic wakes up tight lazy curls and brings new life to hair" For Thinning Hair Teach the children to use West Point Hair Tonic. It will insure their having healthy beautiful hair when they grow older, and (on label) "Natural Vegetable Oil Hair Tonic."—[D D N J F D C 585 Noember 1942]

**Zalco Septic**—Sylvia Zalk trading as Zalco Company St Paul Shipped between Feb 1 and Sept 25 1940 Composition essentially water alcohol and small amounts of menthol eucalyptol thymol methyl salicylate and boric acid Misbranded because when used in the dilutions recommended it was not an antiseptic for feminine hygiene.—[D D N J F D C 630 February 1943]

## SOME MISCELLANEOUS MEDICAL FRAUDS

### A Variety of Schemes Debarred from the Mails

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of THE JOURNAL. Following are brief abstracts of some fraud orders not dealt with previously.

**E J Stevens New Age Book and Supply House and New Age Company**—In this department of THE JOURNAL, Nov 8 1941, page 1642 there was reviewed the record up to that date of Ernest J Stevens of San Francisco including a Post Office fraud order issued May 17 1941, against a long list of trade styles under which Stevens had operated. Among these were Stevens Helio-Scientific Company The Rainbow Publishing Company E. J Stevens Publishing Company and The E J Stevens Color Institute. The article concluded with this paragraph: "As in many similar cases the flaw in this fraud order lay in the omission of Stevens personal name and so like some others whose schemes have been debarred from the mails he flouted the government and continued in business—by operating under a new trade style and local address Chromolux Company Stratford Hotel San Francisco His device also took on a new name Chromolux Lamp His explanation to the Post Office on his mailing list was that his companies had been reorganized. But this trick was soon detected by the Post Office Department which on July 12 1941 issued a supplemental fraud order covering not only the name of Stevens himself but also the Chromolux Company Lux Stevens and a good many other trade styles old and new under which he had been operating. But Stevens is not the kind of person to let a few fraud orders or other government ukases stand in the way of his financial success and so he simply dropped his old trade styles and adopted fresh ones namely New Age Company and New Age Book and Supply House, and the business of promoting his normalizer went merrily on for a while. With it was advertised a manual entitled True Chromo Therapy which was represented to contain color-energy treatments for scores of diseases. This was reported by the Post Office Department to be the same manual which was involved in the earlier case against Stevens when it was found to contain false and fraudulent claims for the treatment of disease by the Stevens devices. When it became evident to the Post Office Department that the trade styles New Age Book and Supply House New Age Company and E J Stevens MSc PhD were names under which Stevens was continuing to promote his scheme a supplemental fraud order was issued against these titles on Feb 15 1943.

**Holder's H F Condensator Company Holder's Research Laboratories W E Holder MD Dr D O Crowe DMT and others**—These concerns and persons whose addresses were given variously as Detroit and Windsor Ontario Canada promoted through the mails a device called at different times Holder's H F Condensator Holder's Ultra Short Wave Condensator and Holder's Ultra Short Wave H F Condensator. The moving spirit in the scheme was a William E. Holder who formerly had advertised and sold through the mails a rubber chair cushion containing an electrical heating unit represented as a curative agency for a large number of serious diseases and other ailments. The operation of that scheme through the mails resulted in the issuance of a Post Office fraud order on Dec. 23 1938 which closed the mails to Holder and others as reported in this department of THE JOURNAL, Sept. 9 1939 page 1051. Thereafter it appears Holder deemed Canada a more propitious place for his activities and set up his new enterprise in Windsor later opening an agency in Detroit which was run by D O Crowe. Holder promoted his condensator in certain publications circulating through the mails. In one advertisement he addressed his message to so-called incurables suffering from asthma bronchitis sinusitis

hay fever colds mastoid and throat troubles arthritis and all rheumatic conditions paralysis spinal troubles neurasthenia stomach disorders prostate kidney and bladder trouble women's weaknesses eye ailments including cataract and glaucoma etc. who have endeavored in vain to obtain relief. Getting down to business his advertisement went on to say: "Such sufferers need not despair for that internationally known miracle machine Holder's Ultra Short Wave H F Condensator (not diathermy) generating fluid electricity with cellular massage is now being manufactured in Detroit so that United States physicians can give this wonderful treatment to aid sufferers in their recovery to good health." Endorsed by the British Ministry of Labor and advertised by the British Ministry of Health as the successful treatment for colds hay fever and sinus trouble. Inquirers received a printed form letter together with various so-called physicians case history reports a 32 page booklet on the condensator and other material. The booklet contained such claims as: "All bacteria free illnesses are simply electrical unbalance. All drugs used for curative purposes must ultimately depend upon their electrical qualifications. Pain is the result of electric unbalance. Knowing these features I came to the conclusion that to balance the electrical potential in the human body it would be necessary to produce a machine which would embody the essential features necessary." The booklet went on to explain that these features were: (1) To produce a current with immense oscillations (2) A current which would be germicidal and have nutritional value. (3) A current of extremely high voltage (4) A current of very low amperage. (5) A current with open circuit or spark gap to produce a damped field or electronic condensation. (This cannot be done otherwise.) Also in the booklet was the promoter's claim that the ultra short wave current which is generated in my condensator now is of a 3 meters wave length or 100 000 000 oscillations per second 50 000 volts intake, 2 amps or 200 milliamperes. Further there were numerous testimonials and statements alleged to have come from physicians reporting the supposed cures of a wide variety of disorders such as blood poisoning paresis infantile paralysis cancer, including inoperable stomach cancer liver tumor epilepsy diabetes pyorrhea black widow spider bite varicose veins cirrhosis of the liver exophthalmic goiter mental diseases obesity impotence high blood pressure and many others. The only condition which the literature admitted Holder's Therapy would not remedy was abnormality of spine—whatever that may be. The device sold for \$365 and though Holder contended that it was distributed only to physicians the Post Office inspector declared that test cases that he had conducted had shown that anyone who would send the required amount would be supplied with a condensator. On Aug 24 1942 the Post Office Department directed the persons and concerns in question to show cause on September 21 of that year why a fraud order should not be issued against them. At the hearing which had been postponed to October 7 an attorney appeared for the respondents. There was produced in evidence a specimen of Holder's device and examination showed that it consisted of a wooden cabinet about 15 inches high, about 17 inches wide and approximately 12 inches in depth. At the bottom of the cabinet was a wooden drawer in which various glass electrodes and other attachments were found. On a bakelite panel inside the top lid was a switch for turning the device on and off with two control indicators a socket for the insertion of the treatment attachments and a number of quarter inch holes from which ozone emanated when the control indicator was turned to the proper mark. On the right hand side were three holes for the placing of bipolar and electrode attachments. Current was furnished to the device by connecting it with the regular electrical outlet of home or office either alternating or direct current. Though the directions for use called for different modes of treatment for various diseases and conditions a government witness brought out the fact that, in general, the therapy was applied locally to the area affected by the disease and elsewhere on the body. In addition to treatment by application of the electrical attachments the ozone emanations were recommended in certain conditions. Dietary instructions were furnished and the use of food cooked in aluminum ware was prohibited. A qualified electrical and radio engineer who had spent many years in examining electrical devices testified for the government that in going over the condensator he had employed the best scientific instruments and followed well recognized testing procedures and that though this device was represented in the advertising to produce 100 000 000 oscillations per second the examination at the National Bureau of Standards showed that it actually produced not more than 250 000 oscillations or kilocycles. A qualified physician specializing in physical therapy testified for the government that the use of the condensator would not cure so-called incurables suffering from any of the numerous disorders listed in the advertising and that even if heat is indicated in the treatment of any of these the amount of heat given off by the condensator would not penetrate deeply enough to produce any significant results. He testified further that one of the diseases in question require surgery x-ray and other types of therapy for their proper treatment. It was brought out also that William E. Holder originator and principal promoter of the device is not a physician had never attended any electrical school and has no scientific or college education of any sort and that in treating persons at his residence in Windsor Ontario he takes at face value their statements about their physical condition that he has had no qualified physicians associated with him was derogated from Chicago to Canada several years ago by the emigration authorities because of his promotion of the electric rubber chair cushion scheme previously mentioned and is present is barred from returning to the United States. He is a British subject born in England in 1892. Because of his false mail order campaign which the government charged was a scheme to defraud the public a fraud order was issued Dec. 22 1942 against W E Holder D O Crowe and other names under which their operations were conducted.

## Correspondence

### REMOVAL OF TESTES IN TREATMENT OF MELANOMA

*To the Editor*—The clinical note "Malignant Melanoma of the Choroid with Extensive Metastasis Treated by Removing Secretory Tissue of the Testicles," by William P. Herbst, published in *The Journal*, June 26, assumes that removal of the testes for melanoma may be followed by temporary clinical improvement as shown by the progress of the case reported following orchietomy.

The following summary represents an example in which removal of the testes had no clinical effect in delaying the rapid downhill progress in a similar instance of widespread melanoma.

E. W., a white man aged 47, admitted to the clinic of the Brooklyn Cancer Institute on Jan. 19, 1942, first noticed a small black spot at the inner angle of his eye eight years before. Up to five years before there was hardly any noticeable increase in its size. In the last year "this black spot" had grown into a fleshy tumor mass.

A coal black papilloma measuring 0.5 by 1 by 1 cm., arising from the conjunctival surface of the lower lid, filled the inner canthus of his left eye. The patient was in good general health without evidence of metastases. His liver was not enlarged.

A radical exenteration of the orbit was recommended. This was done in another institution on Jan. 30, 1942. The pathologic diagnosis was melanoma of cornea and conjunctiva. By February 20 most of the skin grafts had taken and the patient was discharged.

For about one year, or until February 1943, he was followed through the clinic of the Brooklyn Cancer Institute without evidence of disease. In February a subcutaneous, button-like node was felt in the anterior abdominal wall. This was excised and shown to be a metastatic melanoma. Soon after, bluish black nodules developed on the roof of the orbit and numerous discrete, subcutaneous metastases were found scattered over most of his body. His liver enlarged rapidly, ascites accumulated. It was at this time that members of the staff of the Brooklyn Cancer Institute decided to remove his testicles with the hope that the removal of the testicular male hormone might in some way impede the rapid growth and spread of these metastatic lesions.

A bilateral orchietomy was done on April 26. There was no postoperative reaction. The patient, however, showed no evidence of clinical improvement. His downhill course was rapid and he died on June 24, 1943.

An autopsy was obtained. The following is a summary of the anatomicopathologic diagnosis: melanoma arising in conjunctiva of left eye (exenteration left orbit), metastasis of the orbital roof, metastases to skin, both lungs, hilar glands, pleurae, pleural effusion, right, metastases to pericardium, myocardium, metastases to spleen, liver, kidney, mesentery, peritoneum, omentum, ascites. There was nothing in the gross or microscopic study to suggest that the orchietomy had in any way affected the progress of his disease.

So far the only inferences which link melanoma to the sex glands arise from the following facts:

1 With adolescence there is a localized deposition of pigment in the skin of the genitals and about the areola of the breasts.

2 Pigmented nevi which remain quiescent during infancy and childhood have been known to become activated during adolescence or later in life. The only reported case of a baby dying of malignant melanoma is that of Parkes Weber (Spontaneous Inoculation of Melanotic Sarcoma from Mother to Fetus, *Brit. M. J.* 1:537 [March 22] 1930), who described a case of melanoma transmitted from mother to child via the placenta with death of both.

The brilliant research of Huggins, Stevens and Hodges (Studies on Prostatic Cancer. II. The Effects of Castration on Advanced Carcinoma of the Prostate Gland, *Arch. Surg.* 43:209 [Aug.] 1941), which led up to the removal of the testes and the use of diethylstilbestrol in carcinoma of the prostate, and the work of Schinzinger (*Carcinoma Mammæ, Verhandl. d. deutsch. Gesellsch. f. Chir.* 18:28, 1889), and Beatson (On the Treatment of Inoperable Cases of Carcinoma of the Mamma. Suggestions for a New Method of Treatment, with Illustrative Cases, *Lancet* 2:104, 162, 1896), who first demonstrated the efficacy of castration for temporary alleviation of widespread metastases in mammary carcinoma, have no counterpart in any work done on melanoma.

It is therefore suggested that great caution be exercised and a great deal more basic research be done before the testes be removed as a routine measure in the treatment of melanoma.

WILLIAM E. HOWES, M.D., Brooklyn

### ELECTROCARDIOGRAPHIC CHANGES IN HEART WOUNDS

*To the Editor*—In *THE JOURNAL*, July 3, page 664, Dr. Mandel Weinstein reported a case of stab wound of the heart. In the interpretation of the electrocardiograms, he stated: "Our patient's records show the typical progression of changes seen in infarction on the anterior wall of the heart." Inspection of the electrocardiograms, however, reveals patterns which are quite typical not of infarction but rather of acute pericarditis, which, of course, is always present in any case in which an operation on the heart is performed. In other reported cases, as in this case, when a coronary artery is not ligated or involved by the wound, the electrocardiographic changes due to the wound are frequently obscured by those of pericarditis. When a coronary artery is injured or ligated, one then sees either a combined pattern of infarction and pericarditis or, occasionally, the pattern of infarction alone. In the latter cases the changes due to pericarditis are masked or neutralized by those due to the infarction. Dr. Arlie R. Barnes and I (*Arch. Int. Med.* 65:291 [Feb.] 1940) briefly summarized the literature on the electrocardiographic changes reported in heart wounds and the reader is referred to this article for further details.

The electrocardiogram of pericarditis has been recognized only relatively recently. While it simulates that of myocardial infarction, there are a number of points of difference which enable one to make the correct diagnosis. The importance of this differentiation is obvious.

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University College of Medicine

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Sept. 25, page 225.

#### BOARDS OF MEDICAL EXAMINERS

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Basic Science Certificate required.

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## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

Hospital Association Not Exempt from Taxation as Charitable Institution if Charity or Benevolence is Limited to Members—The Farmers Union Hospital Association of Elk City, Okla., was incorporated under the laws of Oklahoma relating to corporations for benevolent and charitable purposes its articles of incorporation specifically providing that it should have no capital stock and that its profits, if any, should not inure to the benefit of the individual members but should be used for charitable and benevolent purposes. The corporation undertook to render medical and hospital care both to members of the corporation and to nonmembers. Members paid a membership fee of \$50 and an annual fee that varied from year to year, being an estimate of the cost of its services for the current year in the light of past experience and future expectations. In return members received necessary hospital and medical services and care. Nonmembers could receive available services by paying the customary cost for services received which was at a much higher rate than for members. There was no evidence of "any conscious effort to bestow" charity or benevolence on any person not connected with the organization though some persons did receive services without cost but according to the evidence that was due entirely to the inability of the association to collect from them for services previously rendered them. The association generally made an annual profit and this profit was used to increase its facilities and to reduce the cost of service to its members for the following year. The association instituted proceedings to force the county excise board of Beckham County, Okla. to exempt the association's property from ad valorem taxes. It claimed it was entitled to such exemption by reason of an Oklahoma statute that exempts from taxation "All property, both real and personal of benevolent institutions or societies devoted solely to the appropriate objects of these institutions. From adverse determinations the hospital association appealed eventually to the Supreme Court of Oklahoma.

The sole question for determination here said the Supreme Court is whether the property of the hospital association was utilized for charitable or benevolent purposes. If so the property is exempt from taxation. Charitable is defined in 14 C. J. S. p. 407 in its broader sense as comprehending all kindly inclinations which men ought to bear toward one another, irrespective of class conditions and invidious distinctions. In 14 C. J. S. Charities p. 411 sec. 1 charity is said to embrace the sense of benevolence philanthropy and good will and good affections which men ought to bear toward mankind. Specifically a charity or charitable hospital is defined as one that is not maintained for gain profit or private advantage. 14 C. J. S.

Charities, p 422, sec 2c, and cases cited in the annotations, 61 C 1 500, sec 597 et seq. It is generally said that "The character of the institution is to be determined, not done by the powers of the corporation as defined in its charter, but also by the manner of conducting the hospital." *Steward v California Med Soc*, 158n, 178 Cal 118, 176 P 46. There is a wealth of cases, continued the court, and a variety of schemes of organizations and methods of operation, and many are held exempt and others are not. In all of them there is one factor the presence or absence of which means almost more than anything else in determining the issue. That is this: Are the doors of the hospital open to all, poor patients and pay patients alike? If the answer is yes, it is a charitable hospital and its property is entitled to the exemption from taxation provided, if the answer is no, it is not a charitable hospital and is not entitled to the exemption. In this instance the hospital association intended charity and benevolence and private benefit and advantage to its membership and to no one else. Whatever service it dispensed for which it received no pay was accidental or incidental. Its officers very carefully refrained from saying that its doors were open to the world irrespective of ability to pay. In speaking of private advantage as being a factor that precludes any organization from assuming the status of a charitable or benevolent institution, we mean private advantage to the organizers and the supporters thereof. The fact that a profit is realized from the operation of a hospital does not condemn the scheme as noncharitable or nonbenevolent. It is the use to which the profit is put that means much. In this case some of the profit is used to increase the facilities and some to the reduction of the cost to the members. This is a private advantage. The members of the hospital association here involved cooperated for their mutual advantage, but the record is bare of any evidence of an intent on their part to distribute charity or benevolence to any person not a member.

Accordingly, the hospital property was held to be subject to taxation—*In re Farmers' Union Hospital Ass'n of Elk City*, 126 P (2d) 244 (Okla, 1942).

**Medical Practice Acts The Prescribing of Foods Based on a Diagnosis of Ailments Constitutes the Practice of Medicine**—Pinkus, who holds college degrees and, in the words of the court, has studied "food chemistry and science, biology and physiology," conducted a store in Newark, N J, wherein food products were sold. On occasion, at least, he advised customers concerning their physical ailments and sold them certain "trade-name packaged" food products for the relief thereof. He was prosecuted for practicing medicine without a license in violation of the New Jersey medical practice act. At the trial, one witness testified that she told Pinkus that she had distress in her stomach and pressure around her heart and that he informed her that her condition was due to improper foods and that she should avoid starches and meats and eat "plenty of fruits and vegetables." He recommended and sold her a package of a product labeled "Sorbex." This witness testified that on another occasion she told Pinkus that she had a pain under both ears and down the side of her neck and that he informed her that her glands were not functioning properly and that she needed iron. He sold her a package of "Seatabs" and advised her to take one to four tablets daily. Later this same witness, so she testified, again visited Pinkus, informing him that she had an irritation around the waistline and had an itch. He told her that she had an acid condition, that she should not use any common table salt and that she should eat "lots of fruit, vegetables and lemons." He then sold her a package of "Vegebroth," advising her to use it twice a day. Two other witnesses testified to similar incidents and advice on the occasion of visits to Pinkus's store. Pinkus was found guilty of violating the medical practice act and prosecuted a writ of certiorari in the supreme court of New Jersey.

He contended that there was no evidence before the trial court of any violation of the medical practice act, that is, that his

acts did not amount to the practice of medicine and surgery as defined in the medical practice act. The practice of medicine, said the supreme court, is defined in the medical practice act as follows:

"Any person shall be regarded as practicing medicine and surgery, within the meaning of this chapter, who holds himself out as being able to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity or physical condition, or who shall either offer or undertake by any means or methods to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity or physical condition"—R S 15 9 18, N J S A 45 9 18.

In view of this language, we think it is clear that the acts of Pinkus did constitute the practice of medicine. Whether or not the substances he sold and prescribed are to be classed as medicines or not makes no difference. Clearly he attempted to diagnose the "physical condition" of the witnesses and to ascribe a cause for its existence and prescribe for such condition. Pinkus argued that he was merely engaged in the sale of food and food products because he had special knowledge concerning food. But, said the court, he went far beyond the mere sale of food when he diagnosed alleged ailments of the witnesses and expressed an opinion as to their cause. We think the practices engaged in by Pinkus came within the inhibition of the act.

Pinkus next contended that the section of the medical practice act defining the practice of medicine is unconstitutional in that it is unreasonable. The power of the legislature, answered the court, to regulate the practice of medicine has been upheld many times. The contention is now made that the language of the definition is so broad that it would prohibit the mere casual suggestion by one person to another of treatment that would help a condition described. However that may be, it is not being enforced in this case in any such set of circumstances. Here Pinkus was engaged in a commercial enterprise. He sold certain products and in connection with their sale attempted to diagnose ailments and conditions and to give advice as to dieting. We think there is nothing unreasonable in prohibiting this practice by other than licensed physicians.

The judgment of conviction was in effect affirmed—*Pinkus v MacMahon* Judge, 29 A (2d) 885 (N J, 1943).

## Society Proceedings

### COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology, Chicago, Oct 10 13 Dr W L Benedict, 102 Second Ave S W, Rochester, Minn., Secretary
- American Public Health Association, New York, Oct 12 14 Dr Reginald M Atwater, 1790 Broadway, New York, Executive Secretary
- Association of Military Surgeons of the United States, Philadelphia Oct 21 23 Colonel James M Phalen, Army Medical Museum, Washington, D C, Secretary
- Delaware, Medical Society of, Wilmington, Oct 12 13 Dr W O La Motte, 601 Delaware Ave., Wilmington, Secretary
- Inter State Postgraduate Medical Association of North America, Chicago, Oct 26 29 Dr Arthur G Sullivan, 16 North Carroll St., Madison Wis., Managing Director
- Kansas City Southwest Clinical Society, Kansas City, Mo., Oct 4 6 Dr William M North, 1115 Grand Ave., Kansas City, Mo., Secretary
- Kentucky State Medical Association, Louisville, Oct 4 6 Dr P L Blackerby, 620 South Third St., Louisville, Acting Secretary
- Oklahoma City Clinical Society, Oklahoma City, Oct 18 21 Dr Clark H Hall, 117 North Broadway, Oklahoma City, Secretary
- Omaha Mid West Clinical Society, Omaha, Oct 25 29 Dr J D McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary
- Pennsylvania, Medical Society of the State of, Philadelphia, Oct 5 7 Dr Walter F Donaldson, 500 Penn Ave., Pittsburgh, Secretary
- Southern Medical Association, Cincinnati, November 16 18 Mr C P Loran, Empire Building, Birmingham, Alabama, Secretary
- Virginia, Medical Society of, Roanoke, Oct 25 27 Miss Agnes Edwards, 1200 East Clay St., Richmond, Secretary

## Current Medical Literature

## AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (5 cents if one and 15 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be applied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Title marked with an asterisk (\*) are abstracted below.

## American Heart Journal, St. Louis

26 1-146 (July) 1943

- Schneider Index as Modified by Diseases of Circulation H Feil M Pettit and O Park—p 1  
Blood Pressure in the Aged Study of 1000 Elderly Male Subjects H I Ruck—p 11  
Combined Use of Strophanthin K and Digitalis in Treatment of Congestive Heart Failure Preliminary Report J E Garcia and B A Goldman—p 20  
Aortic Regurgitation Caused by Dilatation of Aortic Orifice and Associated with Characteristic Valvular Lesion B A Gouley and E M Sichel—p 24  
Routine Use of Cefalotin in Clinical Practice A E Parsonnet and A Bernstein—p 9  
Electrical Conductivity of Tissues Near Heart and Its Bearing on Distribution of Cardiac Action Currents W Kaufman and F D Johnston—p 42  
Short PR Interval with Prolonged QRS Complex Allergic Manifestations and Unusual Electrocardiographic Abnormalities Report of Case A H Clagett Jr—p 55  
Peripheral Blood Flow Under Basal Conditions in Normal Male Subjects in Third Decade H I Stewart and W F Evans—p 67  
Effect of Smoking Cigarette on Peripheral Blood Flow W F Evans and H J Stewart—p 78  
Course of Blood Pressure Before During and After Coronary Occlusion A M Master H L Jaffe S Dack and N Silver—p 92  
Duration of Ventricular Systole as Measured by QT Interval of Electrocardiogram with Especial Reference to Cardiac Enlargement With and Without Congestive Failure S H Phang and P D White—p 108  
Depressor Effect of Tissue Implants in Hypertensive Dogs S Rodbard and L N Katz—p 114

**Blood Pressure and Coronary Occlusion**—Master and his co-workers investigated the blood pressure in 538 attacks of coronary occlusion. Slightly over half of the attacks were initial ones and the remainder were second or third attacks. The authors employed the following criteria in judging whether hypertension had been present before the attacks: (1) a systolic pressure of 150 mm or more at any time during observation; (2) a diastolic pressure of 96 mm or more prior to the attack; (3) a diastolic pressure of 90 mm or more during or after the attack; and (4) pronounced enlargement of the heart without obvious cause. It was found that the incidence of hypertension increased with age. The blood pressure fell in every case, but in a few the fall was slight. A transitory rise in pressure occurred infrequently at the onset of the attack. A rapid fall was somewhat more common than a gradual one. Occasionally the fall did not occur until after a week. The lowest pressure was usually reached between the twelfth and twentieth days. In some cases the initial fall was soon followed by a temporary or permanent rise in pressure. The trend of the blood pressure was similar in the hypertensive and non-hypertensive groups although a rapid fall was more common among the nonhypertensive patients who died. The systolic blood pressure rarely fell below 90 mm in the hypertensive group but this was common in the nonhypertensive group. When the pressure fell below 80 the patient usually died. In almost one fifth of the patients with a previous pressure of 200 mm or more the pressure did not fall below 150 mm. Two thirds of the hypertensive patients regained a hypertensive level in half of these this took place before discharge from the hospital, and in the remaining half usually within one or two years. The height of the blood pressure after the attack did not significantly influence the future course of the case with respect to subsequent angina pectoris heart failure coronary occlusion or death.

## American Journal of Clinical Pathology, Baltimore

13 285-328 (June) 1943

- Idiopathic Hypoprote thrombinemia A S Giordano—p 285  
Blood Amylase D Polowe—p 288  
Diastase Content of Blood and Urine in Acute Alcoholism H Siegel and B Krautman—p 302  
Postmortem Examination in Cases of Suspected Rape O J Pollak—p 309  
Transfusion Reaction Caused by Proven Dangerous Universal Donor S Weintraub—p 315  
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\*Thallium Poisoning I Detection of Thallium in Biologic Material A O Gettler and L Weiss—p 322

**Thallium Poisoning**—Gettler and Weiss state that, before proceeding to the actual detection of thallium, all organic matter in the tissue must be destroyed by an oxidative process. They list the procedures for the digestion of biologic material and describe the method which they found to be least time consuming and at the same time yielding a solution free of all organic substances. The various qualitative tests for thallium are critically reviewed. A detailed description for the detection of thallium in biologic material is given.

## American J Obstetrics and Gynecology, St. Louis

46 1-46 (July) 1943 Partial Index

- Infantile Mortality and Bacteriologic Investigations of Effect of Prolonged Labor on Baby R G Douglas and H J Stander—p 1  
\*Further Contribution to Syndrome of Fibroma of Ovary with Fluid in the Abdomen and Chest Meigs's Syndrome J V Meigs S H Armstrong and H H Hamilton—p 19  
\*Nutrition Studies During Pregnancy Bertha S Burke, Virginia A Beal, S B Kirkwood and H C Stuart—p 38  
Detection of Ovulation by Basal Temperature Curve with Correlating Endometrial Studies P L Martin—p 53  
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Effect of Complementing Diet in Pregnancy with Calcium Phosphorus Iron and Vitamins A and D F L Adair W J Dieckmann H Michel and others—p 116

**Meigs's Syndrome**—Meigs and Cass reported in 1937 4 cases of ascites and hydrothorax associated with fibroma of the ovary. The serous effusions disappeared with removal of the tumor. In the years following the first presentation of this syndrome other cases were reported and brought to the authors' attention. The present report by Meigs, Armstrong and Hamilton lists 27 authentic cases. The syndrome is of considerable importance for some patients have died without proper surgical relief while others, doomed because of a tumor considered inoperable are now well. Two patients operated on in 1941 presented an opportunity to palpate the structure of the diaphragm and to collect fluid for investigation. The fluid in the abdomen and that in the chest were identical. Particulate carbon passed from the abdominal to the thoracic fluid quickly and easily. Three important investigative problems emerge from Meigs's syndrome: (a) the mechanism whereby ovarian fibroma gives rise to abdominal fluid; (b) the mechanism of the hydrothorax; (c) the question of whether similar mechanisms operate in combined hydrothorax and ascites when the primary pathologic condition is other than fibroma of the ovary. Cullen Kelly and others showed that fluid may be present in the abdomen with lesions other than ovarian fibroma. That this fluid is similar to the fluid found with fibroma has not been proved though it may be considered probable. In most cases of uterine fibroid with fluid there are adhesions or entanglement to the tumor or twists of the pedicle which were not present in the cases reported here. It remains for joint investigation by thoracic surgeons and others to demonstrate the presence of diaphragmatic perforations of small or large size or the presence of the rarely reported pleuroperitoneal tubes.



and to determine the direction and the degree of penetrability of the diaphragmatic lymphatics. The syndrome of ovarian fibroma with hydrothorax and ascites is of practical clinical significance.

**Studies of Nutrition During Pregnancy**—Burke and her associates studied 216 women chosen from the antepartum clinics of the Boston Lying-in Hospital. These women were seen at least monthly through the seventh month of pregnancy, every two weeks during the eighth month and weekly thereafter unless more frequently because of complications. The study revealed a relationship between the diet of the mother during pregnancy and the condition of her infant at birth. All still-born infants, all infants who died within a few days of birth with the exception of one, the majority of infants with well defined congenital defects, all premature infants and all "functionally immature" infants were born to mothers whose diets during pregnancy were very inadequate. If the mother's diet during pregnancy is excellent or good her infant will probably be in excellent or good physical condition. There was one exception to this in the present series of cases. A statistically significant relationship was found between the antepartum diet and the course of pregnancy. This relationship, however, was not as clear as that between the antepartum dietary rating and the condition of the infant. This indicates that when nutrition during pregnancy is inadequate the fetus suffers to a greater degree than the mother. In this study no mother whose diet during pregnancy was considered 'good' or 'excellent' had preeclampsia while with a 'poor to very poor' diet during pregnancy almost 50 per cent had preeclampsia. No statistically significant associations were found between antepartum nutrition and the duration or the character of labor and delivery. There was a tendency for the mothers whose diets during pregnancy were "poor to very poor" to have more difficult types of labor and to have more major complications at delivery despite the fact that these women had on the average smaller infants than were born to the women whose diets were 'good' or "excellent." No relationships of statistical significance were found between antepartum nutrition and the postpartum course. There seemed to be a tendency toward a relationship between antepartum nutrition and the occurrence of major complications in the puerperium.

### American Journal of Surgery, New York

61 1-156 (July) 1943

- \*Perinephric Abscess in Infants and Children. Study of 26 Patients Surgically Treated. H. Swan—p. 3
- Present Status of Gastric and Duodenal Ulcer. J. L. DeCoursey—p. 11
- Pentothal Sodium Oxygen Anesthesia in Major Surgery. E. A. French—p. 16
- Acute Cholecystitis. Certain Pathologic and Surgical Aspects. G. T. Root and I. T. Priestley—p. 18
- Five Years' Experience with Hemo-Irradiation According to Knott Technique. H. A. Barrett—p. 42
- Phlegmonous Cecitis. Report of 2 Cases and Review of Literature. A. H. Spivack and I. Busch—p. 54
- Operation for Pilonidal Sinus. I. Cohn—p. 61
- Traumatic Rupture of Spleen. Experiences with 10 Cases in General Hospital. H. N. Harkins and E. J. Zabinski—p. 67
- Diagnosis of Perforated Ulcer. Two Useful Maneuvers by Means of Which Pneumoperitoneum and Diaphragmatic Irritation are Demonstrated More Clearly. A. E. Pearce—p. 76
- Theory and Therapy of Shock. Excessive Fluid Administration. F. M. Allen—p. 79
- Improved Technique for Blind Nailing of Neck of Femur. Crecco-Cetrulo Guide. W. D. Crecco and G. I. Cetrulo—p. 90
- Sulfadiazine Anuria. Its Relief by Ureteropelostomy. M. F. Campbell and J. H. Fobes—p. 99
- Technique for Repair of 'Baseball' Finger. G. M. Sapol—p. 103
- Skin Grafting. New Method Based on Principles of Tissue Culture. M. E. Sano—p. 105

**Perinephric Abscess in Infants and Children**—Swan stresses that perinephric abscess is not as rare in infants and children as is generally believed. He reviews a series of 26 proved and 6 possible cases. It is important for prognostic and therapeutic reasons to classify patients on the etiologic basis of their lesion as metastatic, complicated by underlying renal disease or secondary to trauma to the kidney. In children a history which includes urinary complaints or a finding of albumin or white cells in the urine strongly suggests a complicated type of lesion and indicates a thorough study of the urinary tract. An intravenous pyelogram should be done preoperatively on all patients suspected of having a perinephric

abscess unless they are too ill to tolerate the procedure. Early incision and drainage is the treatment for metastatic or traumatic abscess. In abscess complicating urinary disease, therapy must be individualized and is twofold in purpose: (1) the immediate treatment of the abscess and (2) the subsequent treatment of the underlying urinary tract disease. The mortality was nil and the hospitalization averaged about three weeks in children with metastatic or traumatic abscess. The mortality was 45 per cent and the hospital stay averaged ten weeks in children in whom abscess complicated urinary disease.

### American Journal of Tropical Medicine, Baltimore

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- Observations on Vectors of Chagas Disease in United States II. Arizona. S. F. Wood—p. 315
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- Incidence of Amebiasis Observed at Chicago Hospital over Two Year Period. M. Hood—p. 327
- Multiple Deficiency Disease with Allergy and Nutritional Enteritis. Case Report. A. C. Reed, I. L. Carr and F. Rochex—p. 330
- Death Due to Akee Poisoning in Panama. B. H. Keen—p. 330
- Comparison of Three Strains of *Trichinella Spiralis*. I. Pathogenesis and Extent of Larval Development in Musculature. I. Rappaport—p. 343
- Id. II. Longevity and Sex Ratio of Adults in Intestine and Rat. I. Rappaport—p. 343
- Diphyllobothrium Latum in Florida. W. A. Summers and P. P. Weinstein—p. 363
- Factors Influencing Reported Incidence of Appendical Overgrowth. L. E. Rector—p. 369
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### Archives of Neurology and Psychiatry, Chicago

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- Primary Sarcoma of Brain. Review of Literature and Report of 17 Cases. K. H. Abbott and I. W. Kernohan—p. 43
- Dermatome Hypoesthesia Associated with Herniation of Intervertebral Disk. I. J. Keegan—p. 67

### Archives of Surgery, Chicago

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- Ligation of Sphenous Vein for Varicose Veins. R. W. Postlethwaite—p. 4
- Sarcoma of Stomach. Clinical and Pathologic Study. G. F. Schreyer and H. I. Schattenberg—p. 8
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- Review of Urologic Surgery. A. I. Schell, F. Hinman, A. L. Lichtenberg, A. B. Hepler, R. Gutierrez, G. J. Thompson, E. A. Cook, E. Wildbolz and V. J. O'Connor—p. 86

### Bulletin New York Academy of Medicine, New York

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- Dietary Treatment of Laennec's Cirrhosis with Special Reference to Early Stages of Disease. A. J. Pacl, Jr.—p. 461
- Present Status of Continuous Caudal Anesthesia in Obstetrics. V. Edwards and R. A. Hingson—p. 507

## Diseases of Chest, Chicago

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- \*Sulfadiazine Pneumonia Therapy in Canal Zone (With Special Reference to Bradycardia) S M Browne H P Marvin and E R Smith—p 297  
Inhalation of Nebulized Solutions of Sulfonamides in Treatment of Bronchiectasis J W Stacey—p 302  
Bronchoscopic Aids in Medical Conditions Within Chest J W Peabody—p 307  
Correlated Applied Anatomy of Bronchial Tree and Lungs with System of Nomenclature C L Jackson and J F Huber—p 319  
Post Thoracoplasty Care Scoliosis Pain and Rehabilitation R Shaw—p 327  
Hexilirecinol Solution in Treatment of Tuberculous Empyema J J Mendelsohn—p 344  
Woodward High School Survey Barbara A Hewell and H J Nimitz—p 348

## Sulfadiazine Therapy of Pneumonia in Canal Zone—

Browne and his collaborators treated 100 consecutive unselected pneumonia patients in the Canal Zone with sulfadiazine. They utilized the original dosage recommended by the Council on Pharmacy and Chemistry, namely 0.10 Gm per kilogram of body weight initially, followed by 1 Gm every four hours day and night until a normal temperature had been present for seventy-two hours, at which time the chemotherapy was discontinued. There were 45 lobar and 55 bronchopneumonias. The average length of time between onset of symptoms and hospital admission was 4.07 days. Bacteriologically there were 42 typed pneumococcus (including 10 type I), 7 hemolytic streptococcus and 51 cases of undetermined etiology. The average sulfadiazine dosage was 40.5 Gm. The maximum sulfadiazine concentrations varied from 8 mg to 30.8 mg per hundred cubic centimeters. The temperature returned to normal by crisis within forty-eight hours in 78 patients, by lysis in 21 (one death). Pneumonia and drug complications with complete recovery in all cases were as follows: jaundice, 1; serous pleural exudate, 2; nausea and vomiting, 1. There was one death; a mortality rate of 1 per cent. Most noteworthy and inexplicable was the fact that 63 of the 100 patients developed a sinus bradycardia with occasional heart rates as slow as 36 beats per minute during or immediately following sulfadiazine treatment. The authors conclude that sulfadiazine is most efficacious in pneumonia; that it is equally effective in the treatment of pneumonia in tropical as well as in other climates, and that it is accompanied by fewer drug reactions than sulfa-pyridine or sulfathiazole.

## Gastroenterology, Baltimore

1 555-634 (June) 1943

- \*Significance of Gastroscopic Findings in Patients with Duodenal Ulcer H J Tumen and M M Lieberthal—p 555  
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In Situ pH of Antrum of Stomach Pylorus and Duodenum H C Breubaus and J B Eyerly—p 585  
Effect of Thymoxethylidethylamine (929 F) on Gastric and Intestinal Motility: an Experimental Study G A Hallenbeck C F Code and F C Mann—p 588  
Study of Excretion of Cinchophen in Bile and Urine and Poology of Drug J H Annegers F E Snapp A C Ivy A J Atkinson and A L Berman—p 597

## Gastroscopic Findings in Patients with Duodenal

Ulcer—Tumen and Lieberthal made gastroscopic studies on 50 patients with duodenal ulcer uncomplicated by pyloric obstruction. Of these 33 had chronic gastritis, 1 had unclassifiable inflammatory changes and 16 had normal stomachs. Six of the 16 patients with no evidence of gastritis had an atypical history or poor response to treatment or both. Twenty-one of the 33 patients with gastritis had an atypical history or poor response to treatment or both. While the incidence of atypical history and/or poor treatment response was somewhat greater in ulcer patients who had gastritis than in those who had not, it is difficult to ascribe much significance to this because among the 21 patients with gastritis who were examined by gastroscopy more than once the clinical severity of the symptoms seemed related to the gastroscopic picture in only 10. In the remaining 11 there was no correlation between the gastroscopic

picture and the presence or character of symptoms. The presence of gastritis did not regularly influence the clinical course of duodenal ulcer. It was impossible to postulate the presence or absence of associated gastritis on the basis of the nature of the symptoms or the character of the response to treatment.

## Georgia Medical Association Journal, Atlanta

32 151-184 (May) 1943

- Some Urgent Needs for Medical Advancement J A Redfearn—p 151  
Lesions of Esophagus and Stomach W F Lake—p 154  
Diagnostic Methods Utilized in Study of Colon with Consideration of Various Types of Disease Found J J Clark—p 156  
Chronic Appendicitis A A Rayle—p 157  
Roentgenologic Studies of Gallbladder J W Landham—p 161  
One Hundred and One Years of Anesthesia J S Lund—p 167  
Recommendations for Venereal Disease Control Program in Industry: Report of Advisory Committee on Control of Venereal Diseases O L Anderson—p 172

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- Symposium on Eye Ear Nose and Throat Problems: Aneurysm in Eyelid: Report of Case S J Lewis—p 185  
Id: Diervocystorhinostomy: Logical Treatment of Occlusion of Lacrimal Sac A V Hallum—p 186  
Id: Treatment and Care of Common Eye Injuries W O Martin Jr—p 189  
Id: Osteomyelitis of Frontal Bone L A Brown—p 192  
Id: Laryngectomy for Carcinoma M Eguen F Neuffer W B Matthews and F Ogden—p 194  
Hirschsprung's Disease: Report of Cases C H Watt—p 197  
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## Indiana State Medical Assn Journal, Indianapolis

36 331-378 (July) 1943

- Realistic Approach to Present Medical Problems F W Rankin—p 331  
Prevention and Treatment of Infections of Hand V E Siler—p 334  
Treatment of Uncomplicated Diabetes with Mixtures of Insulin and Protamine Zinc Insulin F B Peck—p 340  
Report of Case of Palindromic Rheumatism J L Ferry—p 348

## Journal of Clin Endocrinology, Springfield, Ill

3 321-388 (June) 1943

- Excretion of Sex Hormones in Abnormalities of Puberty I T Nathan and J C Aub—p 321  
Gonadotropin Excretion in Normal Men and Women and Cases of Hysterectomy Menopause Migraine Epilepsy and Eunuchoidism R Main W Cox R O Neal and I Stoekel—p 331  
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Diabetes Mellitus Associated with Hirsutism and Unusual Insulin Resistance: Case Report R L Pullen and W A Sodeman—p 345  
Serum Phosphatase Activity in Hyperparathyroidism N C Mendelsohn and G F Koepf—p 351  
\*Melanotropic Hormone and Vitiligo: Report of 11 Cases J C M Fournier I M Cervino and O Conti—p 353  
Therapy of Seminal Inadequacy: II Use of an Extract of Chorionic Gonadotropin and Pituitary Synergist C D Davis J H M Madden and E C Hamblen—p 357  
Breast Hypertrophy in Male: Report of 2 Cases of Pseudogynecomastia with Surgical Reconstruction J W Mahoney—p 364  
Structure of Human Anterior Pituitary Gland After Administration of Estrogenic Hormones C Spark—p 367

**Melanotropic Hormone and Vitiligo**—The fact that the pituitary gland produces a melanotropic hormone and that dyschromia occurs in both hypopituitarism and hyperpituitarism led Fournier and his collaborators to investigate the possible effect of treatment with this hormone on vitiligo. The authors employed the hormone in 11 cases. Treatment was started by giving a local intradermal injection of 400 frog units twice a week. The beneficial effect consisted in a striking reduction in the area of the leukoderma. This therapy proved successful in 8 of 11 patients (73 per cent). One patient was given five bovine hypophyses orally. 9 others were given a purified extract of the hormone either locally or subcutaneously. The systemic action of the therapeutic measures is shown by the improvement in areas of vitiligo remote from the site of local or intradermal injections. Local ionization with the melanocyte hormone was tried successfully once. Improvement was more rapid and was of a greater degree in the patches which had appeared recently. Satisfactory results were likewise obtained in case of vitiligo of ten years duration.

**Journal Industrial Hygiene & Toxicology, Baltimore**  
25:199-140 (June) 1943

- Physiologic Response of Rabbits to Cyclohexane, Methylcyclohexane and Certain Derivatives of These Compounds I Oral Adams, J. I. Trecon, W. I. Crutchfield Jr. and K. A. Kitzmiller—p. 199
- Byssinosis. Report of 2 Cases and Review of Literature H. L. Boken—p. 215
- Threshold Toxicity of Gasoline Vapor P. Drinker, C. P. Angellou and Madeleine Field Warren—p. 225
- Physiologic Properties of Indium and Its Compounds H. G. C. Harrell, S. I. Meek, A. Whitman and C. P. McLeod—p. 233
- Hypersensitivity to Adhesive Tape. Report of 1 Case Showing Its Variable Etiology H. Keil—p. 235
- Determination of Volatile Halogenated Hydrocarbons in Blood H. I. Morin—p. 243

**Byssinosis**—According to Boken the term byssinosis is applied to a form of respiratory disease affecting workers in cotton mills where much dust is given off in the processes of preparing the cotton for spinning and weaving. In the early stage the symptomatology is similar to the so called heekling fever, mill fever or Monday fever affecting workers in cotton mills. The onset is insidious. The victim sneezes frequently, develops a slight, dry, increasingly irritating cough and is aware of a feeling of constriction in the chest. Dyspnea becomes more pronounced. As the fine particles or strands of cotton become lodged in the lungs an irritation is set up and the breathing becomes more labored, the cough more metallic. The disease progresses with individual variation, over a period of years. As the cotton dust makes its way into the finer bronchi there is a decrease in vital capacity. The victim becomes a semi-invalid and is forced to give up work entirely. Before this stage of permanent disability is reached, however, many workers change their occupation. The author reviews the literature on byssinosis and presents the histories of 2 patients both of whom had worked for many years in the card room of a cotton mill. In 1936 an outbreak of respiratory disturbances among workers in a North Carolina mill called attention to the need of preventive measures to eliminate the health hazard. As reports from other mills appeared from time to time, steps were taken to control card room dust by installing vacuum strippers and grinders and ventilators. The workers are given frequent physical examinations, and those who exhibit excessive sensitivity to the cotton dust are urged to seek other employment. There is no specific treatment for byssinosis. Removal from exposure should be the first step if the worker appears to be susceptible, and then symptomatic or preventive treatment is instituted. In the late stages treatment can be at best only palliative, because irreversible structural changes have taken place in the lungs. Johnstone recommends for the treatment of dust diseases general tonics, vitamins, adequate diet, cough mixtures, mild narcotics and limited activity.

**Journal of Lab and Clinical Medicine, St. Louis**  
28:1053-1174 (June) 1943

- Distribution and Pollination Times of Important Hay Fever Producing Plants in United States P. M. Gottlieb and E. Urbach—p. 1053
- Surface Films Formed by Blood Plasma and Serum of Patients with Chronic Arthritis C. W. Scull and R. Pemberton—p. 1070
- Vitamin A and Detoxication of Monobromobenzene F. L. Haley and G. S. Samuelson—p. 1079
- Syngadenitis Suppurativa Tropica (Complication of Lichen Tropica) Histologic Appearance and Etiologic Considerations Particularly as to Possible Relationship of Ascorbic Acid and Carbohydrate Metabolism F. Reiss—p. 1082
- Diffusion of Dyes in Ethylene Glycol Gels Frances C. Brown and E. E. Reid—p. 1093
- Seasonal Variations in Some Physiologic Variables M. A. Wenger—p. 1101
- Effect of Continued Sulfanilamide Ingestion on Acid Base Equilibrium of Dog A. H. Free, D. E. Bowman and D. F. Davies—p. 1109
- Protein Hydrolysis in Regeneration of Serum Protein in Hypoproteinemic Rat D. B. Sabine and H. R. Schmidt—p. 1117

**Journal-Lancet, Minneapolis**  
59:163-192 (June) 1943

- Medical Management of Patient with Arterial Hypertension S. M. White—p. 163
- Safety in Cataract Extraction L. G. Dunlap—p. 170
- Health Trends in University of Michigan Women Students Margaret Bell and Claire E. Hesley—p. 172
- Syphilis Serology in North Dakota M. E. Koons—p. 177
- Complaint and Situation in College Health Work T. Raphael and L. E. Himler—p. 182
- Variable Pulmonary Infiltration Association with Boeck's Sarcoid Case Report C. A. McKinlay—p. 185

**Journal of Nat. Cancer Inst., Washington, D. C.**  
3:449-582 (June) 1943 Partial Index

- Effect of Diet Relatively Low in Cystine on Production of Spontaneous Mammary Gland Tumors in Strain C3H Female Mice J. White and H. B. Andervont—p. 449
- Quantitative Experiments on Production of Subcutaneous Tumors in Strain A Mice with Marginal Doses of 3, 4 Benzpyrene. J. Letter and M. J. Shear—p. 455
- Degradation of Cystine by Normal Liver but Not by Transplanted Hepatoma J. P. Greenstein—p. 491
- Hydrogen Ion Concentration of Normal Liver and Hepatic Tumors H. Kahler and W. B. Robertson—p. 495
- Quantitative Analysis of Dose Response Data Obtained with Three Carcinogenic Hydrocarbons in Strain C3H Male Mice W. R. Bryan and M. B. Shumkin—p. 503
- Wavelength Dependence of Tumor Induction by Ultraviolet Radiation H. F. Blum—p. 533
- Neoplasms and Other Lesions of Eye Induced by Ultraviolet Radiation in Strain A Mice S. W. Lippincott and H. F. Blum—p. 545
- Changes Induced in Strain of Fibroblasts from Strain C3H Mouse by Action of 20 Methylcholanthrene Preliminary Report W. R. Larle—p. 555
- Morphology of Sarcomas Derived from Fibroblasts Previously Treated with 20 Methylcholanthrene in Vitro Preliminary Report A. Nettleship—p. 559
- Study of Spontaneous Mouse Rhabdomyosarcoma A. Nettleship—p. 563

**Kansas Medical Society Journal, Topeka**

44:181-216 (June) 1943

- Fundamentals of Psychiatry IX Theory of the Unconscious W. C. Menninger—p. 183
- Case of Pseudohermaphrodite with Ectopic Bladder S. L. Loenen and L. O. Rupe—p. 186
- Rickettsias and Pathogenic Viruses Our Present Orientation F. A. Carmichael—p. 189

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- State Procurement and Assignment F. H. Lahey—p. 217
- Procurement and Assignment Service for Physicians, Dentists and Veterinarians—Responsibilities, Accomplishments and Future Problems H. S. Diehl—p. 218
- Histoplasmosis Report of Case with Brief Review of Literature B. Boltjes—p. 226

**Michigan State Medical Society Journal, Lansing**

42:497-576 (July) 1943

- Prognosis After Injury or Infection of Nervous System in Childhood B. Crothers—p. 517
- Carcinoma of Larynx D. F. Weller—p. 521
- Deafness or Impaired Hearing G. E. Shambaugh Jr.—p. 525
- Diagnostic and Therapeutic Problems of Obesity E. L. Sevringhaus—p. 530
- Problem of Alcohol Addiction Present Day Therapy R. G. Tuck—p. 536
- Radiocurability of Neoplasms C. E. Nurnberger—p. 541
- Treatment of Psoriasis L. A. Brunsting—p. 546

**Treatment of Psoriasis**—The method recommended by Brunsting is the combined use of crude coal tar byunction and of ultraviolet irradiation, a procedure first elaborated by Goeckerman. Crude coal tar ointment in a strength of from 2 to 6 per cent is used generally, excepting on the scalp and nails, where an ointment containing from 10 to 20 per cent ammoniated mercury is used. The patient is thoroughly bathed with soap and water to soften and facilitate removal of the scales. The trunk and extremities are thoroughly anointed with the tar ointment and suitable clothing is provided, such as loosely fitted underwear, pajamas or a covering of gauze. At bedtime additional ointment is applied to the body and scalp when needed. The next morning the tar ointment is smoothed with an oil to the consistency of a thin film over the entire body. Ultraviolet irradiation is carried out daily in increasing dosages. It is desirable to secure a brisk erythema short of a burn. Infiltrated plaques and the scalp may be subjected to more intensive treatment by protection of the surrounding skin by paper or cloth, but it is essential to irradiate the entire surface of the body. After the ultraviolet treatment a bath and shampoo again are in order and the ointments are reapplied. A considerable proportion of psoriatic persons also are subject to arthritis. The most common site of involvement in the early stages is the terminal phalanges of the fingers or toes, gradually the larger joints may become involved, even the spinal column, and when the disease is advanced the picture may resemble that of arthritis deformans. The treatment of psoriatic arthritis depends on prompt recognition and thorough control of the psoriasis by the use of crude coal tar and ultraviolet rays. The affected joints are treated as in other forms of arthritis. It is

wise to bring into play all the auxiliary forces such as rearrangement of the diet and thorough elimination of foci of infection. Nonspecific treatment which provokes fever, such as hot baths, hyperthermia or the injection of foreign protein is useful. Sun bathing is recommended strongly, and often a change to a sunny, dry and equable climate is beneficial. Roentgen therapy is practicable when there is early involvement of the joints or the hands and feet.

### New England Journal of Medicine, Boston

228 773-808 (June 17) 1943

Medical Aspects of Absenteeism L. R. Daniels—p. 773  
Roentgenologic Diagnosis of Right-Sided Enlargement of the Heart M. L. Susman, A. Grishman and M. I. Steinberg—p. 777  
Prognosis in Cases of Serofibrinous Pleurisy J. E. Farber—p. 784  
Epidemiologic Aspects of Food Borne Disease (continued) V. A. Getting—p. 788

228 809-840 (June 24) 1943

How Best to Eat Under War Conditions F. J. Stare—p. 809  
Spina Bifida and Cranium Bifidum IV. An Unusual Nasopharyngeal Encephalocele F. D. Ingraham and D. D. Matson—p. 815  
Hemorrhage and Purpura Caused by Dicoumarin Report of Case A. Cahan—p. 820  
Epidemiologic Aspects of Food Borne Disease (concluded) V. A. Getting—p. 823

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\*Subdiaphragmatic Abscess in Children W. E. Ladd and H. Swan—p. 1  
Tidal Drainage and Cystometry in Treatment of Sepsis Associated with Spinal Cord Injuries Study of 165 Cases D. Munro—p. 6  
Hip-Nail Determiner A. R. Gardner and G. Middlebrook—p. 14  
Peripheral Vascular Disease R. W. Wilkins and C. K. Friedland—p. 16

**Subdiaphragmatic Abscess in Children**—A subdiaphragmatic abscess complicating the postoperative course in a 3 year old boy with a ruptured appendix induced Ladd and Swan to review the cases previously seen at the Children's Hospital of Harvard Medical School. Fourteen patients have been seen in whom an abscess in the subdiaphragmatic space has been recognized. Eleven of these were treated surgically with one death, the other 3 had a fulminating infection and died. Post mortem a subphrenic abscess was found as one among multiple manifestations of a generalized sepsis. The symptomatology of subdiaphragmatic abscess showed considerable variation in the reviewed cases but it appears that in children at least three different types are encountered. These roughly parallel the different modes of origin of the infection. The first group comprises cases in which the subphrenic infection is part of a widespread intra-abdominal suppurative process. The second group in which the subphrenic infection complicates the course of an acute appendicitis with rupture of the appendix, is the type most commonly seen. The third group perhaps the most interesting and difficult to diagnose comprises cases in which the subphrenic abscess is metastatic and is at once the chief or only disease present. These patients have a history of upper respiratory infection, otitis media or recurrent superficial staphylococcal infection. This is followed some days later by the vague and insidious onset of mild malaise and anorexia associated with low grade pyrexia. These symptoms persist and there begin occasional attacks of abdominal pain. These symptoms gradually increase over a period of one to three months until the patient is brought to the hospital because of the appearance of a mass in the upper part of the abdomen. It is generally agreed that early and adequate drainage is the correct treatment for subphrenic abscess. In this series 11 patients underwent operation for drainage of a subphrenic abscess, with one death, a mortality of 9 per cent. There were 5 cases in which a direct incision was made and 2 in which the peritoneum was stripped from the diaphragm making 7 in which there was an extraperitoneal approach. These patients had a much shorter and better convalescence than did those who had a trans-serous approach. The extraperitoneal approach is the one of choice.

### New Orleans Medical and Surgical Journal

95 531-578 (June) 1943

Hypogastric Sympathectomy with Special Reference to Surgical Anatomy of Superior Hypogastric Plexus B. B. Weinstein—p. 534  
Human Serum and Plasma in Diseases of Children E. S. Platow—p. 547  
Duodenal Diverticulitis Acute and Chronic D. C. Browne and G. McHardy—p. 551  
Bacillary Disease of Lung W. A. Sodeman and R. L. Pullen—p. 558

### New York State Journal of Medicine, New York

43 1183-1278 (July 1) 1943

Summary of Present Treatment of Wounds and Burns R. Hayden—p. 1213  
Recent Trends in Psychotherapy L. R. Wolberg—p. 1220

43 1279-1374 (July 15) 1943

Treatment of Severely Burned Patient with Special Reference to Controlled Protein Therapy E. B. Mahoney and J. W. Howland—p. 1307  
Urology in Industry G. E. Slotkin—p. 1316  
Urinary Extravasation (Periurethral Phlegmon) New Concept of Pathogenesis and Treatment E. O. Finestone—p. 1320  
Epididymitis Its Relationship to Trauma and Compensation R. B. Henline and W. Yunch—p. 1325  
Study of Headaches Following Diagnostic Spinal Taps H. Adler—p. 1328  
Vitamins for Gray Hair J. J. Eller and L. A. Diaz—p. 1331  
Lesions of Anorectal Region Associated with Symptoms of Prostatism J. A. Lazarus—p. 1333  
Thyroidectomized Patients After Ten Years Analysis of 100 Consecutive Cases A. H. Noehren—p. 1338

### North Carolina Medical Journal, Winston-Salem

4 197-240 (June) 1943

President's Address Immediate Responsibility of Organized Medicine D. B. Cobb—p. 197  
Psychotherapy Within Psychosomatic Medicine M. H. Greenhill—p. 203  
Hormonal Approach to Carcinoma of Prostate E. P. Alvea and A. F. Henderson—p. 212  
Roentgen Manifestations of Gout S. Kamberg—p. 219

4 241-272 (July) 1943

Functions of County Medical Society G. L. Carrington—p. 241  
Requirements of Good County Medical Society President V. S. Caviness—p. 242  
Functions of County Medical Society Secretary O. L. McFadden—p. 245  
Treatment of Hypertension in Light of Modern Experimental Investigations A. Grollman—p. 246  
Some Aspects of Mental Hygiene or Preventive Psychiatry J. W. Vernon—p. 251  
Acute Leukemia as Terminal Event in Polycythemia Vera Report of 2 Cases with Autopsies O. C. Hansen Pruss and E. G. Goodman—p. 254  
Foreign Body in Stomach Report of Unusual Case H. M. Starling and C. R. Duncan—p. 258

### Public Health Reports, Washington, D. C.

58 857-892 (June 4) 1943

Caries Fluorine Hypothesis and Suggested Study to Test Its Application D. B. Ast—p. 857

58 893-936 (June 11) 1943

Blueprint for Conquest of Hunger T. Parran—p. 893  
\*Dermatitis from Resin Glue in War Industries L. Schwartz, S. M. Peck and J. E. Dunn—p. 899  
Activities of State and Local Industrial Hygiene Services in War Year Victoria M. Trasko—p. 904

58 937-968 (June 18) 1943

Poliomyelitis in United States in 1942 and Summary of Its Prevalence from 1933 to 1942 Inclusive C. C. Dauer—p. 937  
Leptospirosis in Rats (R. Norvegicus) In and About Washington D. C. Evaluation of Methods Used for Diagnosis C. L. Larson—p. 949  
Effect of Arsenates on Storage of Lead L. T. Fairhall, J. W. Miller and F. L. Weaver—p. 955

**Dermatitis from Resin Glue in War Industries**—Schwartz and his associates point out that an increase in the use of glues in the manufacture of wood substitutes has resulted in an increase in occupational dermatitis among workers in these industries. Glues can be classified with respect to their composition as (1) protein glues (2) natural resin glues (3) synthetic resin glues and (4) combinations of the foregoing. In the factories inspected in the course of this study the urea-formaldehyde and the phenol-formaldehyde resin adhesives caused most of the dermatitis. In making plywood for planes and gliders those who apply the cold liquid glues and those who apply the glue tapes are the ones most likely to be affected with dermatitis. The parts most often affected are the palms. The dermatitis begins in some workers as early as the third day after exposure (the primary irritant effect of the glue) while other workers may be exposed several weeks before it occurs. In factories where glass cloth is used workers though the glass fabric was the cause of the dermatitis but patch tests

showed that the phenol-formaldehyde molding powder was responsible. The treatment for dermatitis caused by glues is the same as for other forms of contact dermatitis. Where there are edema, vesicles and oozing only soothing wet dressings should be used such as solution of boric acid, solution of aluminum acetate (Burrow's solution) and 3 to 5 per cent tannic acid solution, this last on parts other than the face or neck. When the eruption begins to dry and crust mild fatty base ointments such as those of boric acid, calamine or zinc oxide should be used. Workers with mild eruptions should be given protective clothing and should be treated on the job in order to give them the chance to become "hardened" (if the dermatitis is caused by allergy) and to learn how to protect themselves (if it is due to primary irritation). To prevent dermatitis the management should provide suitable exhausts to draw away all irritant dusts or fumes. Clean coveralls should be provided daily for workers exposed to irritant glues, dusts and fumes. Workers who apply the glues should be provided with impervious gloves made either of washable leather or fabric lined rubber and sleeves and aprons of impervious materials. The sleeves should fasten over the gloves at the wrist to prevent irritants from falling into the gloves. Facilities should be provided so that workers can frequently wash glue from the gloves and the skin. The brushes and the sponges used for gluing should be washed or changed about every two hours, and workers should be cautioned against touching the face and other parts of the body with glue soiled fingers, gloves or tools.

### Surgery, St. Louis

14 1-156 (July) 1943

- Cirle Kelly Lane R. Matas—p. 1  
 Kienus versus Orthodox Treatment of Anterior Poliomyelitis J. A. Key—p. 20  
 Acute Perforated Gastric and Duodenal Ulcers F. A. Piletta and W. R. Hill—p. 32  
 Actinomycosis of Stomach and Duodenum Report of 2 Cases E. W. Sherrburn—p. 38  
 Impacts of Gastrointestinal Tract with Special Reference to Small Intestine Including Ileum Review of Literature and Report of 6 Cases L. L. Schottenfeld—p. 47  
 Rectal Stricture Due to Lymphogranuloma Venereum Treatment with Sulfonamide and Frei Antigen H. R. Seidenstein—p. 73  
 Murphy Button in Esophagogastric Stoma L. Miscall and B. B. Clark—p. 83  
 Renal Circulation After Compression of Renal Artery According to Method of Goldblatt Study of Influence of Renal Venous Runoff on Experimental Hypertension F. P. Corrigan and I. Pines—p. 88  
 Sulfonamide Therapy in Actinomycotic Infections C. Lyons, Cora R. Owen and W. B. Ayers—p. 99  
 Solitary Eosinophilic Granuloma Report of Case G. A. Kernwein and F. B. Queen—p. 105  
 Study of Physical Factors Concerned in Inflammation III Fixation of Bacteria in Inflamed Tissues C. J. Bellis—p. 111  
 Unusual Intra Abdominal Foreign Body H. T. Winkle—p. 122  
 Traumatic Rupture of Spleen with Delayed Hemorrhage with Reference to Condition as Complication of Rib Fractures, Report of 2 Cases R. L. Wraugh and J. A. Prior—p. 125  
 Surgical Significance of Middle Palmar Septum of Hand J. E. Flynn—p. 134  
 Early Postoperative Walking II Collective Review B. Newburger—p. 142

### Renal Circulation After Compression of Renal Artery

—The purpose of this study by Corrigan and Pines was to check whether and to what degree the ischemia of renal tissue shares in the production of hypertension and, if not, which other factor can be made responsible for the appearance of high blood pressure. They examined the possibility of arterial hypertension being dependent on the relative increase of local venous pressure as compared to the pressure on the arterial side of the kidney. They sought to increase the venous runoff and to diminish the venous pressure after the Goldblatt maneuver had been performed. In order to accomplish this they elevated the kidneys sufficiently to straighten the course of the renal veins. This added the force of gravity to the vis a tergo in certain positions of the animal, prevented the collapse of venous walls and, by establishing a closer contact between the renal vein and artery, increased the effect of arterial pulsation on the movement of blood in the renal vein. This procedure was applied only to animals that had developed hypertension. In the first group of dogs the procedure was applied to kidneys the renal arteries of which were previously constricted, in the second group of dogs to the intact opposite kidney with simultaneous ligation of the renal artery so that both renal arteries

were ligated and only one kidney was elevated, and in the third group of dogs to the intact opposite kidney without ligating the ipsilateral artery, so that one renal artery was ligated and the opposite kidney elevated in the manner already described. In all cases there was a decided fall of blood pressure. These results were particularly striking in the second group, in which, following constriction of both arteries, a further increase of blood pressure could be expected. Results of their experiments are confirmed by the clinical experience of McCann and Romansky and of Riskind and Greene, who have established that the hypertension which accompanies the renal ptosis or renal torsion can be actively eliminated as soon as the incorrect position of the kidney is improved by a surgical operation or by an abdominal belt. The decisive factor, however, in the authors' opinion consists not in the reduction of the lumen of the renal artery because of the renal ptosis but in the impeding of the venous outflow in these conditions and in the fact that the restoration of the kidneys to their right place has had its effect on arterial blood pressure through improvement of the venous return. They conclude that hypertension depends on the disturbance of the balance between the pressure on the arterial and on the venous side of the kidney. When this balance is disturbed in favor of the venous pressure, stasis probably takes place in the renal capillaries and primary renal circulation is short-circuited through arteriovenous shunts. Consequently the tissue responsible for hypertension begins to suffer from inadequate supply of blood and production of a hypertensive substance is begun. When the balance between the pressure in the arterial and venous sides of the kidney is restored the production of hypertensive substance will cease, perhaps through reestablishment of an efficient oxygenation.

### Sulfonamide Therapy in Actinomycotic Infections—

The 5 cases of actinomycotic infections reported by Lyons et al emphasize the necessity for long and continuous sulfonamide administration to effect healing and maintain remission of the disease. Sulfanilamide supplemented the surgical management of 5 patients infected with actinomycetes. The etiologic agent was an anaerobic *Actinomycetes bovis* in 4 cases, one cervicofacial, one pulmonary, one pulmonary and abdominal and one abdominal infection. An aerobic non-acid fast actinomycetes was found in another case in which there was an abscess of the buttocks. In every instance clinical improvement was noted within the first three weeks of sulfonamide treatment. This improvement was not maintained unless the sulfonamide compound was continued for a considerably longer period of time. Nine months of treatment with 4 Gm daily produced healing for two years in 1 case. Other patients treated with smaller doses for equal or longer periods of time showed recurrent abscesses and fistulous sinuses, but all patients appear improved. The dramatic initial response of these infections to sulfonamides is somewhat misleading. The drugs induce a remission and apparently diminish the intensity of the recurrence, but it can hardly be claimed that the disease has been completely cured. The necessity of surgical excision of the infection is clear. Surgical excision of all the infected tissue is the most effective treatment of the disease. Sulfonamide therapy is a valuable adjuvant to the surgical management of actinomycotic infections.

### West Virginia Medical Journal, Charleston

39 233-264 (July) 1943

- Optic Atrophy F. V. Gammage—p. 233  
 Pharyngoesophageal Diverticulum Treatment by One Stage Disposition of Sac R. H. Edwards—p. 241  
 Use of Serum, Plasma and Blood in Gynecology and Obstetrics A. P. Hudgins—p. 243  
 Virus Pneumonia W. C. Stewart—p. 248  
 Catalase and Peroxidase in Pathologic Urine L. I. Halley—p. 252

### Wisconsin Medical Journal, Madison

42 657-748 (July) 1943

- Prostatic Surgery at Wisconsin General Hospital, 1940-1941 I. P. Sisk and P. M. Cornwell—p. 679  
 Cesarean Section Problem in Wisconsin R. S. Cron—p. 683  
 Clinical Applications and Complications of Sulfonamides W. W. Spink—p. 688  
 Modern Status of Sulfamido Group of Drugs Used in Urology T. L. Pool—p. 693  
 Roentgen Study of Virus Pneumonia H. P. Doub—p. 696  
 Present Day Treatment of Varicose Veins H. O. McPhetres—p. 701

## FOREIGN

An asterisk ( \* ) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## Journal Obst &amp; Gynaec of Brit Empire, Manchester

50 161-240 (June) 1943

- Unsuspected Tuberculosis of Endometrium. A M Sutherland—p 161  
Further Investigations on Histidine and Histamine Metabolism in Normal and Pathologic Pregnancy. R Kreppler Adler—p 177  
Prolapse Following Hysterectomy. I Hamilton—p 184  
Primary Abdominal and Primary Ovarian Pregnancy with Report of 1 Case of Each Variety. R C Thomas—p 189  
Puerperal Tetanus with Report of Case Following Septic Criminal Abortion. R C Thomas—p 196  
Prognostic Significance of Rise in Temperature in Course of Radium Treatment of Cancer of Cervix. Gertrude Goldscheider—p 202  
Unusual Case of Intrapertoneal Bleeding from Ruptured Uterine Vein During Pregnancy. Kathleen M D Harding and A B Concanon—p 208  
Excretion of Ketosteroids in Human Pregnancy Urine in Relation to Sex of Fetus. H Burrows, D MacLeod and F L Warren—p 212  
Division of Zygote Producing Trophoblast Only. A Bonney—p 217  
Intrapelvic Tuberculosis. J R Goodall—p 219  
Local Anesthesia in Vulval and Vaginal Surgery. C P Brentnall—p 226

## Lancet, London

2 33-62 (July 10) 1943

- Sensory Areas of Brain. E D Adrian—p 33  
Pulmonary Tubercle in Children. Influence of Evacuation on Its Incidence. Marcia Hall—p 35  
\*Bactericidal Action of Estrogens. G H Faulkner—p 38  
Gunshot Aneurysm of Carotid Artery. R S Handley and M Oldfield—p 40  
Pellagra in Psychiatric Practice. Twelve Recent Cases. S W Hardwick—p 43

**Bactericidal Action of Estrogens**—Faulkner observed that diethylstilbestrol possesses some degree of bactericidal activity. Other substances possessing estrogenic properties were examined in order to see whether there was any correlation between the estrogenic and the bactericidal activities. Estradiol, estrone, diethylstilbestrol, hexestrol and diethoxytriphenylbromoethylene were investigated. The organisms used were all recently isolated from material sent to the laboratory for bacteriologic investigation. The strains of *Corynebacterium diphtheriae* were all virulent to guinea pigs. All the hemolytic streptococci exhibited beta hemolysis, and strains 4, 5 and 6 belonged to Lancefield's serologic group A. Faulkner states that diethylstilbestrol is bactericidal and in lesser concentrations bacteriostatic to gram positive cocci, *Corynebacterium diphtheriae* and *Neisseria catarrhalis*. No inhibitory action was noted on the gram negative bacilli. The minimal lethal concentration varies somewhat between these organisms, but in all those recorded it lies between 1:5,000 and 1:500,000. Tubercle bacilli were killed by incubation in vitro with diethylstilbestrol 1:5,000. Hexestrol also possesses bactericidal properties. Other estrogenic substances (estrone, estradiol and diethoxytriphenylbromoethylene) have not been found to have bactericidal action. The bactericidal activity of diethylstilbestrol is reduced in the presence of serum.

2 63-90 (July 17) 1943

- Anaerobic Infections of War Wounds in Middle East. J D MacLennan—p 63  
March Fracture. Series of 15 Cases from R A F. G Flavell—p 66  
Bacillary Dysentery. Chemotherapy in Its Treatment. An Experience of 492 Cases in Middle East. E Bulmer and W M Priest—p 69  
\*Sonne Dysentery. Sulfapyridine in Its Treatment. R Swyer—p 71  
\*Propamidine in Surgical Infections. Clinical Study. E C B Butler—p 73  
Method of Producing Experimental Granulating Wounds. H E Hutchison—p 75

**Bacillary Dysentery**—Bulmer and Priest assess the value of chemotherapy in bacillary dysentery on the basis of experience of eighteen months in the Middle East covering two summers. A sorting of cases by stool inspection shows two groups, there is the mildest type without blood and mucus in the stools familiarly known as Gypsy tummy and arbitrarily called acute catarrhal enteritis, this is an unpleasant condition often febrile associated with considerable abdominal pain and frequently needing hospital treatment. Even in this mildest type the stay in hospital of 600 patients averaged ten days. True dysentery is distinguished by the presence of blood and mucus in the stools

and is a much graver disease, the average duration of stay in the hospital of 600 patients was twenty days. A series of 483 patients with nonamebic diarrheas, the majority being bacillary dysentery, were treated with sulfonamide drugs. Of 323 patients treated with sulfaguanidine the average stay in the hospital was substantially reduced as compared with that of 600 controls. Of 97 patients with acute dysentery treated with sulfapyridine the stay also was reduced but the patients experienced nausea, vomiting and malaise. Of 63 patients treated with sulfanilamide the stay in the hospital was not reduced. The authors conclude that 1 Sulfaguanidine is a specific drug in the treatment of acute subacute and chronic bacillary dysentery, it is almost nontoxic and does not upset the patient. It is probable that its routine use would diminish the stay in the hospital by one half. 2 Sulfanilamide in the form of crushed tablets does not have any definite effect in dysentery. 3 Sulfapyridine is of considerable value in dysentery but is not so effective as sulfaguanidine. Its unpleasant effects make its use undesirable unless sulfaguanidine is not available.

**Sulfapyridine in Sonne Dysentery**—According to Swyer the incidence of Sonne dysentery has been increasing in Britain. Consequently any procedure which shortens the illness or reduces the number of carriers becomes of great importance. The series here described comprised 92 patients with Sonne dysentery, 57 of whom were treated with sulfapyridine and 35 were used as controls. Except at week ends daily bacteriologic examinations of feces and rectal swabs were done in all chemotherapy series, and twice weekly in controls, on desoxycholate-citrate agar. Treatment with sulfapyridine by mouth was instituted immediately on isolation of *Bacterium sonnei* and was continued until a negative report on the feces and on rectal swabbing was obtained. Administration of the drug was then stopped and after an interval of forty-eight hours further bacteriologic examinations were made. If these proved negative, examinations were repeated until a minimum of three consecutive negative stools and rectal swabs had been obtained. If after forty-eight hours the stool or rectal swabbing reverted to positive, the course of treatment was repeated. Careful watch was kept for toxic symptoms of chemotherapy, granulocytopenia being guarded against by leukocyte counts. In the chemotherapy group the average time required to obtain bacteriologic clearance was a fourth of that in the control group (five compared with twenty-one days). The period required to obtain apparently normal stools in the chemotherapy group was halved (nine compared with twenty days). No bacteriologic relapses after three days of the negative state arose in the drug treated patients but in controls six such relapses developed at periods ranging from seven to thirty-six days after apparent clearance.

**Propamidine in Surgical Infections**—Butler points out that propamidine has been shown to retain its bacteriostatic action in the presence of pus in concentrations which do not prevent phagocytosis, a property which makes it useful in the treatment of infected wounds. The drug is effective in staphylococcal infections and is extremely potent against the hemolytic streptococcus but is of little use against *Proteus vulgaris* and *Pseudomonas aeruginosa* in vitro against *Clostridium welchii* the activity is probably of the same order as against *Staphylococcus aureus*. The present paper describes a series of cases and suggests an additional method of using the drug. Two preparations have been employed a jelly or a solution. Of 10 cases reported 7 illustrate the value of propamidine jelly in the treatment of recent war wounds infected hands and certain types of bone infection. 3 show that a 1 per cent solution of propamidine injected into infected joint or empyema cavities may help to overcome the infection and sometimes make surgical intervention unnecessary. The jelly base of the propamidine preparation is a tissue irritant and must not be used if the wound is to be sutured. When used round open wounds it may cause redness of the skin which should be protected by petrolatum. If the drug is used for more than ten days the production of granulation tissue is often stimulated to an extent which is undesirable in superficial lesions but useful in filling up deep cavities. Propamidine jelly does not penetrate soft tissues or bone and is essentially a local bacteriostatic. Propamidine solution has mainly been used against staphylococcal infection.



## Medicina, Buenos Aires

## 3 259-385 (April) 1943 Partial Index

- Importance of Bile in Absorption of Vitamin K R. B. C. A. Tantar and R. I. Banch —p. 259  
 \*Compensatory Myeloid Metaplasia of Spleen Importance of Differentiation from Chronic Myeloid Leukemia A. Pavlovsky —p. 287  
 Sudden Death A. C. Tiquini and I. de Soldati —p. 328

**Compensatory Myeloid Metaplasia of Spleen**—Pavlovsky stresses the importance of a differential diagnosis between compensatory myeloid metaplasia of the spleen in aplasia of the myelopoietic organs and chronic myeloid leukemia. He observed 7 cases of the former condition and 99 cases of the latter. High voltage roentgen irradiation of the spleen, indicated in chronic myeloid leukemia, is contraindicated in compensatory myeloid metaplasia. A diagnosis of compensatory myeloid metaplasia of the spleen is made on clinical symptoms similar to those of chronic myeloid leukemia but of long duration, acute splenomegaly, changes in the peripheral blood similar to those of chronic myeloid leukemia or of chronic myeloid subleukemia, certain changes of the long bones and lack of tenderness over the sternum. The diagnosis should be verified by the examination of the sternal bone marrow and of spleen tissue obtained by puncture. The bone marrow is either aplastic or hypoplastic, whereas the splenic tissue is transformed into myeloid tissue. In 5 of the group of 7 cases of compensatory myeloid metaplasia of the spleen reported by the author, roentgen irradiations of the spleen were done. The 3 patients who received large doses of roentgen rays to the spleen rapidly developed symptoms of acute pancytopenia, aplastic anemia and thrombopenic purpura respectively. Immediate discontinuation of irradiation and attempts to control the disease failed. Two patients who had weekly irradiations with small doses rapidly grew worse. The symptoms were controlled by immediate discontinuation of the irradiations and the exhibition of hematomics. The last 2 patients and those given hematomics are living and are in a fairly good state of health. One of them is still living with compensatory myeloid metaplasia of more than twenty years' duration.

## Medicina, Mexico, D. F.

## 23 205-230 (June 25) 1943 Partial Index

- Pathology of Brucellosis H. Tovar Mancera —p. 205  
 \*Natural Infection of Cats with Typhus L. Mazzotti and G. Varela —p. 229

**Natural Infection of Cats with Typhus**—Mazzotti and Varela experimented on domestic cats living in or near the wing for patients with infectious diseases in the General Hospital of Mexico City. Agglutination tests for *Proteus typhi* gave positive results with the blood of the animals. The tests were strongly positive with the blood of some animals. Guinea pigs inoculated with the brain of either cadavers of patients who died with typhus or of rats that had been previously inoculated with the brain of the cats developed fever and scrotal inflammation (Neill-Mooser positive sign). Extracellular and intracellular rickettsiae in large numbers were observed in cultures of the tunica vaginalis of inoculated guinea pigs. The authors direct attention to the presence of natural typhus in domestic cats and the possible role of these animals as temporary reservoirs of typhus. Natural infection of cats probably occurs through fleas or through ingestion of infected material.

## Prensa Médica Argentina, Buenos Aires

## 30 689-734 (April 21) 1943 Partial Index

- Hyperinsulinism Due to Adenoma of Insular Cells A. Ceballos and S. Rosenblatt —p. 689  
 \*Procaine Hydrochloride Spinal Anesthesia and Altitude P. Perovic —p. 706  
 Traumatic Hernia of Testicle D. Calisti —p. 709

**Spinal Anesthesia and Altitude**—Perovic found that the effects of spinal anesthesia induced with procaine hydrochloride diminished with increase in altitude. The dose varies in the following proportions: from 0.08 to 0.10 Gm at altitudes of 500 meters over sea level, from 0.10 to 0.12 Gm at altitudes between 1,000 and 1,500 meters, from 0.12 to 0.14 Gm at altitudes between 2,000 and 2,500 meters, from 0.14 to 0.16 Gm at altitudes between 3,000 and 4,000 meters and from 0.14 to 0.17 Gm at altitudes over 4,500 meters above sea level. The

author believes that increased altitude causes increased concentration of organic and chemical substances in the cerebrospinal fluid, which is the factor in diminishing the effect of the anesthetic on the central nervous tissues.

## Revista de la Asoc. méd. Argentina, Buenos Aires

## 57 149-218 (April 15-30) 1943 Partial Index

- \*Pulmonary Blastomycosis with Cavitation E. L. Capdehourat, R. A. Gini and M. F. Jörg —p. 149  
 Sulfamylamide in Surgery J. Nasio —p. 157  
 Antidiuretic Action of Pitressin in Acute Nephritis R. Q. Pasqualini and A. C. Avogadro —p. 168  
 Therapy of Obstetric Shock G. Ricci, N. Rodriguez Miranda and M. Balguier —p. 175

**Pulmonary Blastomycosis with Cavitation**—According to Capdehourat and his collaborators pulmonary blastomycosis with cavitation is rare. The case they report is the second in the literature. A woman aged 26 presented symptoms simulating pulmonary tuberculosis of five years' duration. The bacteriologic examination of the sputum was negative for tubercle bacilli but showed numerous monilia. X-ray examination of the lung showed a shadow of a large solitary cavity. Sulfonamide therapy was without effect. Intravenous injections of chionofon in doses of from 5 to 10 cc and sodium iodide or potassium iodide in daily dose of 0.4 Gm brought about a clinical and roentgenologic cure of the patient. Repeated x-ray examinations of the lung demonstrated disappearance of the cavity more than eight months after discontinuation of the therapy.

## Zentralblatt für Chirurgie, Leipzig

## 69 81-128 (Jan 17) 1942 Partial Index

- Radium Treatment of Hemangiomas in Children E. Günzel —p. 87  
 \*Malignant Exophthalmos P. Sunder-Plassmann —p. 88  
 \*Fatigue Fractures and Zones of Transformation in Bone F. Schroder —p. 92

**Malignant Exophthalmos**—According to Sunder-Plassmann there are cases of exophthalmic goiter in which the exophthalmos continues to increase after removal of the thyroid. These are cases of malignant exophthalmos. In the mild form of malignant exophthalmos conjunctival excision has been effective, but there are also cases in which the exophthalmos increases to a point of perforation of the eye. The author reports a case in which enucleation of the eyes became necessary. In another case conservative measures proved ineffective. Both eyes had advanced corneal ulcers, and spontaneous perforation seemed imminent. The patient required morphine for the control of the pain. The visual capacity was practically nil. As a last resort it was decided to attempt the operation described by Naffziger in 1933, which that author had successfully employed in 6 cases. Bilateral trepanation was done and then by the intracranial approach complete orbital decompression was effected, also decompression of the roof of the nerve canal. As had been observed by Naffziger, the eye muscles were enormously enlarged and both optic nerves showed extreme edema. The patient tolerated the operation well. The exophthalmos receded rapidly, and complete closure of the eyes became again possible. The corneal ulcers healed. The patient regained normal visual capacity and her general condition is excellent.

**Fatigue Fractures**—Schroder shows that the pathologic changes caused by overexertion of bones become manifest in two distinct forms as fatigue fracture and as "umbauzone" (zone of transformation). The fatigue fracture represents a typical fracture. The fracture line is usually delicate, there is considerable callus formation and the pain is severe. The zone of transformation shows a wide area of reduced density, but there is only slight or no callus formation and mild pain. Both lesions are observed at the characteristic sites of greatest exertion, but, whereas fatigue fracture occurs only in healthy bone tissue, zones of transformation develop chiefly in the presence of metabolic disturbances or deficiency diseases. The author reports that zones of transformation appeared in both scapulas of a woman aged 42. These zones of transformation disappeared after prolonged treatment with vitamin C, and it is concluded that vitamin deficiency played a part in their development.

## Book Notices

**Health and Physical Fitness** By I H Goldberger MD Assistant Director of Health Education New York City Public Schools and Grace T Hallock Director Welfare Publication Bureau Metropolitan Life Insurance Company Cloth Price \$1.92 Pp 596 with illustrations Boston Cinn and Company 1943

This book by two authors experienced in health education is designed specifically to contribute to the training in health and physical fitness of the high school Victory Corps and in general for high school health education programs. It follows a conventional organization of such textbooks but is exceptionally rich in well conceived illustrations used in the modern manner, including bleedoff, montage, diagrammatic section and partial section techniques. Each unit has a challenging set of questions under the title 'What Would You Think Say, or Do If—' and under each of these titles such challenging questions as "A 4 year old child of your acquaintance lost a tooth and his mother said 'It doesn't matter he'll get another to take its place'". There are also matching tests, true-false selections, completion tests, extensive suggestions for further study and discussion, and a list of scientific words of which to learn the meaning. Each unit is introduced by a set of "leading questions". The units are effectively entitled, for example, the unit on vision is called "Look!" and, in the same manner, that on hearing 'Listen'. The book is interestingly presented and thoroughly practical. It should be a valuable teaching help.

**The Pharmacology of the Opium Alkaloids Part 2** By Hugo Krueger Assistant Professor of Pharmacology St Louis University School of Medicine Nathan B Eddy Principal Pharmacologist U S Public Health Service and Margaret Sumwalt Associate Physiologist U S Public Health Service Supplement No 165 to the Public Health Reports Federal Security Agency United States Public Health Service Division of Sanitary Reports and Statistics Cloth Price \$1.50 Pp 813 1448 Washington D C Supt of Doc Government Printing Office 1943

The first part of this book offered a dissertation on morphine which provided an excellent informative source for reference. The second part is intended to supplement the other volume and offers concise presentation of pertinent data on codeine ethylmorphine, dihydromorphine, diacetylmorphine, thebaine, apomorphine, other derivatives of morphine, sinomenine and its derivatives papaverine and its derivatives narcotine and its derivatives narceine and its derivatives cryptopine and protopine. The book is not for the practicing physician unless he has an unusual interest in the opium alkaloids, it should be available for all teachers and researchers in pharmacology and therapeutics. The material is presented in concise form and its accumulation must represent the labor of almost uncountable searches into the literature by the authors. The bibliography, subject and author indexes are as complete as the reviewer has ever seen.

**Urology in General Practice** By Nelse F Ockerblad BS MD F.A.C.S Professor of Clinical Urology University of Kansas School of Medicine Lawrence and Hjalmar E Carlson BS A.M MD Instructor in Urology University of Kansas School of Medicine Cloth. Price \$4 Pp 383 with 98 illustrations Chicago Year Book Publishers Inc 1943

Had the authors of this little volume adhered to their promise as stated in the preface 'to help the general physician do better those things that are within his province in the realm of genito-urinary diseases and to suggest the limits beyond which the best interests of his patients require that he obtain the help of a specialist,' this might have been a book of value but unfortunately they fall far short of the mark. The text starts with the most elementary details of laboratory diagnosis and presently one finds an adjoining chapter on such subjects as kidney ptosis anomalies of the genitourinary tract and urinary lithiasis, the subject matter of which might cause even a research worker to ponder. The reviewer takes issue with the discussion of nephritis. This chapter may be comprehensive but it has no place in urology. Nephritis is a medical disease. There is no sequence whatever to the arrangement of the subject matter no orderly presentation, even though isolated topics are well discussed. It is most unfortunate that an experienced urologist should write about diseases of the male urethra to the complete exclusion of pathology of the verumontanum about which the general practitioner should know even though he is not equipped to treat it, and so on. In brief this book is neither fish nor fowl, it is smörgåsbord.

**Index to Dental Literature in the English Language Including One Hundred and Twelve Periodicals from Australia Canada England India South Africa and the United States Three Years 1939 1941** An Alphabetical Subject and Author Index A List of Dental Books Committee on Library and Indexing Service of the American Dental Association John E Gurlev DDS Chairman Cloth Price \$7.50 Pp 282 Chicago American Dental Association 1943

The American Dental Association is to be congratulated on the appearance of this volume of the "Dental Index," covering the years 1939 to 1941, in which a change of style has been effected. Instead of the former numerical system of classification the arrangement is alphabetical according to author and subject. Listing of entries under subjects by title rather than by author and the use of continued column heads would have improved the make-up still further. The subject headings are practical rather than scholarly, but they represent nomenclature in current use. It is hoped that certain wordy headings, inconsistencies in indexing and similar technical defects will be eliminated in future volumes.

**How to Prepare for Military Fitness** By Lieutenant Colonel François D'Eliscu Illustrated by Stephen J Voorhes Cloth Price \$1.96 Pp 216 New York W W Norton & Company Inc 1943

In this compact volume there is an excellent, well edited and adequately illustrated description of the more important methods of physical training. The material is carefully selected from among the more beneficial forms of calisthenics and conditioning exercises as they apply to military personnel. Descriptions of drills, exercises and games are concisely vivid and accurate. The author has subtly drawn on his own experience to add to the effectiveness of the instructions given. Wall scaling and tree climbing, elementary judo wartime wrestling and boxing unarmed defense and disarming an opponent are especially valuable and timely chapters. Further, to meet current needs, the last portion of the book adequately describes swimming and life saving procedures to be employed in common situations which soldiers and sailors are apt to encounter. Throughout there are many well drawn black and white illustrations which clarify the subject. On the whole it is an excellent handbook on physical training that deserves a wide circulation.

**Your Own Story** By Marlon L Faegre Assistant Professor of Parent Education Institute of Child Welfare University of Minnesota Minneapolis Paper Pp 52 with illustrations Minneapolis Minnesota Department of Health 1943

This booklet contains a brief story of human and animal reproduction—not animal and human—to which thirty-one of its fifty-two pages are devoted. The remainder is a chapter addressed to parents as to how to use the material in the first part of the pamphlet. The pamphlet could not be more effectively reviewed than in the words of Dr Haven Emerson contained in its introduction 'Other states and in fact our federal agencies promoting human welfare could not do better than follow Minnesota's example and compete in friendly rivalry of word and design to carry to all parents and children lessons of the hygiene of human reproduction and the bearing of our bisexual structures and functions on personal, family and social soundness of character and happiness. What is here offered is to be unreservedly accepted and recommended for its accuracy and directness of statement and for the spirit and purpose of the language and illustrations used.'

**Memoirs of a Guinea Pig or Eight Years in a Doctor's Waiting Room** By Howard Vincent O'Brien Cloth. Price \$2 Pp 238 with illustrations by Robert Mills New York G P Putnam's Sons 1942

In his middle 40's Mr Howard Vincent O'Brien who is a clever writer developed difficulty with his vision—a condition commonly referred to as scotoma. In his search for relief he tried everything including shock therapy, heat therapy allergy manipulation of the feet, vitamins osteopathy chiropractic and procedures directed toward the intestines and the gallbladder. Apparently he comes to the end of 237 pages still with the scotoma, also with the ability to write an intensely human chapter on 'The Care and Feeding of Doctors'. Here he disports himself by injecting a few barbs into some of the easily recognized and significant weaknesses of the profession. In the course of his travels he came also under the attention of some of our leading ophthalmologists who will be recognized not only by the mention of their names in the dedication but also by their characterization in the work. This item is recommended especially to ophthalmologists with a sense of humor but also to every doctor with a sense of humor.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES OR ARE SPECIFICALLY STATED IN THE REPLY. A POLYMOBIL COMMUNICATIONS AND QUERIES OF POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THIS WILL BE OMITTED ON REQUEST.

### RUPTURE OF MEMBRANES TO INDUCE LABOR

**To the Editor**—For over five years my colleagues and I have been inducing labor by artificial rupture of the membranes when we felt that this was indicated, that is, mainly when the child is past due with the head engaged or there is a plus 1 or plus 2. After the reorganization of our hospital staff we were told that this is poor obstetrics and will no longer be tolerated. We have never had a complication, which is probably due to the fact that we have never used this method promiscuously. We are interested mainly in determining whether or not this is generally considered a poor obstetric procedure. We should appreciate an opinion that will help answer this problem. If this procedure is poor obstetrics we wish to discontinue it, however, the fact that we have used it successfully for over five years leads us to believe that we are not in error. Does the literature substantiate our confidence in this method?

M D, Illinois

**ANSWER**—Artificial rupture of the membranes has become the accepted method of inducing labor when this procedure is indicated. Ideally, the following conditions should be present:

The pregnancy should be advanced to term or beyond it. There must be no question of cephalopelvic disproportion. The cervix should be "ripe", that is, it should be well effaced and sufficiently softened to admit one or two fingers. The head should be engaged. When these conditions are present there is little hazard in the induction of labor. The latent period is rarely long and the labor is of average or shorter than average duration.

The real hazards occur when the indications mentioned are not present. Rupture of the membranes in the absence of a "ripe" cervix may lead to a long latent period and a prolonged and occasionally complicated labor. If the presenting part is not well engaged in the pelvis, prolapse of the umbilical cord may and does occur. The abnormal labor will increase the hazards of infection. The method is most successful at or near term and becomes less and less successful the further away from term it is attempted.

The induction of labor should be reserved for patients for whom such a procedure is indicated. Although it can be carried out with little risk in properly selected cases, it is far better to allow normal patients to go into labor spontaneously. The induction of labor for postmaturity is rarely indicated.

### SNUFF HABIT

**To the Editor**—A woman aged 58 wishes to break the long standing habit of using snuff. Is there any medication which may assist her in her problem?

August C Orr, M D, Bismarck, N D

**ANSWER**—Whether the cessation of the snuffing habit is desired for social, esthetic, economic or hygienic reasons, the measures advised must be psychologic and environmental more than pharmacologic. The craving for nicotine may be alleviated by replacement with lobeline hydrochloride, though the lobelia addiction may be just as undesirable. The motor component of the snuff chewing habit may be replaced by that of chewing gum or candy. The use of pepper and other sternutatories instead of snuff has not met with favor. The development of unpleasant associations by giving ill smelling, ill tasting or unpleasant acting drugs such as asafetida, aloin or apomorphine with the tobacco has been suggested, as in a popular treatment for alcohol addiction. Painting the throat with silver nitrate causes a bad taste on attempting to smoke, but this effect may not be found on chewing or snuffing.

Lessening of the availability of the supply or of reminders of its use, and increase in other interests to distract attention and lessen the impulse to the use of the snuff may be of aid. Clarification and reinforcement of the conscious reasons for abandoning the habit, and encouragement of the individual to develop and display her will power in this connection may be effective.

#### References

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### CORONARY DISEASE DIFFERENTIATED FROM DIAPHRAGMATIC HERNIA

**To the Editor**—A man aged 66 has coronary disease but is otherwise in excellent condition. What are its classic and differential symptoms compared with those of diaphragmatic hernia? Compared with the incidence of coronary disease, about what is its ratio to that of diaphragmatic hernia? What type of therapy would you regard best suited for a diaphragmatic hernia diagnosed as such in a patient as here briefly described?

C B Greear, M D, Honaker, Va

**ANSWER**—The classic symptoms of coronary disease are substernal pain with radiation to the left shoulder and arm or, less frequently, to the right. There may also be radiation to the neck and jaws. The pain is usually associated with a sense of oppression. This pain is usually precipitated by exercise and particularly by exercise shortly after eating. The practical difficulty lies in the fact that there are so many variations from the classic picture. This pain or one of its variations can be differentiated from that of diaphragmatic hernia in many cases only by visualizing the hernia. In fact, it may be that the pain of diaphragmatic hernias is really due to reflex coronary constriction. It is impossible to say what percentage of coronary pain is caused by diaphragmatic hernias, but such a cause is sufficiently frequent to warrant the search for diaphragmatic hernia whenever possible. The symptom that most often arouses suspicion of diaphragmatic hernia is coronary type of pain that comes on with the patient recumbent and which is relieved when the patient assumes an upright position. X-ray examination is, however, the final diagnostic test for diaphragmatic hernia. Active treatment of such hernia is not satisfactory. In most cases coronary dilators plus palliative treatment will cause an amelioration of symptoms.

### DERMATITIS FROM WEEDS OF RAGWEED GROUP

**To the Editor**—A patient has a contact dermatitis from weeds. On patch testing he is sensitive to western ragweed, Santa Maria feverfew, crane's bill and burweed marsh elder. Kindly let me know in what parts of the United States he might live where all these weeds are absent or present only in small numbers.

M D, Colorado

**ANSWER**—Western ragweed (*Ambrosia psilostachya*) is widely distributed over the western half of the United States. It is not abundant east of Oklahoma, Kansas and the Dakotas except perhaps in western Minnesota.

Santa Maria feverfew (*Parthenium hysterophorus*) is common throughout the Southern states as far west as Texas, being found in southern Missouri, southern Illinois and in the area south of the Ohio River.

Crane's bill, or wild geranium (*Geranium spp*), covers a genus of some ten species, several of which are common throughout the Eastern, Northern and Central states.

Burweed marsh elder (*Iva xanthifolia*) is a ragweed which grows abundantly in the northern Mississippi and Missouri valleys and in many places in the intermountain states.

There is no appreciable area where all four plants are absent. Locally one might find plenty of places where over a limited area none of the plants would be present—for example, in a wooded section in the Rocky Mountain area or a seacoast locality such as Miami, Fla. Since the allergy in question involves contact with the plant it should be easy in almost any large city to avoid all four offenders. Cleveland would be free from all except crane's bill, and this would probably be found only in wooded parks or forest preserves. However, the close relationship of western ragweed to common ragweed would suggest caution in close exposure to the latter, which is, of course, widely distributed over the Eastern states.

### GASTROINTESTINAL SYMPTOMS AND GRASS EATING

**To the Editor**—A boy, aged 13, had vague lower abdominal discomfort. His appendix had been removed. Temperature, pulse and respiration were normal. There was some constipation and some dysuria but nothing in the urine. After three days' rest and a bland diet he was symptom free. On the morning of my last visit I saw that he had a pocket full of green grass, which, it developed, he had been in the habit of putting in his mouth. It was denied that he actually chewed it. Is there anything in grass that might produce gastrointestinal symptoms or genitourinary symptoms if the grass should be tasted or chewed?

M D, Massachusetts

**ANSWER**—W C Muenscher (Poisonous Plants of the United States, New York, Macmillan Company, 1939) mentions a number of grasses as poisonous under certain conditions. These include *Sorghum vulgare* (sorghum), *Sorghum halepense* (Johnsongrass) and *Holcus lanatus* (velvet grass, mesquite grass) which may cause poisoning as the result of the formation of prussic or hydrocyanic acid on hydrolysis.

*Lolium Temulentum* L (darnel, tares, poison rye grass) is widespread in the United States, contains the toxic alkaloid temuline. According to some authorities darnel is poisonous.

only when infected by the fungus *Endocladium temulentum*. Apathy, sleepiness, giddiness, mydriasis, nausea and vomiting followed by abdominal cramps have been ascribed to dandel poisoning in human beings.

*Eragrostis cilianensis* (stink grass, meadow snake grass) and *Stipa robusta* (sleepy grass) may cause poisoning in horses but the animals always recover.

Toxic symptoms may be produced also by poisonous weeds eaten with grass and by rusts, smuts and molds present on grass.

Most ordinary grasses such as are found on city lawns (for example, fescue, crab and orchard) aside from producing a bitter taste in the mouth are not harmful. Of course if eaten in sufficient quantities mechanical disturbances of the intestine may result. It is of interest to note that grass either in chopped form or as tablets prepared from dried and powdered grass, may be ingested by human beings without untoward effects. Similarly the juice extracted from grass has been administered to both children and adults without ill effects.

Although the nature of the grass is not mentioned it seems unlikely that it is a member of the poisonous group. In all probability the patient's symptoms were entirely unrelated to the tasting or chewing of grass.

### PLASMA ELECTROLYTES

To the Editor—What are the normal limits of plasma electrolyte millimols?  
Captain M. C. A. U. S.

ANSWER.—The total plasma electrolytes equal the sum of the positively charged cations and negatively charged anions in solution in plasma. In considering acid-base balance it is convenient to use a unit of concentration which reflects the equality between the total positive and total negative ions and permits the comparison of concentrations of different ions in units that are electrolytically equivalent. Hence in discussing plasma electrolyte concentrations the unit milliequivalent is preferable to the unit millimol. A milliequivalent equals a millimol divided by valence. Milliequivalents may be derived from milligrams per hundred cubic centimeters as follows:

$$\frac{\text{mg per 100 cc} \times 10}{\text{molecular weight}} = \text{millimols per liter}$$

$$\text{millimols per liter} \times \text{valence} = \text{milliequivalents per liter}$$

The following table gives the upper and lower limits of plasma electrolyte concentrations expressed as milliequivalents per liter.

	Base meq/L.		Acid meq/L.
Na <sup>+</sup>	136.0-144.0	HCO <sup>-</sup>	25.0-27.0
K <sup>+</sup>	4.0-5.0	Cl <sup>-</sup>	98.0-106.0
Ca <sup>++</sup>	4.8-5.2	HPO <sup>+-</sup>	1.8-2.5
Mg <sup>++</sup>	2.5-3.5	SO <sup>+-</sup>	0.8-1.2
		Organic acid	4.0-8.0
Average total	155	Protein	14.0-18.0
		Average total	155

### IRRITATION FROM COAL TAR OR PINE TAR

To the Editor—I have had contact eczema dermatitis on my hands for two years. It was due to tar. Will you kindly give me information on coal tar products or products with the benzene ring.

Alfred A. Newberry M.D. Twin Falls Idaho

ANSWER.—The query is rather an indefinite one because there are at least two types of tar, coal tar and pine tar which differ somewhat in composition. Neither of the tars is a chemical entity, they consist of a great many hydrocarbons.

A great many chemicals are derived from tar either directly or by chemical combination.

Many of the chemicals in tar will irritate the skin and many of them will sensitize the skin. Some of them are photosensitizers.

It would be desirable to find which of the ingredients of tar cause the trouble. This can be done by performing patch tests first with coal tar itself to verify the diagnosis, second with the coal tar distillates and third with the basic chemicals found in the particular distillates which show the strongest reactions from the patch tests.

#### References

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### FUNCTIONS OF VERTEBRAE AND ARTICULATING PROCESSES

To the Editor—Following a fall from a horse and in turn having the horse fall on me I received a slight fracture of the body of the fourth lumbar vertebra that is the superior lip was pushed down approximately an eighth of an inch slivering the bone parallel and under the anterior longitudinal ligament. The injury has been remarkably free from any pain or discomfort which is more than I can say for the treatment that has been directed toward keeping my lumbar spine in a mild degree of hyperextension. I have been struck with the fact that all of my colleagues seemed to be particularly obsessed with an assumption that the bodies of the vertebrae are principally supporting blocks to the upright position or rather erect posture. My contention is that all of the antigravitational force is centered in the articular processes at the root of the vertebral arches and is balanced antigravitationally in the supraspinal ligaments evolving the anticlinal vertebra in other words the bodies of the vertebrae and the intervertebral disks are progravitational reducing the function of the body and the intervertebral disk to a cushioning counterbalancing and shock absorbing rather than supporting. Sir Samson Wright in Applied Physiology discusses this question in his chapter on muscle tone and regulation of posture from the standpoint of muscles and nerves but does not correlate this with any physical structure of the bones. To reexamine the foregoing assumption what are some of the recent opinions as to the importance of the bodies of the vertebra in maintaining the erect posture?

H. D. Allen Jr. M.D. Milledgeville Ga.

ANSWER.—There is a difference of opinion as to just what the total functions of the articulating processes at the bases of the vertebral laminae are. The probabilities are that they have little to do with the actual weight bearing. Weight bearing most probably is taken care of through the bodies of the vertebrae and the intervertebral disks. The chief function of the articulating processes is that of preventing a forward slipping of the upper vertebra on the one below.

In neurosurgery it is often necessary to perform a wide laminectomy in which the articulating facets (articular processes) are removed on both sides and the patients get along well. The old question comes into prominence here as to whether or not ligaments give the most support or the muscles. Both are essential. The spinal bony column is made up of a number of separate bones, one on top of the other, held together by their contour and strong reinforcing ligaments. In a way the spine can be likened to a tent pole and the muscles to the guy ropes that hold the pole erect.

Clinically, it has long been known that a slight compression fracture along the anterior border of a vertebra may give little or no discomfort and treatment in such cases by hyperextension is not necessary.

### FOCAL (ESPECIALLY DENTAL) INFECTION AND NEPHROLITHIASIS

To the Editor—What are the possible relationships between infections, particularly pyorrhea and nephrolithiasis? Two articles have come to my attention, one in the January 1943 issue of the Merck Report by G. de Leo M.D. urologist, Columbus Hospital, New York and an article which appeared in the Dental Cosmos for November 1931 entitled "Dental Focal Infection as an Etiological Factor in Diseases of the Genitourinary System" by Herbert Sugar M.D. Los Angeles. A question has recently arisen in a case in which there was a definite history of nephrolithiasis from a period of over eighteen years which eventuated in the surgical loss of one kidney. Pyorrhea preceded and was coincident with attacks of renal colic and passage of gravel for the first three or four years. Specifically could this pyorrhea be considered as having an etiologic bearing on the kidney condition?

M.D. Montana

ANSWER.—Many factors are involved in the etiology of nephrolithiasis. Infection of the urinary tract is undoubtedly important in recurrent stone formation particularly when urea splitting organisms are present for example *Proteus vulgaris*, *Escherichia coli*, *staphylococci*, *Bacillus pyocyaneus*, *Hemophilus influenzae* and certain streptococci. There are various possible sources of origin for these bacteria, among which the colon must be given a prominent role.

Ever since the experimental production of renal calculi in dogs by streptococcal infection of devitalized teeth (Rosenow and Meisser) many clinicians have accepted the theory of focal dental infection including pyorrhea as a factor in nephrolithiasis. Search of the literature does not reveal significant factual support for this view. Ordinary statistical studies prove nothing in view of the high incidence of pyorrhea and its resultant coincidence with many other diseases. Another difficulty is the fact that the bacteria found in dental infection are usually streptococci while the organisms found in the urine of individuals with stones are likely to be colon or proteus bacilli or staphylococci (Kessler). However streptococci have been found by means of the Gram stain in a large proportion of calcific plaques on renal papillae (E. C. Rosenow Jr.). The significance of this observation is highly debatable apart from the fact that no deduction is possible regarding the origin of the bacteria in this series of cases.

It would therefore seem unwarranted to conclude that the patient's pyorrhea had an etiologic bearing on his nephrolithiasis.

sis. On the other hand, one could not draw the opposite conclusion in this specific instance. Carefully controlled clinical observations early in the course of kidney stone formation, are badly needed.

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### DESTRUCTIVE LESION OF TERMINAL INTERPHALANGEAL JOINT

**To the Editor**—A patient aged 48 has had swelling and discharge from the right middle finger for the past six months. This discharge has the appearance of joint fluid. An x-ray film shows that there is rather extensive destruction of the terminal interphalangeal joint of the right middle finger. There is also evidence of some slight bony destruction in the opposing bony surfaces. This involves both the terminal and the middle phalanx. There is no evidence of any osteomyelitis. The findings in this case are quite typical of infectious arthritis. The condition is suggestive of osteoperiostitis aluminosa. With these findings, could you suggest the best method of treating this condition?

R. V. Jolin, M.D., Grand Rapids, Minn.

**ANSWER**—Tuberculosis of a single interphalangeal joint is more common than is the condition referred to as osteoperiostitis aluminosa. Destruction of a finger joint without new bone formation in the region should be considered tuberculosis until proved otherwise. A biopsy is indicated. If the diagnosis is confirmed, amputation of the distal phalanx will give the most certain and most prompt recovery of use of the hand. The alternative method of treatment is long continued splinting of this finger in a position of slight flexion. It should be remembered, however, that a fused interphalangeal joint is a much more serious handicap than is the loss of the distal phalanx of a finger.

### PRESERVATION OF LIQUID PLASMA

**To the Editor**—How long can properly processed liquid plasma be safely kept on a shelf at room temperature and at average refrigerator temperature? Also how often should such plasma be cultured for sterility?

M.D., District of Columbia

**ANSWER**—The preservation of plasma in the liquid state should be avoided as much as possible.

In any case liquid plasma should not be preserved at refrigerator temperature, because of massive irreversible flocculation. If very thorough sterility tests have been performed, the expiration date for liquid plasma kept at room temperature (15 to 30 C.) has been set at one year by the National Institute of Health.

It is not necessary to repeat the sterility tests if proper cultural studies were done at the time of pooling the plasma and if the material was not subsequently exposed to contamination.

### COCCYGEAL INJURY AND TRAUMATIC ARTHRITIS

**To the Editor**—A man aged 71 fell out of bed and struck on the lower part of his spine. Considerable pain and disability followed, and an x-ray examination showed a fracture of the last bone of the coccyx—not straight across the bone but slanting. A few weeks after the original injury tenderness developed in one of the lower lumbar vertebrae on pressure, x-ray examination showed no signs of fracture or dislocation, but there was evidence of arthritis. The patient's general condition is fairly good, but it is difficult for him to get about, his legs feeling weak and a certain numbness being present. Bowel and bladder functions are good and with the aid of vitamin B<sub>1</sub> his appetite is satisfactory. I shall appreciate any advice or suggestions for treatment of this patient. Can you give any estimate as to the length of disability?

F. S. Spearman, M.D., Williams, Ariz.

**ANSWER**—The fact that the pain is in the lower lumbar area would indicate it is not a coccygeal injury that is causing the pain. The discomfort may be due entirely to the arthritis in the lumbar part of the spine, the fall being the contributing factor, causing a traumatic arthritis on top of the old. There is no specific treatment but rest, not necessarily to the point of rest in bed but to the point of moderation in activities, and application of heat to the affected area, preferably radiant heat, along with gentle massage, will do as much as anything. In a man of this age metastatic cancer must be considered, and a careful examination of the prostate and inquiry as to gastrointestinal symptoms should be carried out. The length of disability is difficult to estimate, but if traumatic arthritis on top of old osteoarthritis is the basis, the patient should experience considerable improvement in a few weeks.

### REACTION TO PITRESSIN TANNATE

**To the Editor**—A woman aged 40 has diabetes insipidus. I am giving her pitressin tannate into her gluteal muscle. Six months ago she had a reaction. Yesterday she had another reaction from the injection. These reactions came on immediately after taking the injection. I did not see her immediately, but at the time I saw her she had a fever, felt cold and had a feeling of constriction in her chest. Her blood pressure was normal. A small injection of epinephrine increased her discomfort. I gave her a small amount of morphine, after which she felt warm and had some relief. I feel sure this was not a hysterical manifestation, as her temperature was almost 102 F. It seemed to me to be a foreign protein reaction. She remained ill for twenty-four hours, at the end of which time she seemed completely recovered. She is taking these injections at forty-eight hour intervals. Can you give me any more information about this type of reaction, the probability of its recurrence and the probability of its being fatal? What is the treatment? M.D., Iowa

**ANSWER**—The literature relating to the use of pitressin tannate for the treatment of diabetes insipidus is listed below. Reaction to this type of treatment has not been reported. The best suggestion to follow would be to abandon this type of treatment in this particular case and to institute the use of posterior pituitary powder by nasal insufflation. A small amount of the powder, about that which rests on the end of a knife blade or nail file, is simply placed in a tube with atomizer bulb and blown into the nose. This is a much less wasteful method than having the patient attempt to introduce it digitally or to sniff it from a paper. Most patients are controlled with two administrations, one in the morning and one at bedtime. Some patients who do not mind the polyuria and polydipsia during the daytime use it only at night. This method is by far the least expensive method and the one which most patients prefer. It is interesting that 4 of the 8 patients mentioned by Blotner "have discontinued the use of pitressin tannate in oil because they can take pituitary intranasally and avoid injections."

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Thorn, G. W., and Stein, K. E. Pitressin Tannate Therapy in Diabetes Insipidus, *J. Clin. Endocrinol.* 1: 680 (Aug.) 1941.

### INTRACTABLE INSOMNIA

**To the Editor**—A woman aged 66 insists that she is unable to sleep. I have tried everything I can think of or can read about without success. I know of no reason why she cannot sleep. Any advice that you can give me will be appreciated. M.D., Ontario

**ANSWER**—Intractable insomnia is often extremely difficult to treat. It is important, if possible, to get at the cause of the insomnia, diseases of the central nervous system are especially liable to produce insomnia, and frequently insomnia may be of psychogenic origin. It is most important, therefore, to eliminate organic causes for the insomnia by careful examination of the central nervous system and to investigate possible psychogenic origins. If anything is found, the treatment should be directed toward the disease process causing it. For the simpler types of insomnia without serious organic or functional causes, the following references may be suggested.

- Alvarez, W. C. *Help Your Doctor to Help You When You Have Insomnia*, New York, Harper & Brothers, 1942.  
Jacobson, Edmund. *You Can Sleep Well*, New York, McGraw Hill Book Company, 1938.

### APPLICATION OF HEAT OR CHEMICALS TO SKIN OF PATIENT TREATED BY X-RAYS

**To the Editor**—A patient had intensive x-ray treatment of the front, back and outer hip-thigh regions, with considerable skin reaction. She applied dry heat to the outer aspect of her thigh (in an area treated with x-rays) for the relief of local pain. The x-ray man told her not to do that, for the heat thus locally applied over an irradiated area would much increase the local x-ray skin reaction, making it much worse. Is that true or at least enough true so that external heat should not be used?

Stuart B. Blakely, M.D., Binghamton, N. Y.

**ANSWER**—It is usually inadvisable to use any type of irritation, whether thermal or chemical, on the skin of a patient subjected to x-ray therapy. It is not unusual to have a skin reaction greatly exaggerated following the application of local heat even though the amount of x-rays delivered to the skin is not sufficient to cause a definite skin reaction. It is believed that a patient receiving x-ray therapy should not have heat or irritating chemicals applied to the skin.



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## THE EFFECTIVENESS OF TYPHOID VACCINE PREPARED BY THE U S ARMY

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Siler and his co-workers included in their monograph *Immunization to Typhoid Fever*<sup>1</sup> a historical review of the introduction and use of typhoid vaccine in the United States Army. Briefly, typhoid vaccine was introduced on a voluntary basis by F F Russell in March 1909. In 1911 antityphoid vaccination was made compulsory for all military personnel.

From 1909 to 1916 a monovalent typhoid vaccine was used and from 1917 to 1927 inclusive the vaccine was of a triple typhoid (TAB) type containing typhoid, paratyphoid A and paratyphoid B components. In 1928 the paratyphoid B fraction was omitted, followed in 1934 by the omission of paratyphoid A. Monovalent typhoid vaccine was then used exclusively for antityphoid immunization until September 1940, at which time the paratyphoid A and B components were again added. This is the product now used for the immunization of all personnel in the Army; it contains 1,000 million typhoid bacilli and 250 million each of the paratyphoid A and B organisms per cubic centimeter.

The first typhoid culture to be used for the preparation of typhoid vaccine by the biologic laboratories of the Army Medical School was the "Rawlings" strain. This culture was isolated by British investigators from a fatal case of typhoid in 1900 and was being used by the British as a vaccine organism when Russell went abroad in 1908 to observe their methods of preparing typhoid vaccine. The "Rawlings" strain was subsequently used as the typhoid vaccine organism in the Vaccine Department of the Army Medical School from 1909 until late in 1936. During this time it had been maintained in an intermediate stage, neither rough nor typically smooth but tending toward smoothness in its cultural and antigenic characteristics.

### EXPERIMENTAL STUDIES

Late in 1934 an exhaustive investigation was begun to determine the relative merits as immunizing agents of several selected strains of the typhoid organism.

Out of this investigation there emerged a strain of *Eberthella typhosa* of superior immunogenic potency. This culture had been recovered from a chronic typhoid carrier in Panama and since the first announcement of its use it has been variously referred to as "Boxill,"

Panama carrier "Panama 58" and simply "58." For the purpose of future reference it bears the official designation of *E typhosa* strain 42-A-58 of the Army Medical School culture collection.

This strain of *E typhosa* has been used by the Division of Biologic Products of the Army Medical School since late in 1936 for the preparation of typhoid vaccine and it is being used currently as the typhoid component of TAB vaccine. Briefly described it is culturally and biochemically a typical typhoid organism; colonially and serologically smooth, highly virulent for mice, and antigenically complete with a high content of Vi antigen. Before its acceptance by the Division of Biologic Products it had been subjected to every test known to us designed for determining its qualification as a vaccine organism—mouse virulence, agglutimogenic activity and immunogenic potency—and, from the standpoint of production, rate of growth, emulsifying property and stability in salt solution. Added to this were comparisons of its toxicity in human beings with that of other typhoid cultures.

Tests for its immunogenic potency were conducted with test organisms recovered from patients and carriers living in various sections of the United States. When satisfactory evidence had been secured concerning its immunogenic coverage over domestic strains of *E typhosa*, cultures from other parts of the world were sought as test organisms. Two of these foreign strains were obtained, one from China (province unknown) the other from Budapest. In both active and passive immunization tests a vaccine prepared with *E typhosa* strain 42-A-58 produced the same high degree of protection against these imported cultures as it did against the domestic variety of the typhoid organism.

Recently the question of immunogenic coverage afforded by our typhoid vaccine organism has been revived in reference to strains of *E typhosa* prevalent in the Middle East. A doubt has been expressed that our vaccine affords adequate protection against the local Middle East strains and it has been recommended that the vaccine manufactured locally be used for the immunization of the United States armed forces stationed in that area.<sup>2</sup>

Although this hypothesis is advanced from time to time it has few advocates among immunologists today. However, as a matter of interest the vaccine recommended the typhoid organisms used and some cultures from cases of disease from the area were obtained for comparative immunogenic studies. These cultures were examined for mouse virulence, antigenic content and

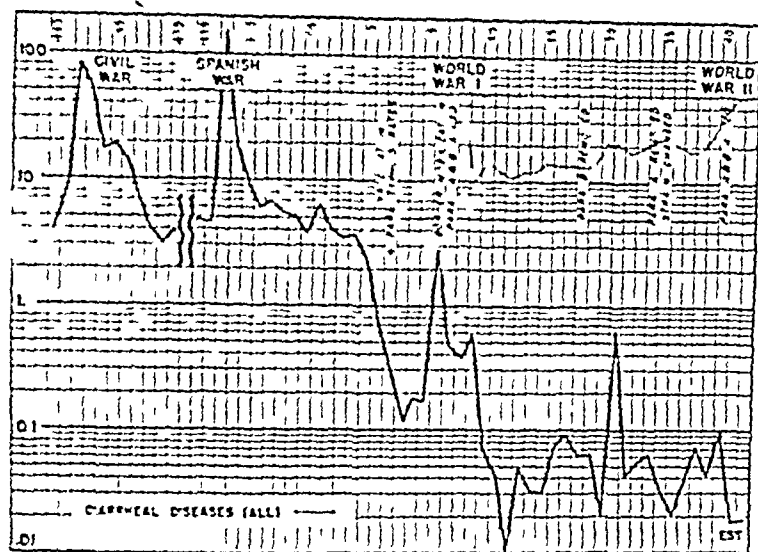
1 Siler J F, Dunham C C, Longfellow Don and Luippold G F. *Immunization to Typhoid Fever*. Monograph Series No 17. Baltimore: Johns Hopkins Press, 1941.

2 Siler J F. Typhoid Vaccine Studies. Investigation of Virulence and Antigenic Properties of Selected Strains of Typhoid Organism. *Am J Pub Health* 26:219 (March) 1936. Siler J F and others. Protective Antibodies in Blood Serum of Individual After Immunization with Typhoid Vaccine. *ibid* 27:142 (Feb) 1937.



immunogenic potency. In all determinations our vaccine strain 42-V-58 was included as the control organism in order to detect superiority of the imported cultures over our vaccine culture, should any differences among them exist.

All cultures (those from the Middle East and strain 42-V-58) proved to be of equal virulence, they were



Rates per thousand annually for typhoid fever in the United States 1860-1942. Dotted line shows rates for all diarrheal diseases 1916-1941.

antigenically identical and they were equal in immunogenic potency when either a domestic or an imported strain of *E. typhosa* was used as the test organism. It was concluded on the basis of these experimental results that our currently used vaccine organism is quite as effective an immunogenic agent against the *E. typhosa* prevalent in the Middle East as is the vaccine organism used there and as are locally distributed strains of typhoid organisms in the Middle East.

As for the paratyphoid A and B organisms used in our 1940 type of triple typhoid vaccine, these were selected on the same bases as was the culture of *E. typhosa*. The strain of *Salmonella* paratyphi (41-N-22) was obtained from Dr. A. Felix of London and is easily the most virulent para A organism that we have found. It is culturally and biochemically typical of *S. paratyphi* antigenically complete and immunogenically superior to all other strains with which we have worked. The strain of *Salmonella schottmuelleri* (41-H-6) was first chosen from our culture collection because of its high virulence for mice and when it was shown to be an antigenically complete immunogenically active culturally and biochemically typical para B organism it was adopted to represent the B fraction of our TAB vaccine. A fuller description of these strains has recently been published by the staff of the Typhoid Research Unit.<sup>4</sup>

#### STATISTICAL STUDIES

The proof thus far presented of immunogenic coverage afforded by our vaccine organism consists of experimental evidence only. Much more significant is the statistical evidence. The actual morbidity of typhoid and paratyphoid fevers among the armed forces of the United States is shown in the chart covering the period from 1860 to 1870 and from 1896 to 1942.<sup>5</sup> The rate for 1942 is an estimate since the actual

strength of troops was not available. Rates for paratyphoid were first included in the Surgeon General's Annual Report of 1912, and some paratyphoid fever occurred in most of the years following that period. In 1916, during the mobilization on the Mexican border, an epidemic of diarrheal disease, including both bacillary and amebic dysentery, occurred there together with an increase in typhoid and a more pronounced one in paratyphoid, most of which was due to *Salmonella* paratyphi. The actual number of cases for that year were typhoid 96 and paratyphoid 410, approximately 95 per cent of which was paratyphoid A.

In 1917, with an average strength for the year of 678,579, there were 297 cases of typhoid, 13 of para A and 7 of para B, a total of 317. In 1918, with an average strength of 2,518,000, there were 768 cases of typhoid, 73 of para A and 34 of para B, a total of 875. Conditions in 1918 in the battlefields of France were responsible for a considerable proportion of the cases in that year, which included a number of contact cases among those caring for the sick.

An interesting test of the efficiency of the vaccine before the addition of the A and B fractions occurred in Hawaii in 1917. A patient with typhoid in a labor camp on the watershed infected an emergency source of water used only in dry periods. This water supplied a section of the post of Schofield Barracks, the population of which was about 4,000 immunized persons, most of them soldiers, and about 800 nonimmunized, most of whom were laborers—Koreans and Japanese. Fifty-five cases occurred in the group of 4,000 and 56 in the 800 unvaccinated controls. Eleven of the 56 were considered to be contact cases. Four of the 55 patients in the immunized group died, whereas there were seven deaths among the 56 patients in the unvaccinated group. This would indicate a protection from morbidity of about 80 per cent. Another factor believed to be of importance in minimizing the incidence in the nonimmunized group is that these oriental

#### Comparison of Typhoid and Diarrheal Diseases

	Average Strength*	Admissions	Average Rate	Deaths
1861-1866				
Typhoid	522,198	79,462	29.66	20,330
Diarrheal diseases	367,742	1,559,126	637.49	37,806
1898				
Typhoid	147,795	20,926	141.09	21,100
Diarrheal diseases	140,305	56,192	400.24	2,100
1917-1919				
Typhoid and paratyphoid	1,501,265	1,732	0.42	25
Diarrheal diseases	1,501,265	92,512	22.41	43
1940			Admission Rates Only	
Typhoid and paratyphoid			0.02	
Diarrheal diseases			37.57	
1941				
Typhoid and paratyphoid			0.02	
Diarrheal diseases			49.89	

\* Strengths on which reports were adequate

peoples seldom drink water straight, preferring tea—though their eating utensils were cleansed in unboiled water.

As a result of reports from abroad before our entry into the first world war and of the epidemic on the Mexican border in 1916, *S. paratyphi* and *S. schottmuelleri* were added to the vaccine. From 1917 through 1919, when considerable numbers of our troops were exposed in areas of relatively high endemicity, the rates continued considerably above those of the period just prior to

<sup>4</sup> Longfellow, Don and Luippold, G. F. Typhoid Vaccine Studies VII. Typhoid Paratyphoid Vaccine, *Am. J. Pub. Health* 33: 561 (May) 1943.

<sup>5</sup> Annual Reports of the Surgeon General of the Army, United States Treasury Department Public Health Service 1943.

the war—from 1912 to 1915 inclusive. It is interesting to note that during the period of 1917 to 1919 the rates for diarrheal disease were dropping and reached the lowest point in the history of the Army in 1919. In the United States troops were quartered in cantonments during their preparation and no extensive maneuvers were held. They were also demobilized from these same cantonments. The use of field sanitary installations for the disposal of excreta was minimal.

Because of the feeling that the para B fraction of the vaccine caused an undue amount of reaction and because of the very small number of cases of paratyphoid B which were occurring in the countries where troops were stationed this fraction was removed in 1928, and this was followed in 1934 by the removal of the para A fraction. The sharp rise in the typhoid rate in 1931 was due to 22 cases occurring in one organization which used unpasteurized and infected milk while on a maneuver. The number of cases of paratyphoid as well as typhoid were insignificant between 1919 and the present time with the exception of the 1931 group. The removal of para A and para B fractions does not appear to have influenced the rates for typhoid and paratyphoid fevers although the general level of the incidence of diarrheal diseases increased appreciably in 1930 from about 12 to 20 per thousand and did not recede in subsequent years.

With the mobilization of the emergency period, typhoid rates show no significant change in 1940, during which there was a considerable amount of activity of troops in the field utilizing improvised installations for the disposal of human wastes. But during this period there was a very distinct advance in the rates for diarrheal diseases including bacillary and amebic dysentery, diarrhea with cause not specified, gastritis and enteritis and colitis and enteritis. The combined rates were 17.74 for 1938, 24.79 for 1939, 37.09 for 1940, 49.89 for 1941.

Increase in the diarrheal diseases is usually accompanied by increase in typhoid. This is especially true in armies operating under field conditions. The diarrheal diseases usually occur in the greater numbers though typhoid has the highest fatality rate. The accompanying table compares typhoid and paratyphoid with diarrheal diseases for four war periods.

The result of vaccination in World War I as compared with previous wars is evident, though the diarrheal rates were only about half those of the prewar period exclusive of 1916. Rates for 1940 and 1941 only are calculable, those for 1942 being estimated because records of the strength of the Army are not available. Typhoid and paratyphoid fever rates in these years are insignificant, and this in the presence of rising rates for the diarrheal diseases. This picture can be interpreted only as definite evidence of the efficiency of the present vaccine.

#### SUMMARY AND CONCLUSIONS

Following the compulsory use of typhoid vaccine in the U. S. Army in 1911 morbidity rates for typhoid and paratyphoid fevers dropped from about 2.5 per thousand annually in 1910 to below 0.2 for 1913-1915 inclusive, the Army having few troop maneuvers during this period.

In 1916 an epidemic condition of typhoid and paratyphoid fevers and diarrheal disease in the Army operating in the field resulted in rates for typhoid and paratyphoid fevers approximating those of 1910, most of the increase being due to paratyphoid A. No para-

typhoid organisms were included in the vaccine of that period.

The rates for typhoid and paratyphoid remained well above the peacetime level of 1913-1915 during the three years of World War I yet were significantly below the peacetime level of the prewar period—about 3 to 4 as compared to 0.3 to 0.4.

During the peace period of 1919 to 1939 rates were in the range of 0.01 to 0.08 with the exception of the food borne outbreak of 22 cases in 1931.

Thus far, rates for typhoid and paratyphoid fevers for the mobilization years 1940-1942 are insignificant, and this in the face of a rise in the rates for diarrheal diseases to higher levels than the period preceding World War I.

With this evidence it appears reasonable to conclude that the World War II (1940 type) triple typhoid vaccine is considerably superior in effectiveness to the TAB product employed during World War I.

## VISCOSE TUBING FOR TRANSFUSIONS

A REACTION REDUCING MATERIAL AND A  
SUBSTITUTE FOR RUBBER

HENRY NAFTULIN

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AND

S. O. LEVINSON, M.D.

CHICAGO

With the introduction of sodium citrate as an anti-coagulant by Lewisohn<sup>1</sup> and the development of the modern technic of blood transfusion this procedure became routine and easily performed. However under the most careful conditions a small incidence of untoward reactions, principally chills and fever, has remained a disturbing factor. Untoward reactions of this kind may be divided into two groups: intrinsic reactions arising from the infused blood, and extrinsic reactions arising from causes other than the blood.

This paper deals with extrinsic reactions. It has been amply demonstrated that the febrile reaction is largely due to the inadvertent injection of foreign material into the blood stream.<sup>2</sup> Many theories have been advanced in an attempt to explain the febrile reaction that is occasionally associated with the whole blood infusion and for that matter, with intravenous infusions in general. Able investigators working along this line have shown that the reactions arise principally from three sources: pyrogenic substances in distilled water,<sup>3</sup> impure chemicals used for preparing solutions,<sup>4</sup> and improperly or inadequately cleansed equipment.<sup>5</sup>

Even with constant vigilance and unrelenting care in the preparation of the material used in the drawing and the administration of citrated blood the incidence of febrile reactions is still from 1 to 10 per cent or higher.

In an effort to reduce the number of reactions following the administration of citrated blood we first

From the Transfusion Department, Michael Reese Hospital and the Michael Reese Research Foundation.

<sup>1</sup> Lewisohn, Richard. Blood Transfusion by the Citrate Method. Surg. Gynec. & Obst. 21, 191.

<sup>2</sup> Wiener, A. S. Blood Clots and Blood Transfusion. 2. Springfield, Ill.: Charles C. Thomas, 1939, p. 102.

<sup>3</sup> Scherf, F. B. Fever Producing Substances Found in Some Distilled Water. Am. J. Physiol. 67, 90 (Dec.) 192.

<sup>4</sup> Walter, Carl W. Preparation of Safe Intravenous Solutions. Surg. Gynec. & Obst. 63, 643 (Nov.) 19.

<sup>5</sup> Lewisohn, Richard, and Roeder, H. A. Prevention of Chills Following Transfusion of Citrated Blood. J. A. M. A. 100, 26 (Feb.) 1933.

eliminated the character of solutions and the manner of cleansing glass and metal parts as factors in the febrile reaction. The solutions in use at the Michael Reese Hospital transfusion department are commercially prepared and proved pyrogen free on test and the glass and the metal parts are relatively easy to clean and inspect. However, a small incidence of reactions

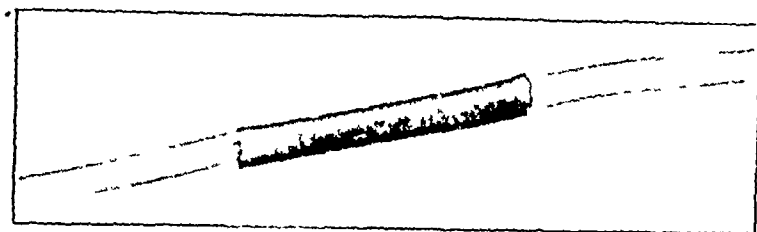


Fig. 1.—A 3-inch length of rubber tubing is slipped onto the Viscose tubing.

remained and our suspicion centered on the rubber tubing because of the difficulties involved in the cleansing of tubing. New rubber tubing is covered with silt and other impurities which must be removed to render it pyrogen free. Rubber tubing which has been used for a blood or a plasma transfusion must be so thoroughly cleansed that there is complete removal of all residual protein matter from the lumen. One can never be certain that this has been accomplished.

Our method of preparing new and used rubber tubing is described in another publication.<sup>6</sup> This method of cleansing is drastic treatment to the rubber but was employed to reduce the possibility of febrile reactions. The effectiveness of this cleansing procedure was shown in a study by Zimmerman, Strauss and Laufman.<sup>7</sup> Five consecutive series of five hundred transfusions each were analyzed and showed progressive reduction in the incidence of transfusion reactions as the technique of the cleansing of rubber tubing and other equipment for intravenous injections was improved. The total incidence of pyrogenic reactions in the final series was 2.2 per cent, compared with 5.2 per cent in an earlier series.

The drastic cleansing of rubber eventually destroys its original elasticity. The original elasticity is what

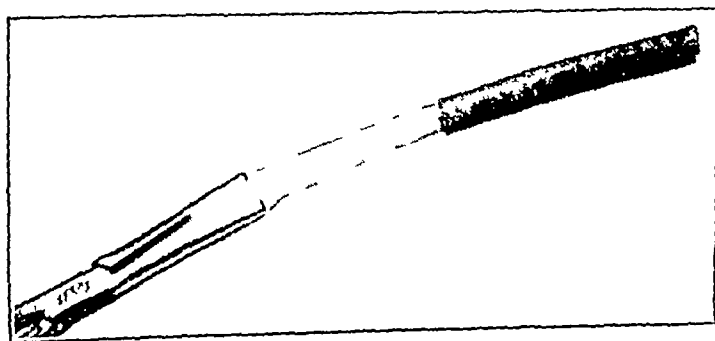


Fig. 2.—After moistening the Viscose tubing is gently stretched with a hemostat.

makes rubber desirable for use in intravenous administration work. Once the tubing begins to deteriorate fissures develop on the inside, and in this condition it can no longer be satisfactorily cleansed by any known procedure. It is hazardous to use old tubing for the administration of plasma, serum or blood because the protein material cannot be completely removed. The

residual protein material will then be subjected to autoclaving in sterilizing the administration set, and the coagulated protein even in minute amounts can cause severe reactions when a subsequent transfusion washes it into the blood stream. Old tubing may be used with relative safety when it is restricted solely to the administration of dextrose and saline solution and when protein material does not come in contact with it.

With these inherent defects of rubber tubing in mind, we sought a substitute. The regular Viscose tubing described by Hartman<sup>8</sup> was found by us to be fragile, difficult to handle and rather permeable to fluids. However, in our experience the heavy walled Viscose tubing has been free from these objections. The heavy walled tubing is far sturdier. The manufacturer impregnates the material with glycerin, which acts as a hygroscopic agent. The moisture content determines the suppleness of the Viscose tubing. Refrigerator storage is desirable for partially used rolls. The tubing is supplied in lengths of 1,500 feet on spools, wrapped in wax paper and at a cost so low that "one time use"

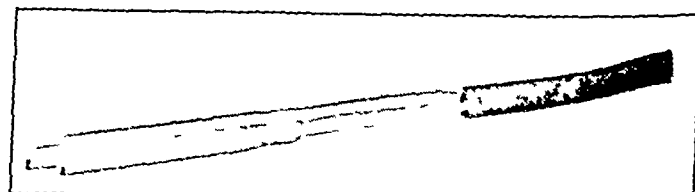


Fig. 3.—The expanded Viscose tubing is slipped onto the needle adapter  $\frac{1}{4}$  inch.

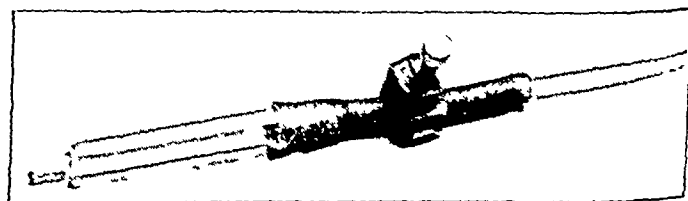


Fig. 4.—The rubber tubing is slipped onto the joint and the clamp placed in position.

and discarding come to less than the cost of rubber considering the time, labor and material used in maintaining rubber tubing. The drying effect from autoclaving can be minimized by making a compact package of each length of tubing to be sterilized and placing it within a glass tube measuring 25 by 100 mm. The glass tube inhibits vaporization of the moisture in the Viscose tubing during sterilization. In contrast to its brittleness when dry, Viscose tubing is quite pliable when wet and permits the required manipulation.

It was important to know whether the Viscose tubing was pyrogen free, impermeable to pyrogens and impermeable to bacteria.

#### EXPERIMENTAL STUDIES

To determine whether the Viscose tubing was pyrogen free, 6-inch lengths were cut of every hundred feet from two rolls of Viscose tubing of 1,500 feet each. The specimens were cut into small pieces with sterile scissors and boiled in 200 cc. of pyrogen-free distilled water for fifteen minutes. The water was filtered through filter paper, made isotonic with sodium chloride and subjected to a pyrogen test.<sup>9</sup> The pyrogen test was negative.

To ascertain whether pyrogens could diffuse through the wall of the Viscose tubing the following tests were performed.

6. Milzer, Albert. Laboratory Aspects of the Preparation and Biologic Control of Plasma, New York State J. Med. to be published.  
7. Zimmerman, I. M., Strauss, Anne Marie, and Laufman, Harold. Blood Transfusion Reactions: Their Causes and Prevention. Ann. Surg. 111: 961 (Dec.) 1941.  
8. Hartman, F. W. Elimination of Rubber Tubing for Administration of Intravenous Solutions. Ann. Surg. 111: 498 (1940).  
9. United States Pharmacopoeia, revision 12, pp. 606-617.

crystalline pyrogen<sup>10</sup> was used. The intravenous injection of 0.08 cc. (0.016 mg.) of this pyrogen into a dog weighing 13 kg caused a rise in rectal temperature of 1.9 degrees F. in two hours. To determine the effect of this pyrogen on rabbits approximately 0.05 cc. of a 1:400 dilution of the pyrogen was injected into each of 5 rabbits. All the rabbits showed a positive response; the average rise in temperature was 2.5 degrees F. Then 10 cc. (0.2 mg.) of the concentrated pyrogen was placed in a length of Viscose tubing, and the tubing was suspended in 400 cc. of sterile non-pyrogenic isotonic solution of sodium chloride. Another flask containing 400 cc. of the same lot of saline solution served as a control. At the end of two hours at room temperature the Viscose tubing containing the pyrogen was removed and the saline solution in each flask was subjected to a pyrogen test.<sup>11</sup> The saline solution in both flasks proved pyrogen free.

To determine whether bacteria could diffuse through Viscose tubing, the following test was performed. A diphtheroid isolated from contaminated human serum was inoculated in 15 cc. of Brewer's medium; the medium was then placed in a length of Viscose tubing and the tubing suspended in 400 cc. of sterile Brewer's medium. At the end of three weeks incubation at 37.5 C the medium surrounding the tubing was clear and sterile whereas the medium in the Viscose tubing was turbid indicating that bacterial growth was present in the tubing and that it had not penetrated through the tubing wall.

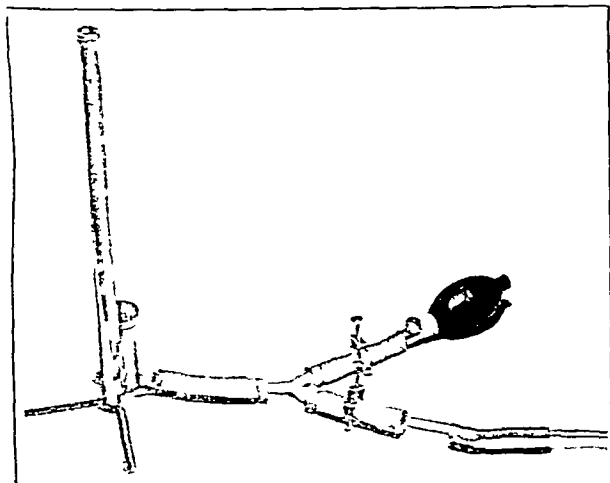


Fig 5—An airtight testing system uncovers leak sections of tubing. After testing suction is applied to return the tubing to its original flat shape.

#### TECHNIC OF ASSEMBLY

The following technic has been developed for the use of Viscose tubing in assembling administration equipment.

- 1 Cut suitable lengths of tubing. Avoid sharp bends if the material is brittle.
- 2 Slip a 3 inch piece of rubber tubing over one end of the Viscose tubing moving it down the Viscose tubing so that the terminal end of the Viscose tubing is exposed 2 inches (fig 1).
- 3 Dip the exposed end of the Viscose tubing into pyrogen free distilled water for twenty to thirty seconds to permit wetting.
- 4 Insert a small hemostat into the lumen and enlarge the lumen by gentle spreading of the blades of the hemostat (fig 2).
- 5 Moisten the end of a glass observation needle adapter in the distilled water; shake off excess water and slip 3/4 inch of the expanded tubing over the glass fitting (fig 3).
- 6 Allow the tubing to dry. This takes about ten minutes. The tubing will shrink and grip the glass. No adhesives are necessary.

<sup>10</sup> BM 27 no 2 supplied through the courtesy of Dr. Heinrich Nechele, director of the department of gastroenteral research of the Michael Reese Hospital.

7 Slide the rubber tubing down over the glass part. Moistening the Viscose tubing and glass will facilitate this procedure. The rubber tubing acts as a guard at the junction of the Viscose tubing and the glass part; it also serves as a site for the metal clamp used for regulating the flow (fig 4).

8 Each section of tubing must be examined for pinhole leaks. This is done by clamping off the free end of the Viscose tubing and inflating the tubing with a pressure bulb on a

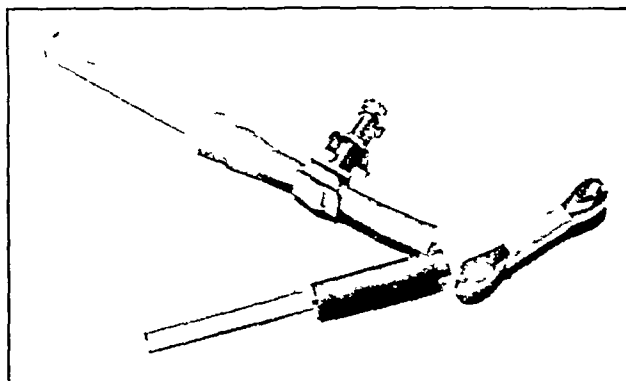


Fig 6—The Viscose tubing is folded on itself into a small package which can be slipped into a test tube. The other end of the tubing is ready for attachment to the second glass adapter.

manometer until the gage shows a pressure of 250 mm. of mercury. Close off the source of pressure and observe the gage. The reading should remain stationary. A rapid fall means that there is a leak in that section of tubing and that it should be discarded. A multiple testing manometer can be constructed simply (fig 5).

9 With a suction bulb completely evacuate the tubing until it is flat.

10 Fold the Viscose tubing on itself until it is a compact package about 2 inches long with the terminal end exposed about 3 inches. Wrap a band of paper around the tubing and fix it with a piece of Scotch tape. This will prevent the Viscose tubing from buckling in the autoclave (fig 6).

11 Slip a 1 1/2 inch piece of rubber tubing over the remaining free end of the Viscose tubing until 1 1/2 inches of Viscose tubing is exposed. Dip the end in the distilled water; expand and slip onto the glass filter chamber. Allow the Viscose tubing to dry and slip the rubber guard onto the glass.

12 Complete assembly by connecting the filter to a glass Y tube (7 mm.) using a 2 inch piece of rubber tubing (1/8 by 1/4). Slip a 3 inch piece of rubber tubing (1/4 by 3/4) onto each

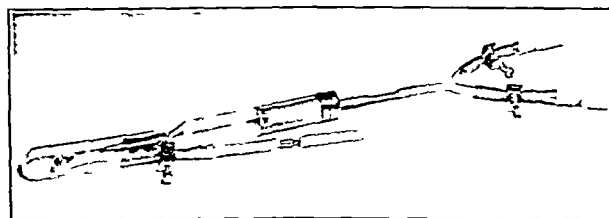


Fig 7—The assembly is completed and ready for wrapping and sterilization. Immediately before use the Viscose tubing will be soaked in water in the test tube to restore its suppleness.

end of the Y tube. Insert a glass bottle adapter in the free end of the rubber tubing and cover each adapter with unbleached muslin. Adjust shut-off clamps. Slip a glass tube 25 by 100 mm. over the Viscose tubing. This glass tube will prevent excessive drying of the Viscose tubing in the autoclave (fig 7).

13 Wrap in two layers of gauze and then in flannel bandage. Sterilize at 15 pounds pressure for twenty minutes.

14 When the assembly is ready for use proceed as follows:

(a) Unwrap the sterile covering; remove the glass tube; remove the binding around the Viscose tubing. Aseptic technique is not necessary in handling the tubing.

(b) Fill the test tube three-fourths full with water (cold tap water may be used) and completely immerse the Viscose tubing in the water for one minute. The tubing will become soft and pliable.

(c) Close the shut-off clamp near the bottle adapter. Insert the adapter into the bottle and suspend the bottle on a rack at the proper height.

(d) The Viscose tubing should now be extended to its entire length. Avoid twisting the tubing.

(e) Open the shut-off clamp and allow the tubing to fill. Air bubbles can easily be seen and removed. Close the shut-off clamp near the needle adapter, insert the needle into the vein, then open the shut-off clamp to allow fluids to run. The flow of fluids must be regulated by the clamp near the needle adapter. This will prevent the tubing from collapsing.

15 After one time use the Viscose tubing is discarded.

16 The foregoing technique is used in combination with rubber tubing. The rubber tubing is used for a few inches of connection and the Viscose tubing for sections requiring the bulk of tubing. Only new rubber tubing is used, and it is discarded after one time use.

CLINICAL STUDIES

In order to determine the value of "one time use" Viscose tubing in reducing reactions in blood transfusions, we studied 600 transfusions, alternating rubber

TABLE 1—Incidence of Pyrogenic Reactions with Rubber Tubing and with Viscose Tubing

	Transfusions	Pyrogenic Reactions			Total
		Major	Minor	Allergic	
Rubber tubing	300	2 (0.67%)	5 (1.7%)	1 (0.33%)	8 (2.7%)
Viscose tubing	300	0 (0.00%)	0 (0.00%)	2 (0.67%)	2 (0.67%)

TABLE 2—Analysis of Reactions with Viscose Tubing

Transfusions Made with Viscose Tubing	Pyrogenic Reactions			Total
	Major	Minor	Allergic	
1,137	1 (0.09%)	4 (0.3%)	3 (0.25%)	8 (0.64%)

tubing and Viscose tubing. The results are recorded in table 1. This table shows a striking reduction in the number of pyrogenic reactions with Viscose tubing.

We classify as major a pyrogenic reaction in which there is a chill and a rise in temperature of 2 degrees or more above the pretransfusion level. If the elevation of temperature is less than 2 degrees and there is no chill or a mild one, the reaction is considered minor.

All infusions of whole blood, plasma and serum at this institution are now administered through Viscose tubing. The total reaction rate for all transfusions administered with Viscose tubing is recorded in table 2. The table shows a total of five pyrogenic reactions. The one major reaction occurred in a woman (group O) who received 500 cc of citrated fresh blood. There was no untoward reaction at the time of the transfusion, and her temperature remained normal throughout the day. The following day, twenty-four hours after the transfusion, the patient complained of a chilly sensation and her temperature rose to 103.8 F. Forty-eight hours after the transfusion her temperature fell to 98.6 F.

The four minor pyrogenic reactions all occurred in a single patient, a 12 year old Negro girl (group A,

Rh positive) suffering from sickle cell anemia. She had previously been in the hospital in July 1942 and at that time received six transfusions through rubber tubing. After three of these transfusions she experienced an immediate chill and a rise in temperature ranging from 1 to 2 degrees F. She was readmitted to the hospital in April 1943 and subsequently received four transfusions through Viscose tubing. A rise in temperature of 1 degree F without chills occurred from three to six hours after each transfusion.

In 1941 Zimmerman and his associates<sup>7</sup> noted that febrile patients and patients suffering from leukemia showed a significantly higher incidence of untoward reactions than afebrile and surgical patients receiving citrated blood. He pointed out that patients suffering from septic diseases are particularly sensitive to minute and otherwise innocuous amounts of pyrogenic material.

An opportunity to use rubber tubing and Viscose tubing alternately in the same patient presented itself in 3 instances (2 of leukemia and 1 of ulcerative colitis).

CASE 1—A girl aged 14 years (group A, Rh positive), suffering from ulcerative colitis, received fourteen transfusions of citrated blood of 250 cc each over a period of four months. All the blood was homologous and was never over 72 hours old. Seven transfusions were administered through rubber tubing and seven through Viscose tubing. Three reactions developed following transfusions through rubber tubing. One was a pyrogenic type with a chill and a rise in temperature from 99.0 to 100.0 F without chills. Following the transfusions with Viscose tubing there were no febrile reactions but there was one allergic reaction.

CASE 2—A J, a woman aged 43 (group O), suffering from monocytic leukemia, received fifteen transfusions of citrated blood of 500 cc each over a period of eight weeks. All bloods given were less than seventy-two hours old. Eight transfusions were administered through rubber tubing and seven through Viscose tubing. Following the transfusions with rubber tubing two major pyrogenic reactions developed. The seven transfusions administered with Viscose tubing were uneventful.

CASE 3—C M, a man aged 63 (group O), suffering from chronic myelogenous leukemia, received fifteen transfusions at another hospital and had a history of several pyrogenic reactions. Three subsequent transfusions administered through Viscose tubing were uneventful.

SUMMARY

The cleansing of rubber tubing to be used for intravenous administration of blood or blood protein is difficult. Incomplete cleansing of rubber tubing is believed to be a major cause of pyrogenic reactions.

Heavy walled Viscose tubing is sturdy, pyrogen free, impermeable to pyrogens, impermeable to bacteria and quite practical for one time use.

In a total of 1,137 blood transfusions given through Viscose tubing the incidence of pyrogenic reactions was 0.64 per cent. This is a material decrease from the reaction rate encountered with rubber tubing.

Cardiovascular Signs of Emotion—The heart and the gastrointestinal tract are the most sensitive recorders of a disturbed emotional state. The intimate connections between the autonomic nervous system and the heart are so close as almost to justify the statement that cardiac rhythm and rate are a measure of the activity of the state of tension in the sympathetic and the parasympathetic systems.—Kraus, Samuel H. *The Therapy of the Neuroses and Psychoses*, Philadelphia, I. C. Febiger, 1943.

## SULFAMERAZINE

A CLINICAL STUDY OF ITS PHARMACODYNAMICS  
THERAPEUTIC VALUE AND TOXICITY

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As a result of the rather frequent occurrence of crystalluria and hematuria following the use of sulfathiazole and sulfadiazine, an effort has been made to find a sulfonamide derivative of comparable therapeutic potency with less tendency to produce crystals in the urinary tract. This problem is of special importance to our armed forces stationed in warm climates where it is exceedingly difficult to maintain a satisfactory urinary output.

Sulfamerazine (2-sulfamylamido-4-methylpyrimidine) has been investigated because of its greater solubility as compared to other pyrimidine derivatives.<sup>1</sup> Welch and his co-workers<sup>2</sup> found that sulfamerazine and its

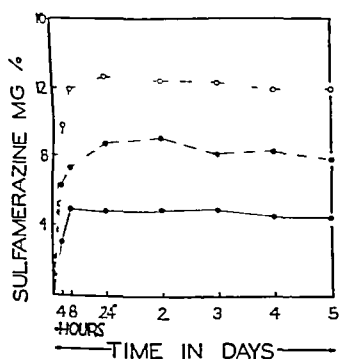


Chart 1—Absorption curve following 4 Gm of sulfamerazine given orally with maintenance dose of 1 Gm every eight hours. Blood levels are expressed as mg % of free sulfamerazine. Curve at top maximum at bottom minimum in center average.

satisfactory blood levels might be attained with smaller doses of sulfamerazine and that the interval between doses might be lengthened. During the past four months 103 patients have been treated with sulfamerazine at the Barnes Hospital and the St. Louis City Isolation Hospital. The therapeutic results and toxic reactions observed constitute the subject of this paper.

From the Department of Medicine, Washington University School of Medicine.

This study was carried out at the suggestion of the Chemotherapy Committee of the National Research Council.

The essential part of the work was done by the staffs of Barnes Hospital and the St. Louis City Isolation Hospital.

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2. Welch A. D., Mattis P. A., Latven A. R., Benson W. M. and Shields E. H. Sulfamerazine: Absorption, Excretion and Toxicity. Pharmacological Laboratories, Medical Research Division, Sharpe and Dohme Inc. Sulfamerazine. I. A Comparison of Sulfamerazine with Sulfadiazine on the Basis of Absorption, Excretion and Toxicity. *J. Pharmacol. & Exper. Therap.* 357, 1943.

Goodwin R. A., Peterson O. L. and Finland Maxwell. Absorption and Excretion of Sulfamethyldiazine in Human Subject. *Proc. Soc. Exper. Biol. & Med.* 51, 262, 1942.

4. Murphy F. D., Clark I. K. and Flippin H. F. Studies on 2-Sulfamylamido-4-Methylpyrimidine (Sulfamerazine-Sulfamethyldiazine) in Man. I. Absorption, Distribution and Excretion. *Am. J. M. Sc.* 165, 71, 1943.

5. Dr. William A. Feiler of Sharpe & Dohme Inc. supplied the sulfamerazine used in this study.

## PROCEDURE

All patients were accepted for treatment provided other sulfonamides had not been previously administered during the current illness. In general the drug was administered as follows:

An initial dose of 4 Gm was given (orally when feasible) and maintenance doses of 1 Gm every eight hours were given thereafter. For severely ill patients this dosage scheme was modified and initial doses up to 8 Gm and maintenance doses of 2 Gm every eight hours were often given. In addition, if blood concentrations did not attain desired levels, supplementary doses were occasionally administered. Alkalis were not given to any patient. It was planned to force fluids to 3000 cc in twenty-four hours in all cases in an effort to obtain a urinary output of 1,000 cc or more in twenty-four hours. Because of the shortage of hospital personnel it was not possible to control the fluid intake adequately in every case, particularly during epidemic periods and in certain instances the fluid intake fell below the desired level. Blood concentrations were measured at least every twenty-four hours at a time just preceding the eight hour maintenance dose. Determinations of the sulfamerazine concentration were done by the method of Bratton and Marshall.<sup>6</sup> All figures quoted are values for free sulfamerazine in whole blood. Urinalyses were performed daily during treatment, the microscopic examination being done as soon as possible after the patient voided. In some instances specimens remained at room temperature for one or two hours before being examined. Red blood cell counts, hemoglobin determinations and white blood cell counts were made at least every three days during treatment.

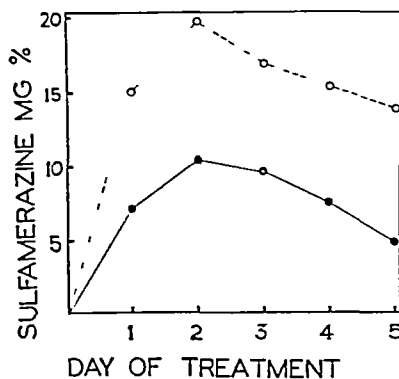


Chart 2—Average of blood and spinal fluid free sulfamerazine levels in 10 cases of meningococcal meningitis. Curve at top blood at bottom cerebro spinal fluid.

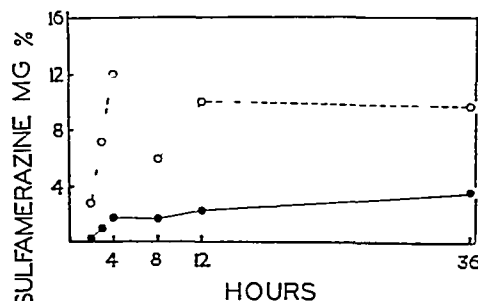


Chart 3—Diffusion of free sulfamerazine into uninfected spinal fluid following oral administration of 4 Gm of sulfamerazine. Curve at top blood at bottom cerebro spinal fluid. The 4 and 36 hour figures are the average of two sets of observations. Other values represent individual instances from different patients.

Culture mediums employed were beef or horse infusion broth and agar with 1 per cent Bacto-peptone, 1 per cent dextrose and 5 mg of para-aminobenzoic acid per hundred cubic centimeters. Spinal fluid cultures were

6. Bratton A. C. and Marshall E. H. A New Colorimetric Method for the Determination of Sulfanilamide Derivatives. *J. Biol. Chem.* 124, 25, 1938.



made on beef or horse infusion blood agar slants. Cultures for meningococci were grown in 10 per cent carbon dioxide. In many instances additional samples of spinal fluid were inoculated on the chorioallantoic membrane of the chick embryo.<sup>7</sup>

## PHARMACODYNAMICS

Absorption of the drug was followed closely in the first twelve patients treated (chart 1). The resulting

tration of the drug to patients without meningitis who had lumbar punctures for various reasons. These are plotted in chart 3 and suggest that a considerable lag occurs in the diffusion of the drug into the uninfected spinal fluid. In several instances simultaneous blood and pleural fluid concentrations were observed to show approximately the same levels in the fluid and the blood (examples: blood 64, pleural fluid 64, blood 67, pleural fluid 68, blood 63, pleural fluid 79).

TABLE 1—Meningococcal Infections Treated with Sulfamerazine

Case No.	Age, Sex	Day of Dis. case	Severity of Infection	Cultures		Duration of Treatment, Days	Total Amount Drug, Gm	Drug Concentration †						Therapeutic Result
				Blood	Spinal Fluid			Blood			Cerebrospinal Fluid			
								24 Hr	Maxi mum	Aver age	24 Hr	Maxi mum	Aver age	
2 I	6 ♂		101 I, petechiae, CSF 7,000 cells	+	+	12	35	21.5	21.5	11.2	10.5	10.5	5.7	Cultures negative after first day; temperature normal 8th day; uneventful recovery.
5 I	14 ♀	2	101 I, petechiae, rheumatic heart disease, CSF 12,000 cells	+	+	10	67	18.5	2	18.4	9	12	9.4	Cultures negative after first day; temperature normal 8th day; uneventful recovery.
6 I	24 ♀		101 I, petechiae, 8 mos. pregnant, CSF 10,000 cells	—	—?	7	42	15	25.0	16.6	6	14	10.6	Temperature normal in 12 hour; uneventful recovery.
9 I	7 ♀	2	101 2 I, petechiae, CSF 2,000 cells	+	—	6	20	18	18	10.7				Temperature normal on 4th day; blood culture positive on 4th day; uneventful recovery.
12 I	17 ♀		101 I, petechiae, comatose, CSF 19,000 cells	—	+	10	78	18.8	18.8	13.2	8.4	8.4	6.5	Culture negative after first day; temperature normal on 8th day; uneventful recovery.
14 I	24 ♂		101 S I, epileptic, CSF 2,000 cells	—	+	9	34	17.2	17.2	7.5	8.6	8.6	5.1	Culture positive on 2d day of treatment; temperature normal on 5th day; uneventful recovery.
15 I	2 ♂	2	100 6 I, severe, CSF 22,000 cells	+	+	11	16.5	6.5	5.0	14.2	4.3	19.5	8.1	CSF positive on 3d day of treatment; temperature normal on 12th day; uneventful recovery.
16 I	14 ♂		102 I, petechiae, stuporous, CSF 8,000 cells	—	++	12	61.5	10.5	12	9	4.6	7	4.8	Temperature normal on 10th day; uneventful recovery.
20 I	12 ♀	2	100 4 I, petechiae, stuporous, CSF 12,500 cells	—	+	3	20	17.8	18.8	16.7	10	10	8.5	Hematuria, temperature normal on 8th day; uneventful recovery.
21 I	8 ♂	2	101 F, coma, iritis, CSF 3,100 cells	—	+	5	52	21	21	16.6	13	13	12.2	Temperature normal 4th day; iritis subsided; uneventful recovery.
22 I	18 ♂	2	101 I, petechiae, maniacal, CSF 1,300 cells	+	++	14	89	15.7	27	19.5	7.5	15.8	12.0	Temperature normal 15th day; uneventful recovery.
23 I	20 ♀	4	103 I, petechiae, CSF 160 cells	+	+	9	60	15	25	18.8	8.3	15.2	11.0	CSF positive on 2d day; temperature normal 7th day; uneventful recovery.
24 I	74 ♂	1	101 4 I, irrational, ecchymoses, CSF 6,150 cells	++	++	5	41	37.5	37.5	24.2	20	20	17	Onset 2 days after transurethral resection; uneventful recovery.
25 I	32 ♂	2	101 F, petechiae, mentally dulled hemiplegic, CSF 9,500 cells	++	++	15	120	12.5	29	15.5	8	17.5	8.2	Temperature septic throughout; CSF positive on 2d and 5th days; developed pneumonia and died on sulfapyridine; autopsy performed.
26 I	20 ♀	2	103 2 I, drowsy, CSF 12,000 cells	+	+	8	50	21	21	16.7	8.5	8.5	8.1	Temperature normal 6th day; uneventful recovery.
27 I	65 ♂	2	103 F, stuporous, hypertension, CSF 19,200 cells	0	+	4	22	1.6	15.4	13.7	5.4	7.5	9.6	CSF xanthochromic; died on 4th day; no autopsy obtained.
28 I	14 ♂	2	103 4 F, petechiae, irrational, CSF 3,760 cells	+	+	9	44	19.4	22	16.8	4	6.5	5.7	Temperature normal 13th day; drug fever with rash; uneventful recovery.
29 I	17 ♀	1	102 4 F, CSF 17,500 cells	—	++	5	35	17	18.8	17.4	7.5	10.4	8.6	Temperature normal 7th day; hematuria; uneventful recovery.
30 I	25 ♀	4	100 F, petechiae, CSF 13,000 cells	—	—?	7	41	12	21	14.9	7	7	5.8	Swollen wrist on 5th day; subsided; uneventful recovery.

curves are similar to those obtained by Welch<sup>2</sup> and by Goodwin.<sup>8</sup> Both rapid absorption and maintenance of high blood concentrations, with the drug administered every eight hours, are well demonstrated.

During the course of the study the diffusion of sulfamerazine into the spinal fluid was observed (chart 2) care being taken to use 1 per cent metycaïne<sup>8</sup> as a local anesthetic. In 19 cases of meningitis the spinal fluid concentrations averaged 49 per cent of the blood concentrations during the period of treatment. A few observations have been made on the relative concentrations of blood and spinal fluid shortly after adminis-

## THERAPEUTIC RESULTS

(a) *Meningococcal Infections*—Thirty-seven patients with meningococcal meningitis were treated as outlined in table 1.<sup>9</sup> The therapeutic results were, on the whole, satisfactory. Most of the patients improved rapidly under treatment and all but 5 recovered. There were 3 pregnant women (6 I, 31 I, 42 I) who recovered without apparent harm to the fetus. A single case

9 Blood and spinal fluid levels are charted as follows: (1) the value attained twenty-four hours after the onset of treatment; (2) the maximum level reached; and (3) the average level observed during the period of therapy. Case numbers are accompanied by the letters I and F indicating the hospital in which the patient was treated: I, City Isolation Hospital or Barnes Hospital.

7 Through the courtesy of Dr. Russell Blattner. To be published.  
8 Gamma (2-methylpiperidino) propyl Benzoate Hydrochloride, Lilly.

(55 B) was complicated by diabetic acidosis and the patient survived. In one instance (21 I) a complicating iritis subsided without a residual lesion. A man aged 74 (24 I) developed the disease on the second postoperative day following a transurethral prostatic resection and under sulfamerazine therapy his recovery was uneventful.

On a number of occasions a low grade fever persisted for several days after the patient seemed to have

(b) *Pneumococcal Infections*—Seventeen patients with pneumococcal infection were treated as outlined in table 2. The results were uniformly good in the pneumococcal infections but there were only 2 patients with bacteremia. Patient 17 I with meningitis and bacteremia died thirteen hours after being admitted to the hospital.

(c) *Streptococcal Infections*—Fifteen patients with streptococcal infection were included in the present

TABLE 1—*Meningococcal Infections Treated with Sulfamerazine—Continued*

Case No	Age Sex	Day of Disease *	Severity of Infection	Cultures		Duration of Treatment Days	Total Amount Drug Cm	Drug Concentration †						Therapeutic Result
				Blood	Spinal Fluid			Blood			Cerebrospinal Fluid			
								24 Hr	Maximum	Average	24 Hr	Maximum	Average	
31 I	19 ♀	1	100 F lethargic pregnant CSF 1300 cells	—	+	6	36	210	210	100				Temperature normal 4th day hematuria uneventful recovery
32 I	67 ♀	2	104 G F stupor hypertension CSF 56 000 cells	+	+	2	17	9						NPN 65 at admission with 4+ albumin and red blood cells in urine died in 3 <sup>rd</sup> hours no autopsy
33 I	10 ♂	1	99 S F CSF 5300 cells	—	—	6	37	104	270	108				Temperature normal 2d day uneventful recovery
34 I	71 ♀	1	102 S F lethargic petechiae CSF 280 cells fluid turbid from bacteria	+	+	3	18	14	21	172				Changed to sulfanilamide on 4th day because of rash CSF positive on 3d and 7th days eventually recovered
35 I	24 ♂		100 F lethargic petechiae arthritis CSF 5400 cells	—	+	18	147	78	4	86	100			CSF positive on 6th day joints subsided slowly recovered
36 I	60 ♂		102 F coma petechiae CSF 7600 cells	—	+	1	173	167						Died after 22 hours no autopsy
37 I	14 ♂	1	1012 F stuporous petechiae CSF 18450 cells	—	+	7	475	114	19	116				Temperature normal 5th day uneventful recovery
38 I	4 ♂		100 F delirious petechiae CSF 3000 cells	—	+	8	57	90	100	90				Received 30000 units of meningococcus antitoxin temperature normal 5th day uneventful recovery
40 I	20 ♂		1004 F CSF 4320 cells	—	—	7	41	9	170	121				Temperature normal 3d day uneventful recovery
41 I	9 ♀		1002 F stuporous CSF 1600 cells	—	+	6	41	12	177	13	70			Temperature normal 4th day uneventful recovery
42 I	20 ♀		986 F petechiae pregnant CSF 1700 cells	—	+	8	46	110	70	162				Received 30000 units of meningococcus antitoxin hematuria uneventful recovery
43 I	13 ♀		1026 F stuporous CSF 1100 cells	—	—	10	54	12	1	118				Temperature normal 7th day hematuria uneventful recovery
44 I	21 ♀		100 F lethargic petechiae CSF 2700 cells	—	+	5	38	10	1	111				Temperature normal 11th day hematuria uneventful recovery
45 I	14 ♂	1	1026 F petechiae CSF 11800 cells	—	—	7	38	164	20	197				Temperature normal 4th day hematuria uneventful recovery
46 I	13 ♂		1014 F lethargic petechiae CSF 8100 cells	+	+	10	64	21	21	170				Drug fever uneventful recovery
49 I	22 ♀	4	1038 F mentally dulled CSF 20000 cells	—	+	9	36	230	200	192				Temperature normal 5th day uneventful recovery
41 B	67 ♀		1034 F coma petechiae CSF 1750 cells	—	+	4	100	19	707	100	10	10	93	NPN 60 at admission received 60 cc of meningococcus antiserum CSF became sterile died in uremia autopsy performed
50 B	20 ♂		1044 F coma diabetic acidosis CSF 1400 cells	+	+	6	37	104	140	100				Changed to sulfadiazine because of drug fever recovered slowly some possible neurologic residual

\* Day of disease therapy was begun

† 24 hour level attained at end of 24 hours of treatment maximum highest level attained during treatment average of all level

‡ Culture positive on chorionallantoic membrane of chick embryo only

§ Culture contaminated

otherwise recovered completely (examples 15 I 16 I). Cultures of blood or spinal fluid remained positive for several days in a few instances (9 I 15 I 25 I 34 I 35 I). The only possible residual lesion was observed in patient 55 B who has an increased left ankle jerk and is still under observation.

Five patients in the group (25 I 27 I 32 I 36 I and 41 B) all of whom were elderly with complicating medical conditions such as hypertension hemiplegia and kidney insufficiency failed to survive. The case fatality rate for the group of 37 patients was 13.5 per cent.

series (table 3). Although these were not severe infections (except 45 B) the response to treatment was satisfactory. In 1 instance (33 B) an abscess formed which contained sterile thin pus. Patient 45 B had severe uncontrolled diabetes with advanced gangrene of one foot. Blood cultures contained 8 to 12 organisms per cubic centimeter at the onset of treatment and subsequent cultures showed no growth. The patient died on the third day of treatment.

(d) *Urinary Tract Infections*—Four patients with urinary tract infections were treated as outlined in

table 4. Results were uniformly satisfactory, however, none of the patients had bacteremia.

(c) *Miscellaneous Infections*—Thirty patients with miscellaneous diseases including gonococcal and staphylococcal infections also were treated and the results

Drug fever with morbilliform rash was observed twice (28 I, 34 I) (19 per cent). The rash was similar to that seen with other sulfonamides.

Neuropathologic changes, agranulocytosis, anemia, nausea and vomiting were not observed in this series.

TABLE 2—*Pneumococcus Infections Treated with Sulfamerazine*

Case No.	Age	Sex	Day of Disease *	Number of Lobe	Type of Pneumococcus	Blood Culture	Severity of Disease	Duration of Treatment, Days	Total Amount Drug, Gm.	Blood Concentration			Therapeutic Result
										24 Hr.	Max. num.	Average	
1 B	25	♂		1	I	—	Moderate	5	19	9.8	9.8	7.8	? Drug fever, excellent
2 B	21	♀		1	VI	—	Moderate	11	27	8.4	10.7	8.5	Excellent
3 B	31	♂	6	Broncho	IX	—	Chronic lymphatic leukemia	6	20	9.5	12.3	11.1	Good
7 B	62	♂	10	Broncho	II	—	Bronchial asthma	6	20	6.6	11.8	9.8	Good
8 B	49	♀	1	I	VI	—	Bronchial asthma	12	39	13.2	13.2	10.4	Excellent
9 B	26	♂	1	Broncho	I	—	Cardiac failure	11	44	6.5	6.5	5.3	Course not altered
10 B	20	♀	1	I	VI	—	Moderate	9	26	11	11	6.5	Excellent
16 B	20	♂	1	I	I	+	Severe	9	27	8.2	8.4	6.6	Hematuria, excellent
19 B	49	♂		Broncho	I	—	Empyema and chronic bronchitis	9	32	6.7	9.1	5.6	Good
20 B	57	♂	1	I	XXVIII	—	Moderate	7	24	7.6	7.9	5.6	Excellent
22 B	75	♂	2	Broncho	II	—	Bronchial asthma	5	19	11.3	13.3	10.4	Good
34 B	65	♀	4	I	I	+	Bronchial asthma	6	22	12.1	12.1	7.4	Excellent
7 I	25	♂	2	Broncho	IX	—	Hemiplegia	6	21	7.3	10.7	9.0	Excellent
58 B	76	♂		II	I, XIV	—	Cardiac failure jaundice	19	40	17.5	22.3	13.3	? Drug fever received 300,000 units of type I rabbit serum, recovered slowly
13 B	62	♀	1	I	II	—	? Pulmonary infarct	11	31	14.6	16.1	13.1	? Drug fever good
14 I	12	♀	2	I	I	—	Meningismus	7	24	12	14.4	12.3	Excellent
17 I	31	♀	2	Meningitis	IX	+	Comatose	13	14		14.4	12.3	Died in 13 hours no autopsy

\* Day of disease treatment was begun

† Pneumococcus isolated but not typable

TABLE 3—*Beta-Hemolytic Streptococcus Infections Treated with Sulfamerazine*

Case No.	Age	Sex	Diagnosis	Day of Disease *	Severity	Local Cultures †	Blood Cultures †	Duration of Treatment, Days	Total Amount Drug, Gm.	Blood Concentration			Therapeutic Result
										24 Hr.	Max. num.	Average	
3 B	22	♀	Pharyngitis	2	Moderate	+	—	6	22	8.4	9	8.1	Excellent
12 B	23	♀	Tonsillitis, peritonsillar abscess	4	Severe	+	—	8	26	11.1	13.3	11.2	Excellent
15 B	34	♀	Pharyngitis	2	Severe	+	—	3	13	10.4	10.4	8.3	Excellent
30 B	24	♂	Pharyngitis	3	Severe	+	—	2	9	10.8	12.6	11.7	Excellent
42 B	20	♀	Pharyngitis	2	Severe	+	—	3	13	16.6	16.6	16.2	Excellent
11 B	41	♂	Erysipelas	1	Moderate	0	—	6	21	6.9	6.9	6.2	Good
33 B †	41	♂	Erysipelas, abscess	4	Severe	—	—	14	28	6.6	9.4	5.7	Good sterile abscess
18 I	61	♂	Erysipelas	1	Moderate	0	0	7	22	8.5	14.2	9.8	Maniacal on 3d and 4th days lesion cleared rapidly
19 I	84	♂	Erysipelas	?	Mild	0	0	8	25	9	9	6.2	Excellent
38 I	74	♂	Erysipelas	3	Mild	0	0	8	25	15	15	12.9	Lesion cleared rapidly temperature normal 8th day
43 I	40	♀	Erysipelas	2	Mild	0	0	7	20	11.4	11.4	6.9	Excellent
44 I	70	♂	Erysipelas	2	Moderate	0	0	7	21	7.5	7.5	5.0	Excellent
50 I	30	♂	Erysipelas	2	Severe	0	0	6	19	12.5	14.4	12.5	Excellent
11 I	14	♂	Scarlet fever	2	Moderate	0	0	8	25	14	14.7	12.3	Excellent
45 B	73	♂	Septicemia	?	Severe, diabetic gangrene	0	+	3	13	12.6	14.9	13.5	Died blood culture negative before death

\* Day of disease treatment was begun

† Same as patient 11 B

† + = culture positive, — = culture negative 0 = culture not obtained

obtained were comparable to those observed with sulfadiazine therapy.

#### TOXICITY

Drug fever was noted in 6 instances (1 B, 27 B, 53 B, 55 B, 58 B, 48 I), an incidence of 5.8 per cent. This reaction was not unlike that observed with other sulfonamides as to severity, time of appearance and response to withdrawal of drug.

Although animal experiments<sup>2</sup> had not shown notable neuropathologic changes, neurologic symptoms and signs were carefully watched for because of the experience reported with sulfamethylthiazole a similar methyl derivative.

Crystalluria without hematuria was noted in 7 cases (4 B, 6 B, 19 B, 2 I, 4 I, 23 I, 37 I), an incidence of 6.8 per cent. None of the patients complained of symp-

toms, and the crystals could be seen only microscopically. Eight other patients showed crystalluria in urine specimens that were exposed to room temperature for one to two hours, but these results were discarded when fresh urines were found to be free of crystals. In every instance in which fresh urines were not checked to confirm the presence of crystalluria, the case was included as one showing crystalluria. The mere fact that crystals often appeared at room temperature soon after voiding suggests that the urine approaches saturation with sulfamerazine and its acetyl derivatives. Attempts to relate the presence of crystals to the blood concentration failed to reveal a correlation.

One patient (25 I, table 1) had no crystals or red blood cells in daily urine samples but at autopsy was found to have concretions of sulfonamide crystals in

parable to that obtained with a larger fluid intake in a hot climate.

Hematuria was observed in 9 instances (87 per cent) (table 5). In 3 of the 9 cases the hematuria was grossly visible and in the others the red blood cells varied from "many" to "occasional" (47 I) per high power field in the centrifuged specimen. Crystalluria was observed at some time during treatment in 3 of the 9. Attempts to correlate the occurrence of hematuria with blood levels have shown no apparent relationship. Four of the 9 patients had petechiae in the skin.

Patient 29 I was menstruating at the time hematuria was reported. Catheterized specimens contained red blood cells, but the possibility of menstrual contamination is not excluded since a two glass technic was

TABLE 4—*Bacillus Coli* Infections Treated with Sulfamerazine

Case No.	Age	Sex	Diagnosis	Urine Culture	Urinary WBC/HP Field Cent	Duration of Treatment Days	Total Amount Drug, Gm	Blood Concentrations			Therapeutic Result
								24 Hr	Maximum	Average	
33 B	62	♀	Pyelitis & brucellaemia	+	10+	9	25	11.3	19.3	15	Excellent
43 B	64	♂	Cystitis carcinoma of prostate	+	Occasional clumps	7	24		4	3.6	Culture negative before death
49 B	34	♀	Cystitis cystocele	+	Many	5	17	15.8	15.8	15.5	Good
59 B	69	♂	Cystitis coronary artery disease	+	200	4	13		8.6		Good

TABLE 5—Cases of Hematuria Observed During Sulfamerazine Treatment

Case No.	Age	Sex	Petechiae	Day of Treatment*	Intake † Cc. per 24 Hr	Output ‡ Cc. per 24 Hr	Blood Concentration			Non protein Nitrogen	Day of Crystalluria §	Severity	Duration in Days ¶	Result
							Hematuria	Maximum	Average					
20 I	12	♀	+	3	1,730	Incontinent	13.5	18.8	16.7	32	0	Gross	3	Subsided promptly
29 I	17	♀	—	5	2,140	1,360	18.8	18.8	17.4	—	0	Micro	3	Subsided promptly (menstruating)
31 I	19	♀	—	6	1,675	715+	14	21.6	16.3	—	4	Gross	3	Subsided promptly
49 I	32	♀	+	6	2,500	720+	13.5	70	16.2	15	3	Micro	4	Pregnant albumin 5th day subsided
45 I	15	♀	—	8	2,300	1,470	11.5	15	11.8	—	5	Micro	1	Subsided promptly
46 I	21	♀	+	4	2,360	2,100	7	15	11.1	24	0	Gross	5	Subsided promptly
47 I	14	♂	+	6	1,910+	1,450	21.5	23	19.7	—	0	Micro	2	Subsided promptly
16 B	20	♂	—	7	3,170	2,170	3.8	8.4	6.6	—	0	Micro	4	Subsided promptly
36 B	32	♂	—	13	2,630	2,092	9.7	16.2	13.6	19	0	Micro	1	Subsided promptly

\* Day of treatment hematuria first appeared

† Average of 3 days preceding onset of hematuria

‡ Blood concentration at time of hematuria maximum level before hematuria average level during therapy

§ Day of treatment crystals were first seen

¶ Duration of hematuria

both ureters. Since the patient had received sulapyridine following cessation of sulfamerazine treatment the identity of the crystals was open to question. Samples were sent to Sharpe and Dohme<sup>10</sup> and were identified as acetyl-sulfamerazine. The daily fluid intake averaged 1,800 + cc and the urinary output 850 + cc during the period of sulfamerazine treatment. Blood nonprotein nitrogen was not measured at any time, as urinary complications were not suspected. Urinary suppression was not noted terminally, but the output was not accurately known because of urinary incontinence. This patient received large doses of sulfamerazine averaging 8 Gm in twenty-four hours for fifteen days and the blood concentration reached 29 mg per hundred cubic centimeters on one occasion. It is felt that the crystalline deposits were due to an inadequate intake of fluid but the urinary output might be quite com-

not employed. It is of interest that patient 36 B had a bloody stool on the day hematuria was reported; no subsequent episodes of hemorrhage occurred.

None of the patients developed nitrogen retention, urinary suppression or other evidence of kidney impairment. Symptoms cleared promptly with every patient on cessation of therapy.

#### COMMENT AND SUMMARY

Experience accumulated in the treatment of 103 patients has demonstrated that sulfamerazine is rapidly absorbed from the gastrointestinal tract and is rather slowly excreted by the kidney. Adequate drug levels can be maintained by doses administered at eight hour intervals. The drug readily diffuses into pleural fluid in concentrations approximating that of the blood and into spinal fluid in concentrations approaching 50 per cent of that in the blood. Patients tolerate sulfamerazine well side effect being few in number.

10 Through courtesy of Dr. Earl L. Burbridge Jr.

Therapeutic results in meningococcic, pneumococcic, streptococcic and colon bacillus infections were satisfactory and compared favorably with those reported for sulfadiazine.

The toxicity of sulfamerazine has been critically evaluated. The incidence of hypersensitivity (drug fever and rashes) seems to be about the same as that observed with other sulfonamide derivatives. Evidence of kidney and urinary tract complications was more frequent than was anticipated from pharmacologic data and preliminary tests in experimental animals. Crystalluria without hematuria was observed in 68 per cent of the series. This complication was benign in all instances. One patient without hematuria or crystalluria had concretions of acetylsulfamerazine in both ureters at autopsy. This patient had received large amounts of the drug and his fluid intake was sub-optimal. It is probable that the incidence of crystalluria would have been lower if more fluids had been administered or if the urine had been alkalinized.

Hematuria was noted in 87 per cent of the patients. In consideration of the incidence of hematuria it should be borne in mind that in all but 1 (possibly 2) instances this complication occurred in patients with meningococcic meningitis who received particularly large doses of the drug because of the serious nature of the infection. The occurrence of hematuria could not, however, be related to the blood concentration of the drug. Certain of the patients received a lower fluid intake than was planned. The average fluid intake for the preceding days in 2 of the 3 cases of gross hematuria was only 1,730 and 1,875 cc respectively. These cases may give some indication of the results to be expected in tropical climates. Since 4 of the 9 patients had hemorrhagic skin manifestations, the suggestion is made that hematuria resulted in certain instances from similar lesions in the kidney. It may be noted further that hematuria was sought for by daily examinations of urinary sediment and that in 6 of the 9 cases the hematuria was discovered only by microscopic examination. It is important to point out also that the hematuria subsided promptly in each case without any evidence of embarrassment to kidney function.

The chief reason for clinical trial of sulfamerazine at this time was the possibility that it might produce fewer and less severe urinary complications than sulfadiazine in warm climates under military conditions. Our experience confirms the previous reports that less of the drug is needed for comparable blood levels, but no conclusion can be drawn as to whether urinary complications occurred more or less often than would have been the case had sulfadiazine been used on the same patients. In certain of these cases circumstances under which the drug was administered were such as to offer an excellent opportunity for urinary complications, and it seems likely that the accumulated results of other observers may indicate that sulfamerazine produces fewer renal complications than sulfathiazole and sulfadiazine.

**Expansion of Intestinal Gas**—In an ascent to 38,389 feet, one volume of gas originally in the intestinal tract at sea level now occupies 5 volumes. This expansion of gas causes distention and abdominal discomfort in the aviator ascending to such altitudes and may cause respiratory and circulatory distress if the expansion of the gas forces the diaphragm to push up on the heart and lungs—Gemmill, Chalmers L. *Physiology in Aviation*, Springfield, Ill., Charles C Thomas, Publisher 1943.

## THE CHEMOTHERAPY OF INTRACRANIAL INFECTIONS

### III THE TREATMENT OF EXPERIMENTAL STAPHYLOCOCCIC MENINGITIS WITH INTRATHECAL ADMINISTRATION OF PENICILLIN

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AND

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The great promise of penicillin as an antibacterial agent has recently received wide publicity, even in the lay press. The discovery of its antibacterial activity by Fleming<sup>1</sup> in 1929 and the outstanding investigations of Chain, Florey and their co-workers<sup>2</sup> beginning in 1940 have been reviewed by Hobby, Meyer, Dawson and Chaffee<sup>3</sup> (who also contributed valuable observations of their own). A recent summary of early clinical observations in Great Britain has been published by the Floreys<sup>4</sup> and extensive investigation of the use of penicillin is being carried on in this country<sup>5</sup>.

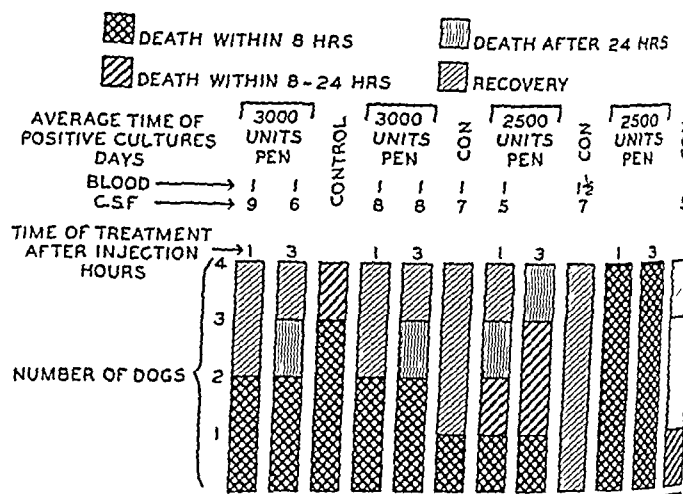


Chart 1—Effects of a single intravenous injection of penicillin in staphylococcic meningitis

The experimental study to be reported herein was undertaken as one of a series of investigations of the treatment of infections of the central nervous system and its coverings<sup>6</sup>. This report will be limited to consideration of the effects of penicillin in experimental staphylococcic meningitis.

Read before the Harvey Cushing Society, New York, May 8 1943  
From the Department of Surgery, Vanderbilt University School of Medicine

The penicillin was furnished by E. R. Squibb and Sons, New Brunswick, N. J., through the kindness of Dr. George Harrop.

The work described in this paper was done under a contract recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and the Vanderbilt University.

1 Fleming, Alexander. An Antibacterial Action of Cultures of Penicillium with Special Reference to Their Use in Isolation of B. Influenzae. *Brit. J. Exper. Path.* 10: 226 (June) 1929.

2 Chain, E., Florey, H. W., Gardner, A. D., Jennings, M. A., Orr-Ewing, J., Sanders, A. F., and Heatley, N. G. Penicillin as a Chemotherapeutic Agent. *Lancet* 2: 226 (Aug. 24) 1940. Abraham, E. P., Chain, E., Fletcher, C. M., Gardner, A. D., Heatley, N. G., Jennings, M. A., and Florey, H. W. Further Observations on Penicillin. *ibid.* 2: 177 (Aug. 16) 1941.

3 Hobby, Gladys L., Meyer, Karl, Dawson, M. H., and Chaffee, Eleanor. The Antibacterial Action of Penicillin. *J. Bact.* 10: 11 (Jan.) 1942.

4 Florey, M. E., and Florey, H. W. General and Local Administration of Penicillin. *Lancet* 1: 387 (March 27) 1943.

5 Penicillin, Statement Released by the Committee on Medical Research. *J. A. M. A.* 122: 235 (May 22) 1943.

6 Pilcher, Cobb, Angelucci, Ralph, and Meacham, W. F. Complications Produced by the Intracranial Implantation of Sulfathiazole. *J. A. M. A.* 119: 927 (July 18) 1942. Meacham, W. F., Angelucci, Ralph, Benz, E., and Pilcher, Cobb. The Chemotherapy of Intracranial Infections. II. The Clinical and Pathologic Effects of the Intracranial Administration of Sulfamizamide, Sulfathiazole and Sulfadiazine in Staphylococcic Meningitis. To be published.

## METHODS AND RESULTS

Dogs weighing 7 to 10 Kg were employed in all experiments. Meningitis was produced by injection of 0.1 cc of a saline suspension of a strain of hemolytic *Staphylococcus aureus* into the cisterna magna. This

volume contained approximately 400 million organisms. Titres of cultures of this organism showed no evidence of toxin formation.

In order to insure that the virulence of the organism should be as nearly constant as possible in successive groups of experiments, the following method of preparation was employed. The organism selected was "passed through" the spinal fluids of a number of dogs until it consistently produced a fulminating fatal menin-

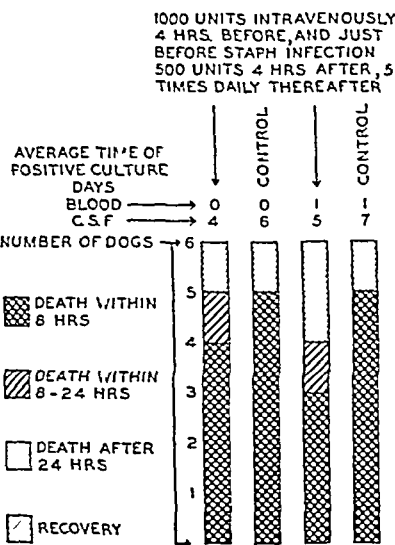


Chart 2—Effects of intravenous penicillin therapy in staphylococcal meningitis

gitis. It was then cultured in a large volume of beef infusion broth containing 10 per cent human plasma for sixteen hours. Finally, small quantities of this culture were sealed in a large number of small glass ampules. The latter were placed in a large container of alcohol, which in turn was kept packed in solidified carbon dioxide in a freezing chamber. The contents of one of these ampules were used for each group of experiments. Each group consisted of 12 dogs. In some groups 6 were treated and 6 served as controls. In others 4 had treatment at one time, 4 at another and 4 served as untreated controls.

Necropsy was performed and microscopic studies were made in most of the experiments, but there were

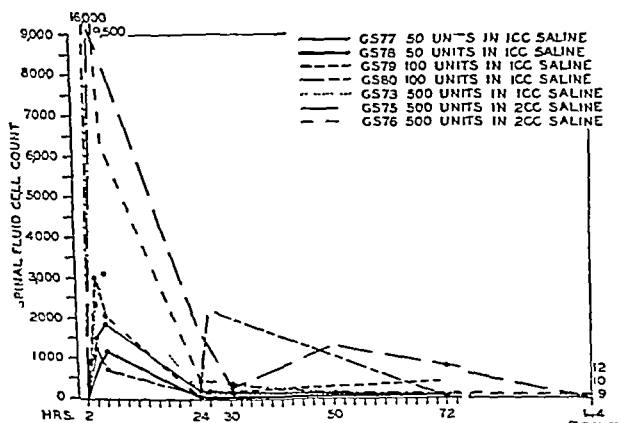


Chart 3—The spinal fluid cell count following a single intrathecal injection of penicillin

no significant findings other than the varying degrees of meningeal inflammation which would be expected.

For statistical evaluation of results in this type of experiment only two criteria are of real significance: namely, mortality rate and duration of life. These two factors are shown in the accompanying charts.

**Intravenous Therapy**—When the first of these studies was begun the amount of penicillin available was extremely small. For this reason the effects of a single large (2,500-3,000 Florey units) intravenous dose given either one hour or three hours after injection of staphylococci were determined (chart 1). It is sufficient to say of the results that, although there was considerable variation in different groups, no significant beneficial effect of the treatment was observed.

When more penicillin became available an additional series of experiments was carried out in which intravenous therapy was begun before injection of staphylococci and continued in equally spaced doses of 500 units five times daily as shown in chart 2. Of the 24 dogs 3 treated and 2 control animals recovered. Seven treated animals, as compared with 10 controls failed to survive eight hours.

**Intrathecal Therapy**—When these experiments were begun there was no published report of the intrathecal injection of penicillin. Since intravenous treatment of staphylococcal meningitis had not proved effective, it seemed advisable to determine the value of intrathecal therapy. First, however, the effects of intracisternal injections of penicillin in normal dogs were studied.

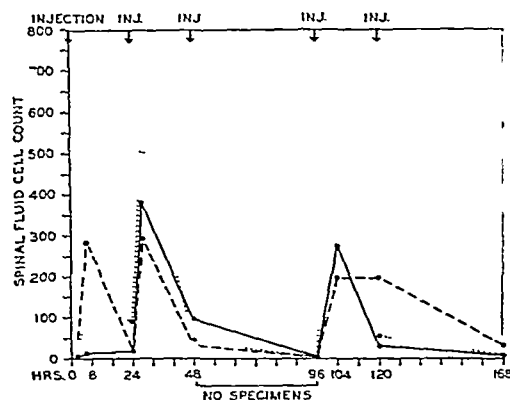


Chart 4—The spinal fluid cell count on normal dogs following repeated injections of 50 units of penicillin

Such injections produced transitory meningeal reactions whose intensity was roughly proportional to the dose (chart 3). Repeated doses at twenty-four hour intervals increased the severity of the reactions only slightly (chart 4). No significant neurologic or systemic phenomena were observed. The animals were alert, took food and fluids normally and had no significant febrile reactions.

On the basis of these observations it was decided to use an intrathecal dosage of 50 Florey units administered once daily.<sup>5</sup> Treatment was begun either one hour before or one hour after injection of staphylococci (chart 5).

In every one of the four series the mortality rate was much lower and the number of animals which either recovered or lived more than twenty-four hours was far higher in the treated than in the control groups.

In the forty-seven experiments only 1 of 15 control dogs (6 2/3 per cent) recovered, whereas thirteen of the 32 treated animals (40.6 per cent) recovered (chart 6).

The number of animals which recovered was greater in the groups in which treatment was begun after injection.

<sup>5</sup> Through the auspices of the Committee on Medical Research of the Office of Scientific Research and Development.

<sup>6</sup> Later observations to be published elsewhere have shown that a larger and more frequent intrathecal dose is well tolerated and we regret that this was not employed in these experiments.



tion of staphylococci than in those in which treatment was begun before injection

It is significant that the cerebrospinal fluid cultures remained positive for several (or many) days even in those treated animals which recovered. This is in support of the now generally accepted concept of penicillin as a bacteriostatic agent

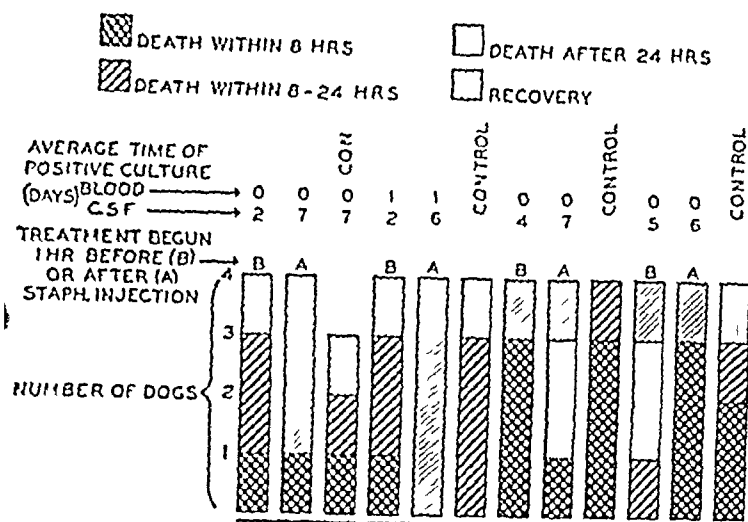


Chart 5—The effect of treatment of staphylococcal meningitis with daily intracisternal injections of 50 units of penicillin

At no time were any harmful effects attributable to penicillin observed

#### COMMENT

A survey of all our experiments (chart 6) suggests that frequent intravenous medication with penicillin may be of slight benefit in staphylococcal meningitis. Such benefit, if actually present at all, was very limited in this study. This is not surprising in view of the recent observation of Rammelkamp and Keefer<sup>9</sup> that "penicillin does not pass through the blood-brain barrier in significant quantities following an intravenous injection of the substance."

On the other hand, our experiments indicate clearly that intrathecal administration of penicillin (even in widely spaced doses now known to be too small) may greatly reduce the mortality rate

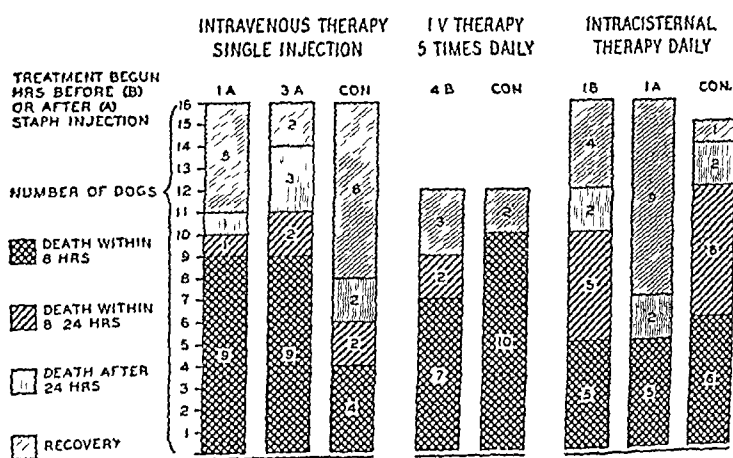


Chart 6—Composite chart of three groups

Since these experiments were completed, Rammelkamp and Keefer<sup>10</sup> have reported studies on the effects of intrathecal injection of single large doses of penicillin in normal human beings as well as in several subjects with various diseases of the central nervous system. Their observations indicate that penicillin is absorbed

slowly from the cerebrospinal fluid (although more rapidly in the presence of meningitis than in normal subjects). They also demonstrated the same meningeal reaction which was observed in our experiments. The only toxic reactions observed by them were vomiting and headache in one subject (after intrathecal injection of 10,000 Florey units).

From our experiments it seems justifiable to conclude that intrathecal injection of penicillin is a safe form of therapy and to suggest that this method of treatment will probably be of great value in clinical cases of staphylococcal meningitis.

#### SUMMARY

Intravenous treatment of experimental staphylococcal meningitis was found to have little if any beneficial effect.

Penicillin, when injected intrathecally, even in relatively large doses, produced a pleiocytosis in the cerebrospinal fluid but no other significant toxic effect.

Intrathecal treatment of experimental staphylococcal meningitis with relatively small doses of penicillin greatly reduced the mortality rate (from 93 per cent in control experiments to 54 per cent in treated animals).

It is suggested that intrathecal penicillin therapy will probably be valuable in treatment of clinical staphylococcal meningitis.

#### THE PROBLEM OF THE ETIOLOGY OF RAT BITE FEVER

REPORT OF TWO CASES DUE TO *SPIRILLUM MINUS*

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Evidence at present indicates that two different infectious agents may produce the disease known as rat bite fever. *Spirillum minus* and *Streptobacillus moniliformis*. The clinical manifestations of these two infections may be so similar that differentiation is possible only by demonstration of the causative organisms.<sup>1</sup> Recent reviews of the literature on rat bite fever in America show that approximately 150 cases have been reported and that the majority were regarded as *Spirillum minus* infections, although actual demonstration of the parasite by animal inoculation was carried out in only 23 of the cases.<sup>2</sup> Dawson and Hobby have questioned this evidence because the laboratory animals used in making the diagnosis may be naturally infected with spirilliform organisms and because *Spirillum minus* has not been demonstrated in the blood of persons suffering from rat bite fever.<sup>3</sup> Nevertheless it must be accepted that *Spirillum minus* can produce a disease in man typical of rat bite fever, since a number of patients with neurosyphilis have been inoculated with *Spirillum minus* for therapeutic purposes and the typical clinical picture of rat bite fever has resulted.<sup>4</sup> Brown

Dr. R. S. Leasingham gave technical assistance in identifying *Spirillum minus*.

From the Medical Service of Grady Hospital and the Department of Medicine, Emory University School of Medicine.

<sup>1</sup> Brown, T. M., and Nunemaker, J. C. Bull. Johns Hopkins Hosp. 70: 201 (March) 1942.

<sup>2</sup> Larson, C. L. Pub. Health Rep. 56: 1961 (Oct. 3) 1941. P. 10.

<sup>3</sup> Chaman, A., and Sweet, L. K. Med. Ann. District of Columbia 10: 38 (March) 1941. Roghano, A. G. Surgery 11: 632 (April) 1942. P. 1.

<sup>4</sup> Dawson, M. H., and Hobby, G. L. Tr. A. Am. Physicians 51: 329, 1939.

<sup>5</sup> Solomon, H. C. Berl. Arthur Theiler, Max and Clay, C. L. T. Use of Sodoku in the Treatment of General Paralysis, Arch. Ir. 38: 391 (Sept.) 1926.

<sup>6</sup> Hershey, A. S. Kibler, O. A., Cebay, S., and Koenig, M. T., Schmid, O. W., and Saunders, Ann. V. ment in Paresis, J. A. M. A. 92: 772 (March 9) 1929.

<sup>9</sup> Rammelkamp, C. H., and Keefer, C. S. J. Clin. Investigation, to be published, cited by Rammelkamp and Keefer.<sup>10</sup>

<sup>10</sup> Rammelkamp, C. H., and Keefer, C. S. The Absorption, Excretion and Toxicity of Penicillin Administered by Intrathecal Injection. Am. J. M. Sc. 205: 342 (March) 1943.

and Nunemaker, after studying the available evidence expressed the opinion that infection with either of the two organisms may follow rat bite but thought that *Streptobacillus moniliformis* infection is probably the commoner of the two. The reasons for uncertainty are that only in a few cases has search for both organisms been made and that the laboratory procedures used have not always been reliable. In the present article I report two additional cases of rat bite fever. *Spirillum minus* was isolated in both instances and cultures for *Streptobacillus moniliformis* were negative. Certain technical details of the laboratory procedures are considered.

#### REPORT OF CASES

**CASE 1—History.**—L. G. H., a white boy aged 2 years, was bitten by a rat on the thumb and first finger of the right hand while asleep on Dec. 12, 1942. He was brought immediately to the emergency clinic of Grady Hospital where the wound described as 'multiple lacerations' was cleaned and dressed with 1 per cent sulfathiazole ointment. Antitetanus serum was administered. The wound healed promptly and the child remained well until Jan. 18, 1943, thirty-seven days later when his mother noted that his skin was hot that he was listless and that there were several small red spots on his face and arms. The next day he improved rapidly and the rash disappeared. Four days later he again became listless and feverish and was brought to the hospital. Examination showed a normally developed child who appeared acutely ill. The temperature was 104 F. His skin was hot and dry and several large irregular erythematous areas were present on his face, neck, abdomen and right arm. There were some swelling and induration at the site of the rat bite. The right axillary nodes were palpable. There were no other physical findings. The erythrocyte count was 3,150,000 per cubic millimeter, hemoglobin was 81 Gm. per hundred cubic centimeters and leukocytes numbered 6,500 per cubic millimeter with 72 per cent polymorphonuclears. The urine was normal. Agglutination tests with typhoid, proteus OX19 and brucella were negative. The blood Kahn reaction on admission was doubtful; two days later it was 2 plus and three days later it was 'doubtful'. No further Kahn tests were done. The tuberculin test was negative.

**Course.**—The patient's temperature variations and the significant laboratory studies are shown graphically in chart 1. It will be observed that he had three febrile episodes, separated by periods of two to three days of normal temperature. During each of the febrile periods a blotchy erythematous rash was noted on his face and extremities. Between the sixteenth and

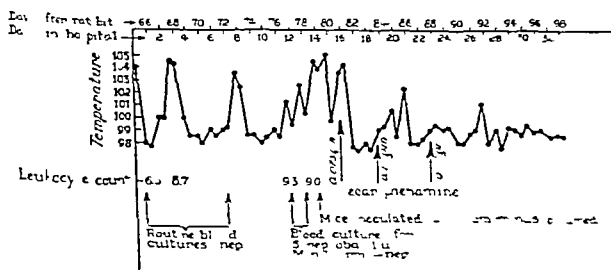


Chart 1—Course of temperature in case 1 together with significant laboratory and therapeutic procedures.

twenty-third hospital days three intravenous injections of neosarsphenamine were given. Following these he had one brief rise of temperature but thereafter remained afebrile and was apparently quite well when discharged from the hospital on the thirty-third day. He was seen again at a follow-up visit two months later and was still free from symptoms.

**Special Laboratory Examination.**—Routine blood cultures in tryptose phosphate broth on the first and eighth hospital days gave no growth. On the thirteenth and fourteenth hospital

days blood cultures were made according to the technic recommended by Brown and Nunemaker for *Streptobacillus moniliformis* with 20 per cent fresh rabbit serum in tryptose phosphate broth. Again there was no growth. In an attempt to demonstrate the presence of *Spirillum minus* 4 mice were inoculated with the patient's blood. Each received 0.25 cc. of fresh unclotted blood intraperitoneally. The blood of each mouse was examined by dark field microscope before inocula-

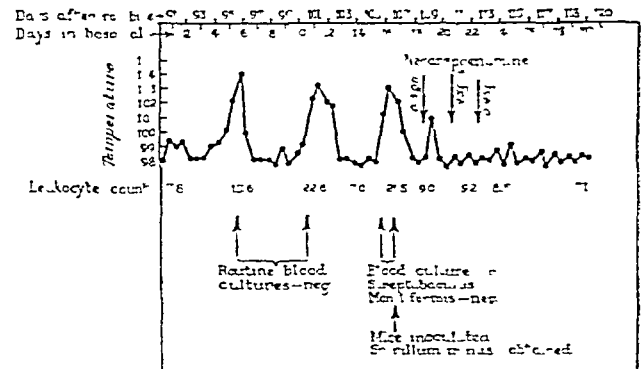


Chart 2—Course of temperature in case 2 together with significant laboratory and therapeutic procedures.

tion and also on the seventh and fourteenth days afterward, but no spirilla were found. On the sixteenth day however, *Spirillum minus* was observed in the blood of 1 of the 4 mice, and on the eighteenth day it was present in the blood of all 4 mice. During the succeeding four weeks *Spirillum minus* was easily demonstrated in the blood of all 4 mice.

**CASE 2—M. L. H.,** a white woman aged 59, married, came to the emergency clinic of Grady Hospital on the night of Nov. 2, 1942, a few hours after she had been bitten by a rat while sleeping. There was a small puncture wound on the right side of her face near the angle of the jaw. This was treated with chromic acid and she was given antitetanus serum. On November 19, seventeen days later, she returned to the clinic because of a soft swelling in the region of the bite. Her temperature was 99.6 F. The swelling seemed fluctuant and was incised but no pus was obtained. She returned for a dressing on November 23, at which time the wound was almost healed. She was not seen again until Feb. 1, 1943, when she returned to the medical clinic complaining of pains in her extremities, weakness, loss of appetite, spells of nausea and vomiting, and some loss of weight. She did not remember dates very accurately, but questioning indicated that she had felt well until about December 25, which was fifty-three days after the rat bite. At that time she had a febrile illness which she thought was "influenza." This had been characterized by chill sensation, never acting in the muscles and a "head cold" and had lasted for approximately two weeks. From that time until admission to the hospital she was never entirely well. There had been episodes every few days of feverishness, chilliness, nausea and vomiting. About January 10 she had noted a painful swelling of her hand, forearm and elbows and one week later there was a similar swelling of her feet and ankles, first on the left side and then on the right. She was admitted to the hospital for study. On physical examination she appeared poorly nourished but not acutely ill. There was no fever. The skin was sorely hot, dry and scaly. A few small non-tender lymph nodes were noted in the right submaxillary and posterior cervical region. The heart and lungs were normal. The blood pressure was 100/60. The abdomen was no tender, the liver edge was just palpable, the spleen was not felt. Over the right hip and leg was a soft pitting edema and the entire area was somewhat tender on pressure. Dorsal flexion of the right leg was painful. These findings were interpreted as evidence of thrombophlebitis in the right leg. Routine laboratory examina-

tions showed erythrocytes 3,600,000 per cubic millimeter, hemoglobin 9.5 Gm per hundred cubic centimeters leukocyte count 7,800 with 87 per cent polymorphonuclears, sedimentation rate 82 mm per hour, blood Kahn test negative, urine normal.

*Course*—The patient's temperature and significant laboratory studies during her hospital stay are shown graphically in chart 2. It will be noted that she had three febrile episodes at approximately five day intervals and that no further episodes occurred after she was given injections of neorsphenamine. The leukocyte count rose sharply when she developed fever. A diagnosis of rat bite fever was not suspected until some days after admission and initial studies were concerned with the function of her stomach and gallbladder. On the twelfth hospital day, when she had fever, the following note was made on her record: "There is a diffuse erythema over the outer surfaces of the arms, a slight splotchiness over the abdomen, and the skin of the right leg below the knee is diffusely reddened and warm. There is a fairly marked erythema surrounding the original area of the rat bite. There is no new lymphadenopathy, though there are small nontender nodes in the submaxillary region." At the onset of the third paroxysm of fever, special laboratory procedures for the identification of *Spirillum minus* and *Streptobacillus moniliformis* were carried out, and following that she was given three intravenous injections of neorsphenamine at two day intervals, as indicated in the chart. This effected a pronounced and rapid clinical improvement, the nausea and vomiting ceased and the pain and swelling in her extremities disappeared. She left the hospital, feeling entirely well, on the thirty-first day. Four weeks later she returned to the outpatient clinic for follow-up and reported herself entirely well.

*Special Laboratory Examinations*—Routine blood cultures on the sixth and eleventh hospital days were negative. On the sixteenth and seventeenth days two more cultures were made according to the technic of Brown and Nunemaker, using 20 per cent fresh rabbit serum in tryptose phosphate broth, but *Streptobacillus moniliformis* was not obtained. In an attempt to find *Spirillum minus*, mice were inoculated with the patient's blood on the seventeenth day. Four mice each received 0.5 cc of fresh uncitrated blood intraperitoneally. One of these mice was killed by its cage mate two days later. Examinations of the blood of the remaining 3 mice were made on the third, twelfth and fourteenth days after inoculation, and *Spirillum minus* was not found. On the seventeenth day *Spirillum minus* was found in the blood of 1 of the mice but not in the other 2. On the twenty-first and thirtieth days the same mouse was positive and there appeared to be a considerably larger number of spirilla present. The organisms were never found in the blood of the other 2 mice.

#### LABORATORY EXAMINATIONS IN RAT BITE FEVER

*Streptobacillus moniliformis* has been isolated by routine blood culture on a number of occasions, but Brown and Nunemaker advise a modification of the routine procedure when this organism is suspected.<sup>1</sup> Their technic consists essentially in centrifuging citrated blood and then culturing the blood cell residue in test tubes containing fresh serum and a nutrient broth. Under these conditions the "fluff ball" colonies are easily seen and can be withdrawn with a pipet for staining or subculture. Wayson's stain was recommended for studying the morphology of the organisms. This technic was carefully followed in the present cases. Any formation on the surface of the blood cell layer which was suspected of containing bacteria was stained by Wayson's and other methods, but the results were always negative.

Suitable precautions were taken to eliminate the possibility of preinfection in the mice used in the isolation of *Spirillum minus* from these 2 patients. Not only were there several negative preliminary examinations

on the test mice but as a further precaution 14 cage mates which had not been inoculated were also examined. *Spirillum minus* was not present in the blood of any of the animals. Furthermore, the animals used in the 2 cases were different breeds of mice. Those used in case 1 were brown mice which had been obtained from South Carolina, while those used in case 2 were white mice which had been obtained in Atlanta.

*Spirillum minus* is not difficult to identify when present in the peripheral blood of a mouse. A drop of blood, obtained by snipping off the end of the tail with scissors, is pressed out very thinly with a cover slip on a slide, and the preparation is examined in a dark field microscope. McDermott has written an extensive description of this organism.<sup>5</sup> The most striking characteristic is its extremely rapid motility. In a fresh preparation it darts in and out of the field very rapidly, however, after an hour or more the motility is often considerably slower. Under these circumstances it is easier to observe the morphology. The organisms are 2 to 5 microns in length, and there are usually two to five spirals. Flagella can be seen as a hazy appearance at the ends. In addition to visibility in the dark field they can also be seen in stained preparations. Ripley and Van Sant have published excellent photomicrographs.<sup>6</sup>

Emphasis is needed on the point that the appearance of the spirillum in the peripheral blood of an inoculated animal may not occur until the third week. Some textbooks and writings on the subject state that it appears between the fifth and fourteenth days. In the 2 cases reported here the spirillum was not found until the sixteenth and seventeenth days, and in other instances the first appearance has been as late as the thirty-seventh day.<sup>5</sup>

#### COMMENT

These 2 patients with rat bite fever were in the hospital at the same time but were otherwise not related. Some of the clinical features showed striking similarities. The incubation periods were long, the skin eruptions resembled each other closely, the fevers were of the same type, and both infections responded promptly to neorsphenamine therapy. Points of dissimilarity were the prominence of nausea and vomiting in case 2 and the leukocytosis which accompanied the febrile periods in case 2. Neither patient exhibited evidence of arthritis while under observation, although patient 2 gave a history of swelling around the wrists, elbows, knees and ankles before admission to the hospital.

It is of interest that three other cases of rat bite fever due to *Spirillum minus* have been identified in Atlanta,<sup>7</sup> whereas in Brown and Nunemaker's study of 8 cases in the Baltimore area *Streptobacillus moniliformis* appeared to be the etiologic agent in every instance. Possibly these differences are due to variations in the parasites harbored by rats in different localities.

#### SUMMARY

In 2 cases of rat bite fever *Spirillum minus* was isolated from the blood by mouse inoculation. Culture of the blood for *Streptobacillus moniliformis* were negative.

5 McDermott, E. N. *Quart. J. Med.* 21: 433 (April) 1917.  
6 Ripley, H. S., and Van Sant, Helen M. *Rat Bite Fever Acq.*  
from a Dog, *J. A. M. A.* 102: 1917 (June 9) 1934.  
7 Leaningham, R. S. *Am. J. Clin. Path.* 8: 333 (May) 1917.

THE PROPHYLACTIC VALUE OF  
SULFADIAZINEIN THE CONTROL OF MENINGOCOCCIC  
MENINGITIS

COLONEL DWIGHT M KUHN'S

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From Jan 1 1943 to April 30 1943 more than 1 300 cases of meningococcic meningitis occurred among military personnel in the Fourth Service Command. During this period the attack rate for the disease varied widely from post to post. In some installations only sporadic cases were found in others the number of cases reached epidemic proportions. Generally speaking, however, the disease was more prevalent in stations where large numbers of recently inducted men were assembled for training purposes.

The customary control measures employed during outbreaks of meningococcic meningitis include quarantine, prevention of overcrowding, protection from fatigue and exposure, and the prompt hospitalization or isolation of all cases of common respiratory illnesses. It is admitted however that these measures are only partially effective and, under conditions of active military training can be properly applied only with considerable difficulty. It seemed desirable, therefore, to seek additional means of controlling this disease particularly among the relatively "unseasoned" recent inductees.

To be useful under military conditions, any control measure proposed must be applicable to large numbers of individuals without causing serious interruptions in daily activities. The remarkable effectiveness of sulfadiazine in the treatment of meningococcic meningitis suggested that it might be of prophylactic value in the control of this disease among troops. There is evidence that other sulfonamides, namely sulfanilamide and sulfapyridine, may have some prophylactic value in curbing outbreaks of meningitis and eliminating meningococci from the nasopharyngeal mucosa.<sup>1</sup> Dingle

and his associates<sup>2</sup> have pointed out that meningococci disappear promptly from the nasopharynx of patients undergoing treatment with sulfadiazine. This implies that sulfadiazine may be effective in the treatment of meningococcus carriers. Although the exact role of the carrier in relation to the spread of meningococcic meningitis is not entirely clear it seems logical that a measure which can quickly reduce the carrier rate to a low level may be valuable in retarding sharp outbreaks of this disease. Indeed reports transmitted from the Office of the Surgeon General have indicated that sulfadiazine has been of value in controlling meningitis at several army posts in recent months.

Studies undertaken at the Fourth Service Command Laboratory have shown that meningococci are rapidly eliminated from the nasopharynx following the peroral administration of 3 Gm of sulfadiazine daily for three days. In a small series of persistent carriers treated in this manner, nasopharyngeal cultures became negative for meningococci twenty-four hours after the initiation of therapy, and repeated nasopharyngeal cultures obtained at weekly intervals remained negative for varying periods of observation up to eight weeks. These results suggested that it might be possible by treating all members of a closed group with sulfadiazine at one time to decrease the number of individuals harboring meningococci during epidemic periods to a point where few, if any, cases of meningitis would occur. Our purpose in this communication is to report the results of the large scale prophylactic administration of sulfadiazine to more than 15,000 soldiers stationed at two posts where meningococcic meningitis was particularly prevalent during the spring of 1943.

## CAMP A

*Occurrence of Meningococcic Meningitis*—Camp A is a newly constructed installation located in rural Mississippi. The camp was first occupied by troops in August 1942, but as late as January 1943 the total military population had reached only 3 100. Thereafter the strength of the post rose rapidly until on March 15 1943 over 34 000 soldiers were stationed there. These included approximately 15,000 men who had arrived at Camp A during the latter part of February 1943 to form the M Infantry Division. The majority of this division was made up of men under 20 years of age who had been inducted into service during the preceding sixty days and who had been assembled from all regions of the United States. The M Division was barracked in areas III IV and VI of Camp A (fig 1). These areas are geographically and functionally separate from one another and at the time of this study were reserved solely for this organization. Two infantry regiments were assigned to area III while areas IV and VI were occupied by an infantry regiment, the division artillery and special troops. Members of the division were housed in 32 man barracks of the theater of operations type. Forty-two men occupied double decked bunks in each barracks sleeping in head to foot arrangement. Shortly after arrival at Camp A all men assigned to the M Division began a course of basic training. The program did not seem to be excessively rigorous and physical exhaustion was no greater than might be expected in fresh troops recently inducted from civilian life.

From the Fourth Service Command Medical Laboratory, Fort McPherson, Georgia.

The cooperation of Col S W French, M C, Col C G Souder, M C, Col H M Thomas Jr, M C, Col D C Campbell, M C, Col T E Scott, M C, Lieut Col George Prazak, M C, Lieut Col T C Rich, M C, Major W B Malcolm, M C, Capt V D Francis, M C, Capt R J Reedy, Sn C, Capt S C Selkovits, M C, Capt M A Fath, M C, Lieut L L Lieberman, M A C, Lieut Saul Freedman, M A C, Lieut M W O'Neil Jr, M A C, and Lieut J R Klett, M A C greatly facilitated the course of the studies. Miss A M Gunderson, Miss P L Moorman, Miss L L Laffitte, Miss M E Askew, and Sgt R J Reiber rendered technical assistance. Appreciation is further expressed to Brig Gen J S Simmons and Col Stanhope Byrnes-Jones, Preventive Medicine Section, Office of the Surgeon General, U S Army, Washington, D C, for their assistance. 1 Bryant Joseph and Fairman H D. Chemotherapy of Cerebrospinal Fever in the Field. *Lancet* 1: 923-926 (April 22) 1939. Meehan J F and Merrillees C R. Outbreak of Cerebrospinal Meningitis in Foundling Hospital. *Treatment of Carriers with M & B 693*. M J Australia 2: 84-90 (July 27) 1940. Seid S E. Meningitis Epidemic Among Navajo Indians. *J A M A* 115: 923-924 (Sept. 14) 1940. Fairbrother R W. Cerebrospinal Meningitis. Use of Sulfonamide Derivatives in Prophylaxis. *Brit M J* 2: 89-92 (Dec 21) 1940. Delafield M E, Straker Edith, and Topley W W C. Antiseptic Snuffs. *Brit M J* 1: 145-149 (Feb 1) 1941. Gray F C and Gear J. Sulfapyridine, M & B 693 as a Prophylactic Against Cerebrospinal Meningitis. *South African M J* 15: 139-140 (April 12) 1941. Ave C D, Babione R W, and DeLamater J N. Meningococcic Meningitis in the San Diego Area During 1942. *U S Nav M Bull* 41: 62-64 (May) 1943.

2 Dingle J H, Thomas Lewis, and Vernon A R. Treatment of Meningococcic Meningitis with Sulfadiazine. *J A M A* 116: 266-268 (June 14) 1941.

served as a control. The approximate strength of this group was 9,500 men. During the week immediately prior to therapy, the weekly attack rate for meningococcic meningitis in the group to be treated had risen rapidly from 0.0 to 1.0 per thousand. This compared with a weekly rate of 0.41 per thousand in the control group at that time.

Before the institution of prophylactic therapy the incidence of meningococcus carriers in the treated and control groups was estimated in a manner similar to that previously employed at Camp A. The carrier rate in the group to be treated was 30.0 per cent, in the control group the rate was 29.0 per cent. Of the meningococci found in these carriers, 37.2 per cent were group I micro-organisms.

**Results**—In a period of observation which extended for eight weeks after the institution of treatment, 2 cases of meningococcic meningitis occurred in the N Division among troops who received the drug.<sup>4</sup> In the untreated group, however, 17 cases were found during this time. These results are shown graphically in figure 4. For purposes of comparison the hospital admission rate for meningococcic meningitis in all organizations other than the N Division from March 10 to June 2 is also included in figure 4. These data confirm the findings initially observed at Camp A and in addition indicate that the prophylactic peroral administration of as little as 2 Gm of sulfadiazine daily for two days is effective in curbing outbreaks of cerebrospinal fever among large numbers of troops.

TABLE 1—Incidence of Meningococcus Carriers in Treated and Control Groups

Camp A, March 20-May 31, 1943														
Date of Culture	Treated Group							Control Group						
	Num ber Cul tured	Num ber Posi tive	Per Cent Posi tive	Meningococcus Grouping				Num ber Cul tured	Num ber Posi tive	Per Cent Posi tive	Meningococcus Grouping			
				I	II	IIa	Poly valent*				I	II	IIa	Poly valent*
March 20-21 (before treatment)	100	36	36.0	22	3	0	11	100	38	38.0	20	1	1	16
March 1-April 1	98	3	3.1	3	0	0	0	96	29	30.0	12	0	2	10
April 7-8	96	2	2.1	1	0	0	1	98	56	57.1	32	0	2	22
April 14-15	98	2	2.0	1	0	0	1	96	49	51.0	26	1	2	20
April 21-22	97	7	7.2	2	1	1	3	96	55	57.2	29	1	3	21
May 20-1	147	8	5.4	2	1	2	3	147	82	55.8	51	6	6	19

\* Includes microorganisms which have biologic reactions of meningococci and agglutinate in polyvalent antimeningococcus horse serum but which do not agglutinate in group specific antimeningococcus rabbit serums.

TABLE 2—Incidence of Meningococcus Carriers in Treated and Control Groups

Fort B, April 6 May 27, 1943														
Date of Culture	Treated Group							Control Group						
	Num ber Cul tured	Num ber Posi tive	Per Cent Posi tive	Meningococcus Grouping				Num ber Cul tured	Num ber Posi tive	Per Cent Posi tive	Meningococcus Grouping			
				I	II	IIa	Poly valent*				I	II	IIa	Poly valent*
April 6 7 (before treatment)	100	30	30 0	12	0	4	14	100	29	29 0	10	2	0	17
April 13 14	100	0	0 0	0	0	0	0	100	43	43 0	19	7	3	14
April 27 28	97	2	2 1	2	0	0	0	95	28	29 5	15	4	4	5
May 4 5														
May 26 27	97	0	0 0	0	0	0	0	48	16	33 3	7	4	0	0

\* Includes microorganisms which have biologic reactions of meningococci and agglutinate in polyvalent antimeningococcus horse serum but which do not agglutinate in group specific antimeningococcus rabbit serums.

Because additional studies undertaken at Camp A had suggested that smaller doses of sulfadiazine might also be effective as a prophylaxis in cerebrospinal fever, all individuals in the treated group in the N Division were given at the same time 1 Gm of sulfadiazine by mouth twice daily for two days. The drug was issued to the men as they entered the mess halls for breakfast and supper. Treatment started on the evening of April 7 and was completed on the morning of April 9. Precautions similar to those at Camp A were taken to ascertain that each man swallowed the tablets. In this instance, however, no instructions regarding possible toxic symptoms were given, since it seemed desirable to observe the treated group without introducing the factor of suggestion.

At intervals subsequent to the completion of prophylactic treatment, meningococcus carrier studies were undertaken in the treated and control groups. As at Camp A, the nasopharyngeal cultures were obtained each time from the same men originally included in the carrier surveys. The results of these observations are set forth in table 2. These findings are essentially the same as those observed at Camp A in that the prophylactic administration of sulfadiazine by mouth appreciably reduced the meningococcus carrier rate among the men who received the drug.

4 One of these men had been admitted to the Station Hospital for measles. Nine days after admission, while still hospitalized, he developed meningitis. The other man was transferred to an organization three weeks after he had received the drug. Fourteen days after transfer, signs of meningitis appeared.

The administration of 2 Gm of sulfadiazine daily for two days apparently caused very few toxic symptoms among the 7,000 treated men in the N Division. There was no interference with the scheduled basic training program during the period of treatment. Indeed, the questioning of a large number of men by regimental medical officers and the staff of the Fourth Service Command Laboratory failed to reveal the occurrence of any definite toxic effects. It will be remembered that efforts were made to eliminate the factor of suggestion during the treatment of this group. Blood sulfadiazine levels, obtained at random from 20 men two hours after the third dose of sulfadiazine and eight hours after the last dose, ranged from 27 to 54 per hundred cubic centimeters by the method of Bratton and Marshall.<sup>3</sup>

#### COMMENT

These data indicate that the prophylactic administration of sulfadiazine by mouth, even in relatively small doses, is a safe and effective method for curbing epidemics of meningococcic meningitis among large numbers of troops. This method of prophylaxis might also prove to be of value in terminating outbreaks of this disease in other situations, for example on troop transports at sea or in schools, orphanages and other institutions.

In these studies the drug was given at one and the same time to all members of the groups to be treated. It should be emphasized that these were closed groups in which there was little opportunity for the usual fortuitous reinfection from outside sources to occur. It seems probable that the effectiveness of the prophylaxis described herein depended on (1) treating all individuals in the group simultaneously, (2) treating all personnel who joined the group subsequent to the institution of prophylaxis before they were incorporated into the group and (3) keeping the treated group closed to reinfection from outside sources.

#### SUMMARY

1 Sulfadiazine was administered prophylactically to more than 15,000 soldiers in residence at two posts where meningococcic meningitis was particularly prevalent during the spring of 1943. In one instance 3 Gm of drug was given by mouth daily for three days, in the other the dose was 2 Gm daily for two days.

2 Following the institution of prophylactic therapy the incidence of cerebrospinal fever among the treated individuals fell abruptly. Only 2 cases of the disease occurred during a subsequent period of eight weeks of observation. At the same time 40 cases were found among 18,800 untreated controls.

3 Meningococcus carrier surveys showed that the administration of sulfadiazine by mouth effectively lowered the carrier rate in the treated group at a time when the incidence of carriers among the untreated controls remained high or actually increased.

4 No serious toxic reactions resulted from the large scale administration of the drug. The treated men continued their usual daily activities without interruption of the scheduled basic training program during the period of treatment.

## Clinical Notes, Suggestions and New Instruments

### A CASE OF STAPHYLOCOCCIC ACTINOPHYTOSIS (BOTRYOMYCOSIS) IN MAN

THE TENTH REPORTED HUMAN CASE

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At the present time the rapid advances in chemotherapy make it increasingly important to identify precisely the etiologic agents of infections, since in many cases the selection of a chemotherapeutic drug for treatment is as dependent on the nature of the infecting organism as it is on the clinical picture of the disease. With this in mind we believe it might be of value to report a case of a rare infection in man and point out the ease with which the disease can be misdiagnosed.

T. S. V., a white man aged 21, married, a medical student, consulted a physician in the clinic on June 5, 1943 about a small mass near the anus, present for about two months and uncomfortable only in certain sitting positions. He knew of no injury to the area.

Examination showed a mass about 10 mm in diameter situated in the fatty tissue of the perineum just medial to the tuberosity of the left ischium and a smaller one medial to this but with no demonstrable connection with the anus. The superficial skin was mildly reddened over the larger mass. The mass was easily circumscribed and only slightly tender. Rectal examination gave no additional information.

The impression was that this was an infected sebaceous cyst and the patient was advised to use hot compresses over the area affected.

On June 12 he was seen again. There was no localization of the infection. He was hospitalized for hot compresses, because he was uncomfortable sitting in class and had poor facilities for treatment at his home. His temperature was normal. The white blood count was 9,600 with 67 per cent polymorphonuclear cells, 30 per cent lymphocytes, 1 per cent monocytes and 2 per cent eosinophils.

On June 14 the mass was incised, yielding about 2 drachms of granular sanguinopurulent drainage. Recovery was rapid. He was dismissed from the hospital on June 16 with the incision closed. There has been no recurrence to date.

Pus removed from the abscess at operation was examined at the department of bacteriology and found to contain small white granules about half again as large as a pinhead. Under the microscope these granules were coarsely lobulated and the surface was covered with tightly packed clublike projections. Under both the low and high powers of the microscope the granules appeared identical with the sulfur granules observed in actinomycosis when they were examined either as fresh mounts or after treatment with 20 per cent potassium hydroxide solution. Gram stains were prepared from a crushed granule but instead of showing the characteristic fragments and fine branched gram-positive mycelium as are found in true sulfur granules, only masses of staphylococci were present. Smears from a number of the granules yielded the same results, but a careful examination of smears prepared from the pus surrounding the granules showed only a few staphylococci after long examination. The cells present were considerably disintegrated and consisted chiefly of polymorphonuclear neutrophilic leukocytes and considerable numbers of mononuclear cells. The presence of granules composed of masses of staphylococci with few of the bacteria found outside the granules identifies the infection as staphylococcic actinophytosis or botryomycosis. Cultures from the crushed granules yielded a pure culture of *Staphylococcus aureus*. This was somewhat less pigmented than usual and showed no hemolysis on blood agar but was coagulase positive and gave the usual cultural reactions.

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Botryomycosis was described by Bollinger<sup>1</sup> in 1870 as a disease of horses, usually following castration by crude methods, characterized by a granulomatous lesion that slowly involves the surrounding tissues but only rarely becomes generalized. In pus discharged from the lesion the causative organism occurs as small, lobulated and frequently clubbed granules which were believed to be mycotic in nature and were assigned to the genus *Botryomyces*. The infection has also been reported in other animals.<sup>2</sup>

The true nature of the disease was shown by Magrou<sup>3</sup> in 1914. This author carried out a complete investigation which showed that the causative organism was *Staphylococcus aureus*, identical in all respects with ordinary strains of the bacterium but which occurred in the tissues in the form of peculiar granules rather than scattered throughout the pus as in ordinary staphylococcal infections. Magrou showed that these granules were composed of masses of staphylococci embedded in a matrix and were usually surrounded by some kind of membrane. The periphery of the granules, which were usually lobulated, was frequently covered by closely packed clubs as in the sulfur granules of actinomycosis. He pointed out that the lesions in horses usually contained horsehairs as foreign bodies and was able to reproduce the disease in rabbits and guinea pigs by inserting into the testes horsehair contaminated with staphylococci. Further work showed that foreign bodies were not absolutely necessary but that the disease could be produced in experimental animals by the injection of small numbers of *Staphylococcus aureus*. It was necessary to have the number of organisms within a definite range so that there were too few to produce a purulent inflammation but yet sufficient so that they would not be absorbed with little or no tissue reaction. Once the correct range has been established for any culture, the disease could be produced at will both with cultures isolated from botryomycosis and with ordinary strains of staphylococci.

In his paper, Magrou recorded from the literature (Kaiser and Gryns) one probable human case of botryomycosis occurring as an osteomyelitis. Since that time 8 other human cases have been recorded. Masson<sup>4</sup> in 1918 reported a second case in man, also occurring as an osteomyelitis, following a hip fracture by a shell fragment. Two cases of nontraumatic osteomyelitis of botryomycotic nature were reported by Fumagalli<sup>5</sup> in 1928. Berger and his associates<sup>6</sup> reported the fifth case in 1936 and the first case in which the infection was confined to soft tissues, occurring as an infection of the genital tissues of a woman. They also point out that a much more common infection in man, granuloma telangiectaticum, has erroneously been called botryomycosis and, since in addition the true disease is not a mycosis, suggest that the infection might better be termed "staphylococcic actinophytosis." The sixth human case was observed by Plaut<sup>7</sup> in 1937 as an abscess of the abdominal wall, which contained a broom straw in addition to the typical granules. The seventh and eighth cases were observed by Kimmelstiel and Oden<sup>8</sup> in 1939 as abdominal abscesses, both of which contained fragments of fish bones. One of these cases was admitted by the authors to be questionable. The ninth case was recorded in 1941 by Fink<sup>9</sup> as a liver abscess with involvement of the lung by both direct extension and metastases.

It would appear from the small number of reported cases that the disease is rare in man, but there can be little doubt that this rarity is more apparent than real. Of the recorded cases several have been diagnosed only by the examination of tissues removed at autopsy or at operation, so that many cases are no doubt missed. This infection can readily be confused with actinomycosis or may be dismissed as a simple, chronic,

inflammatory process. The granules are usually quite small and readily overlooked unless the pus is carefully examined with the naked eye. Simple smears of the exudate are unlikely to contain the granules, so that there can be little doubt that in many cases the granules have been overlooked. Plaut especially points out the importance of differentiating between botryomycosis and actinomycosis, since the prognosis is more favorable in botryomycosis and less radical treatment is necessary. This is borne out by our case, which responded readily to simple drainage. Of the reported infection involving only soft tissues, Berger's patient was still alive twenty months after the onset although unimproved, Plaut's patient recovered rapidly after operation, one of Kimmelstiel and Oden's patients died of complications following operation but the other was completely cured one month after operation, and Fink's patient died from a generalization of the infection but the disease was not diagnosed until autopsy.

Confusion in diagnosis would arise from observation of the granules in fresh material since they are almost identical under low and high powers of the microscope with the granules observed in actinomycosis. It is essential that crushed granules be examined by means of the gram stain. This procedure readily shows that the granules are composed of staphylococci rather than the branched, fine, gram-positive mycelium that makes up the sulfur granules of true actinomycosis. This procedure should never be neglected, since this is necessary to differentiate between the granules of staphylococcic actinophytosis, actinobacillosis, actinomycosis and mycetoma. In staphylococcic actinophytosis the granules are composed of masses of staphylococci embedded in a matrix of some kind and are usually surrounded by a refringent membrane the surface of which is often bedecked with clubs. Occasionally granules from old lesions are calcified. The nature of the matrix and of the limiting membrane are the subject of some dispute. Some authors believe that either or both materials arise from the organisms, probably from proteins derived from disintegrated bacteria. However, others believe that either or both of these substances arise from the host tissues. In some cases it would appear that the hard membrane described was due to calcification. Kimmelstiel and Easley<sup>10</sup> claim to have produced the disease in experimental animals and to have traced the development of the matrix from disintegrating tissue elements. This problem, however, is common to the formation of club covered granules in all of the diseases mentioned and need not be considered here in any detail.

Even considering the fact that many cases of this disease are probably overlooked, it still seems to be less common in man than in lower animals and especially the horse. This is rather surprising in view of the fact that staphylococcal infections are more common in man than in the lower animals. Although Magrou considered that the natural development of the disease was primarily due to infection with a limited number of organisms, this view has been questioned by several authors, who point out that man is frequently, if not more frequently, exposed to infection with a limited number of staphylococci. The importance of foreign bodies has been stressed by a number of workers, and their importance in the development of experimental infections has been shown by Kimmelstiel and Easley. In at least 7 of the reported cases in man, foreign bodies, such as bony sequestrums, fish bones and a broom straw, have been found in the lesions.

We would suggest, at present on purely theoretical ground, that the development of the disease is dependent on a careful balance between the defense mechanisms of the host and the invasive powers of the organisms. Several workers have pointed out the rather low virulence for experimental animals shown by cultures of *Staphylococcus aureus* isolated from staphylococcic actinophytosis. In our case the organisms presented the anomalous characteristic of lack of hemolytic power but was still coagulase positive, as is characteristic of most pathogenic strains. This lower virulence is a point in favor of our theory, as is the fact that the infection is more common in animals possessing a higher natural resistance to staphylococci than that shown by man. The disease probably develops as a result of the entrance into the tissues of staphylococci of low invasive powers but which are able to maintain themselves.

1 Bollinger, O. Virchows Arch f path Anat 49 583, 1870

2 Aynaud, M. Ann Inst Pasteur 42 256, 1928, cited by Berger<sup>6</sup>

3 Magrou, J. E. Les grains botryomycotiques, Thesis 267, Paris 1914

4 Masson, P. Lyon chir 15 230, 1918, cited by Berger<sup>6</sup>

5 Fumagalli, R. C. Ann d'anat path 4 513, 1927, cited by Berger<sup>6</sup>

6 Berger, Louis, Vallee, Arthur, and Vezina, Charles. Genital Staphylococcic Actinophytosis (Botryomycosis) in Human Beings, Arch Path 21 273 (March) 1936

7 Plaut, Alfred. Botryomycosis in Man, Arch Path 23 602 (April) 1937

8 Kimmelstiel, Paul, and Oden, P. W. Botryomycosis. Report of Two Cases of Intra Abdominal Granuloma, Arch Path 27 313 (Feb) 1939

9 Fink, A. A. Staphylococcic Actinophytosis (Botryomycosis). Abscess of the Liver with Pulmonary Involvement, Arch Path 31 103 (Jan) 1941

10 Kimmelstiel, Paul and Easley, C. A., Jr. Experimental actinophytosis, Am J Path 16 95 (Jan) 1940

there often aided by the presence of foreign bodies. This would cause the formation of a chronic inflammatory process with a purulogranulomatous tissue reaction. It is a fundamental peculiarity that all of the infections characterized by the growth of the organisms in granules are also characterized by at least a partially granulomatous tissue reaction.

## TREATMENT OF VINCENTS ANGINA OF THE TONSIL

### A PRELIMINARY REPORT

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The great number of methods and combinations of drugs used by various clinicians in treatment of Vincent's angina indicates that none of them have proved entirely satisfactory. It is a common experience, whether infection is present in the gums or in the pharynx, to have these patients returning frequently over a long period of time. An apparent cure within a period of ten days is usually considered quite satisfactory and even then, owing to frequent recurrence, the wise clinician avoids assuring his patient that he is completely cured.

The fusiform organisms and spirochetes of Vincent's angina have many of the characteristics of a secondary invader. It is commonly believed that these organisms enter only into tissues weakened by some other cause. What this cause is has not definitely been determined but there is some evidence that nutritive factors play a part. It is also possible that some associated infection may prepare the ground.

Vincent's infection of the tonsil was seen recently in several soldiers returning from the South Seas. These men had been exposed to strenuous physical conditions for a considerable period of time with meager rations while on front line duty. They were all sent back to the zone of the interior with various types of disability. On account of the likelihood of a pronounced increase of cases of this type under war conditions, it is considered advisable to make this preliminary report showing remarkable recovery under treatment with sulfathiazole. The first 2 patients had initial treatment with other methods without effective results. Each patient reported definite improvement in soreness of the throat within twenty-four hours with most symptoms gone in forty-eight hours and practically complete clinical recovery within seventy-two hours under treatment with sulfathiazole.

The dosage and method of administration ultimately used consisted of a 0.5 Gm. sulfathiazole tablet dissolved on the tongue every two hours during the day and 1 Gm dissolved on the tongue every four hours during the night. This was continued for two days at which time the patient would voluntarily discontinue medication unless directed otherwise because symptoms had disappeared. When infection also was present about the gum margins it was advised that the sulfathiazole tablet be moistened with a few drops of water to make a paste and this used to rub into the gum margins. Excellent results were secured on the gums in 1 case using this method but it was not tried sufficiently to warrant any expression of opinion.

A search of the literature fails to reveal any use of sulfonamide drugs for this purpose except 1 case treated by Pelner.<sup>1</sup> A remarkable cure was secured with azosulfamide. However Spink in his book on 'Sulfanilamide and Related Compounds' states that sulfanilamide has been used in treatment of gingival infections such as pyorrhea and Vincent's angina with no benefit from local or oral administration.

### REPORT OF CASES

CASE 1—E. E. B. A man aged 26 was sent in with a sore throat of seven days duration and a grayish membrane on the tonsil. Microscopic examination showed great masses of fusiform bacilli and spiral forms from the necrotic area. He was given 0.045 Gm of mapharsen intravenously and local treatment to the tonsil consisting of aqueous 10 per cent mercur-

rochrome. I had previously secured excellent results by using neosarsphenamine intravenously but at this time the drug was not available. The patient returned in two days with the throat still very sore, and local treatment with silver nitrate and mercurochrome was given. The same treatment was repeated the following two days and owing to some ulceration of the gum margin anteriorly, it was advised that sodium perborate paste be massaged into the gums three times daily. On the fifth day little improvement was noted in the condition so it was decided to give sulfathiazole orally, 1 Gm every four hours, in addition to local treatment. The throat was much improved the following day and after forty-eight hours recovery was sufficiently complete to warrant stopping treatment. Some ulceration of the gum margins remained. It was advised to continue sodium perborate paste for two or three days. Tonsillectomy was done under local anesthesia in about another week.

CASE 2—S. W. S., a boy aged 13 years, received with a diagnosis of membranous pharyngitis of three days' duration gave no previous history of sore throat but had suffered from dry cough for about one week. A smear from the tonsils showed large numbers of fusiform organisms and spirals of Vincent's angina. He was first seen on March 26, 1943 and given intravenously 0.045 Gm of mapharsen and sodium perborate paste to the gum margins. After four days there was still some soreness and some membrane present. After several days more of local treatment there was gradual recovery. On April 13 there was an acute recurrence of the infection in both tonsils. Another intravenous injection of mapharsen was given, as well as local treatment to the affected areas. On April 18 infection was still present and sulfathiazole 1 Gm every four hours to be dissolved on the tongue, was ordered for two days. Two days later the patient was seen and had no complaints. Ulcerations had disappeared and there was no soreness in the tonsils although there was still some infection in the gum margins. Tonsillectomy was done two days later with good results.

CASE 3—C. J. L., a man aged 23 who complained of sore throat for about ten days had a deep ulceration in the middle of the left tonsil. A smear from this area showed many fusiform organisms and spirals of Vincent's angina. The treatment consisted only of sulfathiazole 0.5 Gm on the tongue every two hours during the day and 1 Gm every four hours during the night for two days. The patient failed to return as directed. He was looked up after six days and it was found that he had felt well after two days and saw no need for returning. He was much improved after twenty-four hours. In order to prevent recurrence he was advised to take a high vitamin diet including considerable orange or grapefruit juice, greens and brewers' yeast.

CASE 4—B. N., a youth aged 20 complained of sore throat of two days duration. An ulcerated area was present in the right tonsil and there was much ulceration of the gum margins. A smear from the tonsil showed numerous fusiform organisms and spirals of Vincent's angina. The gum margins could bleed profusely from the slightest touch. He was first seen on May 18, 1943 and given sulfathiazole 0.5 Gm dissolved on the tongue every two hours during the day and 1 Gm every four hours during the night. The next day he was much improved with the soreness of the throat much better and the ulceration in the tonsils and gum margins apparently much improved. On the third day no soreness remained and the throat and gum margins appeared practically healed.

On account of the probability of an increase in epidemics of this type due to war conditions and a lowering of the general nutritive condition in certain groups or areas it is hoped that others will try this method of treatment where more cases are available for observation. In the cases reported dietary advice or brewers' yeast were not given until the acute condition had been controlled.

The 4 cases reported are the first 4 cases treated with sulfathiazole. The very remarkable results suggest that it may be a specific cure for the condition although it is impossible to draw any conclusions. It is believed that recurrence of the infection are likely to occur from any type of treatment unless factors which cause weakened resistance in the tissues are controlled.

<sup>1</sup> Pelner, Louis. New York State J. Med. 11: 178 (July) 1941.

## Special Article

## HANDBOOK OF NUTRITION. XXIV

## NUTRITION IN PREVENTIVE MEDICINE

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(Continued from page 337)

VITAMIN B<sub>1</sub> (THIAMINE) DEFICIENCY

Vitamin B<sub>1</sub> (thiamine) deficiency has been known since antiquity by many synonyms: polynemitis endemica barbars (France) loempoe (Java) kakke (Japan and China) taon (Philippines), maladie des sucres (French Antilles) hinchazon (Cuba) muchasas or pernicias (Brazil) maladie des jambes (Louisiana)<sup>109</sup>

The classic type of beriberi is characterized by symptoms due to damage of the nervous and cardiovascular systems and produces neuritis and heart failure. In the so-called "dry" type of the disease the nervous manifestations are the predominant symptoms and in the "wet" type the edema of heart failure is the more striking sign. Various combinations may exist. The neuritic form is seen most commonly in the United States<sup>110</sup> except in some areas of Louisiana where classic beriberi occurs.<sup>111</sup> Infantile beriberi occurs in breast fed infants of mothers with the disease.

Geographically the disease is widespread, occurring endemically or sporadically in all parts of the world. The classic form is common in Asia and Australasia. It occurs with less frequency in Africa, South and Central America, Europe and the United States (table 5). In the latter country about 20 per cent of chronic alcoholic addicts have neuritic manifestations of the disease.<sup>110</sup> Infantile beriberi has a death rate of over 90 per cent and is a chief cause of infant death in the Far East.<sup>112</sup>

## NICOTINIC ACID DEFICIENCY (PELLAGRA)

Deficiency in niacin (nicotinic acid) or closely related substances results in the disease pellagra. The most prominent symptoms of pellagra are stomatitis, dermatitis, mental changes, gastrointestinal upsets and weakness. Pellagra occurs most commonly in people of poor economic status because of the greater food restrictions in this group. In the United States most of the cases occur in the Southeastern states in the spring and early summer.

From 1933 to 1940 the annual death rates from pellagra in thirteen states of the Southeastern United States varied between 5.1 to 22.4 per hundred thousand of population.<sup>113</sup> In 1941, four years after the discovery that nicotinic acid was the pellagra preventive vitamin, 1,868 deaths were reported from pellagra in the United States.<sup>114</sup> Many other reports offer strong evidence that pellagra remains prevalent in the United States.

109 Williams, R. R., and Spies, T. D. Vitamin B<sub>1</sub> (Thiamine) and Its Use in Medicine, New York, Macmillan Company, 1938.

110 Scott, L. C., and Herrmann, G. R. Beriberi ("Maladie des Jambes") in Louisiana, J. A. M. A. 90: 2083 (June 30) 1928.

111 Jolliffe, Norman. Quart. J. Studies on Alcohol 1: 74 (June) 1940.

112 Beckman, Harry. Treatment in General Practice Philadelphia W. B. Saunders Company, 1930.

113 De Kleine, William. South. M. J. 35: 992 (Nov.) 1942. Am. J. Pub. Health 27: 595 (June) 1937.

114 Division of Sanitary Reports and Statistics, U. S. Public Health Service personal communication to the author.

Bean, Spies and Blankenhorn<sup>115</sup> estimate that 1 to 2 per cent of all admissions to the medical services of the Lakeside Hospital, Cleveland, and the Cincinnati General Hospital were due to pellagra. Goldsmith<sup>116</sup> found evidence of pellagra in 17 per cent of 200 consecutive admissions to the medical services of the Charity Hospital, New Orleans. Many other reports of cases of pellagra both within and without the endemic areas in the United States are summarized in table 6.

Outside the United States the great endemic areas appear to be Egypt, Rumania, Bulgaria and many parts of Africa. Ellinger, Hassan and Taha<sup>117</sup> found that 34.3 per cent of 204 people examined in lower Egypt had signs of pellagra. Clark<sup>118</sup> states that 201 cases were admitted to the dermatologic service of the Alexandria Hospital in 1931-1933 and that the incidence at the Cairo General Hospital was 3 to 24 cases per thousand admissions to the medical services. In 1918 70,000 cases were said to exist in Rumania<sup>119</sup> and in 1934 the death rate in Rumania is given as 118 per hundred thousand of population.<sup>120</sup> The data on Bulgaria are not so definite, but Molov<sup>121</sup> believes that pellagra is the most common avitaminosis in that country. Trowell<sup>122</sup> states that pellagra is endemic among the children in certain tribes on the east and west coasts and in Central Africa. Nauck<sup>123</sup> makes the astonishing estimate that in Transcaucasia in 1933 there were 30,000 to 50,000 pellagrins in a population of 1,300,000 or a case incidence of 23 to 38 per cent. Alessandri and his collaborators<sup>124</sup> estimated the number of cases in Chile in 1942 to be 3,000. Smaller numbers of cases have been reported from India,<sup>125</sup> Russia,<sup>126</sup> China,<sup>1</sup> Japan,<sup>128</sup> South America,<sup>129</sup> and many of the British colonies.<sup>119</sup> Exclusive of Spain, Italy and the Balkans the disease seems to be only sporadic in Europe.

## ARIBOFLAVINOSIS

Ariboflavinosis is a disease due to deficiency of the water soluble vitamin riboflavin. It is characterized by the development of cracks in the skin at the corners of the mouth (cheilosis), a greasy eruption of the skin changes in the tongue and keratitis, caused by an invasion of the cornea by blood vessels.

Because of the recent description of the disease information on its incidence is relatively scanty. In

115 Bean, W. B., Spies, T. D. and Blankenhorn, Marion A. The Incidence of Pellagra in Ohio Hospitals J. A. M. A. 118: 1176 (April 4) 1942.

116 Goldsmith, Grace A. South. M. J. 36: 108 (Feb.) 1943.

117 Ellinger, P., Hassan, A. and Taha, M. M. Lancet 2, (Sept. 25) 1937.

118 Clark, Alfred J. Trop. Med. & Hyg. 40: 221 (Oct. 1) 1937.

119 Stannus, H. S. Trop. Dis. Bull. 33: 729 (Oct.) 1936.

120 Jonesco Mihalesti, C. Cuica, A., and Cuica, M. Arch. Roum. de path. exper. et microbiol. 8: 422 1932.

121 Molov, V. Ljeben Vjern 59: 197 1937. abstr. Zentralbl. f. d. Ges. Hyg. 41: 409, 1938.

122 Trowell, H. C. Arch. Dis. Childhood 12: 193 (Aug.) 1937.

123 Nauck, E. G. Beihfte z. Arch. f. Schiffs u. Tropenhyg. 37: 33 1933.

124 Alessandri, H., Garcia Palazuelos, P., and Lerner, M. J. Rev. argent. d. Dermatol. 26: 25, 1942.

125 Aykroyd, W. R. Bull. Off. internat. d. hyg. pub. 29: 23 1939.

126 Batra, B. L. Indian M. Gaz. 77: 269 (May) 1942. Carab. I. B. Tr. Soc. Roy. Med. & Hyg. 35: 21, 1941. Raman, T. F. Indian J. M. Research 27: 743 (Jan.) 1940. Ahmed, N. Indian M. Gaz. 77: 140 (March) 1942. Sen Gupta, P. C. R. Chaudhuri, M. Chaudhuri, R. N., and Napier, L. E. ibid. 74: 143 (March) 1942. Ahmed, N. J. Indian M. A. 12: 1 (Oct.) 1942. Goodall, J. V. Indian M. Gaz. 75: 147 (March) 1940. Napier, L. E. ibid. 71: 1 1939.

127 Wajsnowsky, J. Arch. f. Schiffs u. Tropenhyg. 28: 11 1942.

128 Yang, C. S., and Huang, K. K. Chinese M. J. 19: 20 1934.

129 Yu, K. Y. ibid. 48: 724 (Aug.) 1934. Wilson, R. M. J. 39: 1 1926.

126 Morris, H. H., Hwang, M. S., and Kuo, P. T. J. 57: 1 1941.

141 Urabe, K. Jap. J. Dermat. u. Urol. 47: 2, 1940.

128 Itoh, N. Far East Assn. Trop. Med. Tr. 1: 1 P. 1 1939.

Fokyo 1: 315, 1925.

129 Da Costa, V. F. and Castro, M. Rev. Asoc. Med. 12: 1 1937.

11 363 1937. Bieltreich, R. A. Rev. med. Internat. 26: 1 1937.

Alessandri, Garcia Palazuelos and Lerner.

1938 the Odens and Sebrell<sup>110</sup> felt that the disease might be common in the southern United States. Spies, Bern, Vilter and Huff<sup>111</sup> believe it to be the most common deficiency disease in the United States. Goldsmith<sup>112</sup> found an incidence of 34 per cent in 200 consecutive admissions to the medical services of Charity

additional ones cited in table 7 warrant the conclusion that the disease occurs in many parts of the United States and is very prevalent in the South.

Reports from other parts of the world are even more fragmentary than those from the United States. The disease has been reported in England<sup>113</sup> and is

TABLE 5—Reports of Vitamin B<sub>1</sub> (Thiamin) Deficiency

Location	Comment	References
<b>AFRICA</b>		
Brazzaville	Report of 17 cases in 1947	Nicol R. Rev. sc. med. Afrique Fr. 1 81 1949
Eastern Congo	Report of 30 cases in 1940	Wilcocks C. Trop. Dis. Bull. 17 751 1940
1st Mill Res. Tr.	40 cases observed 1939-1940	Malard M. and Delprat. Rev. Service de San. & Mil. 106 91 1937
Madagascar	Outbreak in some troops in 1947	Sanner. Ann. med. pharm. col. 26 840 1938
Nigeria	Common in famine years	Summary of Information Regarding Nutrition in the Empire London 1939
<b>ASIA</b>		
Burma	1,661 cases in 1933	McKinley F. B. Geography of Diseases 1933
Burma	Endemic	Youmans J. B. Nutritional Deficiencies 1941
Brunei	High incidence in parturient women and in children 1933	Ann. Rep. Med. Dept. (Brunei) 1933
China	Endemic	Youmans J. B. Nutritional Deficiencies 1941
China (Shanghai)	15 per cent of 769 hospital patients admitted for beriberi in 1939	Kuo P. T. China M. J. 35 477 1939
Hong Kong	28 per cent of deaths due to beriberi in 1941	Ann. Rep. Div. Med. & San. Service 1936
Hong Kong	18 per cent of infants at a welfare center 1941	Fehilly Lydia J. Trop. Med. & Hyg. 44 21 1941
Hong Kong	1,661 deaths due to beriberi in 1941	Summary of Information Regarding Nutrition in the Empire London 1939
India	Endemic	Youmans J. B. Nutritional Deficiencies 1941
India (Guntur)	510 cases (1930-1939) reported	Raman T. K. J. Indian Med. A. 12 50 1942
India (Vizagapatnam)	200 cases (1930-1940) reported	Raman T. K. J. Indian Med. A. 12 50 1942
India (Godavari)	Endemic	Aykroyd W. R. and Krishnan B. G. Indian J. Med. Res. 29 351 1941
India (Madras)	40,000 cases per year (1941)	Aykroyd and Krishnan. Ibid. 29 703 1941
Indo China	3,365 cases in 1933	McKinley E. B. Geography of Diseases 1933
North Borneo	Sporadic epidemics	Ann. Rep. Med. Dept. (N. Borneo) 1936
Trengganu	1176 cases treated in 1941	Ann. Med. & San. Rept. (Trengganu) 1936
Siam	2,090 deaths per year	Bull. Health Off. League of Nations 9 361 1940-1941
<b>AUSTRALASIA</b>		
Australia	8 per cent of 130 infants partially deficient 1942	Clements F. W. M. J. Australia 1947
Celebes	3,000 cases 1933-1934	Fleischer D. Geneesk. Tijdschr. Nederl. Indië 77 1973 1935
East Indies	1,349 cases 101 deaths in 1941 1,333 cases 179 deaths in 1933	Abstr. Nutrition Abstr. & Rev. 6 184 1934
Japan	Endemic	Indisch Verslag 1933
Japan	13,525 deaths in 1933 11,541 deaths in 1941	Youmans J. B. Nutritional Deficiencies 1941
Malay	Endemic	Ann. Rep. San. Bur. Imp. Jap. Gov. 1937
Malay	1,762 deaths in 1938	Youmans J. B. Nutritional Deficiencies 1941
Sauru	Endemic	Ann. Rep. of Med. Dept. (Malay) 1938
New Guinea and Papua	48 deaths in 1940	Farle K. V. J. Trop. Med. & Hyg. 44 149 1941
New Guinea and Papua	Epidemics occur	U. S. Army M. Bull. No. 63
Philippines	1935 18,614 deaths 1934 21,419 deaths 1933 18,657 deaths 1932 17,173 deaths 1931 17,623 deaths	Van Veen A. G. Bull. H. O. League of Nations 9 357 1940
Straits Settlement	1,962 cases 121 deaths in 1935	Intergov. Conf. of Far Eastern Countries on Rural Hygiene League of Nations 1937
<b>CENTRAL AMERICA</b>		
Central America	Endemic	Ann. Rep. Med. Dept. Straits Settlements 1939
Costa Rica	43 cases in 1939	Beckman <sup>117</sup>
<b>EUROPE</b>		
Balkans	Sporadic cases occur	Bull. Off. San. for Pan. Am. 1939
Hungary	Sporadic cases reported	McDougall E. J. League of Nat. Health Org. Bull. 1939
Sardinia	Sporadic cases occur	Granvolgyi K. Abstr. Nutrition Abstr. & Rev. 1933-1937
St. Helena	200 cases in 1933	Cocchi C. Rev. Clin. Pediatr. 3 193 1939
Iceland	16 cases seen in 1933	Summary of Information Regarding Nutrition in the Empire London 1939
<b>SOUTH AMERICA</b>		
South America	Sporadic cases occur	Kilka P. V. G. Laeknabl. 6/8 18 1933
Brazil	Endemic	Abstr. Nutrition Abstr. & Rev. 3 57 1933
Argentina	Sporadic cases	Cecil R. L. Textbook of Medicine 1947
British Guiana	Local epidemic 1934	Zimmerman H. M. Nelson's Loose Leaf Medicine
<b>UNITED STATES and CARIBBEAN</b>		
United States	49 deaths in 1941	Cossio P. and Moia B. Dia. med. 114 1937
United States	30 per cent of alcoholic addicts	Report of Surg. Gen. (British Guiana) 1934
Louisiana	Endemic in certain areas	U. S. Bureau of the Census 1947
West Indies	Occurs	Jolliffe <sup>118</sup>
Trinidad	87 cases in 1942 consecutive admissions	Scott and Herrmann <sup>119</sup>
		Williams and Spies <sup>120</sup> Beckman <sup>117</sup>
		Farle K. V. J. Trop. Med. & Hyg. 44 150 1941

Hospital, New Orleans. Wiehl and Kruse<sup>6</sup> found that 75.8 per cent of pupils in a school in the East Side of New York City had signs of mild riboflavin deficiency as did 34.4 per cent of a group of 143 WPA employees. Kruse's figures must be interpreted with care since the diagnoses were made entirely on the changes found in the eyes which by themselves are not specific of riboflavin deficiency. Nevertheless the reports cited plus

probably widespread in India<sup>124</sup> China<sup>125</sup> Malaya<sup>126</sup> and Africa<sup>127</sup>.

#### VITAMIN C DEFICIENCY

Scurvy is a metabolic disease resulting from a deficiency of vitamin C and characterized by a general

130. Oden J. W. Oden L. H. Ir. and Sebrell W. H. Pub. Health Rep. 54 790 (Nov. 12) 1949

131. Spies T. D. Bean W. B. Vilter R. W. and Huff W. E. Am. J. M. Sc. 200 697 (Nov.) 1940

132. Goldsmith Grace A. South M. J. 76 108 (Feb.) 1941

1. Scarborough Harold. Brit. M. J. 2 601 (Nov. 21) 1942  
134. Aykroyd W. R. and Krishnan B. G. Indian J. Med. Res. 24 411 (Oct.) 1936  
135. Aykroyd W. R. and Verrill O. J. Indian J. Med. Res. 7 1 1941  
136. Verrill O. J. Ibid. 7 1 1941  
137. Ho H. C. Chinese M. J. 59 14 1914  
138. Laufer J. A. and Faller C. R. Tr. For. Sc. Trop. Med. & Hyg. 29 121 1914  
139. Purcell F. M. Tr. Rev. Sc. Med. & Hyg. 37 1 1914  
140. Barlow A. Ann. Sc. Soc. Med. & Hyg. 21 11 1914

TABLE 6—Incidence of Pellagra

Area and Date	Incidence	References and Comment
1. Southeastern states, U. S. 1912-1919	Death rates per 100,000 population varied between 21 and 22.1	De Kleene <sup>117</sup>
United States, 1915-1941	Total deaths from pellagra in United States varied from 1,000 to 1,876	Sanitary Reports <sup>114</sup>
Ohio Hospitals, U. S., 1911	Pellagra accounted for 1 to 2% of admissions to medical wards	Bean, Spies and Blankenhorn, <sup>115</sup> noteworthy because outside endemic area
Charity Hospital, New Orleans, 1911	Pellagra found in 17% of 200 consecutive admissions to medical wards	Goldsmit <sup>116</sup>
Charity Hospitals, New Orleans and Shreveport, La., 1917-1941	1 to 21 deaths yearly in these 2 hospitals	Jones, R. C. New Orleans M. & S. J. 95:407, 1943, 58 to 162 cases admitted yearly
Michigan, 1910	Signs and symptoms of pellagra frequent in Northern states especially in the alcoholic	Held, H., Jr. New England J. Med. 223:307, 1940 states that disease is commonly overlooked in the north
California, 1908-1911	Death rates varied from 0.72 to 1.6 per 100,000 population	Smith, C. I., and Stevens, I. M. Am. J. Hyg. 27:590, 1938
Indiana, 1914	Reports 11 cases	Jones, P. J., and Zervas, L. G. J. Indiana State M. A. 27:196, 1936, 109, all cases admitted to Indianapolis General Hospital
Kentucky, 1911	Reports 11 cases	Kooser, J. H., and Blankenhorn, M. A. J. A. M. A. 112:2981, 1939, all cases occurred in county (Perry)
Alabama, 1917	10 cases admitted to Hillman and T. C. 1 Hospitals, Birmingham	Spies, T. D., Chinn, A. B., and McLester, J. B. J. A. M. A. 108:833, 1934
Alabama, 1919	Reports 977 cases of multiple B vitamin deficiency (see riboflavin table)	Spies, T. D., Witter, R. W., and Ashe, W. F. J. A. M. A. 113:961, 1939 states that multiple deficiency states are very common
Canada, 1911	Reports 1 case	Quentin, J. J. Canad. M. A. J. 47:464, 1942
England and Wales, 1928-1938	77 deaths reported in 10 year period	Registrar General's Statistical Review of England and Wales for the year 1938, New Annual Series, No. 16 H. M. Stationery Office London
Northern Ireland, 1911	16 cases	Deeny, J. Brit. M. J. 1:167, 1942 16 patients with suggestive skin or gastric symptoms were relieved with niacin
England, 1914-1921	8 cases	Davies, J. H. T., and McGregor, H. G. Brit. J. Dermat. & Syph. 51:31, 1949
England, 1911	1 case	Davis, F., and Hinden, F. Lancet 1:10, 1941 patient was alcoholic
Scotland, 1910	1 case	Robertson, D. S. Edinburgh M. J. 47:81, 1940
Italy, 1917	74 deaths in 1917	Statistica delle Cause di Morte nell'Anno 1937
Transcaucasia, 1911	0,000 to 10,000 cases estimated	Nach, I.-3 total population 1,300,000
Bulgaria	Author saw personally 223 cases in 10 years of practice	Molot, I.-1 the most important avitaminosis in Bulgaria is pellagra
Rumania, 1918	70,000 cases estimated	Stannus, <sup>119</sup> source of figure is not clear in reference
Belgium, 1919	1 case	Van Bogaert, L., and Vanden Berghe Bull. Acad. roy. di méd. Belgique 4:409, 1939
Switzerland, 1918	2 cases	Bickel, G. Schweiz. med. Wchnschr. 68:1159, 1938
Norway, 1911-1919	18 cases	Kjelland, J. Nordisk Med. 1:663, 1939
Netherlands, 1918	10 cases	De Langen, C. D., Bouslijk, J. C., and van Meunehuizen, C. L. C. Nederl. tijdschr. v. Geneesk. 72:4970, 1938
Sweden, 1911	1 case	Mundus, I. Nordisk Med. 1:2477, 1939 many ill defined cases seen
Germany, 1919	1 case	Salm, H. Munchen med. Wchnschr. 80:882, 1939
Spain, 1917-1938	Many in Madrid during and after Spanish Civil War	Jimenez Garcia, F., and Grande Covian, F. Rev. clin. española, 1:313, 1940
Rumania, 1914	Death rate 118 per 100,000	Jonesco Mihaiesti, Cuica and Cuica <sup>120</sup>
Rumania (Moldavia), 1918	2 cases in 4 families comprising 31 persons	Encescu, M., and Rodenschi, A. Abstr. Zentralbl. f. d. ges. Hyg. 41:90, 1938
Brazil, 1930-1937	114 cases at Recife, 16 cases in rest of Brazil	Da Costa and Castro <sup>121</sup>
Argentina, 1911	8 cases reported to 1911	Bicktruch <sup>122</sup> pellagra is rare in Argentina
Chile, 1912	110 cases reported in Santiago	Alessandri <sup>124</sup> states that there are now 3,000 cases in Chile
Africa, 1937	Describes 26 cases occurring in 1934-1935 in Nairobi Hospital Kenya Colony in children	Trowell <sup>125</sup> states that the disease is endemic on east and west coasts and in Central Africa
Africa, 1932-1937	145 total	Stannus, <sup>119</sup> figures collected from annual medical reports of colonies
Africa, 1937-1938	171 cases at Abu and Jagos, Nigeria, in 744 persons examined	Moore, D. F. J. Trop. Med. & Hyg. 42:109, 1939
Egypt, 1937	Found pellagra in 34.3% of 204 people examined in lower Egypt	Ellinger, Hassan and Taha <sup>127</sup> pellagra is rare in upper Egypt but does occur
Egypt, 1931-1933	Rate at Cairo General Hospital was 3 to 24 cases per 1,000 admissions depending on the season	Clark <sup>128</sup>
Egypt, 1938	15 cases	Alport, A. C., Chalioungui, P., and Hanna, G. Lancet 2:1460, 1938
India	Pellagra is very frequent in a large percentage of infants	Ajrooyd <sup>125</sup>
India, 1942	Widespread	Batra, <sup>125</sup> all types of deficiency disease are seen but pellagra is most widespread
India, 1941	Describes 10 cases	Carruthers <sup>126</sup>
India, 1940	Describes 25 cases incidence 0.6% of admissions to medical wards	Raman, <sup>120</sup> Vizagapatam is an endemic focus of pellagra
India, 1942	Saw 6 cases in 18 months	Ahmed Indian M. Gaz. <sup>120</sup>
India, 1939	Describes 5 cases, 12 cases seen at the medical school yearly	Sen Gupta, Rai Chaudhuri, Chaudhuri and Napier <sup>120</sup>
India, 1942	20 cases	Ahmed J. Indian M. A. <sup>125</sup> present in upper provinces
India, 1940	"Frequent"	Goodall, <sup>120</sup> in India cases of pellagra are frequently met
India, 1939	64 cases in 10 years with 1 death	Napier <sup>120</sup> thinks pellagra is frequent in India but is not diagnosed
Straits Settlements and Malaya, 1937	3 cases	Ann. Rep. M. Dept. Straits Settlements, Fed. Malay States and Lab. Malay States, 1938
Malaya, 1935	2 cases	Landor, J. V., and Pallister, R. A. Tr. Roy. Soc. Trop. Med. & Hyg. 29:121, 1935, disease sporadic in Malaya
Straits Settlements, 1932	24 cases	Stannus, <sup>119</sup> quoting reports of medical departments of British colonies
Hong Kong, 1932	1 case	Wojasnowski, <sup>126</sup>
Trinidad, 1933	1 case	Yang and Huang, <sup>127</sup> occurred in army camp
St. Christophers, 1932	2 cases	Yu <sup>127</sup>
Antigua, 1933	1 case	Wilson <sup>127</sup>
British Honduras, 1932	404 cases	Itoh <sup>128</sup>
Bahamas, 1928-1932	20 cases at Tashkent	Morris, Hwang and Kuo <sup>127</sup> all from 1 war refugee camp
Russian Turkestan, 1934	30 cases	Crabe <sup>127</sup>
China, 1934	3 cases	
Manchuria, 1934	Present in leprosy colonies	
Korea, 1926	72 cases reported in Japan to 1925	
Japan, 1925	40 cases	
China, 1941	39 cases	
Korea, 1939		

debility, progressive anemia and hemorrhagic tendency and skeletal changes of infants and children as the result of arrestment of bone development and hemorrhage.

The disease is of worldwide occurrence. Case studies and group surveys have been reported from Africa<sup>133</sup> China<sup>130</sup> Australia<sup>140</sup> and its territories<sup>141</sup> Malaya<sup>142</sup> the Philippines<sup>143</sup> Czechoslovakia<sup>144</sup> France<sup>145</sup> Norway,<sup>146</sup> Rumania<sup>147</sup> Spain<sup>148</sup> Switzerland<sup>149</sup> the Faroe Islands,<sup>150</sup> Greenland<sup>151</sup> the United States<sup>152</sup> and

of 10,000 natives studied had clinical evidence of scurvy. The crowded housing increased incidence of infectious diseases, chronic fatigue and native customs of preparation of food were attributed as causative factors. In several studies where the incidence reported has been based on the demonstration of low blood vitamin C levels in selected groups, the prevalence of hypo-vitamin C appears alarming. During the winter of 1937-1938 among school children studied in Lau-

TABLE 7—Incidence of Riboflavin Deficiency

Area and Year	Incidence	References and Comment
Georgia 1939	3 cases	The Odens and Sebrell <sup>130</sup> all had cheilosis
New York 1939	15 cases	Jolliffe W, Fern H D and Rosenblum L A New England J Med 221 21 1939 all had cheilosis
Georgia 1939	6 cases	Sydenstricker V P, Geeslin L E, Templeton C M and Weaver J W J A M A 113 1627 1939 all had cheilosis
Alabama 1939	977 cases of multiple B vitamin deficiency	Spies T D, Vilter R W and Ashe W F J A M A 113 931 1939
Alabama 1940	241 cases in infants and children	Spies, Bean, Vilter and Huff <sup>131</sup> believe ariboflavinosis to be the most common clinical deficiency disease
Georgia 1940	45 cases	Sydenstricker V P, Sebrell W H, Cleckley H M and Kruse H D J A M A 114 2437 1940 patients had eye lesions responding to riboflavin therapy
Georgia 1940	9 cases	Kruse H D, Sydenstricker V P, Sebrell W H and Cleckley H M Pub Health Rep 55 157 1940 eye lesions
New York City 1941	Mild deficiency in 4% of 350 well to do children, mild deficiency in 7.8% of 490 pupils from low income groups, mild deficiency in 34.4% of 143 WPA employees	Wiehl and Kruse <sup>150</sup> diagnoses made purely on the basis of eye examination
New Orleans 1942	68 of 200 individuals admitted consecutively to medical wards of Charity Hospital had some evidence of riboflavin deficiency	Goldsmith <sup>132</sup> finds ariboflavinosis to be the most common deficiency
India 1936	41 cases of angular stomatitis	Aykroyd and Kihman <sup>134</sup>
India 1940	10 cases	Aykroyd and Verma <sup>134</sup> superficial keratitis
India 1940	50 cases	Verma <sup>134</sup> superficial keratitis
Malaya 1941	Prevalent in prisons at Singapore and Johore	Landon and Pallister <sup>135</sup> syndrome characterized by cheilosis, glossitis, scrotal dermatitis and combined degeneration of the spinal cord
China 1941	4.9% of 186 refugees had riboflavin deficiency	Hou <sup>135</sup>
Africa Gold Coast 1940	6 cases	Purcell <sup>136</sup> cases chiefly glossitis
Africa Belgian Congo 1940	Many types of glossitis and angular stomatitis are seen among the natives of the Belgian Congo	Barilovatz <sup>137</sup>
England 1940	3 cases	Searborough <sup>138</sup> 3 cases of keratitis responding to riboflavin deficiency

TABLE 8—Reports of Vitamin C Deficiency

Country and Year	Incidence of Scurvy Reported	Comment	References
Rhodesia South Africa 1933	80%	10,000 native mine employees	Dry <sup>139</sup>
Lauanne France 1935	90%	Survey of school children during winter months by blood vitamin C determinations attributed to drop in milk and potato content of diet	Messeri and Heimann <sup>140</sup>
Bucharest Rumania 1941	90%	Survey among school children during winter months by blood studies incidence due to inadequate winter diet	Mezenceo <sup>141</sup>
Nashville Tenn 1940	50%	Study of 500 children attending pediatric clinic by blood analysis technique	Milam <sup>142</sup>
Chaco area Uruguay 1939	34 to 15.5%	Observed incidence among hospital patients of military and civilian sources respectively	Quiroz <sup>143</sup>
Switzerland 1940	57%	94 soldiers studied by blood analysis	Gander and others <sup>144</sup>
Switzerland 1940	38%	100 civilians of all social and age groups employed in anti-aircraft corps	Barrelet <sup>145</sup>
Prague Czechoslovakia 1939	10%	180 school children studied by blood assay	Bytch <sup>146</sup>
New York City 1941	67%	A selected group as determined by blood analysis	Wiehl and Kruse <sup>150</sup>
South Carolina 1942	15%	400 citizens of small mill village as determined by blood studies	Croft and Snorf <sup>150</sup>
England 1942	Not significant	Selected groups of school children and medical students as studied by blood assay	Francis and Wormald <sup>151</sup> Harris <sup>152</sup>

South America<sup>133</sup> The endemic or epidemic proportions of the disease depend on many factors. In 1932 a report from Rhodesia<sup>134</sup> revealed that 80 per cent

of 10,000 natives studied had clinical evidence of scurvy. The crowded housing increased incidence of infectious diseases, chronic fatigue and native customs of preparation of food were attributed as causative factors. In several studies where the incidence reported has been based on the demonstration of low blood vitamin C levels in selected groups, the prevalence of hypo-vitamin C appears alarming. During the winter of 1937-1938 among school children studied in Lau-

138 Hofmeier H O Proc. Staff Meet Mayo Clin 16 644 (Oct 8) 1941  
Henson J South African M J 12 918 (Dec. 24) 1938  
Ann Rep M Services Nigeria 1936-197 Drogoz & Henric Ann Med Pharm Colon 35 1093 1937  
Dr 134

139 Morgan Juhl and Gault A S Chinese M J 60 141 (Aug) 1941

140 Health (Australia) 15 15 140 (Nov.) 1937

141 Ann M Bull No 6 1940 p 32

142 Ann Rep M Dept Straits Settlements 1929 1935

143 League of Nations Health Organization Intergovernmental Conference on Nutrition Geneva 1937

144 Charvat J Bull Office internat d'hyg pub 30 591 (March) 1938  
Bytch<sup>146</sup>

145 Ann Rep Internat Health Div Rockefeller Foundation 1941

p 142 Messeri and Heimann<sup>140</sup>

146 Langfeldt E Nord med tidkr 15 244 1938

147 Mezenceo M D Ztschr f Vitaminforsch 11 76 1941

138 Robin W D, Janney J H and Grande Covian Francisca J Nutrition 24 227 (June) 1942

149 Gander and others<sup>144</sup> Barrelet<sup>145</sup>

150 Wagner K H Deutscher med Wochenschr 67 1232 1941

151 Bytch O Nord. Med 1 740-745 1938 abstr Chem. Zentr 1 S 1224 1941

152 Minot A S, Dodd K, Kharane K, Kelen, Margare and Francis Helen J Pediat 16 717 (June) 1940 Overstreet J M Northwester Med 15 (June) 1938

Wiehl and Kruse<sup>150</sup>

153 Quiroz J D Bull de la Oficina Sanitaria Interamericana 15 5 1940

154 Dry T J Proc Staff Meet Mayo Clin 16 644 (May 2) 1941

155 Messeri F W and Heimann F Rev d'hyg 60 21 (June) 1938



winter diet to furnish vitamin C. Among 500 children seen in a pediatric clinic in Tennessee in 1940, 50 per cent had low blood levels for vitamin C.<sup>156</sup> A study among hospital cases in Uruguay<sup>157</sup> in 1939 revealed an incidence of 15.5 per cent among the civilian popu-

among a group of 100 civilians<sup>158</sup> studied in 1942 38 per cent demonstrated low blood levels.

Less alarming figures have been reported from similar surveys, utilizing blood level determination, among selected groups. In Prague,<sup>159</sup> in 1939, 10 per cent

TABLE 9—Occurrence of Vitamin K Deficiency

Area, Year	Condition	Incidence or Number of Cases	Comment	References
United States 1941	Hemorrhagic disease of newborn	Untreated, 11 of 23; K to mother during labor, 10 of 23; K to mother before labor, of 23		Pray, L. G., McKeown, H. S., and Pollard, W. L. <i>Am J Obst &amp; Gynec</i> 42: 836, 1941
United States 1941	Retinal hemorrhage	Untreated, 56 of 221; K to mother during labor, 1 of 221; K to mother before labor 2 of 50		Maumenee, Hellman and Shettles <sup>160</sup>
United States 1941	Hemorrhagic disease of newborn	Untreated, expectancy cases treated 0 of 538		Javert, C. T., and Macri, C. <i>Am J Obst &amp; Gynec</i> 42: 415, 1941
United States 1940	Death from hemorrhagic disease of newborn	Untreated, 2%; treated, 0.25%	Deaths (total) 4.1% and 1.0% respectively	Hellman, L. M., Shettles, L. B., and Eastman, N. J. <i>Am J Obst &amp; Gynec</i> 40: 844, 1940
United States 1940	Hemorrhage or birth injury	Untreated, 21 of 219; treated 4 of 400		Waddell and Lawson <sup>161</sup>
United States 1940	Prothrombin deficiency	111 of 189		
United States 1940	Hemorrhagic disease of newborn	22 cases	Responded to K	Poncher, H. G., and Kato, Katsuji. <i>J A M A</i> 115: 14, 1940
United States 1940	Hemorrhagic disease of newborn	7 cases	Responded to K	Waddell, W. W. Jr., and Guerra, DuPont. <i>J Pediatr</i> 15: 802, 1939
United States 1940	Hemorrhagic disease of newborn	1 case	Increased clotting time in 10 of 10	Waddell, W. W. Jr. and Guerra, DuPont. <i>J A M A</i> 112: 2259, 1939
United States 1940	Hypoprothrombinemia	41 cases	Treated successfully, 8 with liver damage did not respond	Andrus, P. M., and Lord, J. W., Jr. <i>Ann Surg</i> 112: 783, 1940
United States 1940	Hypoprothrombinemia	39 cases	Treated successfully 6 with liver damage did not respond	Weir, J. F., Butt, H. R., and Snell, A. M. <i>Am J Digest Dis</i> 7: 483, 1940
United States 1940	Hypoprothrombinemia	20 cases	All except those with liver damage treated successfully, 7 with hemorrhagic bleeding stopped	Norcross, J. W., and McFarland, M. D. <i>J A M A</i> 115: 2156, 1940
United States 1940	Hypoprothrombinemia	28 cases	Treated successfully 18 did not respond; many of these had liver damage	Pohle, T. J., and Stewart, J. K. <i>J Clin Investigation</i> 19: 363, 1940
United States 1940	Hypoprothrombinemia	17 cases	Treated successfully, 1 with liver damage did not respond	Butt, H. R., Snell, A. M., Osterberg, A. F., and Bollman, J. L. <i>Proc Staff Meet Mayo Clin</i> 15: 60, 1940
United States 1940	Hypoprothrombinemia	10 cases	9 responded; 3 of these had bleeding which stopped	Rhoads, J. E., and Flegelman, M. T. <i>J A M A</i> 114: 400, 1940
United States 1939	Hypoprothrombinemia in obstructive jaundice	5 cases	Responded to K	Stewart, J. D., and Rourke, G. M. <i>New England J Med</i> 221: 403, 1939
United States 1939	Hypoprothrombinemia in obstructive jaundice	12 cases	Responded to K	Stewart, J. D. <i>Ann Surg</i> 109: 588, 1939
United States 1940	Hemorrhage after operation	4 cases	Responded to K	
United States 1940	Bleeding in obstructive jaundice	11 cases	Responded to K; 5 patients with liver damage did not respond	Aggeler, P. M., Lucia, S. P., and Goldman, L. <i>Proc Soc Exper Biol &amp; Med</i> 43: 689, 1940
Scotland 1940	Intercranial hemorrhage	1 to 2%	85% die in first 3 days; 25% of survivors have motor or mental involvement	Macpherson, A. I. S., McCallum, E., and Haultain, W. F. T. <i>Brit M J</i> 1: 839, 1940
	Hypoprothrombinemia	67 cases	K raised above danger point (to 36 babies and to 31 mothers during or before labor)	
Scotland 1939	Hemorrhagic tendency with jaundice	4 cases	Responded to K	Hillingsworth, C. F. W. <i>Lancet</i> 1: 1031, 1939
Denmark 1941	Hemorrhagic disease of newborn	63 cases	Responded to K	Dam, H., and Plum, P. <i>Monatsschr f Kinderh</i> 55: 1941
Denmark 1940	Hemorrhagic disease of newborn	31 cases	Responded to K	Plum, P., and Dam, H. <i>Ugeskr f Leger</i> 102: 100, 1940
Denmark 1939	Hemorrhagic disease of newborn	4 cases	2 responded to K	Dam, H., Tage Hansen, F., and Plum, P. <i>Ugeskr f Leger</i> 101: 896, 1939
Sweden 1940	Bleeding in obstructive jaundice	4 cases	Responded to K	Hedenstedt, S. <i>Nord Med</i> 6: 789, 1940
Canada 1940	Bleeding in obstructive jaundice	17 cases	Responded to K	Townsend, S. R., and Mills, F. S. <i>Canad M A J</i> 41: 1940
Canada 1939	Bleeding in obstructive jaundice	10 cases	9 responded to K	Townsend, S. R., and Mills, F. S. <i>Canad M A J</i> 41: 111, 1939
Germany 1939	Bleeding in obstructive jaundice	1 case	Responded to K	Koller, F., and Wahrmann, F. <i>Klin Wchnschr</i> 18: 1939

lation and 3.4 per cent among the soldiers. In 1940 among a group of 94 Swiss soldiers<sup>157</sup> whose enlistment period was in excess of nine months, 57 per cent had blood determinations at deficiency levels, while

of 180 school children between the ages of 12 and 21 years had low blood levels. In New York City<sup>161</sup> in 1941, 67 per cent of a selected group were deficient. In South Carolina,<sup>160</sup> in 1942, 15 per cent of 400 per-

156 Milam, D. F. *Am J Pub Health* 32: 406 (April) 1942  
157 Gander and others. *Ztschr f Vitamin* 11: 121-128, 1941

158 Barrelet, P. *Schweiz med Wchnschr* 72: 796 (Jul 1942)  
159 Bitch, L. *Rev franç de pediat* 15: 185, 1939

studied in a mill village were also demonstrated to have low blood vitamin C levels. In England,<sup>161</sup> comparative studies done in 1939 and 1942 among selected school children and medical students revealed "no significant incidence of scurvy" and no increase in the occurrence rate since the onset of World War II although the determined blood levels were on the average lower for the latter study period.

## VITAMIN K

Vitamin K deficiency manifests itself as a tendency to hemorrhage, brought about by a lowered prothrombin level of the blood. It is believed that the normal human adult can dispense with this vitamin in the diet because of synthesis by bacteria in the intestine. It follows and is supported by clinical findings that K avitaminoses will be found only in the newborn before

TABLE 10—Nutritional Anemia

Location and Date	Number of Persons Studied	Age	Sex	Mean Hemoglobin		Mean R B C		Per Cent Deficient	Standard Hemoglobin	References
				Per Cent of Entire Group	Hemoglobin	Per Cent of Entire Group	R B C Millions			
Rural Pennsylvania and small Pennsylvania city 1939	500	All	♂ and ♀	41.94	4.76 or +	19.02	4.76-4.51			Mack P B Smith J M Logan C H Stewart A H and Dodds Paul Richards Institute Pub 2 part I December 1941
Pennsylvania metropolitan school 1939	1000	School age	70% ♀	40.00	12.00 cm +	43.49	4.76-4.51			Mack P B Smith J M Logan C H and O'Brien A T Milbank Quart 19 No 3 1941
			10% ♂	40.44	11.40 10.00	17.03	4.50-4.76			
				1.00	9.00-8.50	0.03	4.25-4.01			
Pennsylvania 1939	400	Preschool	♂ and ♀	0.00	8.40 or —	3.35	4.00 or —	♂ 0.00	>11.0 Gm	Mack P B Smith J M Logan C H and O'Brien A T Milbank Quart 19 No 3 1941
		School						♂ 0.00	10-11.0 Gm	
		Adult						♂ 0.00	10-11.0 Gm	
North Carolina town of 400 1940		Adult Children		100%	17.00	17.60				Milam 1946
Oklahoma City 1939	1000 pregnant women last trimester	Adult	♀	35.0	10.2 11.9	16.4	3.0-3.5			Esckridge J B and Serwer M J South Med J 32 24 1939
				39.1	11.9 13.6	4.71	3.5-4.0			
				32.2	13.6-13.3	29.2	4.0-4.5			
Gainville Fla 1939	670	School age	♂ and ♀	0.7	10.3+	4.6	4.5-5.0			Abbott O D and Ahman C F Am J Dis Child 58 811 1939
				2.0	91 100%				10.7 Gm or 100%	
				12.2	81 90%				9.6 Gm or 70%†	
				25.5	71 80%				11.7 Gm or 80%†	Wiehl and Kruse *
				28.2	61 70%				13.7 Gm or 100%*	
				15.6	51 60%				9.6 Gm or 70%†	
				13.0	21 50%				11.7 Gm or 80%†	Scott J R and Janeway M M New York State J Med 40 440 1940
		Pre school	♂ and ♀	3.4	91 100%				♂ 14 Gm or 12 Gm	
				23.1	81 90%				12 Gm per 100 cc	
				40.0	71 80%					Robinson W D Janner J H and Grande (Covian) Francisco J Nutrition 24 33 1949
				14.4	61 70%					
				7.2	51 60%					
				4.8	21 50%					Davidson I S P Fullerton H W Howie J W Croll J M Orr J B and Godden W Brit M J 1 635 1933
New York City 1941	170	High school	♂					0		
	161	High income	♂					3.1		Heath C W Symposium on the Blood and Blood Forming Organs Wiconsin Press 1939
	41	Low income	♂					2.0		
	14		♂					4.0		
New York State 1940	100	Adults	♂ and ♀					3	10.2 Gm per 100 cc	Bethall F H Cardner S H and Mackinnon Frances Ann Int Med 13 91 1939
New York City 1940		Adults	♂					6	♂ 14 Gm or 12 Gm	
Madrid Spain 1941	21	All ages	♂ and ♀					16	12 Gm per 100 cc	
Scotland 1933		Children Adolescent Adult	♂ and ♀					16		Labate I S Am J Obst & Gynec 38 48 1939
			♀					16		
			♀					16		
Boston 1939		Adult	♀					16		Cordon Harold Kentucky M J S 41 1940
Michigan 1939	100	Adult (pregnant)	♀					16	10 Gm per 100 cc	
New York City 1939		Adult (pregnant)	♀					16	11.6 Gm per 100 cc	
Kentucky 1940		Adult (pregnant)	♀					0 to 10		

\* Normal † Anemic Subnormal ‡ Standard red blood cells 4,170,000

In summary it would appear that vitamin C deficiency is of worldwide occurrence in significant numbers of people. Although low blood levels of vitamin C may and do occur without evident manifestations of scurvy, this finding indicates at least an intake of vitamin C below that necessary to maintain the individual's body reserves at the highest level.

160 Croft J D and Snorr L D Am J M Sc 19S 40 (Sept) 1939  
161 Francis C E C and Wormall A Lancet 1 64 (May 0) 1942  
Harris I I ibid 1 642 (May 0) 1942

the bacterial flora has become established and in adults when there is interference with fat absorption.

A tendency to hemorrhage is not a proof of vitamin K deficiency, but it has become well established that this vitamin is of value in preventing hemorrhagic disease of the newborn and the bleeding of obstructive jaundice and a number of other conditions.

Most cases of hypoprothrombinemia except those which are due to liver damage have been found to respond to vitamin K.

Avitaminosis K appears to have been studied most extensively in the United States, in Denmark and in the British Isles. Very little information is available from other sections of the world. By far the highest incidence is in the newborn, other cases are negligible in comparison. Estimates of prothrombin deficiency in very young infants range as high as 60 per cent,<sup>161a</sup> and an incidence of retinal hemorrhage as high as 25 per cent has been observed.<sup>161b</sup>

#### NUTRITIONAL ANEMIA

The term "nutritional anemia" is restricted to the anemia resulting from insufficient dietary intake of iron. Anemias indirectly arising from other nutritional deficiency such as that which accompanies scurvy, pellagra or hypoproteinemia are not included here.

Nutritional anemia cannot be regarded as a clearly defined clinical entity. Standards of optimal hemoglobin concentration and optimal red blood cell count for persons of each age, sex or race are not generally agreed on.<sup>162</sup> Moreover, certain normal physiologic functions such as pregnancy, pubescence, catamenia and the menopause materially alter the blood picture in so complex a manner that the definition of the norm for these special states is uncertain.<sup>163</sup> The situation is further complicated by the fact that other causes of anemia such as chronic latent blood loss, local infection or tuberculosis may be readily overlooked in large scale investigations.

The clinical features of nutritional anemia are likewise not very clearcut. The dietary history affords the most pertinent positive information. In evaluating the dietary history, local variations in the iron content of foods must be kept in mind. The symptoms are somewhat generalized and include lack of energy, headache, vertigo, dyspnea and palpitations. In children, behavior difficulties such as failure to concentrate and physical indolence are observed. The condition is commonly accompanied by no distinct symptoms whatever.

Physical findings include pallor, loss of skin turgor, suboptimal weight and reduced muscle tone. In advanced cases a soft apical systolic murmur may be heard and the pulse is rapid and of poor quality.<sup>163</sup>

Most often, however, the diagnosis rests solely on laboratory findings. Reznikoff states that, "hematologically, the striking features of iron deficiency from any cause are the relatively marked decrease of hemoglobin compared to the red blood cell reduction and the small size of the cells, giving a low volume index, usually less than 0.75."<sup>164</sup>

Recent studies have been concerned both with the development of adequate diagnostic standards and with the determination of the prevalence and distribution of the deficiency. Despite numerous fairly elaborate studies, only a beginning has been made. In table 10 there have been summarized those studies of the past decade which afford epidemiologic data concerning nutritional anemia. The groups studied vary widely and include preschool children, school children, pregnant women and general populations. Standards for

the determination of deficiency are frequently not stated and the stated standards vary widely from survey to survey. Moreover, the inherent error in the several laboratory procedures employed in the respective surveys is not at all comparable although in all instances it is admittedly great. For these reasons each of the recorded studies must be regarded as a distinct source of information bearing on the special group, and no general statistical summary is warranted.

Disregarding these limitations, we may observe from isolated studies that at least in certain communities nutritional anemia should be given close consideration. Thus about 50 per cent of 2,400 children studied in Pennsylvania in 1939 were anemic. In Michigan 26.6 per cent of 158 pregnant women were found anemic and in Boston 16 per cent of adults studied were anemic. In New York City 72 per cent of 325 pregnant women were anemic. In Florida in 1939 more than 50 per cent of 620 school children were found to have subnormal hemoglobin. In Scotland, in 1939, 32 per cent of children and 45 per cent of adults examined were anemic, and in Madrid, Spain, in 1941, 16 to 18 per cent of 561 persons had low hemoglobin (table 10).

Accordingly, Jolliffe, McLester and Sherman<sup>162</sup> state that combining such data indicates "anemia in from 15 to 85 per cent of children, 36 to 30 per cent of adults and 9 to 72 per cent in pregnancy." Obviously the wide range of these estimates indicates that they are not particularly informative of the actual occurrence of nutritional anemia in the world population.

Such diverse and yet limited information affords too spotty a view of the character and scope of the problem of nutritional anemia to constitute a basis for sound public health practice. Nevertheless it is clear that where the condition has been searched for many cases have been found. In all probability nutritional anemia is of widespread, worldwide occurrence and further extensive observations should be carried out in order to set up suitable public health and dietary practices to prevent this condition.

#### THE PROBLEM OF ADEQUATE NUTRITION

International attention was first given to nutrition and health by the League of Nations beginning in 1925 and culminating in the reports of the Technical Commission on Nutrition<sup>165</sup> and the Mixed Committee on Nutrition in 1937.<sup>166</sup> It is obvious that as measured by any modern standard of adequate nutrition much of the world's population is subsisting on inadequate food. In terms of adequate food for every one, no food surplus has ever existed. In terms of dietary adequacy the world has never had enough to eat. So called overproduction and apparent surpluses have in reality been failures to secure adequate distribution. The recent United Nations Conference on Food and Agriculture<sup>167</sup> recognized that national and international agricultural policies must be directed toward obtaining a food supply adequate for health.

Although poverty is the principal cause of malnutrition, general economic improvement will not give every one an adequate diet. Faulty food distribution is the

161a Waddell, W. W., Jr., and Lawson, G. M. Hemorrhagic Diathesis of the Newborn, *J. A. M. A.* **115**: 1416 (Oct. 26) 1940.

161b Maumenee, A. E., Hellman, L. M., and Shettles, L. B. Factors Influencing Plasma Prothrombin in the Newborn Infant. *Bull. Johns Hopkins Hosp.* **68**: 158 (Feb.) 1941.

162 Jolliffe, Norman, McLester, J. S., and Sherman, H. C. The Prevalence of Malnutrition, *J. A. M. A.* **118**: 944 (March 21) 1942.

163 Osler's Textbook of Medicine, ed. 14, H. S. Christian, editor, New York, D. Appleton & Co., 1942.

164 Cecil, R. L. A Textbook of Medicine, ed. 5, Philadelphia, W. B. Saunders Company, 1942, p. 1071.

165 Physiological Bases of Nutrition, League of Nations Publication II, Economic and Financial, 1936, II, B 4.

166 Interim Report of the Mixed Committee on the Problem of Nutrition, League of Nations Publications II, Economic and Financial, 1937, II, B 3.

167 United Nations Conference on Food and Agriculture, First and Second Reports, Dept. of State Publication 1948, Conference on Food and Agriculture, Thomas, A. Blueprint for the Conquest of Hunger, Pub. Health Rep. **58**: 893 (June 11) 1943. Editorial Am. J. Pub. Health **33**: 847, 1943.

most important contributory factor, and ignorance of the rules of good diet plus indifference to the consequences and bad dietary habits are the contributory underlying causes

Great Britain has shown that a national food policy based on nutritional adequacy can control malnutrition. Close control of food production, importation, and prices together with strict rationing and with a food distribution system planned with the assistance of nutrition experts with the goal of adequacy instead of profit has assured an individual availability of foods with the result that in spite of poorer living conditions incident to the war the infant mortality in 1942 was the lowest on record and health has been maintained at a high level with a decreased general death rate and a negligible incidence of deficiency diseases.

From the point of view of preventive medicine the problem of adequate nutrition is so different from other health problems that it requires a new approach. Its ramifications extend far into our whole economic structure. Such diverse problems as the control of crop production, farm machinery, manpower, food distribution, transportation, food preservation and processing, storage and food preparation as well as nutrition education and the diagnosis, prevention and treatment of deficiency diseases are all involved. It is obvious that problems of this range and magnitude cannot be solved by physicians, health officers or any other one agency alone. The first essential is close cooperation and intimate relations among a number of agencies including physicians and health officers.

A number of official and voluntary agencies in this country have been working on certain aspects of our nutrition problem for many years with little participation by physicians except from some health officers. The home economics and agriculture teachers in our high schools and colleges, the Agricultural Extension Service, the American Red Cross, the Children's Bureau of the Department of Labor and numerous other organizations have had continuing programs for a long time.

Many of our state health departments have established and maintained a small nutrition service at the state level with the assistance of the Children's Bureau. The attention here during peacetime was focused primarily on problems of maternal and child health, and an excellent start has been made. However, there are other population groups which also may be regarded as especially vulnerable from a nutritional point of view and to whom it is essential that attention also be given especially in wartime, for example school children, adolescents and workers in essential industries. In order to deal more effectively with these varied problems the regular nutrition activities of various government and voluntary agencies have been intensified, expanded and coordinated. A first meeting of representatives of these agencies was held in 1940 and in May 1941 President Roosevelt called the First National Nutritional Conference in Washington.<sup>165</sup>

The National Nutrition Program was based on the recommendations of this conference, and coordination was obtained through the Nutrition Division of the Office of Defense Health and Welfare Services. These activities have now been incorporated into the Nutrition and Food Conservation Branch of the War Food Administration.

Regional nutritionists carry out the functions of this branch from the Food Distribution Administrative regional offices. On invitation these nutritionists work with state and local nutrition committees in planning and developing nutrition programs and projects. The most important accomplishment of this office has been the successful coordination of the nutrition program of various agencies, recognizing the place of each but centering attention on the common objective. It has shown that a coordinated program of this magnitude can be made to work in this country.

Nutrition committees have been formed in every state and in Hawaii and also are working on local nutrition problems in many counties, cities and local communities. In many instances there has been little or no participation by physicians or health officers in spite of invitations to medical societies and health departments to send representatives. The work of these committees has consisted mainly in the organization of nutrition classes, preparation and distribution of educational material, food demonstrations, victory gardens and home food preservation and it is expected that they will play an increasingly important role in war food programs through school lunch activities and nutrition in industry subcommittees. If properly developed they should become the local body through which all the food and nutrition problems of the community are attacked.

The ultimate purpose of a civilian wartime food program is to assure "enough to eat" to every one, so that the war may be fought with the utmost efficiency. The phrase "enough to eat" in its proper use must mean not only enough in quantity but also enough of all essential dietary elements. This means that the entire program must be planned on a sound technical nutritional basis with adequate control of distribution together with price control of those constituents of the nation's food supply necessary to secure dietary adequacy.

Failure to recognize the necessity for basing the control on nutritional adequacy, or half-way measures of control, defeat the whole purpose of the program and are worse than no control in that they create a false sense of dietary security, and a ration coupon becomes a symbol of unobtainable food rather than a guaranty of a fair share of an item necessary for the maintenance of health.

It is also essential that any such program take into account the greater physiologic needs of the 'vulnerable groups' in the population among the most important of these groups during war being the workers in war industries. Differential rationing by allotting more ration coupons to such groups would threaten the whole rationing structure because of difficulties in administration and the great difficulty in assessing the actual needs of the individual based on his special requirements. In general the most practicable solution is to develop feeding facilities within each industrial plant which can supply an adequate midshift meal to every employee without requiring ration coupons. In a few industries operating under special conditions of isolation from the usual food supply it may be necessary to supply extra food to the entire establishment. Here the allocation is made to the group and not to the individual. Rare exceptions such as sheep herders may require special allocation.

<sup>165</sup> Proceedings of the National Nutrition Conference for Defense  
U. S. Govt. Printing Office 1942

The aspect of industrial nutrition which involves the community can be attacked by the local nutrition committee. Infant feeding should be regarded as one aspect of a properly developed industrial hygiene program. It should be approached through the plant medical officer or safety director after the plant management has agreed to the program.

At the federal level the War Food Administration works closely with the Industrial Hygiene Division of the National Institute of Health of the United States Public Health Service. At the state level, when state health departments have industrial hygiene officers they should be one of the points of contact with the plant, using the advice and assistance of the local and state nutrition committee. Because of the scope and importance of the industrial nutrition problem the War Food Administration has appointed regional nutrition representatives to work with state and local committees as well as health officers and plant officials.

On request from industrial plants, industrial nutritionists assist in planning employee feeding and nutri-

to include an effort to attain the best possible level of health which is unknown in the absence of good nutrition.

The fact that malnutrition and deficiency diseases usually appear insignificant in mortality and morbidity tables does not reflect the real importance of nutrition in our national health. Although good nutrition does not guarantee good health, poor nutrition can and often does contribute to mortality from other primary causes, while optimum nutrition can contribute to optimum health.

The health officer and physician can help determine the prevalence of malnutrition and relate nutrition problems to other public health and medical problems. Some of the more important activities for health departments in developing this field in collaborating with existing programs were recently proposed by Sebrell and Wilkins<sup>169</sup> as follows:

#### STATE HEALTH DEPARTMENT ACTIVITIES

1 Collect information and do appraisals on the incidence and types of deficiency diseases and on food habits in geographical areas and population groups, especially children, pregnant and lactating women and industrial workers. Even small samplings are of value in pointing the way to more comprehensive appraisals.

2 Offer assistance in the diagnosis of nutritional deficiencies. Here is a health department service which is in line with sound public health principles and which will strengthen the work of other agencies in this field. At the same time the efforts of other agencies will contribute greatly to creating a demand for this type of service.

3 Prepare and distribute simple attractive literature dealing with state nutrition problems. Such literature should be prepared with a full knowledge of all other nutrition literature being used by other agencies in order that duplication and conflicting viewpoints may be avoided.

4 Cooperate actively with other agencies dealing with different aspects of the nutrition problem. Offer the specialized services of the health department to other agencies to help them in dealing with their particular phases of nutrition.

5 Take an active part in the work of the state nutrition committee.

6 Offer information, consultation, guidance and encouragement to local health departments in developing local nutrition programs and in cooperating with the local nutrition committees.

7 Promote staff education in nutrition, including facilities for professional education in public health nutrition, and education of county and city health department personnel in nutrition activities.

8 Assist in sponsoring conferences and refresher courses in nutrition and related fields for public health and school personnel. During the past three summers nine such cooperatively sponsored six week conferences have been held in one state. Similar projects have been successfully carried out in several other states.

9 Active participation of nutritionists in the public health nursing and dental hygiene program, in well child clinics, in school health programs and in other activities of the maternal and child health division.

10 Include nutrition in the industrial hygiene program not only by nutrition education in the plant, but also by improving plant feeding facilities and the nutritional quality of the meals served.

11 Cooperate with and assist the state food distribution administrator in locating and meeting local food problems.

12 Take an interest in school lunch programs. The United States Public Health Service can consider requests for nutritionists for these programs under title VI funds if recommended.

TABLE 11—*Necessary Foods*

- |   |
|---|
| 1 Green and yellow vegetables, some raw, some cooked, frozen or canned          |
| 2 Oranges, tomatoes, grapefruit or raw cabbage or salad greens                  |
| 3 Potatoes and other vegetables and fruits raw, dried, cooked, frozen or canned |
| 4 Milk and milk products, fluid, evaporated, dried milk or cheese               |
| 5 Meat, poultry, fish or eggs or dried beans, peas, nuts or peanut butter       |
| 6 Bread, flour and cereals, whole grain or enriched or restored                 |
| 7 Butter and fortified margarine (with added vitamin A)                         |
| “Eat some food from each group every day.”                                      |
| “In addition to the basic 7 eat any other foods you want.”                      |

Further instructions in order to cover possible wartime shortages are as follows:

If scarce in	Use more from
Group 2	Group 1, 3
Group 4	Group 1, 5, 6
Group 5 (meats)	Group 4, 5 (eggs)
Group 7	Group 1, 4

tion education programs and in handling applications for essential equipment and food. They also work with labor groups in promoting better eating habits.

In many states industrial nutrition subcommittees have been organized under the state nutrition committee. The representative of the health department should work with these subcommittees, which include industrial physicians, caterers, representatives of labor, plant management and other interested groups.

Nutrition committees throughout the country are constantly striving to improve the public knowledge of nutrition and to develop better food habits. Food shortages make these activities more important than ever. This education is based on food groups designed to yield nutritional adequacy with considerable latitude in the choice of food items. The recommendation is a type diet which for application requires local adaptation to specific items. The necessary foods are listed in seven groups (table 11).

Physicians and health officers should assist in the promotion of sound nutrition education as well as in promoting good food programs designed to improve nutrition. The health officer has both an opportunity and an obligation here in preventive medicine which cannot be performed as well by any other group. The concept of the prevention of disease must be enlarged

169 Sebrell, W. H., and Wilkins, Walter. The Role of the Health Department in the National Nutrition Program, Pub. Health Pers. 54, 803 (May 21) 1943.

and requested through local and state health departments. Under rationing we should give more attention than ever to the adequacy of the meals our children get at school.

#### LOCAL HEALTH DEPARTMENT ACTIVITIES

1. Learn what other agencies have done and are doing within the area.

2. Affiliate with the local nutrition committee.

3. Study the nutritional status and needs of the area from medical and public health angles and help orient other agencies in this regard.

4. Distribute and interpret nutrition teaching material, especially material which deals primarily with local problems.

5. Have a planned program for staff education in nutrition within the department or in cooperation with other agencies.

6. Exert a stabilizing influence and interpret sound nutrition practices to the public, avoiding fads and extremes.

7. Interpret local nutritional conditions to the public through talks, newspaper articles, radio programs and so on.

8. Make an effort to increase the interest of local medical and dental professions in local nutrition problems and practical solutions.

9. Develop nutrition educational facilities for patients who attend public health clinics. In some places it may be advisable to establish clinics to deal primarily with nutrition problems.

10. Develop and maintain a movie, film strip and slide library on nutrition and related subjects.

11. Encourage public eating places to serve food of good nutritional value and to prepare their foods in such a way as to conserve vitamins and minerals. This might be started as a consultation service.

12. Encourage civic clubs to sponsor programs which either directly or indirectly will improve the nutrition status of groups within the community.

13. Advise and sponsor feeding facilities in connection with child day care programs.

14. Stress nutrition in school health programs.

(a) Cooperate with teachers-parent-teachers associations and lunchroom managers in improving school lunches.

(b) Sponsor cooperative school lunch programs.

(c) Encourage the use of simple, wholesome, home prepared foods in lunchboxes rather than the use of store bought snacks.

(d) Watch for and stress nutritional deficiencies in physical examination of school and preschool children.

(e) When practical conduct or sponsor demonstrations with school children showing results of improved nutrition (properly integrated with other health habits).

(f) Sponsor 'sampling surveys' of school children for nutritional status. If possible get local medical and dental societies to cooperate.

From a national point of view the state of nutrition of a considerable part of the population of this country is unsatisfactory and has been so for many years. Whether even this present state of nutrition can be maintained in the face of the present food situation depends on the efficiency with which we produce, distribute and utilize our food supplies. The signs and symptoms of malnutrition are often overlooked or attributed to other causes. Gross deficiency disease still exists and the relationship of nutrition to other health problems is not common knowledge as it should be. Poor methods of using preserving and preparing foods both in homes and in public eating places are responsible for tremendous losses in food values. Even in the face of food shortages there is as yet little tendency to conserve and use every bit of edible food. The uses of alternate foods when shortages exist is little appreciated. A shortage in beef results in a public clamor to satisfy the palate although physiologic needs can be met easily from other food sources without difficulty.

There is probably more public interest in nutrition and food today than ever before. Physicians and health

officers can play an enormously important part in the national effort to improve nutrition by guiding this interest along sound lines. Too often the busy physician finds it easier to prescribe a vitamin pill than to investigate food habits and recommend dietary changes. Health officers need to become acquainted with the nutrition work being done by other agencies and have their staff members take their proper place in the nutrition program after they have obtained a background of knowledge of the work being done by other organizations.

We have an unparalleled opportunity in the field of preventive medicine. If agriculture is to be based on the nutritional needs of the population health and medical authorities should determine what those needs are. Satisfactory nutrition depends on health and agricultural authorities working together. Agriculture up to now has had to assume the major portion of the burden of solving our nutritional problems. It is past time for medical and health authorities to assume their share of the responsibility.

## Council on Pharmacy and Chemistry

### REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING  
REPORT  
AUSTIN E. SMITH, M.D., Secretary

### NOMENCLATURE OF ENDOCRINE PREPARATIONS

Considerable progress has been made in the last few years on the development of potent endocrine preparations for clinical purposes. The standardization of these products has been significantly improved of late and promises to be established on a satisfactory basis. Nevertheless there is still confusion in the minds of physicians regarding the identity of many of these products, their sources and potencies. One of the factors most responsible for this unsettled state is the retention of proprietary terms for these products. The Council has made several appeals for a scientific nomenclature and has taken numerous steps in this direction so that therapy with endocrine preparations would not necessitate an intimate knowledge of the detailed lists of products. In the 1942 edition of *Glandular Physiology and Therapy* the chapter on 'Present Status of Commercial Endocrine Preparations' discussed the therapeutic value of the various endocrine preparations together with a listing of the products accepted by the Council. No attempt was made, however, to note the proprietary names of other than products accepted by the Council except by their scientific terminology. The Council now considers it advisable to furnish physicians with the names and synonyms of these endocrine preparations which have been shown to have therapeutic effects. The present report was prepared therefore in order to enable physicians to clarify in their minds the nature of the various products, both proprietary and nonproprietary, together with the synonyms basis of standardization and sources. The Council reserves the privilege of omitting from this list those preparations which are acknowledged by authorities to be of little value in endocrine therapy because of their unscientific nature, lack of sufficient potency or other evidence indicating little rationale for their use. The reader is referred to an article by W. A. Schonfeld (*New York State J. Med.* 42:1538 [Aug. 15] 1942) who in writing a somewhat similar article has included preparations which the Council does not see fit to list for the reasons mentioned. In the present report the reader is advised that preparations are being omitted which are marketed by firms which have no products accepted by the Council in order to eliminate an excessive amount of effort and time in examining these multitudinous products. Such omissions do not necessarily imply a disapproval of certain of these products. The fact that



products are included in the appended list is, on the other hand, no indication that the Council approves of all of them. As a matter of fact, some of these products have been rejected by the Council. The reader is referred to chapter XXXI of *Glandular Physiology and Therapy* (13th Journal, Oct 4, 1941 p 1175) for brief discussions on the actions and uses of some of the preparations described in the following list.

[Note—Products marked with an asterisk have been accepted by the Council for inclusion in New and Nonofficial Remedies.]

### THYROID GLAND

#### DESSICATED THYROID

Source: Obtained from domesticated animals that are used for food by man. Assay Chemical—U S P standard requires from 0.17% to 0.23% of iodine in thyroid combination.

#### PRODUCT AND FIRM

- \*Thyroid U S P. Marketed by eight or more firms.
- Thyroid Implants—iodine 0.3% assayed 50% above U S P. Parke Davis.
- Thyroid Tablet—iodine 0.4% (net wt) 5 grains equal 2 grains U S P. Burroughs Wellcome.
- Note: Avoid unstandardized products.

#### THYRONIN (Natural)

Source: Active principle obtained from thyroid gland. Assay Chemical—U S P requires not less than 64% iodine in thyroxine molecule.

#### PRODUCT AND FIRM

- \*Thyroxin (crystals, intravenous). Squibb.

#### THYRONIN (Synthetic)

#### PRODUCT AND FIRM

- \*Synthetic Thyroxin (intravenous and oral). Hoffmann-La Roche.

#### THYRONIN FRACTION

Source: Disodium salt of thyroxine. Assay Chemical—contains stated weight of thyroxine.

#### PRODUCT AND FIRM

- \*Tablets Thyroxin Fraction (oral). Squibb.

### PARATHYROID HORMONE

#### PARATHORMON

Source: Animal parathyroid gland. Assay U S P units.

#### PRODUCT AND FIRM

- \*Parathyroid Extract. Lilly.
- \*Parathyroid Hormone. Squibb.
- \*Pituitin. Parke Davis.

### ADRENAL CORTEX

#### ADRENAL CORTICAL EXTRACT

Source: Adrenal gland of animals. Assay Biologic units (1 cc of extract is derived from 40 Gm of fresh gland).

#### PRODUCT AND FIRM

- \*Adrenal Cortex Extract. Upjohn.
- Adrenal Cortex Extract. Wilson Laboratories.
- Cortin. Roche Organon.
- Eschatin. Parke Davis.

#### DESOXYCORTICOSTERONE ACETATE

Source: Synthetic. Assay Weight.

#### PRODUCT AND FIRM

- Cortate. Schering.
- Doca. Roche Organon.
- Percorten. Ciba.

### ADRENAL MEDULLA

#### EPINEPHRINE

Source: Active principle of adrenal medulla, natural or synthetic (levorotatory). Assay Chemical—U S P standards.

#### PRODUCT AND FIRM

(Prepared for hypodermic, intravenous and oral medication)

- \*Suprarenalin. Armour.
- \*Adrenalin. Parke Davis.
- \*Epinephrine. Upjohn, Wilson and other firms.
- \*Suprarenin. Winthrop.

#### SOLUTION OF EPINEPHRINE HYDROCHLORIDE U S P 1,000

Composition: Epinephrine in distilled H<sub>2</sub>O and hydrochloric acid—1,000.

- \*Products. Marketed by nine or more firms.

#### SOLUTION OF EPINEPHRINE HYDROCHLORIDE U S P 1,100

Composition: 1 part of epinephrine hydrochloride U S P in 100 parts of isotonic solution of sodium chloride.

1 See also Activated Sterols. Source: Ergosterol, irradiated product. Viosterol in Oil. See list in N N R. Hytakerol (dihydroxycholesterol, formerly known as A T 10), Winthrop.

#### PRODUCT AND FIRM

- \*Suprarenin Solution 1 100. Armour.
- \*Solution of Adrenalin Chloride 1 100. Parke Davis.

#### SUSPENSION OF EPINEPHRINE IN OIL 1 500

Composition: A 0.2% suspension, containing 1 part epinephrine U S P to 500 parts vegetable oil.

#### PRODUCT AND FIRM

- \*Epinephrine in Oil 1 500. Endo Products, Lakeside, Smith-Dorsey, Squibb.
- \*Adrenalin in Oil 1 500. Parke Davis.

### PANCREAS

#### INSULIN (Crystalline)

Source: Beef and pork pancreas. Assay Biologic—solution of zinc insulin crystals standardized as follows: 1 mg contains 22 insulin units as defined by Insulin Committee of University of Toronto.

#### PRODUCT AND FIRM

- \*Insulin, U 20, U 40, U 100. Sharp & Dohme.
- \*Insulin, U 20, U 40, U 80, U 100. Squibb.
- \*Iletin, U 20, U 40, U 80, U 100. Lilly.

#### PROTAMINE ZINC INSULIN

Composition: A suspension of the precipitate of insulin, protamine and zinc in buffered solution. Assay: As above, with additional chemical assay.

#### PRODUCT AND FIRM

- \*Protamine Zinc Insulin, U 40, U 80. Sharp & Dohme, Squibb.
- \*Protamine Zinc and Iletin, U 40, U 80. Lilly.
- Note: Standard label colors: U 20, yellow; U 40, red; U 80, green; U 100, orange.

### ESTROGENS (CRYSTALLINE)

#### ESTRONE—Theelin—Ketoxydroxyestrin

Source: Urine of stallions and pregnant mares. Assay: International standard (0.0001 mg equals 1 international unit).

#### PRODUCT AND FIRM

- \*Estrone in Oil. Abbott, Lilly.
- \*Estrone Suppositories. Abbott, Lilly.
- Estrone Aqueous Suspension. Abbott.
- \*Theelin in Oil. Parke Davis.
- \*Theelin Suppositories. Parke Davis.
- Theelin Aqueous Suspension. Parke Davis.

#### ESTRIOL—Theelol—Trihydroxyestrin

Source: Urine of pregnant women. Assay: Weight.

#### PRODUCT AND FIRM

- \*Estriol Capsules. Abbott, Lilly.
- \*Theelol Capsules. Parke Davis.

#### ESTRADIOL—Dihydroxyestrin

Source: Chemical modification of estrone from the urine of stallions and pregnant mares. Assay: Weight or biologic units.

#### PRODUCT AND FIRM

- Dimenformon Ointment. Roche Organon.
- Dimenformon Tablets. Roche Organon.
- Ovoclyn Ointment. Ciba.
- Ovoclyn Suppositories. Ciba.
- Ovoclyn Tablets. Ciba.
- Progynon DH Ointment. Schering.
- Progynon DH Suppositories. Schering.
- Progynon DH Tablets. Schering.

#### ESTRADIOL BENZOATE

Source: Esterification of estradiol. Assay: Weight or biologic units.

#### PRODUCT AND FIRM

- Ben Ovoclyn in Oil. Ciba.
- Dimenformon Benzoate in Oil. Roche Organon.
- Progynon B in Oil. Schering.

#### ESTRADIOL DIPROPIONATE

Assay: Weight.

#### PRODUCT AND FIRM

- Di Ovoclyn in Oil. Ciba.
- Progynon DP in Oil. Schering.

### ESTROGENS (NONCRYSTALLINE)

ESTROGENS—Estrogenic Substances—Essentially Estrone. Source: Urine of stallions or pregnant mares. Assay: In equivalent of international units.

#### PRODUCT AND FIRM

- \*Amniotin. Squibb.
- \*Amniotin Capsules. Squibb.
- \*Amniotin Suppositories. Squibb.
- Estrogenic Hormone in Oil (from human placenta). National D.
- Estrogenic Hormone in Oil U S Standard Products Co.
- \*Estrogenic Substance. Sharp & Dohme.
- Estrogenic Substance Solution. Breon.
- \*Solution of Estrogens. Lakeside Laboratories.
- \*Tablets of Estrogens. Lakeside Laboratories.
- Estromone in Oil. Endo Products.
- Estromone Ointment. Endo Products.
- Estromone Tablets. Endo Products.

Folletin in Oil Armour  
Menformin in Oil Roche Organon  
Menformen Ointment Roche Organon  
Menformin Tablets Roche Organon  
Ova E trin in Oil Hospital Liquids  
\*Solution of Estrogenic Substances Smith Dorsey

**ESTRONE SULFATE (Essentially)**

Source Urine of pregnant mares Assay Weight

**PRODUCT AND FIRM**

Premarin Tablets Averst McKenna & Harrison

**ESTRONE AND ESTRIOI GLUCURONIDE (Essentially)**

Source Urine of pregnant women Assay Biologic units

**PRODUCT AND FIRM**

Emmenin Liquid Averst McKenna & Harrison  
Emmenin Tablets Averst McKenna & Harrison

**ESTROGENS (SYNTHETIC)****DIETHYLSTILBESTROL (Stilbestrol)—4,4-dihydroxy diethyl stilbene**

Assay Weight

Marketed by numerous firm—a number are Council accepted

**DIETHYLSTILBESTROL DIPROPIONATE**

Assay Weight

**PRODUCT AND FIRM**

Estrobene Dipropionate Averst McKenna & Harrison  
Diethyl stilbe trol Dipropionate Winthrop

**HEXESTROL—Dihydro-diethylstilbestrol**

Source Synthetic Assay Weight

Marketed by The Wm S Merrell Co

**OCTOFOLLIN—2,4-di(p-hydroxyphenyl) ethyl hexane**

Assay Weight

**PRODUCT AND FIRM**

Octofollin Schieffelin

**PROGESTINS****SYNTHETIC PROGESTERONE (CRYSTALLINE)**

Source Synthesized from stigmasterol Assay Weight or international standard (1 mg equals 1 international unit)

**PRODUCT AND FIRM**

Lutoclyn in Oil Ciba  
Progesterone in Oil Armour  
Progestin in Oil Roche Organon  
Prolutin in Oil Schering  
Valutron Winthrop

**SYNTHETIC PROGESTERONE (NONCRYSTALLINE)**

Source Synthetic Assay Biologic units converted into international units

**PRODUCT AND FIRM**

Progestin in Oil Abbott  
Lutromone in Oil Endo Products

**NATURAL PROGESTERONE (NONCRYSTALLINE)—Progestin**

Source Animal ovaries Assay Biologic units converted in some instances to international units (1 Corner Allen rabbit unit equals approximately 1 international unit)

**PRODUCT AND FIRM**

Lipo-Lutin in Oil Parke Davis  
Progesterone in Oil Breon  
Progestin in Oil Lilly Upjohn

**PREGNENOLONE (Anhydro-Hydroxy Progesterone) (Oral)**

Source Synthetic Assay Weight

**PRODUCT AND FIRM**

Luto-Cylol Tablets Ciba  
Pranone Tablets Schering  
Progesterol Tablets Roche-Organon

**ANDROGENS****TESTOSTERONE PROPIONATE**

Source Synthetic Assay Weight

**PRODUCT AND FIRM**

Neo-Hombreol in Oil Roche-Organon  
Neo-Hombreol Ointment Roche-Organon  
Oretin F Ointment Topicators (testosterone) Schering  
Oretin in Oil Schering  
Perandren in Oil Ciba  
Perandren Ointment Ciba

**METHYL TESTOSTERONE (Oral)**

Source Synthesized from testosterone Assay Weight

**PRODUCT AND FIRM**

Metandren Tablets Ciba  
Neo Hombreol (M) Ointment Roche-Organon

Neo-Hombreol (M) Tablets Roche-Organon  
Oretin M Tablets Schering  
Oretin M Ointment Schering

**PITUITARY GLAND PRODUCTS**

NOTE—All of the following products are derived from extracts of the anterior pituitary glands of domesticated animals which are used for food by man

**ANTERIOR LOBE FACTORS**

Adrenotropic Lactogenic Thyrotropic Further clinical investigation is necessary before these products can be marketed with assurance of effective potency

**GROWTH PROMOTING FACTOR**

Assay Biologic—in terms of rat growth units which as yet have not been made uniform

**PRODUCT AND FIRM**

Polvansin (contains growth gonadotropic and thyrotropic principle)  
Armour Averst McKenna & Harrison  
Phykentrone (P) Squibb  
Antuitrin growth Parke Davis  
Phyone Wilson  
Growth Complex Armour Averst McKenna & Harrison

**GONADOTROPIC FACTOR**

Assay Biologic—rat units which are not yet uniform

**PRODUCT AND FIRM**

Maturin Extract (Gonadotropic) Armour  
Gonadotropic Factor Averst McKenna & Harrison  
Gonadophysin (P) Searle  
Prephysin (P) Chappel  
(These products contain follicle stimulating and luteinizing hormones)

**POSTERIOR LOBE (WHOLE)**

Solution of Posterior Pituitary Assay Biologic—U S P standardization 0.1 cc.—1 U S P posterior pituitary unit

**PRODUCT AND FIRM**

\*Ampoules Post Pit Sol Abbott  
\*Pituitary Liquid Armour  
\*Pituitary Extract Lilly Endo Lakeside Merrell Squibb Upjohn  
U S Standard Wilson  
Infundin Burroughs Wellcome

**POSTERIOR PITUITARY POWDER**

Assay U S P—1 mg equals 1 U S P posterior pituitary unit

**PRODUCT AND FIRM**

\*Desiccated Post Pit Powder U S P (used as snuff) Armour  
Lilly Parke Davis

**POSTERIOR PITUITARY FRACTION**

Vasopressor and antidiuretic Assay Biologic—pressor units

**PRODUCT AND FIRM**

\*Pitressin Parke Davis  
Oxytocic Assay Biologic—oxytocic units

**PRODUCT AND FIRM**

\*Pitocin Parke Davis

**EQUINE GONADOTROPIN**

Source Serum of pregnant mares Assay International units (0.1 mg of international standards equals 1 international unit)

**PRODUCT AND FIRM**

Anteron (P) Schering  
Gonadin Cutter  
Gonadogen (P) in powder form—dissolved for injection Upjohn

**CHORIONIC GONADOTROPIN**

Source Urine or placenta of pregnant women Assay International or biologic units (0.1 mg of the international standard equals 1 international unit)

**PRODUCT AND FIRM**

Anterior Pituitary Like Gonadotropic Hormone Lakeside Laboratories  
Anterior Pituitary Like Sex Hormone Hospital Liquids U S  
Standard Products  
Antuitrin S Parke Davis  
A P L Averst McKenna & Harrison  
Chorionic Gonadotropin Breon  
Entomone Endo Products  
\*Follutein (P) Squibb  
Getael National Drug  
Kerotrin (P) Winthrop  
Pranturon (P) Schering  
Preguol (P) Roche-Organon  
NOTE—(P) In powder form—dissolved for injection

In preparing these lists of products an extended attempt was made to keep abreast of the changes constantly being made in the marketing of these preparations. However errors may be found because of changes in products which have escaped the notice of the Council's office or because of the introduction of new agents since the preparation of this report.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 9, 1943

## COUNCIL STANDARDS AND MEDICAL ADVERTISING

Among the most important steps for the advancement in the United States of the practice of scientific therapy was the establishment of the Council on Pharmacy and Chemistry by the American Medical Association. The Council on Pharmacy and Chemistry was organized to protect the medical profession and the public against fraud, undesirable secrecy and objectionable advertising in connection with proprietary medicinal articles. A proprietary article means any chemical, drug or similar preparation used in the treatment of disease and protected against free competition as to name, product, composition or process of manufacture by secrecy, patent, copyright or other means. Notwithstanding the wholly laudable character of these functions, the creation of the Council was met by a furor of opposition from manufacturers, salesmen and the venal medical press which derived from this unsavory business profits tainted by their origin from the helpless sick and the dying. Patients must depend on their doctors for the choice of remedies. Doctors depended then on the information that came to them in the pages of medical publications and on information derived from detail men. Only too often even those pages of periodicals devoted to allegedly scientific contributions could be influenced if not purchased by the advertising that appeared in the same issue. No wonder that the establishment of a council of physicians, pharmacologists, chemists, physiologists and other qualified scientists to sift truth from falsehood and to give physicians a dependable source of information on new and nonofficial remedies should have elicited a shrieking and a moaning and a groaning from those who saw in its functioning their impending dissolution.

In almost thirty-five years that have passed since the Council came upon the scene, its results have justified the far sighted efforts of Philip Mills Jones, Frank Billings, George H. Simmons, Reid Hunt, Lafayette Mendel, Torald Sollmann and other medical and basic science leaders who gave so freely of their

time and then wisdom to its work. Again and again the medical leaders of foreign nations have written in envy of the ability of the Council to achieve the results it seeks. The subsequent creation of Councils on Foods and Nutrition and on Physical Therapy has been an indication of the approval of the House of Delegates.

In the years that have passed, more and more manufacturers of pharmaceutical preparations have given their collaboration and support to the work of the Council on Pharmacy and Chemistry. Many medical schools in their teaching of therapeutics limit themselves to the products listed in *Useful Drugs*. The book *New and Nonofficial Remedies*, a list of the preparations investigated and accepted by the Council, is increasingly used as a reference in medical schools and hospitals. The new legislation which controls foods and drugs developed from national acceptance of the principles so long maintained by the Council, no longer is it possible to launch a new remedy on the American public without previous controlled clinical testing. Such governmental control is, however, concerned only with harmlessness, and not with efficacy or advertising of the product. All the more need, therefore, for the work of the Council.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, under the direction of the Board of Trustees limits its acceptance of advertising to products that have been accepted by the Council. All advertising for Council-accepted products is submitted to the Council on Pharmacy and Chemistry for consideration prior to publication. Most of the state medical journals and several independent medical journals also restrict their acceptances of advertising similarly. Such support is necessary to maintain the strength of the Council. Formerly some of the state medical journals were the private property of physicians, publishers or corporations that had founded them. They were conducted largely for financial gain or personal prestige. Gradually ownership changed, today in most instances these publications are the property of the state medical associations which publish them.

Outside the periodicals published by medical organizations are some which do not limit their acceptance of advertising in any easily apparent way. Their pages are replete with the announcements of remedies that have not met the criteria of scientific evaluation. Conspicuous examples of this type are the throw-away publications, such as *Medical Economics* and *Modern Medicine*, sent free to physicians because their support comes from the publication of advertising which could not gain entrance into periodicals of recognized scientific origin and merit.

The journals of two state medical societies—Illinois and New York—have been conspicuous almost from the first in their insistence on the profits to be derived from the publication of advertisements of unaccepted products. For a brief period the *New York State Journal of Medicine* agreed to abide by scientific therapy, apparently

the insistence of the business office ultimately prevailed, that periodical is today among those counted as lost before the altar of those who give their faith to scientific therapy.

In 1913 the Board of Trustees of the American Medical Association, in its desire to aid and support the work of the Council on Pharmacy and Chemistry and to aid those medical periodicals which wished to enlist themselves in this righteous cause created the Co-operative Medical Advertising Bureau. Year by year the reports of the Bureau have appeared and have indicated the extent to which the Bureau has been helpful in securing advertising for the state medical journals and increasing their income. Recently there seems to have been a lessening of the careful scrutiny of advertising copy that is necessary in limiting advertising strictly to Council-accepted products. In the past month, for instance, the *Pennsylvania Medical Journal* has carried announcements of perandren and metandren male sex hormones which have not been accepted and of prinine, a vasoconstrictor used for nasal inhalation. The *New England Journal of Medicine* carried one for teriosate, which is a mixture used against anemia. *California and Western Medicine* in the July issue alone published advertisements for six nonaccepted products. Indeed, almost any issue of any journal may have one or more advertisements that do not meet Council Standards. The September issue of the *Southern Medical Journal* carries advertisements for more than twenty unaccepted preparations, and the Illinois and New York journals continue to be veritable directories of unestablished and unscientific therapy.

As long as any considerable part of the medical profession contributes to extending the blight of the falsely exploited proprietary medicine the battle for scientific therapy remains difficult. In any war the most dangerous attack is the attack from the rear. The threat most difficult to meet is that from those who should be presumed to be friends. The time should long since have passed when leaders of medical organizations consent to permit the exploiters of unestablished proprietary remedies to pay the bulk of printing and publishing bills of the medical journals that are supposed to represent scientific medicine. Can the physicians of Illinois and New York and the representatives of a few states who are urging a breakdown of the Council standards believe that the business managers of their periodicals are better equipped to judge what is good in materia medica and therapeutics than is the Council on Pharmacy and Chemistry? Fortunately for American medicine the vast majority of the profession has not accepted that point of view. The governing bodies of the medical societies of Illinois and New York and the Councils and boards of trustees of the other medical societies which are being urged by business managers to depart from the standards of the Council might well give more consideration to their responsibility to scientific medicine. The good name

and prestige of American medicine have come from its support of scientific remedies and ethical practice, from its condemnation of fraudulent and unscientific nostrums and of commercialized medicine. That good name gives us strength before the bar of public opinion where the point of view of scientific medicine needs to prevail. Let us keep the good name unsullied; its value is far above that of jewels or gold.

#### REACTIONS FOLLOWING SPINAL PUNCTURE

Reactions have been variously reported as occurring in 17 to 40 per cent of patients after lumbar puncture. The syndrome includes headache accompanied in severe cases by vertigo, nausea and vomiting. The most characteristic feature of this headache is the prompt relief that ensues when the patient lies down, and return of the headache when he sits up. The headache may be transitory, lasting one or two hours, moderate, terminating in one or two days, or severe, lasting six or more days. Sicard and others suggested that the headache was due to leakage of the cerebrospinal fluid into the epidural space through the defect in the dura left by the puncturing needle. The cerebrospinal fluid in a closed sac forms a pad for the brain and the spinal cord. At the base of the brain this pad acts as a cushion or water bed. MacRobert<sup>1</sup> argued that the cushion is absent when the patient sits up and the weight of a good part of the brain is suddenly imparted through the pons to the communicating plexus of veins. The blood about to leave the skull is impeded and is forced to turn back and travel by other crowded pathways. The resulting congestion causes a sudden rise of venous pressure. The relief of headache when the patient lies down is due to the fall of pressure when the weight is removed from the plexus of veins resting on the clivus of the occipital bone. The proponents of the leakage theory urged that the patient be confined to bed with the head lowered for twenty-four to forty-eight hours. Of the 30 patients thus treated, MacRobert records the occurrence of severe headache in 12 (40 per cent). Jacobaeus and Frumerie<sup>2</sup> and later Nelson<sup>3</sup> found that there was a significant fall in the spinal fluid pressure between the time of the spinal puncture and the onset of the headache, suggesting reduction in the volume of the blood, probably through leakage. Nelson developed an ingenious method of plugging the puncture hole in the meninges with a strand of catgut. Of 102 cases in which this was practiced, typical postpuncture reaction developed in only 5 (4.9 per cent). Of 92 cases in which spinal

1 MacRobert, R. G. The Cause of Lumbar Puncture Headache. *J. A. M. A.* 70: 130 (May 11) 1918.

2 Jacobaeus, H. C. and Frumerie, K. A Study of the Leakage of the Spinal Fluid After Lumbar Puncture and Its Treatment. *A. A. M. Scand.* 58: 10, 1921.

3 Nelson, M. O. Postpuncture Headache. A Clinical and Experimental Study of the Cause and Prevention. *Arch. Dis.* 21: 1 (April) 1921.

puncture was concurrently made in the usual manner, typical postpuncture reaction developed in 16 (17.4 per cent)

The leakage theory and the theory of meningeal irritation have been questioned recently by observers who have found that patients who were not put to bed after the puncture had less reaction than those who were treated by bed rest. Adler<sup>4</sup> argued that a patient in the upright position should have greater leakage and therefore more severe headache. Blau<sup>5</sup> reported that 21.2 per cent of patients who rested in the clinic and at home had reactions of a severe nature. Of those who left the clinic immediately but rested all day at home 21.7 per cent had severe reactions, but of those who did not rest at all only 6.4 per cent reacted severely. He concludes that the best method of preventing postpuncture reactions is the use of a fine needle and keeping the patient active for a considerable time after the puncture. Adler encouraged his patients to stay erect as long as possible after the puncture. Out of a group of 108 patients 14 (13 per cent) had a moderate or severe reaction. Of 10 men who went to bed immediately after the puncture, 7 (70 per cent) had moderate to severe reaction. Of 20 men who went to bed eight hours after the puncture, 2 (10 per cent) had slight and 2 (10 per cent) mild reactions, none had either moderate or severe reactions. Of 38 men who went to bed six hours after the puncture, only 2 (5 per cent) had severe or moderate headache. Adler therefore believes that the leakage and the meningeal irritation theories do not explain the reaction. He concludes that the cause of the headache is increased intracranial hypertension due to reaction of the choroid plexus caused by emotion. He points to the fact that Kulchar and King<sup>6</sup> were able to reduce the incidence of typical postpuncture headache from 25.5 per cent to 13.5 per cent in 105 patients by the administration of 3 grains of sodium amytal by mouth before puncture. Schube and Le Drew<sup>7</sup> reported a diminution in the incidence of reactions following lumbar puncture by administration of 3 grains of sodium amytal. Adler found a definite relationship between constitutional inadequacy and headache. Davenport<sup>8</sup> likewise suggests that lack of physical stamina and increased suggestibility, as evidenced in the higher incidence of reactions among females and Puerto Ricans in his large series, are factors. Adler believes that the predominant factors in the causation of postpuncture headache are the constitutional make-up of the patient and psychogenic influences.

Consideration of the several theories advanced and of the contradictory facts presented suggests that further studies will be required to elucidate the mechanism of the postpuncture headache and its successful prevention.

## Current Comment

### THE EPIDEMIOLOGY OF SCARLET FEVER

An epidemic disease can be most satisfactorily investigated by studying the community in which the outbreak occurs throughout the preepidemic, epidemic and postepidemic periods. Such an investigation was carried out near Iasi (or Jassy) in Rumania in 1936 under the auspices of the International Health Division of the Rockefeller Foundation and the Iasi Institute of Hygiene.<sup>1</sup> The city in the province of Oltanea had a population of about 100,000. The field work was done in the villages surrounding the city. The area was primarily agricultural, the inhabitants living for the most part in small villages and proceeding to their farm work each day in the surrounding countryside. The studies demonstrated a rough semilogarithmic relationship between the degree of latitude and the incidence of scarlet fever in that latitude. It has been suggested that this relationship may be due both to climatic conditions and to a lower susceptibility of those races which populate the tropical regions. The studies showed that the streptococcus flora of a community during nonepidemic periods includes many different strains, almost constantly changing their relative proportions. Persons up to 20 years of age are more frequently carriers than are adults. The types of streptococci which are prominent in causing scarlet fever one year may gradually assume an insignificant role and be replaced by other types. During epidemics a single type is generally responsible but this may vary, depending on whether an outbreak occurs in a community free from scarlet fever or is superimposed on previously existent endemic disease. A type of streptococcus which causes scarlet fever may also cause other forms of streptococcal illness. The types of streptococci most frequently recovered from persons with scarlet fever and other streptococcal diseases are those most commonly found in normal carriers in the same community. This suggests that the pathogenesis may be related to the degree of distribution of the organisms throughout the community. The number of cases of scarlet fever which occur is related to the carrier rate for the epidemic type. The distribution of cases of scarlet fever by age coincides with the age distribution of positive Dick tests, except that the peak for the former is with children from 5 to 9 years old and for the latter from 1 to 4 years old. Antitoxic immunity is accepted, and, with few exceptions, Dick negative persons are immune to the clinical syndrome of scarlet fever. Antibacterial immunity may also be a factor. The principal conclusion from this study is that the amount of illness caused at any one time by a given strain of streptococcus

4 Adler, Harry. A Study of the Headaches Following Diagnostic Spinal Taps, New York State J Med 43 1328 (July 15) 1943

5 Blau, Albert. Reactions Following Spinal Puncture, Urol & Cutan Rev 45 239 (April) 1941

6 Kulchar, G. V., and King, A. D. Use of Sodium Amytal in Prevention of Reactions Associated with Lumbar Puncture, Arch Neurol & Psychiat 30 170 (July) 1933

7 Schube, P. G., and Le Drew, Frederick. The Prevention of Reactions Due to Lumbar Spinal Puncture, New England J Med 211 537 (Sept 20) 1934

8 Davenport, K. M. Postpuncture Reactions. A Clinical Study, New York State J Med 39 1185 (June 15) 1939

1 Schwentker, F. F., Janney, J. H., and Gordon, J. F. The Epidemiology of Scarlet Fever, Am J Hyg 38 27 (July) 1943

is determined by three factors—the current pathogenic ability of the strain, the degree of dispersal throughout the community and the specific immune status of the population. These factors are all labile and their constant change accounts for the variations with time in the amount of streptococcal disease. Following the outbreak of war in Europe it was necessary to remove the collected material to New York and to complete the studies in the laboratories of the International Health Division there. This is of course, only one example of the tremendously disruptive force of war on medical research.

#### HAIR LACQUER PADS—A WARNING

Information has come to the office of THE JOURNAL to the effect that certain hair lacquer pads widely used by women throughout the United States to make the hair conform to recent styling or "up-do," have been causing dermatitis or severe inflammations of the skin around the back of the neck and ears. Cases have come to the attention of physicians in many cities. The Food and Drug Administration immediately on notification made a preliminary investigation which, according to reports reaching THE JOURNAL, indicates that the irritative action results from a change in the formula of manufacture of the products under investigation by the inclusion of a new gum. It may take some time to identify this ingredient accurately. With the usual alertness and efficiency that have characterized its activities the Food and Drug Administration has issued a request for the recalling of hair lacquer pads manufactured by Hubere Cosmetics of Chicago and of the Parfait Powder Puff Company, an Illinois corporation. Under the circumstances, women will do well to discontinue the use of these hair lacquer pads until their harmlessness has been established.

#### ANTHIOMALINE IN CLINICAL MEDICINE

Anthiomaline is lithium antimony (trivalent) thiomalate prepared as a 6 per cent solution, 1 cc of which contains about 0.01 Gm of antimony. An analysis of the extensive pharmacologic and experimental studies has just become available.<sup>1</sup> The drug has been employed therapeutically in venereal lymphogranuloma, granuloma inguinale, schistosomiasis, leishmaniasis, filariasis, trypanosomiasis, febrile jaundice, multiple sclerosis and trachoma. Therapeutic dosage depends on the disease to be treated, as do some of the toxic reactions to the drug. Its approximate range of therapeutic effectiveness was indicated by early experiences with venereal lymphogranuloma. It has been proposed to begin with 60 mg injected intramuscularly and to increase the dose of the single injections to a possible maximum of 300 mg until a total dose of between 2 and 4 Gm has been reached. Injections ordinarily are given three times a week and repetition is advisable after an interval of several weeks. The maximum dose for a single injection may be determined by the appearance of rheumatoid pruritus, which constitute the most widely

observed toxic reaction. The pruritus may be localized or general, they appear several hours after injection and they usually last twenty-four hours and occasionally longer. Painful swellings at the site of the injection sometimes occur. Salivation, retching, vomiting and abdominal pruritus have been observed. Slight fever, headache, thirst and fatigue may also appear in the course of treatment. Venereal lymphogranuloma is the condition in which anthiomaline has been used most extensively—some 250 cases having been recorded in the literature. Excellent results were obtained in 35 to 75 per cent and failures have been encountered in from 10 to 25 per cent of the patients treated. Experience with granuloma inguinale has been too scanty to warrant conclusions, although the results appear promising. Anthiomaline treatment of filariasis on a small number of patients has on the whole been disappointing. Good results have been uniformly reported with the use of this drug in more than 130 cases of genitourinary schistosomiasis. The efficacy of anthiomaline in cases of leishmaniasis is extremely doubtful. Thirty-three cases of trypanosomiasis have been treated with a combination of moranyl and anthiomaline with consequent sterilization of lymph and blood and reports of cure of fifteen months' duration in 17 cases. From the information available it may be concluded that anthiomaline has a considerable variety of therapeutic usefulness and a sufficiently low toxicity to warrant its further clinical trial.

#### HEALTH AND THE "VICTORY CORPS"

The United States Office of Education, sponsoring the Victory Corps in high schools, has published the proceedings of a committee of physicians and educators convened by the Office of Education to outline preparation of teachers for the program of physical fitness through health education.<sup>1</sup> The shortage of school personnel for health education led the United States Commissioner of Education to consider the possibility of giving supplementary training to science teachers and to teachers of home economics and physical education. The committee<sup>2</sup> met in May and formulated standards which teachers should meet if they are to be expected to function in the health education program. These standards, in general, indicate that persons having medical knowledge such as doctors, are not usually equipped pedagogically and vice versa. The findings and recommendations of the committee which should be of interest to physicians and educators, and especially to physicians serving as public health officials in school health programs or as members of boards of education are available in a reprint<sup>3</sup> from the official biweekly publication of the United States Office of Education, "Education for Victory." Inquiry should be addressed to the United States Office of Education, Federal Security Agency, Washington, D. C.

1. Report: Education for Victory. Official Biweekly of the United States Office of Education. Federal Security Agency. Washington, D. C. 1 June 1943.

2. W. W. Bauer, M.D., William H. Brantley, Lillian Day, Ph.D., Esten Edna Gekker, Ruth E. Green, Philip G. Johnson, Farley Dorey, La Sale, Margaret Lorna and Leon R. Mead as Florence O'Brien, Jackson R. Sherman, Sherwood D. Charland, Frank C. Wood, Charles Turner, Jennie Wahlert, R. W. Weir and Charles C. W. and M. D. chairman.

1. A Summary of Current Literature on Anthiomaline. National Research Council, Division of Medical Sciences. Prepared by the Office of Medical Information. Aug. 1943.



# MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

## ARMY

### AVIATION MEDICAL EXAMINERS

Graduation exercises were held at the School of Aviation Medicine, Randolph Field, Texas, on August 26 following completion of the course for aviation medical examiners. The didactic portion of the course was conducted at the School of Aviation Medicine, Randolph Field, Texas and the practical portion of the course at the three army air forces classification centers. The list of students graduating follows:

#### ALABAMA

James P. Collier, Major, Tuscaloosa  
Albert H. Green, Major, Birmingham  
Lilas A. Kaiser, Major, Montgomery  
James H. Means, Captain, Anniston  
David D. Smith, Captain, Birmingham

#### ARIZONA

John S. Miller, Major, Tucson  
William G. Shultz, Major, Tucson

#### ARKANSAS

Barnett P. Briggs, Captain, Little Rock

#### CALIFORNIA

Charles Benninger Jr., Captain, Oroville  
Henry C. Bernstein, Captain, San Francisco  
Norman C. Fox, 1st Lieut., San Bruno  
William A. Gannon, 1st Lieut., Pasadena  
Herbert Greenwood, Major, Oakland  
Millard E. Gump, Major, Oakland  
Gordon C. Hall, 1st Lieut., Soledad  
Ronald L. Hughes, 1st Lieut., Los Angeles  
Jesse J. Iverson, 1st Lieut., San Francisco  
Maxwell S. Kassel, 1st Lieut., Hondo  
Frederick G. Kirby, 1st Lieut., Los Angeles  
Edward A. Kirz, 1st Lieut., Butte Meadows  
Arthur L. Kobal, 1st Lieut., Los Angeles  
Donald O. McGowan, Major, Los Angeles  
Newell L. Moore, Major, Santa Ana  
Ralph E. Netzeley, Captain, Pasadena  
Maurice J. Regan, 1st Lieut., Los Angeles  
Frederick G. Reynolds, Captain, Los Angeles  
George H. Rue, 1st Lieut., Riverside  
Lawrence A. Solberg, 1st Lieut., Kerman  
Milo K. Tedstrom, Major, Santa Ana  
George E. Webster, 1st Lieut., Inglewood  
Harris R. Wilson, Captain, Modesto

#### COLORADO

Robert K. Dixon, Major, Denver  
Bryce D. Smith, 1st Lieut., Denver

#### CONNECTICUT

George A. Burnie, 1st Lieut., Danbury  
George R. Eckert, 1st Lieut., Danbury  
Ronald H. Kettle, Major, Norwich  
Royal A. Meyers, Major, Watertown  
Victor G. H. Wallace, Major, Darien

#### DELAWARE

Constance A. D'Alonzo, 1st Lieut., Wilmington

#### DISTRICT OF COLUMBIA

George F. Bauer III, Lieut. Col., Washington  
John Louzun, Captain, Washington  
Leo H. Mugmon, 1st Lieut., Washington

#### FLORIDA

Anthony J. Barranco, 1st Lieut., Lake Wales  
Albert D. Kristin, 1st Lieut., Brysonville  
Carl C. Mendoza, 1st Lieut., Jacksonville  
Robert J. Needles, Major, St. Petersburg  
Murray M. Reckson, 1st Lieut., Miami  
Francis C. Skilling, Major, Miami  
Frank L. Snyder, Captain, Hollywood  
Cyrus H. Stoner, Major, Fort Pierce

#### GEORGIA

Briswell E. Collins, Captain, Waycross  
Gordon L. Green, Major, Mount Berry  
Oscar H. Lott, Captain, Savannah  
William B. Turk, Captain, Nelson

#### IDAHO

John H. Culley, 1st Lieut., Idaho Falls  
Frederick H. Haugler Jr., Major, Boise

#### ILLINOIS

Raymond H. Abrams, 1st Lieut., Chicago  
Marvin F. Austin, Major, Chicago  
Ben H. Barbour Jr., 1st Lieut., Centralia  
George W. I. Bard, 1st Lieut., Sheldon  
Merrill C. Beecher, 1st Lieut., Knoxville  
Carl A. Gebuhr, 1st Lieut., Evansville  
John W. Gray, Captain, Geneva  
Anton P. Huml, 1st Lieut., Peoria  
Roland F. K. Jordan, Captain, Pekin  
Herbert Kahryn, Captain, Chicago  
Emerson C. Kunde, Captain, Woodstock  
Robert C. Long, 1st Lieut., Chicago  
Cornelius E. Murphy, Captain, Chicago  
Oliver Rian, Captain, East Peoria  
Frederick J. Ricketts, Captain, Sadorus  
Percy J. Ross, Major, Chicago  
Lee H. Schlesinger, Major, Hines  
Edward J. Schmeihl, 1st Lieut., Chicago  
Albert Sheade, 1st Lieut., Chicago  
Everett L. Strohl, Major, Chicago  
Charles R. Sugden, Captain, Deerfield  
Sydney W. Tauber, 1st Lieut., Chicago  
Scottie J. Wilson, 1st Lieut., Urbana

#### INDIANA

Victor F. Albright, 1st Lieut., Indianapolis  
Clarence E. Bunge, Captain, Logansport

Robert M. Derrmin, Major, Indianapolis  
Floyd L. Grandstaff, Captain, Decatur  
Howard E. Hill, Major, Muncie  
Howard H. Marks, Captain, Evansville  
Raymond J. Modjeski, Captain, Hammond  
Frederick H. Simmons, Captain, Goshen  
Robert A. Staff, Captain, Rockville  
Charles O. Weddle, 1st Lieut., Lebanon

#### IOWA

Harold C. Bastron, Major, Red Oak  
Daniel F. Crowley, Captain, Des Moines  
Frank D. Edgington, Colonel, Spencer  
Robert H. Foss, 1st Lieut., Remsen  
Edwin B. McConkie, Major, Cedar Rapids  
Kermit W. Myers, 1st Lieut., Sheldon  
Merlin R. Wyatt, Captain, Manning

#### KANSAS

Charles H. Johnson, 1st Lieut., Kinsley  
Charles R. Magee, 1st Lieut., Wichita

#### KENTUCKY

Harry S. Andrews, Major, Louisville  
Horace W. Carle Jr., 1st Lieut., Louisville  
Arthur C. McCarty, Major, Louisville  
John K. Mack, Captain, Louisville  
Lawrence T. Minish Jr., Major, Frankfort  
Edgar C. White, Captain, Louisville  
Earl P. Wright, Captain, Pikeville

#### LOUISIANA

John J. Burdin, 1st Lieut., Lafayette  
John Corso, 1st Lieut., Independence  
Parker K. Hughes, Captain, New Orleans  
John C. Pate Jr., Captain, New Orleans  
Salvadore J. Russo, 1st Lieut., New Orleans  
Alvin Stander, Captain, Baton Rouge

#### MAINE

Harry Butler, Major, Bangor  
Louis C. Lesieur, Captain, Biddeford

#### MARYLAND

Walter E. Yingling, Major, Baltimore

#### MASSACHUSETTS

Timothy E. Allen, Captain, Arlington  
Harwood W. Cummings, Captain, Greenfield  
Howard H. Englander, 1st Lieut., Boston  
John J. Kelleher Jr., 1st Lieut., Lawrence  
John E. Smith, 1st Lieut., East Weymouth  
Knowlton D. Stone, Captain, Greenfield  
Roland P. Wilder, 1st Lieut., Malden

#### MICHIGAN

Herschel L. Browns, Captain, Ann Arbor  
Frederick W. DeYoung, Captain, Spring Lake  
Robert E. Fallis, Captain, Kalamazoo  
Willard E. Fischer, 1st Lieut., Wyandotte

Neil A. Gates Jr., Captain, Ann Arbor  
Jason (NMI) Hodges, 1st Lieut., Detroit  
Arvid G. Holm, Captain, Three Rivers  
Clinton H. McKay Jr., 1st Lieut., Ann Arbor  
Philip T. Mulligan, Captain, Mount Clemens  
Jesse P. Muse, 1st Lieut., Detroit  
John E. Patrick, 1st Lieut., Detroit  
Leland J. Rather, 1st Lieut., Detroit  
Walter F. Sethney, Captain, Menominee  
Everette M. Steffes, 1st Lieut., Detroit  
Kenneth N. Wells, 1st Lieut., Spring Lake  
Stewart C. Wheeler, 1st Lieut., Detroit

#### MINNESOTA

Harold J. Frank, Captain, New Prague  
Richard B. Graves, 1st Lieut., Red Wing  
Bernard N. Karleen, 1st Lieut., Balaton  
Paul C. Leck, Captain, Austin  
Joseph J. Mack, Lieut. Col., St. Paul  
Robert E. Mattison, 1st Lieut., Minneapolis  
Jan H. Tillisch, Captain, Rochester

#### MISSISSIPPI

Randolph L. Clark Jr., Captain, Jackson

#### MISSOURI

Charles H. Barnett Jr., 1st Lieut., Kansas City  
Victor K. Hager, 1st Lieut., St. Louis  
Aretus D. Martin, 1st Lieut., Sikeston  
John B. Ryan, 1st Lieut., Kansas City  
Hugh R. Smith, 1st Lieut., St. Louis  
William D. Susanka, 1st Lieut., St. Louis

#### MONTANA

Robert G. Lemon, Captain, Glendive  
Leland G. Russell, Captain, Billings

#### NEBRASKA

William R. Malony, Captain, Omaha  
Edwin J. Shaughnessy, 1st Lieut., North Platte

#### NEW JERSEY

Jules E. Baime, 1st Lieut., Newark  
Joseph F. Corless, Major, West New York  
Allan B. Crunden Jr., Captain, Jersey City  
Gerald B. Demarest, 1st Lieut., Westfield  
Philip D. Gilbert, Captain, Camden  
Joseph J. Kohn, 1st Lieut., Trenton  
Thomas A. Marcicocchi, Captain, Orange  
Meyer Notkin, Captain, Paterson  
Salvatore S. Piacente, Captain, Paterson  
Charles G. Prather, Captain, Weehawken  
Richard Wagner, 1st Lieut., So. Orange

#### NEW YORK

Jules B. Aaron, Captain, Iroquois  
Adrian R. Avitable, Captain, Brooklyn  
Raymond K. Bush, Major, Vernon

To enb M Covelli Captain, Flush  
ing  
Martin J Coine 1st Lieut,  
Geneva  
Maurice M Croll, 1st Lieut,  
Brooklyn  
Martin Cutler Captain Brooklyn  
Salvatore A Dispenza 1st Lieut,  
Lackawanna  
John A Failla 1st Lieut New  
York  
Max M Goldenkranz Captain  
Brooklyn  
Eugene L Griffin Captain New  
York  
Wilfred Guerra 1st Lieut Brook  
lyn  
John A Hamilton Jr 1st Lieut  
Brooklyn  
Archue M Harris Captain Rock  
ville Centre  
Myron L Kenler 1st Lieut  
Maspeth  
John C Kilroe Major New York  
George G Knight 1st Lieut Pier  
mont  
Edgar A Lawrence Captain New  
York  
Lewis B Londen Captain New  
York  
William G MacDonald 1st Lieut  
New York  
Habeeb Z Maroon 1st Lieut  
New York  
Joseph H Merin Captain Botto  
n Landing  
Saul Michalover Major Brooklyn  
Myron J Miller Captain New  
York  
Walter W Miner Jr Major  
Baldwin  
Hofer C Nelson Captain Water  
town  
Alfred H Riskin 1st Lieut New  
York  
Carl C Roenberg 1st Lieut  
Brooklyn  
Emanuel A Rumore Captain  
Brooklyn  
Julius J Sachs 1st Lieut New  
York  
Jacob Schneider Captain Brook  
lyn  
John E Sullivan Major New  
York  
Eitel G Surber Captain Brooklyn  
John H Wadsworth Captain  
Cohasset  
Milton A Wald 1st Lieut Brook  
lyn

#### NORTH CAROLINA

Roderic O Jones 1st Lieut. Burns  
ville  
Robert E Stone Captain Chapel  
Hill

#### OHIO

Nicholas G Amato 1st Lieut  
Cincinnati  
Jack J Berry 1st Lieut Clevel  
and  
Robert F Corwin Major Dayton  
Arthur F Dornier Major Akron  
James A Ellery 1st Lieut Shelby  
Clen K Folger Major Cleveland  
Reuben H Hamman 1st Lieut  
Waterville  
John R Harding Major Cincin  
nati  
Francis J Heringhaus Major  
Mansfield  
Charles S Higley Major Clevel  
and  
George F Hilles Captain Clevel  
and Height  
Harold L Keiser 1st Lieut Fre  
mont  
Howard Lauer 1st Lieut Dayton  
William R Liebchner 1st Lieut  
De hier  
Earl D McCallister Captain Chil  
licothe  
John Mighonico 1st Lieut Clevel  
and  
Morris S Osherwitz Captain Cin  
cinnati  
Adolph B Schneider Jr Captain  
Cleveland  
John R Schroder 1st Lieut Cin  
cinnati  
McColm E Switzer 1st Lieut  
Calion  
Harold O Tagett Captain Rock  
Creek  
Stanley W Whitelouche 1st Lieut  
Cincinnati

#### OKLAHOMA

George E Dodson Captain Mus  
kegee

Willard D Holt 1st Lieut Altus  
Roy L Neel, Captain Oklahoma  
City  
Charles R Rayburn Lieut Col,  
Norman  
John R Smith Captain Oklahoma  
City

#### OREGON

Richard J Rich 1st Lieut, Wood  
burn  
Robert P Scheffter 1st Lieut  
Portland

#### PENNSYLVANIA

Harold S Agnew 1st Lieut Ben  
Avon  
Daniel A Atkinson Jr 1st Lieut  
West View  
Harold P Belknap Captain York  
Maurice L Brown 1st Lieut  
Philadelphia  
Nicholas L Ciaccia Captain Pitt  
burgh  
Anthony N Domonkos 1st Lieut,  
Huntingdon  
Walter C Ferer Captain Conneaut  
Lake  
George E Fiesel Captain Phila  
delphia  
Robert T Gillis Captain Taren  
tum  
George L Greaser Major Altoona  
Duncan S Hatton Captain  
Chester  
Willard W Havne Captain Paul  
lina  
Hubert B Hawwood Jr 1st Lieut  
Abington  
Samuel S Huntzberger 1st Lieut,  
Sinking Spring  
Nathan Katsif 1st Lieut Phila  
delphia  
Luther A Lenker 1st Lieut Har  
ri burg  
James F MacDonald 1st Lieut  
Pittsburgh  
Joseph H Magrath Major Upper  
Darby  
John L Meyers 1st Lieut Skull  
ington  
Jack M Orman 1st Lieut Phila  
delphia  
William D Pre cott 1st Lieut.  
Pine Grove  
Charles L Sacks 1st Lieut Phila  
delphia  
Charles Schnall Captain Philadel  
phia  
Roman V Ulane 1st Lieut  
McAdoo  
Jas E Weidenhamer 1st Lieut  
Punxsutawney

#### RHODE ISLAND

Richard Rice Captain Providence

#### SOUTH CAROLINA

Abram E Adams Captain Green  
wood

#### SOUTH DAKOTA

George R Dornberger Major  
Miller

#### TENNESSEE

Robert M Conger 1st Lieut Lex  
ington  
Marshall B Lynch 1st Lieut,  
Memphis  
John C Turley 1st Lieut  
Memphis

#### TEXAS

Arthur B Alexander Captain  
Spur  
Alfred C Bennett Captain Marlin  
Herman R Buzbee 1st Lieut  
Dallas  
Hamilton F Ford Captain Gal  
veston  
William C Ghormley 1st Lieut  
Corpus Christi  
Frederick J Koberg 1st Lieut  
Big Spring  
John W Lanus 1st Lieut Dallas  
Gordon Phillips 1st Lieut Hackell  
Marcus A Fier on Captain Gal  
veston  
Nellus C Smith Captain Hills  
boro  
D D Wall Captain San Angelo  
Stephen W Wilson 1st Lieut  
Linden

#### UTAH

Kurt E Rose 1st Lieut Salt  
Lake City

#### VERMONT

Joseph B Crowley 1st Lieut  
Brattleboro  
Paul C Willard 1st Lieut Mc  
reister

#### VIRGINIA

James L Davis, Captain Raccoon  
Ford  
Edward M Holmes Jr, Major,  
Richmond  
Hulbert C McCoy, 1st Lieut  
Gordonsville  
Charles D Schilling, Captain  
Charlottesville  
Frank A Zack, 1st Lieut, New  
port News

#### WASHINGTON

Donald D Corlett Major Seattle.  
Frank J Cornelius Captain,  
Olympia  
Harry A Gilbert Captain Mount  
Vernon  
Russell B Hanford, Captain,  
Spokane  
Albert D Haug Captain, Wenat  
chee  
Charles W Hoffman 1st Lieut  
Wauwatosa  
William C Kintner Jr, Captain,  
Seattle  
Lumir M Mares Captain Wenat  
chee

Lloyd H Smith 1st Lieut,  
Wenatchee  
Rudolph E Stuart, 1st Lieut,  
Spokane

#### WEST VIRGINIA

James E McClung 1st Lieut,  
Richwood  
Robert A McLane Jr, 1st Lieut,  
Arthurdale  
Richard A O Dell, 1st Lieut,  
Belle

#### WISCONSIN

William F Cormack 1st Lieut,  
Wauau  
Max F Drozewski, 1st Lieut Mil  
waukee  
Rollie M Harrison, Captain Bos  
cobel  
Erwin J Jelenchick, 1st Lieut,  
Milwaukee  
Robert G Kvarnes, 1st Lieut,  
Superior  
Robert C Love Captain Glen  
wood City

HOME ADDRESS UNKNOWN  
Juan Benavides Lieut. Comdr  
Peruvian Army

### DOCTORS OPERATE UNDER SHELLFIRE

Following is a dispatch as printed in the Chicago Sun, Sep  
tember 24, from the United Nations Headquarters in North  
Africa

Three delicate operations of brain surgery were performed  
successfully in a tent among the sand dunes of Salerno during  
the critical days when the Germans had the entire Fifth Army  
bridgehead under artillery fire it was revealed today

Lieut Col Paul K Sauer of New York Hospital took his  
contingent ashore amid a rain of German lead

Exhausted by two days and nights of bombing, strafing and  
mortar fire the men of the evacuation hospital finally organ  
ized their scattered equipment and spent all night setting up  
portable operating rooms and tent walled wards on a field not  
far inland Then the tired staff began a twenty-four hour  
schedule of operations and treatment

Major Howard A Patterson of New York, former surgeon  
at Roosevelt Hospital and a veteran of the Tunisian campaign  
led his surgical staff in a round the clock schedule, with three  
teams working in succession on never empty operating tables

Nurses were not due to be landed for several days, so the  
hospital's enlisted men donned operating gowns and sterilized  
masks and worked long hot hours in operating tents Many  
had no more than two hours' sleep in the first three days

Casualties that piled up during the first week of the cam  
paign made expansion necessary so a surgeon was added and  
then tents from a medical battalion Abdominal punctures head  
wounds, fractures and burns tormented the bulk of the hospital  
cases

### COLONEL DABNEY AWARDED LEGION OF MERIT

Col Albert S Dabney M C U S Army, who recently  
relinquished his duties as assistant commandant of the Medical  
Field Service School Carlisle Barracks, Pennsylvania, was  
awarded on September 15 the Legion of Merit for meritorious  
conduct and outstanding service. The presentation was made  
by Brig Gen Addison D Davis commandant of the school  
It read in part as follows

Col Albert S Dabney, M C U S Army For excep  
tionally meritorious conduct in the performance of outstanding  
service. From the beginning of the emergency until the end  
of 1941 he has been director of the Medical Department Equip  
ment Laboratory, where by his conspicuous energy and ability  
he developed many new major articles of equipment needed  
by the Medical Department for war Since Jan 1 1942 as  
assistant commandant of the Medical Field Service School he  
has had immediate charge of training approximately 14,000  
Medical Department officers and officer candidates His careful  
supervision of their instruction in the armamenting device of  
and his knowledge have resulted in giving them the effec  
tiveness of their duties in the field and the success of the United States in the present war

With twenty-seven years of service to his credit, Colonel Dabney already holds decorations from the American, British, French and Russian governments, as well as numerous other military ribbons. He was recently appointed assistant dean of the University of Pittsburgh School of Medicine, where he took up his duties on October 1.

### SOLDIER'S MEDAL AWARDED TO ARMY NURSE

The War Department announced on September 1 the award of the Soldier's Medal to 2d Lieut Margaret M. Decker, Army Nurse Corps, the second woman ever to receive this award, for heroism at Ioppr, Calif., on June 19, 1943, when, according to the citation accompanying the award, while swimming in the Colorado River, without regard for her safety she went to the rescue of a soldier and saved him from drowning. Though physically exhausted, Lieutenant Decker administered first aid to the soldier and accompanied him to a station hospital, where he was given medical attention. Lieutenant Decker entered the army on Nov. 19, 1942. She is a graduate of the St. Barnabas Hospital School of Nursing, Newark, N. J., 1938, and is assigned to the 127th Station Hospital, Desert Training Center, Arizona.

### PRISONERS OF THE JAPANESE

According to the *Chicago Tribune* of August 12, Lieut Amel L. Palermo, formerly of Chicago, is a prisoner of the Japanese. A card received recently by his mother indicated that he is being held a prisoner in the Philippines in prison No. 1. Lieutenant Palermo graduated from the University of Illinois College of Medicine, Chicago, in 1940 and entered the service on July 5, 1941.

According to the *New Albany (Indiana) Ledger* of September 3, word has been received from Capt Thomas H. Hewlett, formerly of Washington, D. C., that he is safe and well. Captain Hewlett has been held a prisoner of the Japanese since the fall of Corregidor. He graduated from the University of Louisville School of Medicine in 1938 and entered the service in April 1941.

According to the *Stanton (Mich.) Clipper Herald*, word has been received from 1st Lieut Arthur L. Benison, former physician in the Edmore Hospital, Edmore, Mich., who is being held a prisoner of the Japanese. Lieutenant Benison, who graduated from the University of Michigan Medical School, Ann Arbor, in 1937, was a member of a medical unit stationed in the Batian Peninsula.

## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

### QUOTAS OF INTERNS AND RESIDENTS

Since many hospitals have not returned their questionnaires, it is impossible at this time to give every hospital its quota of interns and residents. It was therefore felt advisable to release this memorandum through *THE JOURNAL* so that the state chairmen for the Procurement and Assignment Service and the hospital superintendents would have this additional information concerning the nine-nine-nine program. As soon as the hospitals in each state have been appraised, the state chairmen and the hospital superintendents will be notified of the definite quota which appears as a blank in paragraph two of the following release from the Directing Board.

1 The new intern-resident program based on reduction in the length of internships to nine months and deferment by the Army and Navy of commissioned interns to serve as residents begins Jan. 1, 1944, for nine month periods. This program consists of

- Nine months internship
- Nine months junior residency
- Nine months senior residency

This program applies to all interns and residents who will have completed nine months of hospital service on or after Jan. 1, 1944. Deferments from active duty which have already been approved by the Army or Navy for residents will be continued to the date authorized.

#### 2 Quota for \_\_\_\_\_ hospital

\_\_\_\_\_ internships for nine months period

\_\_\_\_\_ combined number junior and/or senior residencies for nine months (major portion should be junior residents so that some of them can be retained in senior residencies for nine months period)

Adjustments of this quota may be authorized by the directing board of the Procurement and Assignment Service but will be made only under exceptional circumstances and on the recommendation of the state chairman of the Procurement and Assignment Service.

3 These quotas include all interns and all residents who will serve the institution, including those physically disqualified or otherwise ineligible for military service and those interns who are commissioned officers but who automatically are deferred by the military services for their nine month internships and those residents who are deferred for nine months for either a junior or a senior residency.

4 Failure to limit staffs to these allocated numbers will result in preventing the Procurement and Assignment Service

from requesting the Surgeon General to defer commissioned officers to fill essential residencies in the institution.

5 The greater the number of vacancies filled with applicants who are physically disqualified or otherwise ineligible for military service, the more certain is the maintenance of the house staff, therefore no requests for deferment of commissioned officers should be considered until every effort has been exhausted to fill the vacancies with individuals ineligible for military service.

6 For the deferment of a commissioned officer to fill an essential residency, form number 218 should be completed in triplicate and forwarded to the state chairman of the Procurement and Assignment Service for his approval and submission through the central office to the surgeon general of the service in which the applicant holds a commission. Attention is called to the necessity of the individual recommended for deferment to indicate his desire to accept this appointment by personal signature in the space provided.

7 Hospitals should make contacts and appointments of prospective interns and residents in the usual manner. The Procurement and Assignment Service has no authority to assign interns and residents to hospitals, hence this assignment of an allowable quota is no guaranty that a hospital will be able to procure that number of interns or residents. Hospitals may notify the central office of the Procurement and Assignment Service of vacancies in authorized internships and residencies. This office will arrange for the publication of this information so that individuals who are available and interested may apply for such positions.

8 Certain junior residents who are commissioned officers may be deferred for a third nine months to serve as senior residents within the limitation of authorized quotas. Selection of junior residents and of senior residents may be made from interns and junior residents respectively serving in the same hospital or in other hospitals.

9 Commissioned officers who are to serve as junior or senior residents for nine month periods should be selected at least four months before the termination of their current deferments. Form No. 218 must be submitted promptly for all such individuals in order that deferments may be authorized for the issuance of orders to active duty. Requests for deferment received after orders have been issued cannot be approved.

10 Any questions concerning this announcement or the nine-nine program should be addressed to the state chairman of the Procurement and Assignment Service and not, under any circumstances, to the Office of the Surgeon General.

## CIVILIAN DEFENSE

NEED FOR PROTECTIVE SERVICES IN  
TIME OF WAR

A memorandum recently issued by the Office of Civilian Defense, Washington, D. C., to regional medical, nursing, engineer, gas and rescue officers states that rumors that civilian defense is no longer necessary have recently been spread by irresponsible persons. These rumors are thoughtless or calculatingly subversive, for they are not supported by Army authorities responsible for our coastal defenses or by the present military situation. Fortunately the success of our armed forces overseas has saved us thus far from experiencing the horrors of enemy bombing to which the cities of our allies are being subjected. In the opinion of the best military authorities our coastal areas and industrial centers will not be free of the danger of enemy attack from the air or of widespread sabotage until the last day of the war.

Civilian defense is also needed as one of the essential measures for safeguarding internal security. This is especially true of the Emergency Medical Service. If we had not created a nationwide organization for civilian defense two years ago, we would be obliged to organize one today for home security. Disasters of all kinds have increased as the result of the tremendous speeding up of our great industries, the overburdening of our railroads and the incurrence of hundreds of thousands of new war workers. Our police, fire departments, public works and utility services and our hospitals on which we depend for protection are being increasingly depleted of trained personnel. We must therefore strengthen our voluntary protective services throughout the land. Along the Pacific and the Atlantic coasts these services must be especially strong in volunteer personnel and equipment to guard us against the hazards of enemy attack and sabotage until that day when the Army itself advises us that the danger is ended.

MOBILIZATION OF EMERGENCY MEDICAL  
SERVICE ON AIR RAID ALERTS

The Office of Civilian Defense, Washington, D. C., issued on September 13 Circular Medical Series No. 33 on the "Mobilization of the Emergency Medical Service on Air Raid Alerts" in which the different colored warning signals are explained as follows:

**Yellow Warning Signal**—The chief of Emergency Medical Service and his deputies assigned to duty at control centers should receive the yellow warning and proceed immediately to their designated posts. All casualty receiving hospitals should receive the yellow warning which should be relayed immediately to the administrator, the superintendent of nurses and the chief engineer.

**Blue Warning Signal**—1. Mobile medical teams. (a) Teams composed of resident personnel of hospitals prepare for action by assembling, with equipment, at a designated point in the hospital and stand ready for orders from the control center. (b) Teams composed of persons from the neighborhood of a hospital assemble at the hospital. (c) Teams designated to assemble at casualty stations remote from a hospital report to the casualty station. 2. Stretcher teams. Stretcher teams on call assemble at their posts of duty at hospitals or casualty stations. 3. Ambulance teams (driver and attendant). (a) Teams composed of persons on duty at a hospital or depot at which the ambulance is parked prepare their vehicles and equipment for action. (b) Teams composed of persons residing in the neighborhood of hospitals or ambulance depots assemble at the hospital or depot at which they are on call. 4. Hospital personnel. The following will report to the hospitals to which assigned: physicians on shock, surgical, triage, fracture or other emergency teams; anesthetists, nurses and volunteer nurses on call at the time for emergency duty; hospital protection personnel such as wardens, fire guards, messengers and essential maintenance personnel. In preparing hospitals for action every effort should be made to reduce to a minimum the movement through streets. Hospital administrators and chiefs of staff should therefore determine their minimal requirements and recommend emergency personnel for membership

in the U. S. Citizens Defense Corps or the Civilian Defense Auxiliary Group. The chief of Emergency Medical Service should arrange for the appointment, training and proper identification of such emergency personnel.

**Red Warning Signal**—Members of the Emergency Medical Service stand by at their posts throughout the red warning period until dispatched to incidents or casualty stations on orders from the control center. The physician in charge of a mobile medical team at a hospital or casualty station may send forward a stretcher team or other personnel to nearby incidents on his own initiative.

**Omission of Yellow or First Blue Warning**—The sudden or rapid approach of enemy planes may prevent the giving of either the yellow or blue warning, or both. In the event that a red warning is given without preliminary warnings, Emergency Medical Service personnel will immediately take the action normally taken on the yellow and blue warnings.

**Blue Warning Signal Following Red**—Emergency Medical Service personnel remain at assigned posts or at posts to which they have been dispatched until relieved by the chief of Emergency Medical Service.

**All Clear**—Emergency Medical Service personnel remain at their posts of duty until relieved by the chief of Emergency Medical Service.

## HOSPITAL MEN VOLUNTEERS

The Office of Civilian Defense, Washington, D. C., issued on September 13 Operations Letter 140 to state and local defense councils for the attention of war services boards and volunteer offices, pointing out the acute shortage of manpower in hospitals throughout the country. The Office of Civilian Defense, in cooperation with the American Hospital Association, is working on a plan to promote the use of men volunteers in hospitals where they are needed. At a meeting of the American Hospital Association in Buffalo, September 13-17, the plan as outlined here was presented in order that hospital administrators might be able to hear from their own group what has already been done in some hospitals and how through their local defense councils they can secure help in recruiting men volunteers.

The Health Committee should be asked by the War Services Board to ascertain from hospital administrators the extent of their manpower problem. The Health Committee should appoint a special committee to do this job, and on this committee should be represented the principal hospitals, the Volunteer Office and the Publicity Committee of the Defense Council. If a serious shortage is found the committee should assist the hospitals to determine what assistance hospital men volunteers can give. The committee should then take the following steps:

1. Request the Volunteer Office to obtain men volunteers to work in hospitals.

2. Plan to publicize local needs for men volunteers through the publicity director of the local Defense Council and the Volunteer Office using all appropriate mediums such as newspapers, the radio and speakers.

3. Plan with hospital administrators, the Volunteer Office and the Training Committee of the Defense Council for organizing hospital staffs for the proper use of volunteers including provision for their training and supervision.

4. Arrange with the executive of the Citizens Service Corps for special induction ceremonies and awarding of insignia to the men hospital volunteers.

The Volunteer Office should be responsible for securing the hospital men volunteers. The following points will guide the Volunteer Office in fulfilling this responsibility:

1. The files should furnish the first source of volunteers. If there is not a sufficient number of suitable men required recruiting should be undertaken at once.

2. The general public can be reached most effectively through the press and the radio. Stories should indicate clearly at kind of men volunteers are wanted, how many are needed, where they will work, and when and where interested men can be interviewed.

3. Medical schools and college provide another source. Speakers should be sent to explain the need to such groups.

and convenient arrangements should be made for interviewing interested men.

4 Organized men's groups such as labor organizations, church groups, ministers' organizations, fraternal organizations and men's civic groups, are a potential source. Organizations of the clergy are an especially good source. Speakers should be made available to these men's organizations, and convenient arrangements should be made for interviews with interested applicants.

5 Selection from among men volunteers either enrolled or especially recruited should be carefully made on the basis of specifications of the various hospitals.

6 Referrals should be made directly to the hospitals as long as the hospitals' need for men volunteers continues to be unfilled.

7 Follow-up on referrals should be made to determine whether the hospitals are satisfied, and replacements should be made whenever necessary.

## MISCELLANEOUS

### U S CADET NURSE CORPS PROGRAM

According to the Division of Nurse Education, U S Public Health Service, Washington, D C, expansion of housing and educational facilities will be necessary to many nursing schools if the required number of student nurses are to be enrolled in the U S Cadet Nurse Corps. Institutions which cannot finance the entire cost of such additions are eligible to apply for assistance under the Lanham act if they are participating in the Cadet Nurse Corps program. New construction must be avoided wherever possible by leasing or purchasing an existing building which can be suitably altered. Institutions applying for financial aid under the Lanham act should make a preliminary request to the regional office of the Federal Works Agency having jurisdiction in the state. Institutions which do not require financial assistance should make application for priorities assistance directly to the War Production Board, Washington, D C, on form WPB 617. WPB 28141 will accompany WPB 617. In the "hospital section" of WPB 28141 only questions pertinent to the applicant hospital need be answered. In the "nurses home" section, all questions must be answered.

### WARTIME GRADUATE MEDICAL MEETINGS

On October 14 a conference under the auspices of the Wartime Graduate Medical Meetings will be held at the Army and Navy General Hospital at Hot Springs, Ark., with Lieut Col Irving S Wright, M C, as chairman. The schedule will include papers entitled "Studies on the Mechanism of Recovery from Pneumococcal Pneumonia" by Dr Barry Wood and "Allergy as It Is Related to Bronchial Asthma," with case presentations by Dr Harry Alexander, and a round table in which Lieutenant Colonel Wright, Dr Wood, Dr Alexander and Major Dudley C Ashton, M C, will take part.

On October 7 a conference was held at the same hospital on "Malignant Diseases in Military Age."

Other recent programs under the auspices of the Wartime Graduate Medical Meetings have been held at the Station Hospital Fort Sill, Oklahoma, and Will Rogers Field, Oklahoma City.

### RELIEF WINGS INCORPORATED

Relief Wings, Inc., with headquarters at 80 East 42d Street, New York City, is a nonprofit organization for aerial mercy aids to civilians. The air ambulance service which this institution conducts is offered to charity patients at a cost of 5 cents per mile. For those patients who are able to pay the full operating cost of the airplane a charge of 14 cents per mile is made to cover all necessary costs. Flight surgeons and flight nurses on registers throughout the United States who have been receiving aeromedical training on the care of the airborne patient are available.

Dr Harry V Spalding is chairman of the organization's Aero Medical Research Committee. Miss Ruth Nichols, well known aviatrix, is the executive secretary. Among the sponsors, officers, sectional leaders and advisory committees of Relief Wings, Inc., are nationally known citizens, aviators and scientists.

This organization is largely maintained by the donations which it receives, and contributions may be sent to Relief Wings, Inc., at 342 Madison Avenue, New York City.

### PUBLIC HEALTH UNDER HITLER

According to NDZ of July 12 the increased employment of women and the burdens thus placed on large families have made it necessary to extend the day nursery scheme and give more help to mothers of large families. The NSV needs assistance for these tasks. As far as it is not possible to meet this demand through normal channels, young girls will be called up for this purpose. This kind of war work is specially suited to the natural inclinations and interests of girls, as it consists exclusively of feminine tasks. It will not only enrich the knowledge and increase the ability of the girls but also in many cases inspire them in their choice of a vocation.

The Reich youth leader, the general trustee for the direction of labor and the minister of education have issued the directives for this work in a joint decree. They say that, where in special cases the requirements cannot otherwise be met by the labor offices, girls of the seventh form of *oberschulen* can be made available. The present seventh form will be employed on this work until August 31. They will take their holidays from September 1 to 20 and will enter the eighth form on September 21. They will be relieved by the girls of the new seventh form. These girls will be employed from Sept 1, 1943 until Feb 26, 1944, at the latest.

The Social Welfare Office of the Reich Youth Directorate has been entrusted with the organization of this scheme. The girls may work, first, as assistants in day nurseries, in small harvest, agricultural and auxiliary kindergartens, and, secondly, in NSV recuperation institutions for juveniles and in connection with the Extended Child Evacuation Scheme. Where the need for assistants is fully covered, the girls may be employed to reinforce the NSV domestic help scheme locally or within the *kreis*. They must, however, be able to sleep at home. Before work of this kind is started there will always be parents' meetings at the schools, at which further details of the work will be announced. The cost of accommodation, food, insurance, fares and pocket money of 15 reichsmarks per month will be borne by the NSV.

*Nachrichten für den Aussenhandel* of May 17 states that, owing to shortage of fish in Bulgaria, food preserving factories have been temporarily prohibited to preserve fish. This measure was deemed necessary in order to provide the population with as much fresh fish as possible. Despite the efforts of the authorities, insufficient fish has been landed lately, especially on the Black Sea coast, where the industry has been greatly handicapped by war conditions. Fishing tackle has become scarce and is difficult to replace in wartime. In the opinion of the fishermen the relatively low prices are also partly responsible for the present shortage. An appeal for higher prices was refused by the authorities.

*L'Action française* of July 24 complains that children under 3 are not entitled to certain rationed food such as calf brain, liver, eggs and ham, which they need more than certain other categories. The birth rate is higher than five years ago, but too many infants die as a result of malnutrition. Since mothers have been encouraged to have more children, it is essential to feed the children properly.

The *Deutsche Zeitung in den Niederlanden* of July 14 states that 99 per cent of the doctors who wrote the second letter to Seyss-Inquart have apologized to him. They are said to have declared that many of the signatures were forced.

# ORGANIZATION SECTION

## MEDICAL ECONOMIC ABSTRACTS

### HOW MANY PHYSICIANS ARE NEEDED

The United States Public Health Service has made a questionnaire study on medical conditions in the District of Columbia, Baltimore City, certain Maryland counties and Georgia. The average weekly patient load is shown in the following table.

Place of Practice	Averages			
	Office	Hospital	Home of Patient	Total
District of Columbia	86	8	21	115
Maryland				
Baltimore	82	6	31	119
Exclusive of Baltimore	66	7	29	102
Total	89	7	50	126
Georgia				
Urban	78	11	23	112
Rural	70	6	26	102
Total	79	7	25	111

The averages, however, are somewhat deceptive, as they vary greatly according to age. Physicians under 45, especially those from 35 to 44 inclusive, care for two to three times as many as those above 64 years of age. The number of patients that can be seen naturally varies with the proportion of office and home visits. With considerable variation the average office hours in Baltimore for physicians are between four and five, while in the counties outside they are about an hour longer. The same difference exists between urban and rural counties in Georgia.

An effort was made to determine the possible optimum patient load. Sixty per cent of urban general practitioners declared that they could increase the present load. The remainder declared that they are caring for as many patients at present as they could manage. Only forty-nine per cent of rural physicians thought that they could care for more patients. This would mean an increase from 112 and 111 patients for urban and rural general practitioners respectively to 135 and 128 patients. From these facts some general conclusions are drawn. It is calculated that the number of persons per physician cannot be increased beyond 1,200 to 1,500 in Maryland and 2,000 to 2,400 in Georgia. This conclusion, however, is affected by the fact that it is measured in both need for medical services and by the economic demand, and it is not certain that this would not be changed if economic conditions improve in Georgia, for example. The ratio of physicians to population constitutes nothing more than index of the maximum amount of services that can be provided but whether or not the physicians' potential services are fully utilized will depend not on their number but on the effective demand for services.

1. Cicco, Antonio, and Altman, Isidore. The Patient Load of Physicians in Private Practice. *Pub. Health Rep.* 58: 1529 (Sept.) 1943.

### AN OPTIMISTIC OUTLOOK

Recent bulletins of the Metropolitan Life Insurance Company bring a combined message of remarkable improvement in vital conditions in the United States. In the first place we learn that, "despite the hardships of war, American wage earners and their families are living on the average longer than ever before."

Not only are we living longer but there is a promise that there will be more of us since "a steady rise in the American birth rate since 1933 will have paid, by the end of this year, a dividend of 2,000,000 additional babies for the ten year period."

The added number of births is also accompanied by a striking decline in the maternal death rate, so that childbearing in this country is now safer than ever before, since "only about one third as many American mothers currently lose their lives in childbirth as compared with ten years ago. About two maternal deaths per thousand live births now take place in the United States, while prior to 1934 the rate was between six and seven per thousand."

Meanwhile, although there has been a recent outbreak of cerebrospinal meningitis which was the most extensive in the country's history, fortunately in 1943 we have a powerful weapon against this disease. The great majority of cases are now cured by the sulfa drugs which have revolutionized the treatment of the disease. In the general population, prior to 1939 the proportion of deaths to cases was more than 40 per cent.

Preliminary data for 1942 for this country give a fatality rate only slightly more than 20 per cent. Where facilities for diagnosis and early treatment are better than average, fatality rates of 10 per cent or less are experienced. Indeed in our army camps the rate has been only 3.5 per cent, as compared with 34 per cent in the first world war.

### NEW HAMPSHIRE PREPAYMENT PLAN

The house of delegates of the New Hampshire Medical Society meeting at Concord, N. H. on September 12, accepted a report of a committee on medical economics giving a detailed outline of a prepayment nonprofit organization. This plan will include the rural areas and according to a report in the *Union* (Manchester, N. H.), will provide for premiums that "will appeal to the lower and middle, as well as the higher income brackets. The organization will be known as the Blue Shield and will be administered through the New Hampshire Blue Cross Hospitalization Plan. The house of delegates authorized the medical economics committee to work out details for the establishment of a corporation.

The house of delegates also adopted a resolution condemning the Wagner-Murray-Dingell bill and stated that in its opinion the need for improvement in the distribution of medical care can best be met by the extension of existing voluntary plans for medical and hospital care.

## MEDICAL LEGISLATION

### MEDICAL BILLS IN CONGRESS

*Change in Status*—H. R. 159 has passed the Senate appropriating \$18,600,000 for grants to states including Alaska, Hawaii, Puerto Rico and the District of Columbia to provide in addition to similar services otherwise available medical nursing and hospital maternity and infant care for wives and infants of enlisted men of the fourth, fifth, sixth and seventh grades in the armed forces of the United States under allotments by the Secretary of Labor and plans developed and

administered by state health agencies and approved by the chief of the Children's Bureau. An additional appropriation of \$20,000 was also made available for salaries and expenses of the Children's Bureau in carrying out the program.

The federal money that is made available for grants to states may be used for payments of contributions made prior to Oct. 1, 1943 for similar services to the wives and infants of enlisted men of the first, second and third grades of armed forces.



## Medical News

(PHYSICIANS WILL CONFIR A FAVOR BY SE DING FOR  
THIS DILATNE T ITEMS OF NEWS OF MORE OR LESS  
GENERAL I TIKIST SUCH AS PLIATI TO SOCIETY ACTIVE  
THIS IN HOSPITALS, EDUCATIO AND PUBLIC HEALTH)

### CALIFORNIA

**Alumni Research Foundation Created**—The Alumni Research Foundation of the College of Medical Evangelists, Los Angeles, has been created by recent action of the board of directors of the Alumni Association and the board of trustees of the College of Medical Evangelists. The foundation is incorporated under the laws of California. While the primary purpose is to stimulate research, it may also accept gifts, grants, bequests and other forms of property to be used for charitable or educational purposes to aid the College of Medical Evangelists or advance medical science. At the first meeting of the board August 8 the by-laws were ratified and Dr. Newton G. Fyans, dean of the medical college, was elected president. The foundation consists of twelve to fifteen trustees.

### COLORADO

**Physician's Conviction Reversed by Supreme Court**—Conviction of Dr. Philip L. Cobianchi, Denver, on the charge of performing an illegal operation, was reversed on August 3 by the Colorado Supreme Court, newspapers reported. It was stated that the evidence submitted "was insufficient to support the charge." Statements to the press indicated that the physician was convicted in 1942 on a charge of performing an illegal operation in 1941, the patient dying a few months later of peritonitis. The supreme court held that the pregnancy of the woman was not proved beyond doubt and testimony was that she had undergone an operation for appendicitis subsequent to the purported illegal operation. The newspaper reports stated that Dr. Cobianchi was sentenced to ten to twelve years for second degree murder. Newspaper accounts implied that the state will file a motion with the supreme court for a rehearing, the intimation being that the physician would be held on other charges still on file in the district court.

### FLORIDA

**Appointments in State Health Department**—The appointment of Dr. Elmer J. Teagarden, Orlando, and Dr. Estella Lucille Johnson Marsh, Tallahassee, as directors of the state board of health's bureau of tuberculosis and bureau of maternal and child health, respectively, were reported on September 3. Dr. Teagarden has been serving as superintendent of the Morgan County Tuberculosis Sanatorium, Flint (Decatur P. O.), Ala., and succeeds Dr. Lynne E. Baker, Jacksonville, who resigned to enter private practice in Dayton, Ohio, last July. Dr. Marsh has been serving as chief physician at the Florida State College for Women, Tallahassee. Since the resignation of Dr. Robert C. Hood, Jacksonville, to enter private practice in Arlington, Va., the latter part of 1942, the bureau of maternal and child health has been in charge of Dr. Erwin F. Hoffman, director of the bureau of epidemiology.

### ILLINOIS

**Springfield Hospital Dedicated**—The dedication of the new Memorial Hospital of Springfield took place September 26. The new building occupies a four block site and was erected at a cost of \$1,800,000. It has 285 beds and 50 bassinets. Of brick construction with concrete trimming, the building is composed of a central tower ten stories high and three wings seven stories high. At the dedication exercises the speakers included Lieut. Col. Charles W. Mayo, M. C., A. U. S., Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, on "What a Standardized Hospital Means to a Community", Dr. Malcolm T. MacEachern, Chicago, associate director of the American College of Surgeons, and Dr. Warren P. Morrill representing George Bugbee, executive secretary, American Hospital Association, Chicago. The Illinois State Journal and Register devoted a special section, September 26, to a review of the hospital's development and to features emphasizing the modern installations and accommodations. The section also carried pages of congratulatory messages from local physicians and commercial and other firms.

### Chicago

**Dr. Wynkoop Refused Request for Freedom**—Dr. Alice L. Wynkoop, who is serving the tenth year of her sentence for conviction in the murder of her daughter-in-law, was denied a writ of habeas corpus by Federal Judge John P. Barnes, September 11, newspapers report. Dr. Wynkoop is serving a twenty-five year sentence in the women's prison at Dwight, Ill.

**Dr. Elvehjem Lectures on Vitamin B Complex**—Conrad A. Elvehjem, Ph.D., professor of biochemistry, University of Wisconsin, Madison, will address the annual joint meeting of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine at the Palmer House on October 25. His subject will be "The Nutritional Significance of the Newer Members of the Vitamin B Complex."

**Dr. Bachmeyer Receives Hospital Award**—Dr. Arthur C. Bachmeyer, director and associate dean of the biology division of the University of Chicago Clinics, was presented with the American Hospital Association's Award for meritorious service to the hospital field during a meeting of the association on September 13. According to the inscription on the medal constituting the award, Dr. Bachmeyer was recognized as a "distinguished administrator and educator whose achievements have greatly advanced standards of treatment for patients and educational opportunities of lasting benefit to his fellow citizens."

### KENTUCKY

**Pediatric Conferences**—On October 22 Drs. Philip F. Barbour, Louisville, and J. Garland Cherrill, consultant in pediatrics and consultant in surgery for children, respectively, for the state department of health, will conduct a pediatric conference in Corbin with the Whitley County Medical Society and the county health department. The program will include lectures and a clinic. The Muhlenberg County Medical Society will present a meeting on October 24 in Greenville, including a pediatric and obstetric clinic. A pediatric conference will be offered in Pineville, October 29, with Dr. Thomas M. Mark, Lexington, and Dr. Barbour in charge. Dr. Stanley S. Parks, Lexington, will be available as a consultant on obstetric patients. On November 12 a pediatric clinic will be conducted by Dr. Robert B. Warfield, Lexington, and Dr. Barbour in Paintsville, with Dr. A. J. Whitehouse, Lexington, as consultant in obstetric care. These various programs are being held throughout the state under the sponsorship of the county medical societies and the local health departments and under the general supervision of the state medical association and the state department of health.

### MISSOURI

**Health Board Resigns in Protest**—Resignation of all members of the health board of Cape Girardeau in protest against failure of the city to follow its recommendations for more strict scrutiny of milk distribution and adoption of rules regulating health conditions in restaurants was accepted by the city council on August 2, newspapers report. A complete new board was appointed. Retiring board members included Drs. Carl A. W. Zimmermann, chairman, William F. Oechler, John H. Cochran and Raymond A. Ritter. Members of the new board are Drs. Gustav B. Schulz, Alexander E. Dalton, Hugh I. Ashley and Amos M. Murphy.

**Report of State Cancer Hospital**—A total of 3,574 patients have been examined in the Ellis Fischel State Cancer Hospital in Columbia from the time it opened in May 1940 through Feb. 28, 1943. There have been 13,225 clinic visits. These patients came from practically every county in the state with the exception of the St. Louis and Kansas City districts. The 931 physicians who sent patients to the hospital make up 48.6 per cent of all the physicians in the state, exclusive of Kansas City and St. Louis. One physician sent 49 patients. The average hospital stay per patient for 1942 was 18.5 days. The cost per patient day was \$6.30. About 40 per cent of the proved carcinoma cases and 25 per cent of the surgical pathology cases were made up of skin lesions. Carcinoma of the rectum was a fairly common lesion, and of 81 consecutive cases, 57, or 70 per cent, were resectable. According to a report published in the state medical journal by Dr. Lauren V. Ackerman, medical director and pathologist of the hospital, 150 cases of carcinoma of the breast are seen yearly, and 15 radical mastectomies are being done. Thus far there have been no operative deaths. The distribution of carcinoma at the cancer hospital does not conform with accepted statistical standards, it was stated. To consider how many patients have true carcinoma, a thousand consecutive cases were analyzed and malignant disease was present in only 52 per cent. Forty-three

cent were proved definitely not to have carcinoma and 5 per cent could not be classified. Of the nonmalignant lesions 341 were located in the uterus, skin, breast, stomach, rectum, penis and sigmoid. According to the state law all patients admitted to the hospital must be indigent, as certified by the patient's local county court, and a diagnosis of carcinoma or precancerous condition must be made by the referring physician from that county. All patients admitted to the hospital with malignant disease are treated from a curative or palliative approach. Patients with advanced disease which cannot be benefited by treatment are not admitted.

### NEBRASKA

**Mid-West Clinical Society**—The Omaha Mid-West Clinical Society will hold its eleventh annual assembly at the Hotel Paxton Omaha, October 25-29. Among the out of state speakers will be

Dr. Harold G. Wolff, New York: Headache Mechanisms  
Dr. Jennings C. Litzberg, Minneapolis: Management of Occiput Posterior  
Dr. Frank R. Ober, Boston: Infantile Paralysis  
Dr. Raymond W. McNealy, Chicago: Advances in Blood Vessel Surgery  
Dr. Sam M. Jordan, Boston: Functional Disorders of the War  
Dr. Luther Emmett Holt, Jr., Baltimore: Unusual Cerebral Disorders in Childhood  
Dr. Sanford R. Gifford, Chicago: Treatment of Some Corneal Diseases  
Dr. Robert L. Sander, Memphis, Tenn.: Complications of Duodenal Ulcer  
Dr. Tom D. Spies, Birmingham: Detailed Methods of Diagnosis and Therapy in Acute Nutritive Failure  
Col. Rexford L. Dively, M. R. C.: The Work of the Rehabilitation Centers in England (tentative)  
Dr. Cyrus E. Burford, St. Louis: Present Day Management of Carcinoma of the Prostate  
Major General Norman T. Kirk, surgeon general of the U. S. Army: Amputations (tentative)

There will be symposiums on peripheral vascular diseases, pneumonia and shock and special lecture courses. Thursday evening has been designated "Omaha-Douglas County Medical Society Night" and speakers will include Dr. Eben I. Carey, Milwaukee, on "Medical Education of Today and Its Effect on the Future of Medicine." The session will conclude Friday morning with a panel discussion on "War Medicine and Surgery" with Capt. Henry L. Dollard (MC), U. S. Navy, acting as chairman. Other speakers will be

Capt. Emil J. Stelter (MC), U. S. Navy: Aviation Medicine and Research  
Comdr. John F. Luten (MC), U. S. Navy: Treatment of War Casualties Including Shock, Placenta and Sulfonamides  
Lieut. Comdr. Franklin C. Southworth, Jr. (MC), U. S. Naval Reserve: Neuropsychiatric Screening of Recruits at a Naval Training Station  
Lieut. Comdr. Charles W. McLaughlin, Jr. (MC), U. S. Naval Reserve: Corrective Surgery  
Lieut. Comdr. Joseph M. Picciochi (MC), U. S. Navy: 2,000 Photographs of the Cheaters of Naval Recruit

### NEW HAMPSHIRE

**Dr. Mary Atchison Named Acting State Health Officer**—Dr. Mary M. Atchison, formerly director of the divisions of maternal and child health and crippled children's services, New Hampshire State Board of Health, Concord, and recently acting deputy secretary of the state board, has been appointed acting state health officer. Dr. Atchison fills the vacancy that occurred when Dr. Alfred L. Frechette was granted a leave of absence as secretary of the board to engage in war rehabilitation work under the auspices of the U. S. Public Health Service (THE JOURNAL, July 17, p. 821).

**The Mayo Lectures**—Capt. Winchell M. Craig (MC), U. S. Naval Reserve, chief surgeon, Naval Hospital, Naval Medical Center, Bethesda, Md., will deliver the W. J. and C. H. Mayo Memorial Lecture at Dartmouth Medical School, Hanover, November 5. The title of his address will be "Warriors Against Disease." The lecture was established in 1942 by Dr. and Mrs. Waltman Walters, Rochester, Minn., as a stimulating factor in interesting men in medicine and surgery and, particularly, to call attention to the accomplishments of Drs. W. J. and C. H. Mayo in these fields.

### NEW JERSEY

**Schireson's License Restored**—The New Jersey state court of pardons and appeals set aside on September 24 the action of the state board of medical examiners in revoking the license of Dr. Henry J. Schireson, Merchantville, plastic surgeon, according to the New York Times. The errors court in an opinion written by Chief Justice Thomas J. Brogan held that although Schireson at the time his license was revoked April 15, 1942, was serving a federal penitentiary sentence for perjury, false swearing and concealing assets in federal bankruptcy proceedings, the physician had not been convicted of a crime.

The report stated Schireson was once involved in a notorious damage suit in which he was ordered to pay the complainant \$40,000. Since then his licenses to practice medicine in various states have been revoked.

### NEW YORK

**New Building at Lederle**—A five story and basement reinforced concrete and brick factory and laboratory building has been started at the Lederle Laboratories Inc., Pearl River. The expansion is in accordance with recently approved priorities from the War Production Board to meet the required need of penicillin.

**Personal**—Dr. William T. Shanahan has retired as medical superintendent of the Craig Colony, Sonoma, effective October 1. He plans to live in Eggertsville. Dr. Shanahan has been medical superintendent for thirty-two of the forty-seven years with which he has been connected with Craig Colony, an institution for the epileptic.

### New York City

**Tuberculosis Package Library**—The Queensboro Tuberculosis and Health Association launched a library health package service recently to supply, free of charge, new books, pamphlets and research studies on tuberculosis to libraries throughout the borough.

**Louis Livingston Seaman Fund**—The New York Academy of Medicine announced that the Louis Livingston Seaman Fund of \$1,000 is now available. Applications will be received either from institutions or from individuals up to November 1. The fund will be expended only in grants in aid for investigation or scholarships for research in bacteriology or sanitary science and may be made for securing or technical help, aid in publishing original work and the purchase of necessary books or apparatus. The fund was made possible by the terms of the will of the late Dr. Louis Livingston Seaman. Additional information may be obtained from Dr. Wilson G. Smillie, chairman of the fund, 1300 York Avenue.

**Grant for Undergraduate Psychiatric Education**—The Commonwealth Fund has awarded a six year grant to the Long Island College of Medicine, Brooklyn, for the development of undergraduate psychiatric education, beginning with the sum of \$20,450 toward the current budget. The aims of the projected program are to train the medical student to understand and recognize the personal and environmental factors that often contribute to ill health both physical and mental, the impact of somatic illness on personality and the diagnosis and treatment of psychologic problems long before these grow into fully developed psychiatric disorders as one of the responsibilities of physicians in the mental hygiene area of public health and hygiene.

**Opinion Reverses Revocation of Compensation License**—In a decision handed down on September 8 Supreme Court Justice Carroll G. Walter voided an action of the New York State Industrial Commission in revoking the authority of Dr. Leo S. Sacharoff to treat workmen's compensation cases. Dr. Sacharoff lost his license to care for this work on August 11 by order of the state labor department because of fee splitting and other misconduct (THE JOURNAL, September 4, p. 46). The physician's right to treat such cases was rescinded as a result of the Moreland commission's investigation into the administration of the workmen's compensation act. In annulling the revocation action Justice Walter held that the commissioner had no legal right to hold a hearing and that the charges of professional misconduct first should have been heard by the county medical society having jurisdiction according to the New York Times. In the event that the medical body sustained the charges Justice Walter pointed out in his decision, the industrial commissioner might then act to revoke the physician's right to administer to compensation cases.

### NORTH CAROLINA

**Dr. Ferguson Named Professor of Physiology**—Dr. John H. Ferguson, assistant professor of pharmacology, University of Michigan Medical School, Ann Arbor, has been appointed professor and head of the department of physiology at the University of North Carolina School of Medicine, Chapel Hill. Dr. Ferguson graduated at Harvard Medical School, Boston in 1928.

**New Building for Health Unit**—A new two story building has been erected in Wilmington for the consolidated board of health of New Hanover County and the city of Wilmington. Most of the lower floor is given to the cancer examination and treatment rooms and office of the mammography staff and the fluoroscope room. The second floor is devoted to

administrative facilities. The general public health laboratory and the venereal disease laboratory will remain in the court house. The unit was constructed by the Federal Works Administration which leased the lot and constructed the building at a cost of about \$30,000. Ultimately the lease will be terminated and the lot and building will be turned over to the county.

## OHIO

**Industrial Funds Distributed Reach New High**—The state industrial commission disbursed \$1,213,069.09 for medical services to injured Ohio workers during 1942, according to a recent report. The figure, which established a new record for this expenditure, includes a relatively small amount for essential dental services. Other expenditures during the year included \$1,760,898.69 for hospital care and nursing, \$133,104.11 for funeral expenses and \$84,611.31 for court costs, a total of \$6,223,733.53. These amounts include payments covering injuries to private and public employees as well as similar costs on occupational disease claims and are in addition to death awards and compensation to injured employees. Comparative figures for 1941 were \$5,322,792.06 for medical services, \$1,258,095.36 for hospital care and nursing, \$122,290.05 for funeral expenses and \$73,998.89 for court costs, a total of \$7,777,177.26. The number of claims filed during 1942 was 320,793, also a record in the thirty-one year history of the Workmen's Compensation Fund. There were 286,010 claims filed in 1941, the previous peak year. The total for 1932 was 130,099. "Medical only" claims involving payment for physicians' services but no compensation to the claimant for loss of time numbered 256,600 in 1942 or 80 per cent of all claims filed compared with 79.5 per cent in 1941. Average expense of "medical only" claims decreased from \$8.03 in 1941 to \$7.69 in 1942.

## OKLAHOMA

**Thirteenth Annual Clinic Society Conference**—The Oklahoma City Clinical Society will hold its thirteenth annual conference at the Biltmore Hotel, Oklahoma City, October 18-21. The guest speakers will be:

- Dr. Louis F. Phelan, Boston: Evolution, Indications and Contra-indications of Calcium Section.
- Dr. Abraham H. Aaron, Buffalo: The Management of Peptic Ulcer from the Standpoint of the Active Practitioner.
- Dr. Charles T. Way, Cleveland: Clinical Problems Involving Water, Protein and Solute Replacement.
- Dr. Grayson I. Carroll, St. Louis: The Clinical Management of Pyuria.
- Dr. Robert D. Schrock, Omaha: Fractures at the Knee Joint.
- Dr. Vilray P. Blair, St. Louis: The Importance of Proper Early Treatment of Face Injuries.
- Dr. John A. Foomay, Cleveland: Chemotherapy in Acute Infectious and Contagious Diseases.
- Dr. Leroy A. Calkins, Kansas City, Mo.: I Haven't Been the Same Since Mary Was Born (a diagnostic problem).
- Dr. Theodore I. Dimitry, New Orleans: The Modern Trend in the Treatment of Eye Diseases.
- Dr. Thomas B. Orr, Kansas City, Mo.: Analysis of Gallbladder Cases.
- Dr. George B. Eusterman, Rochester, Minn.: "When Johnnie Comes Marching Home" (diagnostic and therapeutic problems facing the practitioner and how to meet them).
- Dr. Harry E. Mock, Chicago: Skull Fractures and Brain Injuries (a review of the management of 7,031 cases treated throughout the United States).
- Dr. Louis A. Bue, Rochester, Minn.: Lesion of the Terminal Portion of the Colon.
- Col. Franklin G. Ebaugh, M. C., A. U. S.: Basic Neuropsychiatric Induction Examination Problem (How the General Medical Profession Can Help).
- Dr. W. Likely Simpson, Memphis, Tenn.: Diagnosis and Treatment of Sinusitis.
- Dr. Clinton W. Irwin, St. Louis: Contact Dermatitis with Particular Reference to Occupational Dermatitis.

The program will also include round table luncheons and banquets.

## OREGON

**Life Members of State Society**—At a meeting of the council of the Oregon State Medical Society, August 14, life membership was voted to Drs. Charles T. Sweeney, Medford, George Norman Pease, Portland, William T. Johnson, Corvallis, and the late Wilson Johnston, Portland.

**Dr. Weeks Observes Ninetieth Anniversary**—Dr. John E. Weeks, professor emeritus of ophthalmology, New York University College of Medicine, New York, celebrated his ninetyeth birthday recently. Dr. Weeks was for many years professor of ophthalmology at University and Bellevue Hospital Medical College, New York, becoming emeritus professor in 1920. He was chairman of the Section on Ophthalmology of the American Medical Association in 1902.

## SOUTH CAROLINA

**Dr. Routh Resigns from State Board**—Dr. Foster M. Routh, Columbia, for many years a member of the executive committee of the state board of health and chairman in 1935, resigned as a member of the board on August 18 because of

ill health. Dr. Robert B. Durham, Columbia, has been named to succeed Dr. Routh, who will continue his work as resident physician at the University of South Carolina, Columbia. Dr. Routh graduated at the Medical College of the State of South Carolina, Charleston, in 1910.

## TENNESSEE

**New State Health Officer**—Dr. Robert H. Hutcheson, Nashville, assistant commissioner and one time superintendent of the Williamson County Health Unit, has been appointed state commissioner of public health. He succeeds Dr. Wilson C. Williams, Nashville, who accepted a commission as lieutenant colonel in the Medical Corps of the Army and who has been ordered to active duty. Dr. Hutcheson graduated at the University of Tennessee College of Medicine, Memphis, in 1930.

## UTAH

**State Medical Election**—Dr. Ezekiel R. Dumke, Ogden, was named president-elect of the Utah State Medical Association at its annual session in Salt Lake City and Dr. James P. Kerby, Salt Lake City, was inducted into the presidency. Other officers include Drs. Wilford Woolf, Provo, LaVelle H. Merrill, Spring Canyon, and Mildred N. Nelson, Salt Lake City, vice presidents, Dr. David G. Edmunds, Salt Lake City, secretary, and Dr. Edward S. Pomeroy, Salt Lake City, treasurer. The next annual session will be held in Salt Lake City some time in August 1944.

## WISCONSIN

**Physicians Honored**—The Waukesha County Medical Society held a banquet recently at the Draper Hall, Oconomowoc, to honor Drs. Michael R. Wilkinson, Oconomowoc, Byron M. Caples, Waukesha, and Francis J. Donnelly, North Lake, in recognition of their completion of fifty years in the practice of medicine, each was awarded an honorary life membership in the county society.

**Will Provides for Hospital**—The estate of the late Dr. William H. Finney will eventually be available for the erection and maintenance of the William Finney Memorial Hospital in Clintonville under the provisions of the physician's will filed on July 30. The estate is estimated to be about \$400,000 and will be divided among the beneficiaries during their lifetime. On their deaths one half is to go to the city of Clintonville to build and equip a modern hospital to bear his name.

## GENERAL

**Examination in Otolaryngology**—The American Board of Otolaryngology announces that it will conduct an examination in Los Angeles, February 2-5, provided fifty applicants are accepted.

**New Executive Director of the Russian War Relief**—Fred Myers, public relations director of Russian War Relief, New York, since its inception in 1941, has been appointed executive director to succeed Arch Mandel, who resigned to join Community Chest and Councils, Inc.

**Meeting of Industrial Hygiene Foundation**—The eighth annual meeting of the Industrial Hygiene Foundation will be held at the Mellon Institute, Pittsburgh, November 10-11. At a meeting of the board of trustees on August 25 it was decided to hold the meeting as a help in maintaining healthful conditions in war plants, which in turn helps maintain manpower.

**Casselberry Award**—The American Laryngological Association announced that a sum of money has accrued from the Casselberry Fund to insure a prize being offered in 1944 for original investigation in the art and science of laryngology or rhinology. Theses must reach the secretary, Dr. Arthur W. Proetz, 1010 Beaumont Building, St. Louis 8, before March 1, 1944.

**Examinations for Medical Technologists**—The Registry of Medical Technologists of the American Society of Clinical Pathologists announces that examinations of applicant registration will be conducted in various parts of the United States and Canada on October 29. Additional information may be obtained from Dr. Lall G. Montgomery, chairman of the Board of Registry of Medical Technologists, Ball Memorial Hospital, Muncie, Ind.

**Society News**—The National Association for Nursery Education will hold its tenth biennial meeting at the Hotel Statler in Boston, October 22-25. There will be a conference on "The Community Serves the Child in War and Peace" and a session on "The World Picture and the Implications for Education." Other sessions will consist of study groups.

discuss child development problems based on actual case histories of various communities. Dura-Louise Cockrell, state social security commissioner, Jefferson City, Mo. is the secretary of the National Association for Nursery Education.

**Brazilian Physician Lectures on Tropical Medicine**—At the invitation of the Pan American Sanitary Bureau Dr. Olympio da Fonseca Jr., medical director for Brazil for E. R. Squibb and Sons Inter-American Corporation has arrived in the United States for an extensive lecture tour before the faculties and students of medical schools throughout the country, discussing tropical medicine with special emphasis on malaria, African sleeping sickness, amebic dysentery and ringworm infection. Dr. da Fonseca is a professor at the National School of Medicine of the University of Brazil and is connected with the Medical Center of Ceara and the department of health of that state.

**Special Society Elections**—Dr. Fuller Albright, Boston, is president of the American Society for Clinical Investigation for 1943-1944, and Dr. Wesley W. Spink, Minneapolis is secretary. Dr. H. Marshall Taylor, Jacksonville, Fla., is president of the American Laryngological, Rhinological and Otolological Society. The society did not have an annual meeting this year, and the council promoted Dr. Taylor from president-elect to president. He succeeds Dr. James G. Dwyer, New York, who resigned as president. Vice presidents appointed for the ensuing year are Dr. Westley M. Hunt, New York, William C. Warren Jr., Atlanta, Ga., Fred W. Dixon, Cleveland, and Simon Jesberg, Los Angeles.

**Profession-Industry Follow-Up Conference**—The second Profession-Industry Follow-Up on the National Conference on Planning for War and Postwar Medical Services was held at the Waldorf-Astoria, New York, October 4 under the auspices of the National Physicians Committee for the Extension of Medical Service. Among the speakers on the program were Dr. Roger I. Lee, Boston, on "Medicine's Position and Policy," Raymond Moley, Ph.D., New York, "The Cult of the Uncommon Man," and Dr. Morris Fishbein, Chicago, Editor of *THE JOURNAL 'Medical Planning and Progress'*. Dr. Edward H. Carv, Dallas, Texas, was chairman at the meeting, at which the financial report and reports covering the educational efforts and the profession-industry cooperation were reviewed.

**Remington Award Goes to Dr. Fischelis**—Robert P. Fischelis, Ph.M., Trenton, N. J., chairman of the council of the American Pharmaceutical Association, has been awarded the 1943 Remington Medal, conferred by the New York Branch of the American Pharmaceutical Association. Dr. Fischelis, who is secretary and chief chemist of the Board of Pharmacy of the State of New Jersey and chief of the chemicals, drugs and health supplies branch of the Office of Civilian Requirements of the War Production Board, was presented with the medal for his many contributions to the advancement of pharmacy, including his literary, scientific and organizational activities. He has recently been reappointed as the pharmacist member of the state board of health of New Jersey for a term of four years. The Remington Medal is awarded annually to the man or woman who has done most for American pharmacy during the preceding year or during a longer period of outstanding activity and of fruitful achievement.

**Pacific Coast Society of Obstetrics and Gynecology**—The annual meeting of the Pacific Coast Society of Obstetrics and Gynecology will be held in San Francisco November 4-5, under the presidency of Dr. C. Frederic Fluhmann, San Francisco. Among the speakers will be:

Dr. Howard C. Stearns, Portland, Ore. Extraperitoneal Cesarean Section: Analysis of a Short Series.  
Dr. Ernest W. Page, Berkeley, Calif. The Metabolism of Histidine During Pregnancy.  
Dr. Karl L. Schaupp, San Francisco. Unusual Case of Abdominal Pregnancy.  
Dr. Goodrich C. Schrauffler, Portland. Women in Heavy War Industries: Gynecologic and Obstetric Aspects.  
Dr. Albert V. Pettit, San Francisco. The Closure of Lower Abdominal Incisions.  
Dr. Frederic M. Loomis, Sausalito, Calif. De Senectute: The Good That We Would We Do Not the Evil That We Would Not That We Do.  
Carl G. Hartman, Ph.D., Baltimore. Securing Monkey and Human Embryos.

Another feature of the meeting will be a symposium on Erythroblastosis Fetalis. Dr. Herbert M. Evans, Berkeley, and Charles H. Driiforth, Ph.D., Stanford University, will discuss Story of Implantation in Primates.

**Association of American Medical Colleges**—The fifty-fourth annual meeting of the Association of American Medical Colleges will be held at the Hotel Statler, Cleveland, October 25-27, under the presidency of Dr. Waller S. Leathers, dean

of the Vanderbilt University School of Medicine, Nashville. Speakers on the program will include:

Dr. Henry E. Meleney, New York. Tropical Medicine Fellowships of the John and Mary R. Markle Foundation.  
Brig. Gen. George F. Lull and Col. Francis M. Fitts, M.C.U.S. Army. The Army Specialized Training Program.  
Comdr. Bartholomew W. Hogan, (MC), U.S. Navy. The Navy V. 12 Program.  
Dr. Victor E. Johnson, Secretary, Council on Medical Education and Hospitals. American Medical Association. Chicago. Effect of the Accelerated Program of Medical Schools on the Curriculum Faculty and Students.  
Dr. Willard C. Rappleye, New York. Postwar Planning for Medical Education.  
Dr. Lester J. Evans, New York. The Place of the Small Community Hospital in Postwar Medical Education.  
Dr. Allan Gregg, New York. Can Excellence be Learned?  
M. B. Harrower, Erickson, Madison, Wis. The Rorschach Test.  
Philip A. Shaffer, Ph.D., St. Louis. A Recipe for a Medical School.  
Dr. Carey P. McCord, Detroit. Some Aspects of Medical Education in Industrial Health Conservation.  
Dr. Joseph T. Wearn, Cleveland. Present Methods of Medical Teaching.  
Dr. Carl J. Wiggers, Cleveland. Correlation of Physiology Instruction with War Problems.

**Aero Medical Association Meeting**—The fifteenth annual meeting of the Aero Medical Association of the United States will be held in the Netherland Plaza Hotel, Cincinnati, October 26-27. Among the speakers will be:

Dr. Albert J. Herbolzheimer, Washington, D.C. The Role of Extraocular Muscles in the Aviation Physical Examination.  
Dr. William J. Holmes, Honolulu, Hawaii. Night Vision, Fundamental Considerations.  
Dr. Whitman C. McConnell and Dr. Whitman H. McConnell, St. Petersburg, Fla. Neuropsychiatric Aspects of the Civilian Pilot Examination.  
Dr. Edgar E. Poos, Detroit. Allergy of the Upper Respiratory Tract.  
Dr. Ralph Bretney Miller, Washington, D.C. Emerson Day, Baltimore. LeMoine White, Walpole, N.H. and John M. Baldwin, New York. Medical Problems in an Overseas Air Transport Service.  
Lieut. Comdr. Marion M. Kalez, (MC), U.S. Naval Reserve. Observations on the Odd and Strange in the South Pacific.  
Brig. Gen. Eugen I. G. Reinartz, M.C., U.S. Army. Observations on Aviation Medicine in the European and African Zones.  
Lieut. Col. Richard L. Meising, M.R.C., Air Evacuation of Casualties.  
Dr. Alberto Hurtado, Lima, Peru. Comparative Studies Among Flight Personnel and Residents in the Peruvian Andes.  
Major Herman S. Wigodsky, M.R.C. Army. Air Forces Altitude Training Program.  
Lieut. Comdr. Earle E. Metcalfe, (MC), U.S. Navy. Navy Low Pressure Chamber Instructional Program.  
Lieut. Comdr. John W. Jenkins, H.V. (S), U.S. Naval Reserve. Prediction of Flight Training Performance by Biographic Data.  
Major Arthur B. Welton, V.C. A.C. U.S. Selection of Pilots by Means of Psychometric Tests.  
Lieut. Comdr. Ashton Grabbie, (MC), U.S. Naval Reserve. Fatigue as a Problem in Aviation Training.  
Squadron Leader K. Evelyn, R.C.A.F. Ottawa, Ont. Night Vision.  
Capt. George M. Hass, M.C.A. U.S. Aircraft Injuries.  
Major F. G. Hall, A.C. A.L.S. and Alice Brues, Ph.D., Dayton, Ohio. Simultaneous Measurements of Pulse Rate, Pulmonary Ventilation and Inspiratory Pressure.  
Comdr. Chalmers L. Gemmill, (MC), U.S. Naval Reserve. The Testing of Oxygen Equipment.  
Col. Gustave E. Ledfors, M.C. U.S. Army. Progressive Changes in Medical Field Equipment.  
Capt. Bertram Groesbeck Jr., (MC), U.S. Navy. Modern Trends in the Teaching of Aviation Medicine.  
Lieut. Comdr. Herman J. Sternstein, (MC), U.S. Naval Reserve. The Effect of Nasal Ventilation on Tubal Equalizing Efficiency in Flying Personnel.  
Air Commodore I. W. Tice, R.C.A.F. Ottawa, Ont. Current Medical Developments in the Royal Air Forces.  
Capt. John C. Adams, (MC), U.S. Navy. Developments in Naval Aviation Medicine.  
Brig. Gen. David N. W. Grant, M.C. U.S. Army. Medical Service with the Army Air Forces.  
Dr. William R. Stovall, Washington, D.C. Trend in Civil Aviation Medicine.  
Lieut. Albert Darnon, A.C. A.L.S. The Importance of Human Sizing Standards in Aviation.  
Capt. Alvin M. Cahan, M.C. A.L.S. The Improved Methods of Resuscitation.  
Lieut. Col. William R. Lovelace II, M.R.C. Aviation Medical Research in Aircraft at High Altitudes.

Another feature of the meeting will be a civil aeronautics medical forum Wednesday with Dr. Stovall in charge.

## Government Services

### Dr. Wilder Resigns from Food Administration

Dr. Russell M. Wilder has resigned as chief of the civilian food requirements branch of the Food Distribution Administration to return to his activities at the Mayo Clinic, Rochester, Minn. He will continue to serve as medical adviser to the administration. According to the *Washington Post*, September 19, Norman Leon Gold, Silver Spring, Md., as assistant administrator of agricultural marketing administration, U.S. Department of Agriculture, will become acting chief of the branch.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Aug. 20, 1943

#### Diphtheria Problems

The Fever Group of the Society of Medical Officers of Health has issued an important memorandum on diphtheria problems. Artificial immunization has much reduced the incidence of the disease and minimized its severity. But the variation in the classic signs has increased difficulty in diagnosis, and without evidence of complete immunization, as shown by a negative Schick test, immunity cannot be safely assumed. Further, diphtheria may occur, though rarely, in a Schick negative person. There is a tendency to place undue reliance on the swab examination. The bacteriologist cannot distinguish between active diphtheria and the carrier state. Doubtful cases must be examined for hemolytic streptococci and Vincent's organisms. Antitoxin must be given at the earliest possible moment, normally in a hospital, as a maximum dose is advisable rather than a series of smaller ones. Only when there has been delay or is likely to be delay should the physician give antitoxin. Antitoxin need not be withheld for fear of severe reactions. The modern protein digested concentrated product rarely gives rise to serum sickness or related phenomena.

In case of doubt continuous observation is necessary and the patient should be sent to a hospital. The procedure today in many hospitals is as follows: 1 When delay in administering antitoxin would be dangerous it should be given immediately before any bacteriologic investigation. 2 When delay of six hours would not be dangerous the Schick test should be performed, swabs taken and antitoxin given six hours later. 3 When delay of one day or more would not be dangerous, antitoxin should be deferred until the results are known. In no case should reliance be placed on the swab alone, every suspected patient when first seen must either receive antitoxin and have the throat or nose swabbed or must be given the Schick test and have the throat or nose swabbed. When there is doubt, antitoxin should be given.

A person whose throat or nose is swabbed because of contact with a diphtheria patient but who has no symptoms must not be classed as having diphtheria, notified or sent to a hospital merely because of a positive finding. Routine swabbing of contacts, except in special circumstances, such as institutional outbreaks, is to be deprecated and should at any rate be restricted to those showing an unhealthy condition of the nasal or pharyngeal mucosa. The waste of time, effort and material is not justified by the occasional discovery of a healthy carrier.

#### Blind Factory Workers

The Ministry of Labor and National Service has a list of more than eighty occupations in which blind persons have been placed. During the past twelve months over 700 blind men and women have been given jobs formerly done by sighted workers. It is claimed for the blind that they often show unusual powers of concentration and have supersensitive hearing and touch. Keenness of hearing is known to enable a blind operative to detect a blunted cutter or a slight irregularity in the running of a machine which another person would miss. For the most part the blind are given simple process work for which little, if any, preliminary training is needed. But a good many have proved capable of doing intricate assembly work.

What is the accident risk among blind workers? The general experience of blind welfare officers is that the blind factory worker is more than ordinarily careful and that the risk of

accident is negligible. The chief insurance companies do not refuse blind persons, nor do they increase the premium for a blind worker provided the employer can assure them that the work is within the worker's capacity.

On the staff of the Ministry of Labor there are eleven blind shorthand typists and fifty blind telephonists. Many men blinded in the last war are still capable of work. Some months ago the works manager of a London factory inquired urgently of the employment exchange for four men of a particular type. "I must have some one," he said, "for it is an important job though simple. I could do it with my eyes shut." There was no one on the register and the exchange manager suggested that he might engage some blind men. The trial was so successful that a week later he engaged four more.

#### A New "Ophthalmic" Camera

Wing Commander Harold Pearce, director of photography at the Royal Canadian Force headquarters, has been elected a fellow of the Royal Photographic Society of Great Britain for his part in the invention of a new "ophthalmic" camera developed by that force for studying vitamin deficiencies revealed by the eye. As a result of studies with the camera the medical officers of the force have shown that airmen who finish flights rubbing their eyes, which feel tired and watery, often suffer from a lack of vitamin B<sub>2</sub>, or riboflavin. In order to inspect men's eyes and obtain a permanent record of examinations, a special camera was designed by Wing Commander Pearce and Flying Officer M. J. Sym, an authority on microscopic camera work at the University of Manitoba, who worked out the technical details for a 2,000,000 watt bulb which flashes for a split second into the eye camera.

#### British Medical Aid for China

The British Red Cross Society sent last year a hospital unit of twenty-one persons—doctors and nurses—for service in China. It was under the direction of Dr. W. S. Flowers and established a base hospital at Changsha, Hunan, where sick and wounded, both civilian and military, are being treated and excellent work is being done. In the medical press Lord Horder states that an appeal has been received by the War Organization of the British Red Cross for reinforcements. It is stated to be especially desirable that applicants should have a knowledge of the Chinese language or a background of Chinese experience. Further particulars may be obtained from Dr. H. Gordon Thompson, War Organization of the British Red Cross, 14 Grosvenor Crescent, London, S.W. 1.

#### C. J. S. Thompson, Medical Historian and Curator

The death of C. J. S. Thompson, Ph.D., has removed an important figure from the medical world, though he was not a member of the medical profession. Born in 1862, he devoted his early days to the study and practice of chemistry and pharmacy with special attention to history. In 1900 he was appointed curator of the projected Wellcome Historical Medical Museum. Until his retirement in 1926 he threw all his energy into gathering and organizing that unrivaled collection. In the course of his work he traveled extensively in Europe. In 1927 the Royal College of Surgeons appointed him honorary curator of the historical section of its museum. He worked at this until the collection was almost completely destroyed by German bombing in 1941. Fortunately he had then completed his great work, "The History and Evolution of Surgical Instruments," which was published last year in New York and which is a permanent record of some of the most important exhibits of the museum. His lifelong study of toxicology gave rise to "Poisoners," a standard reference work on the history of poisoning. Other important works from his pen were "The Apothecary" (1929) and "The Secrets of Magic" (1927).



## BUENOS AIRES

(From Our Regular Correspondent)

Sept 1, 1943

## Mortality in Laryngectomy

Drs Robert C Ferrari and Edgar Flemming recently read an article before the Argentine Academy of Surgery on the surgical results of laryngectomy in 193 cases which were classified in four different groups on the basis of mortality rates. 1 Endolaryngeal cancer with neither tracheal obstruction nor complications and associated diseases in young and strong patients. Twenty-four cases were included in this group, and there was no surgical mortality. 2 Endolaryngeal cancer with tracheal obstruction, with or without previous tracheotomy, including cancer of the epiglottis and cancer with involvement of the pharyngeal wall. Patients in this group were between 50 and 60 years of age, in good general condition. One hundred and ten cases were included in this category. The mortality was 37 per cent. 3 Cancer of the epiglottis with involvement of the tongue and laryngeal cancer with destruction of the larynx and involvement of the surrounding soft tissue. Moderate doses of x-rays were given. The patients were over 60 years of age, in poor general condition. Forty-nine patients were classified in this group. Twelve patients died. 4 Cancer heavily irradiated including laryngeal carcinoma in patients with associated diseases such as diabetes, nephrosclerosis and chronic pulmonary or cardiac conditions. Nine cases fell in this group. The surgical mortality was 45 per cent.

## Public Health in Uruguay

Dr Mussio Fournier, minister of public health in Uruguay, has published an extensive study on the activities of this service in the last four years. Several departments were considerably improved. The development of the Center of Prophylaxis and Study of Hydatid Disease deserves special mention because of the importance of this disease in Uruguay. The intensification of the antituberculosis campaign has led to an increase of 130 per cent in the number of beds reserved for tuberculous patients (from 1,555 beds in 1937 to 2,437 beds in 1942). The newly created service for mass radiologic chest survey has examined 50,000 persons in two years. Eight new tuberculosis sanatoriums and several outpatient clinics were established. There are large new pavilions for patients with mental disease with a capacity of 1,000 beds in the Colonia Bernardo Etchepare. The crusade against trachoma is intensified throughout the country. The Department of Industrial Hygiene, the Instituto de Otopedia y Traumatologia, the Centro de Proteccion al Cardaco and four polyclinics of mental hygiene were also established. A total of 7,500,000 pesos was spent in these improvements and new departments. The Department of Public Health had a total of 12,777 beds available in 1942. The Vital Statistics Department of Public Health was reorganized and modernized. A new Department of Public Help to the Poor was recently created. It is mostly concerned with carrying on investigations in order that the poor may receive necessary medical care. The Dorrego laboratory was also created recently for the preparation of drugs for the hospitals of the country at moderate cost.

## Allergy

Drs Guido Ruiz Moreno, Miguel A Solari and Alois A Bachmann studied 733 clinical reports of patients who were cared for in the Instituto de Investigaciones Físicas Aplicadas a la Patologia Humana, a department of the National Academy of Medicine of Buenos Aires. The most frequent allergic syndromes were asthma (431 cases), rhinopathies (360 cases) and urticaria (41 cases). The best therapeutic results were obtained in allergic rhinopathies. 69.5 per cent of allergic rhinopathies and 62.1 per cent of allergic asthma were cured. The specific

therapy failed in 18 per cent of the cases of rhinopathy and in 4.5 per cent of those of asthma. There were 62.9 per cent multiple sensitivities and 37.1 per cent single sensitivities. Cutaneous sensitivity was not an index of clinical sensitivity. The greatest frequency of the latter is that which is produced by inhaled substances. 50 per cent. Food is the cause of reaction in 29.8 per cent of the cases, pollen in 11.7 per cent and bacteria and mushrooms in 8.5 per cent. House dust and feather dust were the causes in a large number of instances. Streptococci and staphylococci were the cause in about the same number of instances. Aspergillus in the group of mushroom sensitivities and Ambrosia tenuifolia in that of pollens followed, but the gramineous plants were the most frequent in their groups. Allergic foods in order of frequency were milk, eggs, wheat, fish and pork. It was also found that peas, lentils, rice and beef have allergenic properties. Heredity appeared to be a factor in 69.1 per cent of the cases. Rhinopathies complicated by asthma were observed in 51.9 per cent of the cases. Asthma occurred in about the same number of women as in men. Rhinopathies, urticaria, eczema, headache and conjunctival diseases occurred more frequently in women than in men. Plurisyndromal allergy was rare. Gastrointestinal syndromes were frequently observed in men. The allergic syndromes appeared most often between the ages of 20 and 29 years and less frequently in these under 9 years.

## New Medical Journals

*Revista de la Asociacion Argentina de Dietologia* is the name of a new medical journal which has recently appeared here. It is the organ of the Instituto Nacional de la Nutricion, Buenos Aires. Dr Pedro Escudero, head of the institute, is the editor. The first issue, of 84 pages, contains articles on determination of the effect of potassium bromate on the content of thiamine (vitamin B<sub>1</sub>) in bread, staphylococci as cause of food poisoning, food value of araucaria cones, postwar formulas for feeding children, chemical constitution and vitamins in dehydrated eggs and chemical constitution of food prepared in Argentina (according to results of analysis carried on in the Instituto Nacional de la Nutricion).

*Revista de Psicoanalisis* is the official organ of the Argentina Association of Psychoanalysis, which is a branch of the International Association of Psychoanalysis. Its purpose is to make available in Spanish the foreign psychoanalytic literature. The editorial staff includes Drs C E Carcamo, G F Hardoy, A Garma, M Langer, E P Riviere and A Rascovsky. The publication has the support of the Francisco Muñoz Foundation.

## Pan American Week on Neuropsychiatry

The Pan American Neuropsychiatric Week, postponed from 1942 to this year, will be held in the Faculty of Medicine of Buenos Aires November 7 to 13. Dr Nerio Rojas will preside. The following physicians have been appointed as official speakers: Drs Arturo Vivado of Santiago, Gonzalo Bosch of Buenos Aires, Honorio Delgado of Lima, Osvaldo Loudet of Buenos Aires, A Austregesilo and Fortes Ariz Borges of Rio de Janeiro, Vicente Dimieri of Buenos Aires, Camilo Pavese of Montevideo, Jose Belbevi of Buenos Aires, Samuel Ramirez Moreno of Mexico, Nerio Rojas of Buenos Aires, Julio Endara of Quito and A C Pacheco e Silva of São Paulo. The following official topics will be discussed: Presenile Psychoses, 'Abnormal Personality', Nonsuppurated Acute Encephalitis, 'Conceptions on Schizophrenia', Psychopathology of Hunger in Legal Medicine' and Neuropsychiatry of Infections in Latin America.

## Brief Items

The Sociedad Argentina de Historia de la Medicina honored the memory of Vesalio on the occasion of the fourth centenary since his famous *De humani corporis fabrica*.



## Deaths

**James Franklin Allen** † Pittsburgh, Howard University College of Medicine Washington, D. C., 1902, University of Pennsylvania Department of Medicine Philadelphia, 1903, aged 70, died in the Allegheny General Hospital, July 27, of carcinoma of the stomach.

**Thomas D. Armistead**, Roanoke, Va. Medical College of Virginia Richmond 1898, member of the Medical Society of Virginia, formerly city physician and coroner, took part in the establishment of the Burtell Memorial Hospital, where for many years he was on the advisory board, served on the staff and for many years a member of the board of the Roanoke Hospital, aged 69, died August 6 of carcinoma.

**Clarence Edmund Barr**, Braddock, Pa. Western Pennsylvania Medical College Pittsburgh, 1900, aged 71, died, August 3, of valvular heart disease.

**Christo Petroff Balabanoff**, Iacoma, Wash. University of the City of New York Medical Department, 1888, aged 84, died August 6.

**Margaret Banta**, Los Angeles American Medical Missionary College Battle Creek Mich. and Chicago 1903, aged 76, died July 20, of uremia pyonephrosis, cystitis and pernicious anemia.

**George Richard Beddow**, Pine Grove, Pa. Temple University School of Medicine, Philadelphia, 1934, member of the Medical Society of the State of Pennsylvania, served for many years as deputy coroner of Pine Grove, aged 35, on the associate staff of the Pottsville Hospital, where he died, August 10, of hypertensive cardiovascular disease.

**Charles Edwin Beecher** † Knoxville, Ill. Northwestern University Medical School, Chicago, 1905, served on the staffs of the Cottage Hospital and St. Mary's Hospital, Galesburg, aged 63, died, July 14, of streptococcal sepsis.

**Jesse Wilmington Bell** † Walhalla, S. C., Bellevue Hospital Medical College, New York, 1892, surgeon for the Southern Railroad, aged 76, died, July 14, of heart disease.

**Sherman Grant Berry**, San Diego, Calif., Marion-Sims College of Medicine, St. Louis, 1893, aged 78, died, July 17.

**Hugo Edward Betz**, St. Joseph, Mich., Bennett College of Eclectic Medicine and Surgery, Chicago, 1896, member of the Illinois State Medical Society, at one time trustee of the Chicago Medical Society, formerly professor of dermatology at his alma mater, superintendent of the Iroquois Memorial Hospital, Chicago, from 1915 to 1924 and formerly on the staff of the Cook County Hospital, Chicago, aged 81, died in Berrien Springs, July 29, of thromboangitis obliterans.

**John Philip Boland**, Chicago, Rush Medical College, Chicago, 1928, commissioned a captain in the medical corps, Army of the United States, June 22, 1942, relieved from active duty Jan. 2, 1943 and dishonorably discharged, Jan. 19, 1943, aged 41, died, January 18, of an overdose of barbiturate poisoning.

**Edwin C. Bollinger**, Toledo, Ohio, Chicago Physio-Medical College, 1894, served on the staff of the Women's and Children's Hospital, aged 72, died, July 27, of heart disease.

**Arthur Stout Boyett**, Buena Vista, Ga., University of Nashville (Tenn.) Medical Department, 1894, Vanderbilt University School of Medicine, Nashville, 1894, mayor of Buena Vista, served as state representative and as chairman of the board of county commissioners, aged 73, died, July 30.

**Raleigh Virgil Butler**, Minneapolis, University of Minnesota Medical School, Minneapolis, 1937, aged 39, died in July.

**Herbert William Case**, East Tawas, Mich., Michigan College of Medicine and Surgery, Detroit, 1904, aged 60, died, July 15, of lobar pneumonia.

**Charles Ellis Clark**, Baltimore, the Hahnemann Medical College and Hospital, Chicago, 1912, served during World War I, formerly on the staff of the Hahnemann Hospital, aged 63, died, July 25, of heart disease.

**Fred William Compton**, Olivehurst, Calif., University Medical College of Kansas City, Mo., 1888, aged 80, died in Marysville, June 10, of coronary occlusion and coronary sclerosis.

**Thomas John Connor** † Arlington, Mass., Boston University School of Medicine, 1922, served on the staff of the Lawrence Memorial Hospital, Medford, aged 50, died in East Sandwich, July 16, of coronary thrombosis.

**Edgar Parsons Cook**, Johnstown, Ohio, Cleveland Medical College, 1897, served in the medical corps of the U. S. Army during World War I, aged 76, died in the Newark Hospital, July 6.

**James H. Cook**, McMinnville, Ore., University of Oregon Medical School, Portland, 1895, formerly a trustee of the Linfield College, aged 79, died, July 3, of heart disease.

**Pleasant A. Creswell**, Columbia, Tenn. (licensed in Tennessee in 1912), veteran of the Spanish-American War, aged 69, died recently of bronchial asthma.

**Dorwin LeRoy Culver**, St. Augustine, Fla., University of the City of New York Medical Department, New York, 1890, aged 81, died, July 29, of hypostatic pneumonia.

**Louis Frederick Curran** † Boston, Tufts College Medical School, Boston, 1917, professor of clinical medicine at his alma mater, member of the National Gastroenterological Association on the staff of the Boston City Hospital, physician in chief at the Carney Hospital, trustee of St. Michael's College, Winooski, Vt., aged 57, died, July 28, of coronary thrombosis.

**Gustavus Cornelius Darlington**, Reno, Nev., Long Island College Hospital, Brooklyn, 1901, member of the Medical Society of the State of New York, served overseas during World War I, aged 80, died, July 28, of pneumonia.

**Ernest Joseph David**, Lowell, Mass., Laval University Faculty of Medicine, Quebec, Canada, 1915, member of the Massachusetts Medical Society, district welfare physician for the city, aged 58, on the courtesy staff of St. Joseph's Hospital, where he died, July 11, of acute coronary occlusion.

**Charles Wesley Davis**, New Castle, Pa., Western Pennsylvania Medical College, Pittsburgh, 1895, aged 76, died, July 27, of congestive heart disease.

**Homer Augustus Davis**, Missoula, Mont., Dartmouth Medical School, Hanover, N. H., 1892, aged 85, died, June 27.

**Jesse J. Dean**, Waco, Texas, Medical Department of Tulane University of Louisiana, New Orleans, 1897, active in the establishment of the Dean Highland school, aged 69, died July 22, of heart disease.

**Peter De Gaetano**, Brooklyn, Long Island College Hospital, Brooklyn, 1914, aged 52, died, July 31.

**Allen Ross Diefendorf**, New Haven, Conn.; Yale University School of Medicine, New Haven, 1896, member of the Connecticut State Medical Society, American Neurological Association and the American Psychiatric Association, served as president of the Connecticut Society of Psychiatry, for many years lecturer on psychiatry at his alma mater, aged 71, died at the New Haven Hospital, July 30, of heart disease.

**Henry E. Donges**, Uvalde, Texas (licensed in Texas under the Act of 1907), aged 81, died in the Merritt Hospital, July 24.

**Francis Bernard Donohue**, Bloomingburg, N. Y., Columbia University College of Physicians and Surgeons, New York, 1901, at one time physician at St. Bonaventure College at Allegany, aged 69, died, July 26.

**Alexander McGill Duff Sr.**, Republic, Pa., Western Pennsylvania Medical College, Pittsburgh, 1901, for many years a director of the First National Bank of the Republic, chairman of the medical committee of civilian defense, president elect of the Republic Rotary Club, aged 66, died in the Uniontown Hospital, July 24, of chronic nephritis.

**Lawrence Francis Dugan**, Faribault, Minn., Marquette University School of Medicine, Milwaukee, 1924, member of the Minnesota State Medical Association, aged 45, served on the staff of St. Lucas Evangelical Deaconess Hospital, where he died, July 17, of coronary thrombosis.

**William Esser**, Manning, Iowa, Rush Medical College, Chicago, 1891, aged 86, died in Carroll, June 6, of uremia.

**William Harrison Finney** † Clintonville, Wis., Northwestern University Medical School, Chicago, 1899, served as a captain in the medical corps of the U. S. Army during World War I, for many years physician and surgeon for the Chicago and Northwestern Railroad, donated the building site for Clintonville's public library, which was named for him, aged 68, died in St. Elizabeth Hospital, Appleton, July 25, of gangrenous appendicitis.

**Chester Arthur Fleger** † Ansted, W. Va., Marquette Medical College, Baltimore, 1905, aged 62, died, July 22, of angina pectoris.

**Edward Samuel Folk** † Canton, Ohio, Ohio Medical University, Columbus, 1902, since January 1939 mayor of Canton, formerly president of the city council, member of the board of education and board of health, served during World War I, aged 66, honorary member and in 1937 president of the Aultman Hospital, where he died July 31, of coronary heart disease.

**Isar Goldofsky Fox**, Harlingen, Texas, University of Texas School of Medicine, Galveston, 1924, specialist, certified by the American Board of Radiology, Inc., president of the

Cameron-Walker Counties Medical Society, member of the State Medical Association of Texas and the Radiological Society of North America, Inc., roentgenologist at the Valley Baptist Hospital aged 42 died July 15, of acute leukemia

**Morris Frank** & Boston Harvard Medical School Boston 1911, counselor of the Norfolk District of the Massachusetts Medical Society school physician on the staff of the Jewish Memorial Hospital on the associate staffs of the Beth Israel and Washingtonian hospitals physician for the Selective Service Board during World War I and recently, aged 57, died, June 17 of coronary sclerosis

**Rawley H Fuller**, South Boston Va University College of Medicine, Richmond 1905 member of the Medical Society of Virginia, surgeon for the Southern Railroad aged 64, medical superintendent and owner of the South Boston Hospital, where he died July 24 of cerebral thrombosis

**Charlton Edwin Gamble**, Turbeville S C, Medical College of the State of South Carolina Charleston 1907, aged 62, on the courtesy staff of the Tuomey Hospital Sumter, where he died, July 10 of hypertension nephritis and cerebral hemorrhage

**Frank R Geiger**, Columbia, S C, Tennessee Medical College, Knoxville, 1893, member of the South Carolina Medical Association on the staff of the Columbia Hospital, aged 79, died, July 18, of cerebral hemorrhage

**William Henry George** & Albany N Y, Albany Medical College, 1894, served on the draft board during World War I, aged 71, died July 16 of coronary disease

**Maurice Gerstein**, Brookline, Mass New York University Medical College New York, 1896 member of the Massachusetts Medical Society past president of the Norfolk District Medical Society served as chief surgeon at the Jewish Memorial Hospital and on the courtesy staff at Beth Israel Hospital Boston, where he died, July 13, of myocardial infarction, aged 73

**William Winder Goldsborough**, Greensboro Md University of Maryland School of Medicine Baltimore 1901 formerly state senator served as president of the Caroline County Bank aged 68 died in Princeton N J, July 13 of carcinoma of the left hand carcinoma of the left side of the chest and chronic myocarditis

**Burton Thomas Gordon** & Pompano, Fla Rush Medical College, Chicago 1910 at one time on the staff of St Anne's Hospital, Chicago aged 58 died in Deerfield Beach July 2, of chronic rheumatic heart disease

**Gus R Griggs**, Baird Texas (licensed in Oklahoma in 1908), aged 66 died in June of carcinoma of the lungs

**Charles Raymond Haley**, San Augustine, Texas Chicago College of Medicine and Surgery, 1916, first lieutenant in the medical corps of the U S Army during World War I served as health officer of San Augustine County aged 54, died recently of carcinoma of the colon

**Henry Brown Hart**, Sarasota, Fla Medical School of Maine, Portland 1899, member of the Massachusetts Medical Society, served on the board of the Cape Cod Hospital Hyannis Mass, formerly treasurer of the Barnstable District (Mass) Medical Society aged 72, died in Bradenton, July 13, of cerebral hemorrhage due to arteriosclerosis

**Dorsey Alford Harwood** & Santa Ana, Calif, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906 president of the Orange County Medical Society aged 63, on the staff of St Joseph Hospital, Orange, where he died July 17, of coronary insufficiency

**Della Hertzsch**, Louisville Ky University of Michigan Department of Medicine and Surgery Ann Arbor 1891, member of the Kentucky State Medical Association for many years served as examining physician for the city schools aged 82 died in the Norton Memorial Infirmary, July 12 of a fracture of the left hip from a fall and bronchopneumonia

**John Henry Heuser**, Louisville Ky University of Louisville Medical Department 1891 member of the Kentucky State Medical Association served during World War I, formerly on the staff of SS Mary and Elizabeth Hospital for many years medical examiner for the Metropolitan Life Insurance Company aged 78 died July 1 of myocarditis

**George Price Hill**, Summit Hill Pa Medico Chirurgical College of Philadelphia 1904 aged 64, died July 9 of pleurisy and chronic myocarditis

**Marie Kirby Hopkins Humphrey**, East Rochester N Y University of Michigan Department of Medicine and Surgery Ann Arbor 1900 aged 67 died in the Strong Memorial Hos-

pital Rochester, July 18 of pulmonary embolus due to rheumatic and arterio-sclerotic heart disease

**Henry Creath Kelker**, Cleveland Western Reserve University Medical Department, Cleveland, 1903 for twenty-eight years physician for the Cleveland Christian Home, formerly on the staff of the Fairview Park Hospital served as examiner for the Big Four Railroad, aged 68, died, July 11, of coronary occlusion

**Frank Kenworthy** & Pittsburgh, Western Pennsylvania Medical College, Pittsburgh, 1901, a captain in the medical corps of the U S Army during World War I, for many years surgeon for the city department of public safety served on the staffs of the Western Pennsylvania and Shadyside hospitals aged 65, died, July 14, of coronary thrombosis

**Jacob H Kerth**, San Diego, Calif Medical College of Evansville, Ind 1881 aged 87, died, July 8, of heart disease

**John Ketterle**, St Albans, N Y, Bellevue Hospital Medical College New York, 1897, member of the Medical Society of the State of New York a captain in the medical corps of the U S Army during World War I aged 70, died, July 9, in the Mary Immaculate Hospital, Jamaica, of carcinoma of the sigmoid

**Adolph Kroll Jr**, Passaic, N J, University and Bellevue Hospital Medical College, New York 1916, member of the Medical Society of New Jersey, member of the staffs of the Passaic General and St Mary's hospitals aged 51, died suddenly July 7, in the Newark induction center of coronary occlusion

**Oliver William Kulp**, Davenport, Iowa State University of Iowa College of Medicine, Iowa City, 1896, formerly a captain of Company B, 54th Infantry of the Iowa National Guard veteran of the Spanish-American War, served on the staff of the Mercy Hospital, aged 68, died July 5, in Iowa City of coronary embolism and carcinoma of the mouth

**Joseph Philorum Lapointe**, Harvey N D, School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal Que. Canada, 1917 served on the staff of the St Aloisius Hospital, aged 52 drowned June 25

**Samuel Elijah Newman** & St Louis, Miami Medical College Cincinnati 1902 member and formerly vice president of the American Proctologic Society on the staff of the Jewish Hospital and City Sanitarium, aged 65, died, July 17, of angina pectoris

**James Joseph Panton**, Portland Ore Long Island College Hospital Brooklyn, 1894 member of the Oregon State Medical Society formerly medical director of the Oregon State Penitentiary Hospital, Salem served with the Oregon National Guard Company G, first regiment, aged 81 died, June 19 of carcinoma of the esophagus

**Brantly Fuller Parker**, York Pa, Hahnemann Medical College and Hospital of Philadelphia 1903 member of the Medical Society of the State of Pennsylvania served during World War I aged 65 died June 28 of gastric carcinoma

**Roy C Pope**, Niantic Ill, Michigan College of Medicine and Surgery, Detroit 1901 member of the Illinois State Medical Society aged 67, died in Boulder Junction, Wis., July 8, of valvular disease of the heart

**Harvey Francis Rawlings** & Champaign Ill, University of Louisville (Ky) Medical Department, 1910, served during World War I on the staffs of the Mercy Hospital, Urbana and the Burnham City Hospital, aged 59, died in Jacksonville, July 14 of bronchopneumonia

**John Luther Reeves**, Philadelphia, Howard University College of Medicine Washington D C. 1923, member of the Medical Society of the State of Pennsylvania and the American College of Chest Physicians, on the staff of the Mercy Hospital aged 43 died July 11, of carcinoma

**Brette Redpath Riley** & Benedict Kan Central Medical College of St Joseph Mo, 1896 served as mayor of Benedict and for many years as a member of the board of education served during World War I aged 72 died July 16 of coronary embolus

**John Wylie Robertson**, Coulterville Ill, Beaumont Hospital Medical College St Louis 1889 member of the Illinois State Medical Society for many years local physician and surgeon for the Illinois Central Railroad Company aged 81 was killed July 20 when the automobile in which he was driving was struck by a train

**Willard B Robinson**, Richmond Va Kentucky School of Medicine Louisville 1880 aged 81 died July 4

**Armand Otto Rogers**, Ennis, Texas, McHairy Medical College, Nashville, Tenn., 1925, aged 45, died, June 21, of hypertension and myocarditis.

**Lurten Roscoe Saylor**, Dayton, Ohio, Medical College of Ohio, Cincinnati 1888, for many years served as deputy recorder of Montgomery County, aged 81, died, July 21, of heart disease.

**Joseph Peter Schlaikowski**, Wauwatosa, Wis., Marquette University School of Medicine, Milwaukee, 1913, served during World War I, resident physician at the Mundelein Sanatorium, aged 55, died, June 14, of coronary thrombosis.

**Henry Alvin Shaffer**, Charleston, Ill., the Hahnemann Medical College and Hospital, Chicago, 1903, past president of the Cook-Cumberland Counties Medical Society, served during World War I, formerly health officer, president of the staff of the M. A. Montgomery Memorial Sanatorium, aged 69, died, July 15, of acute psychosis.

**John Cresswell Slawson**, Orlando, Fla., New York University Medical College, New York, 1898, for many years health officer of the town of Carmel, N. Y., and attending physician of the Lincolnville branch of the New York Catholic Protectorate, formerly on the staffs of the Saratoga Springs Sanatorium, the Dr. Strong's Inc., Saratoga Springs, N. Y., and the Linton Hospital, Utica, N. Y., aged 66, died, July 13, of chronic myocarditis.

**Gilbert Cumin Smith**, Louisville, Ky., University of Louisville Medical Department, 1892, demonstrator of analytic chemistry at his alma mater, 1907-1908 and assistant to the chair of chemistry and toxicology 1908-1909, also a pharmacist, aged 74, died in St. Joseph Infirmary, June 27, of carcinoma of the esophagus.

**Charles James Smyser**, New Wilmington, Pa., Harvard Medical School, Boston, 1897, past president of the Lawrence County Medical Society, member of the Medical Society of the State of Pennsylvania, served during the Spanish-American War and World War I on the staff of the Jameson Memorial Hospital, New Castle, aged 78, died, July 22, of arteriosclerosis.

**John Harvey Sparks**, Detroit, McHarris Medical College, Nashville, Tenn., 1914, member of the Michigan State Medical Society, aged 54, on the staffs of the Wayne Diagnostic Hospital and the Parkside Hospital, where he died, July 11.

**Thomas Frank Staley**, Bristol, Tenn., Medical College of Virginia, Richmond, 1900, chairman of the Missionary Emergency Fund, Inc., aged 67, died in the Henry Ford Hospital, Detroit, July 13, of acute yellow atrophy.

**Eugene Gillis Steele**, Buffalo, Wyo., Albany (N. Y.) Medical College, 1906, member of the Missouri State Medical Association, at one time on the staff of the Santa Fe Coast Lines Hospital, Los Angeles, aged 62, died, July 20, of coronary sclerosis.

**Robert Marcus Stith**, Seattle, University of Pennsylvania Department of Medicine, Philadelphia, 1899, member of the American College of Chest Physicians, served as a captain in the medical corps with the 69th artillery during World War I, was chief of the division of tuberculosis control of the city health department, served as consultant for the United States Marine Hospital, medical director of the Firland Sanatorium and Isolation Hospital, Richmond Highlands, Wash., aged 68, died, June 22, of cerebral hemorrhage.

**Cephas Swanson**, Minneapolis, University of Minnesota College of Medicine and Surgery, Minneapolis, 1907, member of the Minnesota State Medical Association, medical examiner for the Selective Service Board number 19, aged 67, on the staff of the Lutheran Deaconess Home and Hospital, where he died, July 20, of cerebral hemorrhage.

**Albert B. Sweet**, Hopkins, Minn. (licensed in Minnesota in 1880), also a pharmacist, Civil War veteran, aged 93, died in the Veterans Administration Facility, Minneapolis, July 6, of cerebral thrombosis.

**Richard Jerome Tanner**, Norfolk, Neb., Lincoln Medical College of Cotner University, 1909, at one time known as "Diamond Dick", aged 74, died in a Norfolk hospital, July 2, of an injury received in a fall.

**Frank Eugene Towers**, Minneapolis, University of the City of New York Medical Department, 1875, past president of the Hennepin County Medical Society, formerly served as county coroner, aged 92, died in the Parkview Sanatorium, June 1, of generalized arteriosclerosis and bronchopneumonia.

**Haworth Robert Traver**, Buffalo, University of Buffalo School of Medicine, 1917, served during World War I, aged 50, died in the Veterans Administration Facility, Canandaigua, N. Y., July 6, of coronary heart disease.

**Harrison Allen Tucker**, Brooklyn, Long Island College Hospital, Brooklyn, 1888, aged 78, died, June 28, of heart disease.

**Arthur Robert Turner**, Norwalk, Conn., Université de Paris Faculté de médecine, France, 1894, on the consulting staff of the Norwalk Hospital, aged 80, died, July 2, of coronary thrombosis.

**James Walsh**, Cortland, N. Y., New York Homeopathic Medical College and Hospital, New York, 1903, formerly school physician, chief of staff, Cortland County Hospital, aged 73, died, July 31, of coronary thrombosis.

**Stephen W. Williamson**, Dovesville, S. C., College of Physicians and Surgeons, Baltimore, 1904, aged 72, died in the McLeod Infirmary, Florence, July 14, of myocarditis and cerebral thrombosis.

**John Wotherspoon**, Seattle, University of Glasgow Medical Faculty, Scotland, 1889, member of the Washington State Medical Association, aged 79, died, July 5, of chronic myocarditis.

**Alonzo D. Wright**, Coxs Creek, Ky., Kentucky School of Medicine, Louisville, 1886, aged 85, was found dead in bed, July 1.

**Justus Gaige Wright**, Brooklyn, Long Island College Hospital, Brooklyn, 1899, member of the Medical Society of the State of New York, on the staff of the Carson C. Peck Memorial Hospital, consulting pediatrician to the Cumberland, Prospect Heights and the Brooklyn Nursery and Infants' hospitals, aged 65, died at his summer home in Mattituck, N. Y., July 27.

**Goldman McDonald Young**, Postell, N. C., Lincoln Memorial University Medical Department, Knoxville, Tenn., 1916, aged 58, died, July 9, of carcinoma of the stomach.

#### DIED WHILE IN MILITARY SERVICE

**William Ambrose Hutchinson**, Texarkana, Ark., Tulane University of Louisiana School of Medicine, New Orleans, 1924, served as secretary of the Bowie County (Texas) Medical Society in 1934 and as president in 1938, in 1931 was commissioned a first lieutenant in the medical corps of the Texas National Guard, in July 1932 promoted to captain and in March 1940 became a major, began active duty in the medical corps of the U. S. Army (National Guard) in November 1940, was promoted to the grade of lieutenant colonel in June 1942, had been in command of a hospital at Eritrea, Africa, was killed in an airplane crash in the Middle Eastern area of North Africa, February 23.

**William Harris Funk**, Captain, M. C., U. S. Navy, Washington, D. C., Johns Hopkins University School of Medicine, Baltimore, 1920, U. S. Naval Medical School, 1921, entered the medical corps of the U. S. Navy in June 1920, served on many assignments in various parts of the world where the Navy maintains its stations, specialist certified by the American Board of Internal Medicine, diplomate of the National Board of Medical Examiners, fellow of the American College of Physicians, aged 50, died, January 6, in Kodiak, Alaska.

**Adam George Heilman**, Lieutenant Colonel, M. C., U. S. Army, Washington, D. C., University of Pennsylvania School of Medicine, Philadelphia, 1913, U. S. Army Medical School, 1922, served during World War I, entered the medical corps of the U. S. Army as a first lieutenant in 1920, aged 57, died in the Walter Reed General Hospital, August 12, of bacterial (Streptococcus fecalis) endocarditis.

**Pascasio Quinones-Chacon**, Baltimore, George Washington University School of Medicine, Washington, D. C., 1936, member of the Medical Association of Puerto Rico, began active duty as first lieutenant in the medical reserve corps of the U. S. Army in February 1942, aged 32, was killed in an airplane accident in Puerto Rico Oct. 1, 1942.

**Robert Corkill Quine**, San Diego, Calif., Rush Medical College, Chicago, 1935, commissioned a captain and later a major in the medical reserve corps of the U. S. Army, a flight surgeon, aged 41, was killed in an airplane crash at Gunnison, Colo., July 19.

## Bureau of Investigation

### DANGEROUS TO HEALTH When Used as Directed

[EDITORIAL NOTE.—These abstracts differ from other abstracts of Notices of Judgment issued by the Food and Drug Administration of the Federal Security Agency which have appeared in these pages in that they include reference to the fact that these nostrums were specifically declared to be dangerous when used in accordance with the directions given on the label by the manufacturer. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

**Atoban**—Maffett Sales Corporation Seattle Shipped between Feb 19 and Sept 2 1941 Composition capsules containing emetine hydrochloride in amounts varying from 0.05 to 0.18 grain with ephedrine hydrochloride pilocarpine hydrochloride and milk sugar Misbranded because dangerous to health when used in the dosage and with the frequency and duration suggested on label and because claim on carton "And in curbing the liquor habit and similar statements in accompanying circular were false and misleading since this product would not be an appropriate or effective treatment for that purpose—[D D A J F D C 616 February 1942]

**Breatheasy Kits and Inhalant**—Breatheasy Distributors Inc Seattle Shipped between Nov 27 1940 and April 26 1941 Composition government chemist reported finding that the product had the activity of 5 per cent synthetic racemic epinephrine hydrochloride Misbranded because dangerous to health when used in the dosage or with the frequency or duration prescribed on bottle label and in accompanying booklet. Also misbranded because statements in booklet gave the impression that the product was a safe appropriate and efficacious treatment for asthma hay fever dermatitis eczema chronic bronchitis and head colds. Further misbranded because carton label failed to bear common or usual names of active ingredients a statement of the quantity of contents and the name and place of business of manufacturer packer or distributor—[D D A J F D C 546 November 1942]

**Bromo Caps**—Parke Davis and Company Detroit Shipped April 11 1941 Composition in each capsule essentially 23 grains of acetanilid 44 grains of aspirin and 34 grain of caffeine Adulterated because strength differed from that claimed on label namely that each capsule contained 54 grains of acetanilid. Misbranded because dangerous to health if used in dosage or with frequency or duration suggested on label. Also misbranded because of misleading name since no bromine or compound thereof was present. Further misbranded because of false and misleading claims that product contained no narcotic drugs and was a quick sure scientific remedy which would take the place of aspirin and habit forming headache powders and liquids since the latter claim created the impression that the product contained neither dangerous drugs nor a poison. Misbranded again because of misrepresentations that the preparation would give relief and constitute an adequate treatment for rheumatic pains colds toothache mental fatigue menstrual pains febrile conditions sea or car sickness or overindulgence in food or drink. Misbranded also because label did not list the common or usual names of active ingredients other than acetanilid and the quantity or proportion of the latter was not correctly declared. Further charges of misbranding were Labels failed to bear adequate directions for use or warnings that because of acetanilid content frequent or continued use might be dangerous causing serious blood disturbance anemia collapse or dependence on that drug also label did not caution against giving the product to children or using it in those pathologic conditions wherein it might be dangerous to health or warn against unsafe dosage or methods or duration of administration—[D D A J F D C 601 February 1943]

**Cold Tablets and Capsules**—Lypjohn Company Kalamazoo Mich and New York Shipped between Sept 20 1940 and Feb 14 1941 Composition included acetanilid a quinine salt camphor podophyllin and aloin. Products were variously labeled Capsule Cold Special Lypjohn Cold Special Cold Special No 2 and Swiss Capsules All misbranded because dangerous to health when used in dosage and with frequency and duration suggested in labeling. Further misbranded because labeling did not in most instances bear adequate directions for use since such directions as were given would have caused the products to be dangerous to health. Further misbranded because labeling failed to warn sufficiently against use by children and in those pathologic conditions wherein the tablets and capsules might be dangerous to health. Also misbranded because labels failed to caution against use in cases of nausea vomiting abdominal pain or other symptoms of appendicitis or continued use which might cause serious blood disturbances anemia collapse or dependence on the drug. Misbranded finally because of false and misleading representation that the tablets and capsules were a remedy for colds—[D D A J F D C 60 February 1942]

**Leunbach' Paste**—Merz and Company Chemical Works Inc Newark and East Orange N J Shipped Aug 16 1940 Composition syrup water and about 2 per cent each of alcohol and potassium iodide. Misbranded because dangerous to health when used as an abortifacient in the dosage or with the frequency or duration recommended in labeling—[D D A J F D C 607 February 1943] (Another consignment shipped Jan 25 1942 by the Doctors Pharmacy Milwaukee, was declared misbranded under D D A J F D C 608 for the reason given above.)

**Mrs Moffatt's Shoo Fly Powders for Drunkenness**—M F Groves Son and Company Philadelphia Shipped Nov 2 1940 Composition tartar emetic Misbranded because dangerous to health when used in the dosage or with the frequency or duration suggested in labeling and also because statement for drunkenness was false and misleading—[D D A J F D C 605 February 1943]

**Nature's Minerals Compound**—Nature's Mineral Company Indianapolis also known as Nature's Minerals Company and Nature's Mineral Food Company Shipped between Aug 26 1940 and Jan 24 1941 Composition (preparation in powder and tablet form) essentially compounds of calcium magnesium iron and sodium phosphate, carbonates sulfates chlorides sulfur and fluorine. Misbranded because dangerous to health when used in the dosage or with the frequency or duration suggested in the labeling since it contained a poisonous substance fluorine. Further misbranded because of false and misleading representations on cartons and bottles that the preparation would supply minerals deficient in the ordinary diet [D D A J F D C 541 542 and 543 November 1942] Consignments of a product called simply Nature's Minerals and shipped by the aforementioned concern between Sept 15 1940 and April 18 1941 and reported identical in composition were subjects of D D A J F D C 543 and 544 November 1942. One charge of misbranding was under the representations that the product would be efficacious in treating or preventing cancer arterio sclerosis diabetes stomach blood kidney and bladder disorders gall tones and some other things. Cases Nos 544 and 545 also included the name of P G Jurich Pasadena Calif as a shipper.

**Special Formula Tablets and McNeal's Laxative Cold Tablets**—Arner Company Inc Buffalo N Y Shipped Dec 16 1940 Composition (the products were identical) in each tablet acetanilid (approximately 1 grain) quinine sulfate (approximately 0.58 grain) a laxative plant drug and a small amount of atropine. McNeal product misbranded because dangerous to health when used in the dosage or with the frequency or duration suggested in the labeling. Also misbranded because labeling failed to give adequate directions for taking it and did not sufficiently caution against use by children or in those pathologic conditions in which it might be dangerous to health or warn against unsafe dosage or methods or duration of administration or application for protection of users. Special Formula Tablets misbranded because labels did not bear common or usual names of the active ingredients or declare the amounts or proportions of acetanilid and atropine present—[D D A J F D C 547 November 1942]

**Tabknoll Three Bromides Effervescent**—H G Knoll and Company Inc New York Shipped Jan 6 1941 Composition ammonium potassium and sodium bromides Misbranded because dangerous to health when taken in the dosage or with the frequency and duration prescribed in the labeling because latter failed to give adequate directions for use and to bear sufficient warnings against use when it might be dangerous to health or caution against unsafe dosage or duration of administration in such manner and form as are necessary for protection of users—[D D A J F D C 548 November 1942]

**Whitehall's (Dr) Compound Tablets**—Dr Whitehall Megrimine Company South Bend Ind Shipped between Nov 27 and Dec 3 1940 Composition acetanilid sodium salicylate and plant material. Misbranded because dangerous to health if taken in the dosage or with the frequency or duration prescribed in the labeling since such use might cause serious blood disturbances anemia collapse and a dependence on the drug. Further misbranded because labeling failed to give adequate directions for use since it did not provide for a limit as to the duration or frequency of administration. Misbranded also because labels failed to carry adequate warnings against use by children or in conditions in which the product might be dangerous to health or to caution against unsafe dosage or methods or duration of administration. Misbranded finally because label gave the false impression that the product was an appropriate treatment for the conditions described whereas it was not but actually a dangerous drug—[D D A J F D C 549 November 1942]

**Zerbst's Capsules**—Zerbst Pharmaceutical Company St Joseph Mo Shipped Jan 20 1941 Composition capsules (in 25 cent package) each containing acetanilid (1 1/2 grains per capsule) with caffeine resorcinol material camphor capsicum aloin and afoetida (0 cent package) acetanilid (2 1/2 grains per capsule) and a laxative plant drug not named. Both packages misbranded because dangerous to health when used according to directions on the label. Further misbranded because labels failed to bear adequate warnings against use by children or in those pathologic conditions in which product might be dangerous to health or to caution against unsafe dosage or duration of administration for protection of users since no warning was given against use in the presence of appendicitis symptoms or with reference to cases of serious blood disturbances following use of acetanilid. Also warning that frequent or continued use might result in dependence on the drug. The 50 cent package was found to contain a laxative plant drug not named. It was falsely represented that these capsules would cure colds and label failed to give common or usual name of each active ingredient or declare quantity of contents of the package—[D D A J F D C 60 November 1942]

## Correspondence

### THE EMERGENCE OF THE CHRONIC PATIENT

*To the Editor*—Of late years the students of vital and social statistics have been calling our attention to the remarkable increase in longevity which is having such a profound influence on our way of living. As the length of our days on earth is increased we find ourselves living longer, in health and otherwise, with people who must live longer with us. Youth, being confronted with the problems of age, must share them. Youth too may be stricken by long-term disease, as in the case of rheumatic fever with its complications and sequelae. Against the satisfaction and joy of preventing and curing illness in the earlier years we now have the specter of the degenerative and malignant diseases which are more characteristic of the later years.

The 'acute' hospital which has chosen and specialized in emergencies during the earlier years of our lives, can have only one response to the needs of the chronic patient with whom philanthropist, physician, nurse and social worker must now live longer. We have learned to be patient with the lame, the halt and the blind, and we must learn to be patient with those who are sick with a long-term disease. Medical science is equipped to meet the challenge in this realm and should welcome the opportunity. The beggar must not be turned away from our doors for fear that he may break our hearts.

A reasonable proportion of long-term patients who still require intensive medical care should be retained in general hospitals, and the establishment of independent hospitals for chronic disease, at comparatively greater expense if the job is to be done right, and at a distance, should be discouraged. The qualifying adjectives "acute" and "chronic" have no place in connection with institutions built for the scientific care of the sick. For our help in reconsidering the claims of the long-term patient to the attention of the modern hospital we have a number of recent developments which owe their existence to the war and to the threat of insecurity generally.

Provisions for social security which preceded and subsequently went hand in hand with the idea of the four freedoms include more public funds for the care of patients who are chronically ill and cannot finance themselves. (Poverty and chronic disease lie within a vicious circle which must be broken somewhere.) Furthermore, we are witnessing an extension of voluntary group insurance schemes which will confer more benefits all around, over longer periods of time, for those who can afford it. Direct income from patient sources will also be noticeably increased. For these three reasons, hospitals will be less dependent on philanthropy and ultimately less dependent on voluntary medical service. Because of these new or improved sources of income the financial reason for the transfer of long-term patients from the "acute" hospital to a segregated and isolated institution independently maintained for chronic disease, at a time when they may need scientific care most, will disappear. Such patients will be retained longer in general hospitals, where they belong. The duration of their illness, which now differentiates them so artificially from short-term patients, will no longer appear as a criterion for their admission or retention.

Apart from economic developments which will favor the retention of the long-term patient, we have the following to consider: (a) the increased interest of the physician, social worker and public generally in chronic disease, (b) the provision of full time opportunities in hospitals and the remuneration of physicians for medical service in hospitals and dispensaries

generally, (c) the increase of laboratory facilities in hospitals where qualified physicians who have selective interests in the various categories of chronic disease can develop their special talents along these lines and (d) the utter inadequacy and indecency of existing facilities for the care of long-term patients. Thus the second major reason for transfer will disappear, namely the lack of interest in patients with a long drawn out illness. The presence of these patients in hospitals where they are under control over longer periods of time, either continuously or in divided visits, gives to the scientific physician greater opportunities to study the remote results of treatment than ever before and, if he is freed from financial worry while having the additional opportunities of the laboratory, he will welcome the change. In passing, I might add that the lack of interest of the doctor in chronic disease encourages quackery as a possible relief to the uneducated patient.

These new trends indicate that chronic disease is rapidly emerging as an acute social and medical problem, and it will not be denied if for no other reason because it is beginning to strike home to many of us who are responsible for hospital progress. Moreover, the war will leave us with a demand for the rehabilitation of the wounded in our armed forces, many of whom will be in the long-term classification. This will doubtless increase our respect for the patient suffering from chronic disease and stimulate adequate provisions for his hospitalization.

The medical profession is greatly concerned with the trends of social security in its broadest implications and now has the opportunity of cooperating in the solution of this vexing problem, while benefiting itself in many desirable ways. It is now up to the hospitals and their medical boards to formulate a program without delay. In competition with government, they have always done better in such matters thus far.

E. M. BLUESTONE, M.D., New York

Director, Montefiore Hospital

### "INSECT VECTORS OF POLIOMYELITIS"

*To the Editor*—In reading your editorial on "Insect Vectors of Poliomyelitis" in the August 28 issue of THE JOURNAL I was struck by this statement: "The dominant species in each group were green bottleflies and blowflies, the common housefly being present in small numbers in only two of the four positive specimens."

The common housefly is such an important vector of dysentery that it seemed strange that it had not been more seriously considered in these investigations concerning poliomyelitis. I wondered at once what type of bait had been used in catching the flies used in the experiments by Trask, Paul and Melnick. I had missed their articles in the *Journal of Experimental Medicine*, but on looking up their publication I see that the bait used principally was fish. This bait is somewhat attractive to the housefly, but, of course, much more so to bottleflies and blowflies. Had a fermenting bait been used it is far more than probable that the dominant species of flies caught would have been houseflies, and the results might have been totally different.

Control of the housefly is a major problem in Army sanitation and it is especially important that the role of this insect with respect to the spread of poliomyelitis be made clear. If any experimental work is being done during your current epidemic in Chicago, it is suggested that efforts be made to trap houseflies and repeat the experiments of Trask, Paul and Melnick.

CHARLES G. SOUDER  
Colonel, M. C., U. S. Army



## Miscellany

### THE AMERICAN MEDICAL ASSOCIATION AND THE CULTIVATION OF THE CINCHONA TREE IN THE UNITED STATES

ERWIN H. ACKERKNECHT, M.D.  
BALTIMORE

It is now common knowledge that the Japanese in taking Java cut off the source of almost the entire prewar quinine supply of the world. It is equally well known that the resulting quinine shortage is still in spite of many ingenious and valuable countermeasures, one of the most serious problems of medical warfare. The American Medical Association can rightly be proud of having been, seventy-five years ago, the protagonist of a plan which if it had been executed, would have saved us our present difficulties.

In 1738, a hundred years after the introduction of the Peruvian bark into our pharmacopeia La Condamine had already foreseen the exhaustion of the South American supply as a consequence of the purely destructive methods of "production" in New Granada, Ecuador, Peru and Bolivia. After a hundred years had passed the situation had grown so dangerous indeed that the Dutch and the English started cultivating the cinchona tree in their own colonies: the former in 1854 in Java, the latter in 1860 in the Neilgherry Hills of southern India.

The Transactions of the fifteenth annual session of the American Medical Association held in 1864 in the city of New York, contain a little memorandum of Dr. D. J. Macgowan (apparently an army surgeon) of Washington, D. C. on the "Naturalization of Cinchona on the Eastern Continent."<sup>1</sup> Macgowan dealt with the Dutch and English experiments and recommended that they also be tried in Haiti. The assembly reacted favorably to the suggestion and on the motion of Dr. J. H. Griscom the famous New York Quaker and sanitarian appointed a committee composed of three of its most distinguished members: Joseph M. Smith, E. R. Squibb and J. H. Griscom to confer with the Haitian minister<sup>2</sup> on the subject.

Three years later, in 1867 the Medical Society of Wayne County, Mich., submitted to the eighteenth annual session of the American Medical Association a paper of its member Dr. J. M. Bigelow which examined the whole cinchona situation in more detail and boldly and rightly asked the introduction and cultivation of the cinchona trees in the United States.<sup>3</sup> Dr. Bigelow designated western Texas, Arizona or Lower California as best fitted for such plantations. On the motion of Dr. W. B. Atkinson (Pennsylvania) a committee consisting of I. M. Toner (District of Columbia), F. Howard (District of Columbia) and C. A. Lee (New York State), was appointed to memorialize Congress on this vital question.<sup>4</sup> In the next year 1868 Dr. Toner read a report of the committee in the Section on Chemistry and Materia Medica and a new committee, composed of Dr. L. I. Deal (Pennsylvania), T. A. Logan (California) and J. M. Bigelow (Michigan) was elected to memorialize Congress.<sup>5</sup> For seven years this committee under the leadership of Dr. Deal was to carry on a vigorous, intelligent fight for the cultivation of the cinchona tree in the United States.

At the twenty-first annual session in 1870, Dr. L. I. Deal submitted a report of the committee, consisting mainly of a proposed memorial to Congress.<sup>6</sup> This memorial was the most important and substantial document published during this action of the American Medical Association. It starts with an explanation of the medical value of quinine and then gives some interesting data on the economic implications of the problem. For example, from 1859 to 1865, \$2,287,250 worth of bark and quinine salts were imported into the United States, between 1861 and 1865 the United States Army purchased 1,198,000 ounces of quinine (the average annual consumption of the United States before World War II was 5,000,000 ounces). The memorial describes the danger arising from the exhaustion of the Peruvian supply and recommends the cultivation of cinchona in California which seemed to be even better suited for such an enterprise than India. The aid of the California State Board of Agriculture and the Sacramento Medical Society had already been secured. The memorial concludes:

The American Medical Association therefore asks in view of the foregoing facts that the Congress of the United States would appoint a commission of scientific men for the following purpose:

1. To determine what portion if any of the public domain of the United States will produce the cinchona and which may be set apart for this purpose.

2. To determine what species may be best transplanted and will furnish the greatest amount of active principles.

3. That they be authorized to visit such South American countries as they may deem necessary in order to determine these points, employ a competent botanist to assist them and that our consuls in such States be instructed to further these investigations.

4. That they be empowered to negotiate for and obtain a proper quantity of seeds and plants.

In 1872 Dr. L. I. Deal reported "a gratifying progress Congress having been memorialized with a favorable prospect of success." A second memorial to Congress was submitted.<sup>7</sup> The transactions of 1874 contain a more detailed report of the committee which still sounds rather optimistic. Since 1868 "three memorials had been presented to Congress. The last by Mr. Scott of Pennsylvania in the Senate and by Mr. Kelley of Pennsylvania in the House." The latter wrote to Dr. Deal that he could not assure him of speedy help from Congress in the matter but that continuous pushing of the matter would probably result in success. The committee had obtained the support of the Botanical Gardens in Washington, D. C., or the Department of Agriculture and of the Horticultural Society. President Grant in his message relating to the purchase of San Domingo had advanced the argument that the climate and the soil of this island were suitable for the cultivation of cinchona. The committee was continued.<sup>8</sup>

But alas at the twenty-sixth annual session in 1875 after a "report of progress" the committee was discontinued.<sup>9</sup> We do not know the exact reasons and motivations for this step but though regrettable it is only human that after seven years of incessant endeavor the Association grew tired of preaching to deaf ears and did not like Jacob go on for another seven years of bondage. In this action which seemed only an episode but has now become so consequential the American Medical Association showed a considerable degree of inboardness and of foresight in the public interest. Like so many plans of prevention its plan probably suffered from looking more costly than expedient. The failure seems no reason to give up in similar situations in which our scientific conscience commands unpopular proposals in the public interest. On the contrary it seems to be rather an admonition to be still more persistent. 1909 East Monument Street

From the Institute of the History of Medicine, Johns Hopkins University.

<sup>1</sup> Macgowan, D. J. "Naturalization of Cinchona on the Eastern Continent." *Tr. A. M. A.* 15: 151-154, 1864.

<sup>2</sup> *Tr. A. M. A.* 15: 31, 1865.

<sup>3</sup> "Cultivation of the Cinchona Trees in the United States." *Tr. A. M. A.* 18: 40, 1867.

<sup>4</sup> *Tr. A. M. A.* 18: 40, 1867.

<sup>5</sup> *Tr. A. M. A.* 19: 149, 1868.

<sup>6</sup> *Tr. A. M. A.* 21: 1, 1870.

<sup>7</sup> *Tr. A. M. A.* 21: 159, 1870.

<sup>8</sup> *Tr. A. M. A.* 22: 19, 1871.

<sup>9</sup> *Tr. A. M. A.* 22: 1, 1871.



## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS

##### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL* Oct 2, page 305

##### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIOAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Nov 15 and Jan 17 1944 Sec, Dr I S Rodman, 225 S 15th St, Philadelphia

##### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY *Written Part I* Various centers, Jan 21 Final date for filing application is Oct 21 Sec, Dr P M Wood, 745 Fifth Ave, New York 22, N Y

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written Part I* Locally Feb 12 Final date for filing application is Nov 15 Sec, Dr Paul Titus, 1015 Highland Blvd, Pittsburgh 6 Pa

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Written and Oral Part II* Chicago Jan 21 22 Sec, Dr Guy A Caldwell, 3503 Pryor St, New Orleans, Louisiana

AMERICAN BOARD OF OTO-RHINO-LARYNGOLOGY *Oral* Chicago, October, Los Angeles Feb 25 (provided 50 applicants are accepted) Sec, Dr Dean M Hinkle University Hospital, Iowa City, Iowa

AMERICAN BOARD OF PEDIATRICS *Written Locally*, Feb 4 *Oral* Philadelphia March 25 26 and San Francisco, May 6 7 Sec, Dr C A Aldrich 707 Fullerton Ave, Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *Written Locally*, Oct 30 *Oral Locally* Dec 20 21 Final date for filing application is Sept 30 Sec, Dr Walter Freeman 1025 Connecticut Ave. NW, Washington D C

AMERICAN BOARD OF RADIOLOGY *February* Final date for filing application is Dec 15 Sec, Dr B R Kirklin, 102 110 Second Ave S W Rochester Minn

AMERICAN BOARD OF UROLOGY *Oral* Chicago, February *Written* Various centers December Final date for filing application is Nov 1 Sec, Dr Gilbert J Thomas, 1109 Willow St, Minneapolis, Minn

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Venereal Diseases Constitutionality of City Ordinance Requiring Treatment of Infected Persons Convicted of Prostitution**—By Little Rock city ordinances prostitution is made a criminal offense and the city health officer is required to ascertain by necessary tests and examinations whether or not a person convicted of prostitution has any venereal disease. Any evidence so acquired is not to be used in any criminal prosecution against the person convicted. If the convicted person is found to have a venereal disease in a communicable stage and if she fails to take or submit to treatment adequate for the protection of public health, the city health officer is authorized to commit her to an appropriate institution for treatment, provided only that she can be committed without endangering life. The plaintiff was convicted of prostitution and was thereafter examined by the city health officer and was found to have venereal disease in a communicable stage. She was thereafter ordered quarantined in a health center maintained by the United States government in Hot Springs, Ark. She then filed a petition for a writ of habeas corpus, contending that her detention was illegal because the ordinances purporting to authorize it were unconstitutional and void. The trial court granted the writ and the defendants, the city of Little Rock, the city health officer and the county sheriff, appealed to the Supreme Court of Arkansas.

The determining question here presented, said the Supreme Court, is whether or not the ordinances of Little Rock in question are valid as being within the police power of the city. Admittedly, the city has power to declare prostitution a criminal offense. The proceeding under which the plaintiff was detained is not a criminal proceeding, however, but is one in the interest not only of the plaintiff but of the public. It is a proceeding to compel her to be quarantined and segregated from the public to the end that she may be cured of the venereal disease with which she is infected and thus not communicate it to others. When a cure is effected the authority to detain her is at an end. Courts, the court continued, in testing the validity of a regulation, must resolve all doubts in favor of the legislative action and must sustain the regulation unless it appears to be clearly outside the scope of reasonable and legitimate regu-

lation. The police power of the state is founded in public necessity and this necessity must exist in order to justify its exercise. It is always justified when it can be said to be in the interest of the public health, public safety and public comfort, and in such instances private rights must yield to their security under reasonable laws. Can there be any doubt that the legislature might enact valid legislation similar to the ordinances here in question? We think not. If it could, then it can and has delegated this power to municipalities. Section 9543, Pope's Digest, authorizes municipalities to make ordinances to provide for the safety, preserve the health, promote the prosperity and improve the morals, order, comfort and convenience of the inhabitants thereof. Section 9589 further gives municipalities power to prevent injury or annoyance within the limits of the corporation, from anything dangerous, offensive or unhealthy. These two sections constitute a delegation to municipalities of the state's power to legislate in protection of public health. Exercise of the delegated powers by the city in the ordinances here presented must be held to be within the grant, unless it can be said that the power conferred on the city health officer is unreasonable. The court could not say that the power conferred on the health officer was "clearly outside the scope of reasonable and legitimate regulation."

Section 9679, Pope's Digest, authorizes a city council to establish a board of health, with jurisdiction for 1 mile beyond the city limits, and for quarantine purposes, in cases of epidemic, 5 miles. The trial court held that that statute denied the city health officer the right to quarantine plaintiff outside the city or county beyond the limits indicated in the statute. The statute referred to, said the Supreme Court, simply means that the jurisdiction of the health officer extends for 1 mile beyond the city limits, or for 5 miles for quarantine purposes, in cases of epidemics. It has no reference to the place a person may be confined for quarantine purposes, but only to the extent of the jurisdiction beyond the city limits for the better protection of the inhabitants of the city. Section 6438, *ibid*, expressly requires the city health officer to perform the duties prescribed for him by the regulations of the state board of health. A regulation of the state board of health, promulgated under that authority, provided that any health authority should, when in the exercise of his discretion he believed that the public health required it, commit any person apprehended, examined and found afflicted with an infectious disease and who refused or failed to take treatment adequate for the protection of the public health to a hospital or other place in the state for such treatment if the commitment could be done without endangering the life of the patient. This regulation, the court concluded, was authority to commit the plaintiff outside of Little Rock and to confine her where she was confined in Hot Springs.

The Supreme Court accordingly reversed the judgment of the trial court and remanded the plaintiff to the custody of the sheriff for isolation and quarantine.—*City of Little Rock v Smith, 163 S W (2d) 705 (Ark., 1942)*

## Society Proceedings

### COMING MEETINGS

Aero Medical Association of the United States Cincinnati Ohio Oct 26 27 Dr David S Brichman, 5440 Cass Ave, Detroit Secretary  
American Academy of Ophthalmology and Otolaryngology Chicago Oct 10 13 Dr W L Benedict, 102 Second Ave S W, Rochester Minn Secretary  
American Public Health Association, New York Oct 12 14 Dr Reginald M Atwater, 1790 Broadway, New York, Executive Secretary  
Association of Military Surgeons of the United States Philadelphia Oct 21 23 Colonel James M Phalen, Army Medical Museum Washington, D C Secretary  
Delaware Medical Society of, Wilmington, Oct 12 13 Dr W O La Motte, 601 Delaware Ave, Wilmington, Secretary  
Inter State Postgraduate Medical Association of North America Cincinnati Oct 26 29 Dr Arthur G Sullivan 16 North Carroll St, Cincinnati Wis Managing Director  
Oklahoma City Chemical Society Oklahoma City Oct 18 21 Dr C L H Hall 117 North Broadway, Oklahoma City, Secretary  
Omaha Mid West Chemical Society Omaha, Oct 25 29 Dr J D McCarthy, 1036 Medical Arts Bldg Omaha Secretary  
Radiological Society of North America Chicago, Nov 29 Dec 1 Dr Donald S Childs, 607 Medical Arts Bldg Syracuse, N Y Secretary  
Seaboard Medical Association, Richmond Va Nov 30 Dec 1 Clarence P Jones 3117 West Avenue Newport News Va Secretary  
Southern Medical Association Cincinnati, November 16 18 Dr L L Loran, Empire Building Birmingham, Alabama Secretary  
Virginia Medical Society of, Roanoke Oct 25 27 Dr A A Edwards, 1200 East Clay St Richmond Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American J Digestive Diseases, Fort Wayne, Ind

10 241-282 (Jul) 1943

- Effect of Atropine on Gastrointestinal Canal and Its Gland V E Henderon and M O Sweeten—p 241  
Newer Concepts in Treatment of Diabetes Mellitus with Protamine Insulin E Tolstoi—p 247  
Pruritus Ani A J Cantor—p 254  
Effect of Dog's Bile Certain Bile Acids and India Ink on Bili rubinemia and Excretion of Bromsulphalein A Cantarow and C W Wirt Jr—p 261  
Some Effects of High Fat Diets on Intestinal Elimination I Helen L Wiloff S D Koonce and H Jane McGuire—p 266  
Cardiopalmal Successful Treatment by Esophagogastrotomy I Lichtenstein—p 271  
Digestive Disturbances in Early Cardiac Failure A W Oelgoetz—p 27  
Tannin Control of Ileostomy M Peelen and F F Vonkman—p 277

#### American Journal of Medical Sciences, Philadelphia

206 1-140 (Jul) 1943

- Atypical Pernicious Anemia of Young Adults S O Schwartz and Helen Legere—p 1  
Dynamics of Air Borne Infection W F Wells and Mildred W Well—p 11  
\*Studies on Bone Marrow in Vitro I Cellular Pattern and Behavior of Explanted Bone Marrow M Rachmilewitz and A Rosin—p 17  
\*Tissue Culture Studies on Cytotoxicity of Bactericidal Agents II Effect of Tyrothricin Gramicidin and Tyrocidine on Culture of Mammalian Spleen W E Herrell Dorothy Heilman and R P Gage—p 26  
Clinical Significance of Loud Aortic and Apical Systolic Heart Murmurs without Diastolic Murmurs L A Baker H B Sprague and P D White—p 31  
Magnesium Sulfate in Paroxysmal Tachycardia L J Boyd and D Scherf—p 43  
Criteria for Differentiating Deep Q Electrocardiograms from Normal and Cardiac Subjects M Mazer and J A Reisinger—p 48  
Detecting Aneurysm of Aorta R B Logue—p 54  
Arteritis in Rats with Experimental Renal Hypertension W J Cromartie—p 66  
\*Management of Obesity with Empha on Appetite Control N H Colton H I Seagal A Steinberg F R Shechter and N Pastor—p 73  
Urinary Elimination of Phenolsulfonephthalein Injected into Cerebrospinal Cavity in Schizophrenia and General Paralysis S Androp H E Ratcliffe and S Katzenelbogen—p 866

**Studies on Bone Marrow in Vitro**—Rachmilewitz and Rosin obtained bone marrow from the tibias of 6 to 8 week old rabbits. The containers used for explantation were glass tubes 15 cm in height and 8 mm in diameter. The bone marrow fragment of the size of 3 cubic millimeters was placed immediately after removal from the tibia in the medium consisting of 3 drops of rabbit's plasma 3 drops of Tyrode solution and 1 drop of diluted chick embryo extract. The tissue fragments were planted at the time when the plasma began to coagulate so that they remained suspended in the upper layers of the medium. The tightly closed tubes were incubated at 37°C. After incubation the plasma clot containing the bone marrow explant was removed and fixed. Experiments were carried out with bone marrow of 26 rabbits. The bone marrow of 12 animals showed predominant leukopoiesis of S predominant erythropoiesis. In the bone marrow of 6 animals myeloid and erythroid cells were present in nearly equal proportions. The material was fixed in Zenker's and Hell's fluid. After the specimens had been embedded in celloidin paraffin serial sections 4 microns thick were made and stained with hematoxylin-eosin. Some of the sections were stained with Giemsa stain. The object of this investigation was to establish a physiologic model which would help in the analysis of the factors which govern

normal and pathologic blood cell formation in the bone marrow. The method of bone marrow explantation and the observations made give reason to assume that this may be possible. The bone marrow in vitro continues for a certain period of time the specific functional activity, even at an increased rate. This period of functional activity of bone marrow in vitro can be made use of in the study of the factors which affect the bone marrow function. Maturation and multiplication of white and red cells was observed to take place in the explanted bone marrow, maturation of polymorphonuclear leukocytes in vitro was proved by differential cell counts. The period of functional activity of the explanted bone marrow is followed by depletion of the marrow parenchyma and fibroblastic proliferation of the stroma.

**Cytotoxicity of Bactericidal Agents**—In order to compare the relative cytotoxic effect of tyrothricin and its fractions gramicidin and tyrocidine, Herrell and his collaborators made experiments in which tissues were grown in a plasma clot in Carrel flasks for a period of four days. Rabbit spleen was used as a source of tissue because it is fairly homogeneous and provides a good source of large wandering cells or macrophages. The authors conclude that when the toxicity of the products of *Bacillus brevis* is determined by their ability to inhibit the migration of macrophages from the normal rabbit's spleen in a medium composed of serum, plasma and chick embryo extract, it appears that gramicidin is most toxic tyrothricin is next in order of toxicity, and tyrocidine is much less toxic than either gramicidin or tyrothricin. The greater part of the cytotoxicity of tyrothricin is accounted for by its content of gramicidin. The authors emphasize that the cytotoxicity of products of *B. brevis* is low compared with that of a number of other germicides. This agrees with the absence or deleterious effects on the tissues when aqueous suspensions of these substances are used in the local treatment of infections.

**Obesity and Appetite Control**—According to Colton and his associates the restriction of food intake is still the basic principle in all successful attempts at treatment. Dietary restriction over a long period of time is exceedingly difficult in most cases without the aid of some agent that depresses the appetite. The authors treated 300 cases of obesity by dietary restriction and appetite control. Appetite was best controlled by dextroamphetamine, although amphetamine and propadrine hydrochloride were found to be effective. Treatment was aimed at correcting eating habits so that the patient would have less desire for the high caloric foods. Various therapeutic agents (thyroid ammonium chloride salyrgan-theophylline and decholin sodium) were added successively to eliminate each refractory period. The average weight loss for the entire group for the therapy was 2 pounds (0.9 Kg) a week. The greatest weight loss was during the first month of therapy and averaged 2½ pounds (1.1 Kg) a week.

#### American Journal of Ophthalmology, Cincinnati

26 675-784 (Jul) 1943

- Diathermy Coagulation in Treatment of Angiomatosis Retinae and of Juvenile Coats Disease Report of 2 Cases I S Guxton and F H McGovern—p 675  
\*Colored Reflex from Anterior Capsule of Lens in Mercurialism W S Atkinson—p 68  
Multiple Primary Malignant Neoplasms Report of Case of Malignant Melanoma of Choroid and Glioblastoma Multiforme of Right Cerebral Hemisphere Mary Knight Asbury and D Ail—p 688  
Ocular Pathology of Methyl Alcohol Poisoning W H Fink—p 694  
Use of Furzethide in Comparison with Other Medicines for Treatment of Glaucoma Ella M Uhler—p 710  
Abscess of Crystalline Lens R O Rechner and E C Ellett—p 717  
Nexus Flammeus Associated with Glaucoma Report of Case in Which Cycloathermy Was Used in an Attempt to Control Intraocular Pressure B A Alvis and Virgil A Toland—p 720  
Roentgenography of Exophthalmos with Notes on Posttraumatic Exophthalmology R L Pfeiffer—p 727  
Ocular Myiasis (Ophthalmomyiasis) Report of Case R D Hartley—p 732  
Bee Sting of Cornea L P Glue—p 734

**Colored Reflex from Lens in Mercurialism**—Attention is directed to a brownish reflex from the anterior capsule of the lens which occurs in cases of chronic mercurialism. The reflex may be found also in those who have been exposed for a long time with mercury or in an attempt to remove mercury from the

they may exhibit no symptoms of mercurialism. The reflex has not been observed in other patients nor has any previous report of such a reflex been found in the literature. This hitherless, somewhat homogeneous looking reflex from the interior capsule of the lens is seen well with the slit lamp when a low power objective is used. When examined with oblique illumination the lenses of the eyes in which the colored reflex is pronounced present a dull gray appearance. The colored reflex, which is believed to be a deposit of mercury on or in the interior capsule, does not disappear after the symptoms of chronic mercurialism subside or when the individual discontinues work with mercury. Some patients were examined ten and twenty years after they had last worked with mercury and the reflex was still as vivid as that which is seen in active workers who have symptoms of chronic mercurialism. Seventy persons who are or had been engaged in the manufacture of thermometers in which mercury is used were examined. One patient who had worked as a coner in the felt hat industry for over thirty years also was examined. This man exhibited definite symptoms of chronic mercurialism and a pronounced colored reflex from the interior capsule. The colored reflex was present in 37 or over one half of the cases examined. Fourteen of the 71 manifested symptoms of chronic mercurialism, and in all of these cases the reflex was present. The author suggests that the colored reflex from the lens is a permanent and probably an early diagnostic sign of chronic mercurialism.

### American Journal of Physiology, Baltimore

139 325-480 (July) 1943 Partial Index

- Potency of Liver Extract in Stimulating Gastric Secretion by Intravenous Injection and by Direct Ingestion D. B. Butler, A. P. Hands and A. C. Ivy—p. 325
- Studies on Effect of Thymosynthyl-diethylamine (929 I) and N-Diethylaminoethyl-N-ethylamine on Gastric Secretion in Dog G. A. Hallenbeck—p. 329
- Effects of Hyperventilation and of Blood Pressure Changes on Self-Sustained Responses of Cerebral Cortex F. C. Del Pozo and A. A. P. Iorio—p. 335
- Effect of Caffeine and Coffee Extract on Activity of Digestive Enzymes Florence Waller—p. 343
- Role of Brain Stem in Arterial Hypertension Subsequent to Intracranial Hypertension F. M. Forster—p. 347
- Observations on Circulation in Hind Limbs of Dog Ten Years Following Left Lumbar Sympathetic Ganglionectomy H. E. Essex, T. I. Herriek, E. J. Baldes and F. C. Mann—p. 351
- Effect of Sodium Bicarbonate on Gastric Secretion W. L. Adams, C. S. Welch and B. B. Clark, with technical assistance of Dorothy B. Blair and F. J. Romano—p. 356
- Stimulation of Gastric Secretion by Neurine E. F. Williams Jr., C. F. Hoffman and T. P. Nash Jr.—p. 364
- Aerobic Survival of Adult Animals J. F. Fitzekas and H. E. Himwich—p. 366
- L-serine, Acetylcholine, Atropine and Nervous Integration R. Gessell and E. T. Hansen—p. 371
- Occurrence of Vasoconstrictor Substance in Blood During Shock Induced by Trauma, Hemorrhage and Burns I. H. Page—p. 386
- Effect of Cobalt on Work Performance Under Conditions of Anoxia S. S. Dorrance, G. W. Thorn, M. Clinton Jr., H. W. Edmonds and S. Farber—p. 399
- Influence of Pregnancy, Hypervitaminosis D and Partial Nephrectomy on Volume of Parathyroid Glands in Rats L. Oppen and T. Thale—p. 406
- Influence of Basal Forebrain Arcs on Electroencephalogram R. S. Morrison, K. H. Finley and Gladys N. Lothrop—p. 410
- Studies on Linguomaxillary Reflex R. Greenberg and E. Gelhorn—p. 417
- Electric Potentials of Human Small Intestine F. M. Forster, J. D. Helm Jr. and F. J. Ingelfinger—p. 433

**Effect of Caffeine and Coffee Extract on Activity of Digestive Enzymes**—Walker investigated the effect of caffeine and coffee extract on the activity of the digestive enzymes in vitro. The enzymes studied were those which act on carbohydrates, proteins and fats in the digestive tract, namely ptyalin, pancreatic amylase, pepsin, trypsin and pancreatic lipase. It was found that caffeine in concentrations of 20 mg and 40 mg per hundred cubic centimeters of substrate has no effect in vitro on the saccharogenic action of salivary and pancreatic amylases, nor does it affect the digestion of casein by pepsin and trypsin or of olive oil by pancreatic lipase. Coffee extract in the two concentrations studied does not affect the digestion in vitro of casein by pepsin or trypsin. It increases the rate of digestion of starch by the salivary and pancreatic amylases. It retards the digestion of olive oil by pancreatic lipase.

### American Journal of Public Health, New York

33 773-924 (July) 1943

- Brucellosis: Consideration of Its Epidemiology, Diagnosis and Control C. I. Jordan, I. H. Borts, D. M. Harris and J. R. Jennings—p. 773
- Some Epidemiologic Aspects of Tuberculosis Determined by Analysis of Sanatorium Records R. M. Seideman—p. 780
- Effect of War on Minds of Children B. I. Beverly—p. 793
- Losses of Vitamins Which May Occur During Cooking of Dehydrated Vegetables Faith Fenton, Barbara Barnes, J. C. Moyer, Katherine A. Wheeler and D. K. Tressler—p. 799
- Epidemiology of Plague in Ecuador A. Macchiavello—p. 807
- Indemic Typhus Fever in Jamaica, British West Indies H. Plotz, J. L. Woodward, C. B. Philip, B. L. Bennett and K. L. Evans—p. 812
- Rapid Detection of Production of Acetyl Methyl Carbinol L. M. Coblentz—p. 815
- Danger of Botulism I. C. Hall—p. 818
- Gearing Dental Public Health to Meet Wartime Conditions W. J. Pelton—p. 821
- Milk Laboratories in War Areas L. A. Black—p. 824
- Encephalitis (Western Equine) in Manitoba—1941 F. W. Jackson—p. 833
- Comparison of Nasopharyngeal Swab and Cough Plate in Diagnosis of Whooping Cough and Hemophilus Pertussis Carriers J. J. Miller Jr., C. W. Leach, T. M. Saito and J. B. Humber—p. 839

**Danger of Botulism**—According to Hall a recent tabulation shows that during the period 1899 to 1941 as many as 359 outbreaks of botulism with 1,024 cases and 669 deaths were recorded in the United States and Canada. Most of these outbreaks were caused by eating improperly home canned vegetables. In view of the current plans of many housewives to can as much food as possible, a timely warning may help to prevent a recurrence of the catastrophic outbreaks of botulism which followed the widespread use of the "cold pack" method of home canning during the first world war. This is primarily a problem in public education of housewives and others engaged in canning and serving foods. It is recognized that while the pressure cooker, properly operated, provides the easiest and best method of home canning there is likely to be a shortage of such cookers. Correct operation should be emphasized. The author has recorded three outbreaks of botulism caused by foods supposed to have been sterilized in pressure cookers. He stresses the selection of sound produce, careful cleansing, blanching when indicated, general cleanliness, correct application of intermittent sterilization and the use of other methods of preserving food, notably drying, salting and pickling, in which there is little or no danger from botulism. With regard to consumption the author stresses the significance of turbidity, gas production, softening and odor as criteria of spoilage, the danger of eating or even tasting freshly opened home-canned foods, especially if signs of spoilage are present, the fact that certain foods, notably beets, chili, some times beans, and possibly other foods, may show no easily recognizable signs of spoilage even though botulinus toxin is present, the importance of the destruction of botulinus toxin by boiling home-canned foods for at least five minutes before serving, the harmlessness of the spores of *Bacillus botulinus*. Contaminated foods should be boiled in strong lye water to avoid killing poultry and other domestic animals, excessive pollution of the soil with the spores of *Bacillus botulinus* and loss of usable containers. The author stresses prompt reporting of suspicious symptoms to physicians and the saving of remnants of food for epidemiologic and laboratory studies of food poisoning.

### Anesthesiology, New York

4 345-464 (July) 1943

- Reflexes from Mouth, Trachea and Esophagus which Stimulate Respiration L. C. Reid and D. E. Brace—p. 345
- Anesthetic Management of Patients Undergoing Sympathectomy for Hypertension M. L. Phelps and D. L. Burdick—p. 361
- Peridural Segmental Anesthesia with Intracaine J. Abajian Jr.—p. 372
- Significance of Changes in Lung Volume and Its Subdivisions During and After Abdominal Operations M. D. Altschule—p. 385
- Surface Temperature During Anesthesia R. Foregger—p. 392
- Use of Stellate Ganglion Block in Cerebral Vascular Occlusion P. P. Volpito and W. A. Risteen—p. 403
- Development of Anesthesia (Conclusion) T. E. Keys—p. 407
- Narcotic as Factor in Postoperative Nausea and Vomiting J. D. Steele—p. 430

## Annals of Otol, Rhin. and Laryngology, St. Louis

52 281-540 (June) 1943

- Historical Survey of Structure and Function of Cochlea T H Bast and J Shover—p 281  
Hereditary Hemorrhagic Telangiectasia T A Figs and C H Watkins—p 330  
Anterior Communicate Tendon E N Broyles—p 342  
Kelly Operation for Restoration of Laryngeal Function Following Bilateral Paralysis of Vocal Cords Report of 3 Cases E S Wright—p 346  
Problem of Acute Catarrhal Otitis Media G D Hoople and I H Blaisdell—p 359  
Preoperative Training for Development of Esophageal Voice in Laryngectomized Patients J W McCall—p 364  
Primary Carcinoma of Eustachian Tube Study of Evidence of Its Occurrence L J Law—p 377  
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Chemotherapy in Nose and Throat Diseases D S Cunniff—p 394  
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## Archives of Dermatology and Syphilology, Chicago

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Weil's Disease and Meningitis—Clapper and Myers report 15 cases of Weil's disease. In 2 both clinical and laboratory evidence of meningitis was observed, in 7 there was an abnormal cellular reaction in the cerebrospinal fluid without clinical signs of meningeal irritation and in 1 meningitis was present without the cerebrospinal fluid showing pleocytosis.

Cell counts on the cerebrospinal fluid may reach 1,000 or more per cubic millimeter. Polymorphonuclear cells predominate early and lymphocytes later. The dextrose content of the cerebrospinal fluid is not altered. Yellow discoloration of the cerebrospinal fluid is common in Weil's disease. It is at least in part due to bilirubin. Retention of urea is frequent. Pericarditis, auricular fibrillation or disturbances of conduction may occur in hearts previously normal. The plasma prothrombin, although appreciably decreased in most instances, usually does not reach levels sufficiently low to account for the hemorrhagic manifestations. Anasarca, the result of hypoproteinemia, may develop. Immunotransfusions may be of value in treatment and are worthy of a more extended trial.

Mixtures of Protamine Zinc and Unmodified Insulins—According to Hildebrand and Rynearson most authors have agreed that for satisfactory control of severe diabetes mellitus protamine zinc insulin must be supplemented by unmodified insulin. The use of mixtures was first proposed by Lawrence and Aitken in 1938. At the Mayo Clinic mixtures of the two types of insulin have been used in the routine treatment of severe diabetes and proved satisfactory for a large proportion of diabetic patients. There are cases in which adequate control has been difficult and the question of adjusting the amounts of each type of insulin has not been answered. The authors studied the effects of injecting various mixtures. Observations were made on 2 young women with severe diabetes. The results of a study of the dosage of insulin in 100 cases of diabetes taken at random from the files are included. The disease in these cases was severe enough to require administration of a mixture of the two types of insulin. The authors have not been able to demonstrate that any one ratio of the protamine zinc insulin to unmodified insulin gave an optimal effect. However ratios of protamine zinc insulin to unmodified insulin which lay between the two extremes of 1:1 and 1:5 gave the most satisfactory control, mixtures in which the ratios of protamine zinc insulin to unmodified insulin were 1:2, 1:3, 1:4, 2:3 and 2:5 were capable of adequate control of the blood sugar during the twenty-four hours after their injection. The use of a mixture of equal parts of the two insulins resulted in blood sugar curves very similar to those obtained when the dose consisted of protamine zinc insulin alone. On the other hand, a mixture of 1 part of protamine zinc insulin to 5 parts of unmodified insulin resulted in an immediate hypoglycemic effect such as might follow the injection of a large dose of unmodified insulin alone. Injection of the two types of insulin at separate sites gave not as satisfactory control of the blood sugar level as their injection together. The authors tried to eliminate the midmorning lag in hypoglycemic effect of the mixtures of the two insulins by injection of the dose of insulin one hour instead of half an hour before breakfast. Although this method eliminated the lag it did not result in smoother control of the blood sugar during the remainder of the twenty-four hours.

Anemia in Hernia at Esophageal Hiatus—Murphy and Hay attempted to determine those symptoms which may lead one to suspect the diagnosis of hiatal hernia and to record the frequency of anemia in patients with hiatal hernia and its importance as a diagnostic aid. The data recorded are based on 72 histories of patients with hiatal hernia of whom 11 were men and 61 women. Hiatal hernia is more common in female patients. The average age was 60 years. Seven of this series had a congenitally short esophagus. Six of them were troubled with vomiting or regurgitation after ingestion of food. Substernal pain distress or a feeling of obstruction in this location was present in 5 of these patients. Obesity is an important contributory factor to hiatal hernia. Increased intra-abdominal pressure, which may be produced by excess fat in the abdomen, a large fibroid or a pregnant uterus may cause herniation. Rigler emphasized the importance of pregnancy as a factor. Slightly more than one half of this series were women who had been pregnant one or more times. Trauma is undoubtedly responsible in some cases. Pain was the symptom most frequently stressed by the patients. Anemia rarely occurred in order or frequency. Other symptoms were vomiting, regurgitation, gas in the stomach, indigestion, distress after eating, constipation, prostration, nervousness and attacks of palpitation.

tory is as follows. After the ingestion of food, particularly solid or coarse, there is a feeling of obstruction or pain (ache or squeeze) in the substernal or the upper epigastric region. This may be followed by regurgitation or vomiting, with relief of symptoms. Vomiting and regurgitation of food not associated with nausea are characteristic complaints. Hiatal hernia should be more frequently included in the differential diagnosis of pathologic conditions in the upper part of the abdomen. An analysis of the blood was made in 67 of this series. A diagnosis of pernicious anemia was made in 7. In 2 other cases there was severe microcytic anemia with a high color index. If one excludes the 7 patients with pernicious anemia, there were 40, or 66 per cent, with anemia of some degree. Anemia is so commonly associated with hiatal hernia that it must be considered an important aid in the diagnosis. It is usually hypochromic and the result of hemorrhage arising from ulceration of the esophageal or of the gastric mucosa or from congestion of the mucous surfaces. Surgical intervention may be necessary in hiatal hernia, particularly when there is incarceration of the stomach in the esophageal hiatus with symptoms of obstruction and recurrence of severe hemorrhage. Medical management should include a diet low in roughage, with avoidance of solid foods; later the diet should be increased to include some moderately rough and coarse foods. It may include purced vegetables. It should be divided into five or six small meals daily. At no time should the stomach be overloaded. Loss of weight will be desirable in the obese. Patients should rest before meals. The patient should not recline soon after a meal. Those whose symptoms occur at night or on reclining will be benefited by sleeping in a semireclining position. The patient should be cautioned against lifting heavy objects or lifting any object from a bending over position. All straining and physical effort should be avoided. The hypochromic anemia should be treated with optimal doses of iron.

### Archives of Ophthalmology, Chicago

30 1-166 (July) 1943

- Standardization and Checking of Schiøtz Tonometers A Posner—p 1  
Corneal Transplantation R A Perritt—p 14  
Bilateral Metastatic Carcinoma of Choroid A J Bedell—p 25  
Congenital Paralysis of Lateral Rotators of Eyes with Paralysis of Muscles of Face A M Hicks—p 38  
Absorption of Infra-Roentgen (Bucky) Rays of Various Qualities by Anterior Portions of Eyeball F Sigher and E Sigher—p 43  
Association Between Anisokonia and Anomalous Binocular Space Perception K N Ogle—p 54  
\*Local Toxic Effects of Sulfanilamide and Some of Its Derivatives J G Bellows with laboratory assistance of R Gluckman—p 65  
Physiology of Aqueous in Completely Irsectomized Eyes H G Scheie, Elinor Moore and F H Adler—p 70  
Structural Changes in External Genuiculate Body of Rat Following Removal of Eyes R R Chace—p 75  
Homotropine Paredrine Emulsion as Cycloplegic E Yasuna—p 87  
Heterochromia of Iris L Hess—p 93  
Intraocular Hemorrhages in Choline Deficiency J G Bellows and H Chinn—p 105  
Bacteriologic Observations in Infections of Eye C Weiss—p 110

**Local Toxic Effects of Sulfonamide Compounds**—Bellows investigated the effects of local application of the sulfonamide drugs on the eyeball. The corneas of young adult rabbits were anesthetized by means of a 4 per cent cocaine hydrochloride solution, which was chosen not only for its anesthetic properties but for its drying effect on the epithelium. The drying effect was desired because it facilitated removal of the epithelium, an operation which was accomplished by immobilization of the eyeball with a fixation forceps and rubbing of the cornea with dry gauze. The cornea was stained with fluorescein to make certain that the epithelium was completely removed. Sulfanilamide, sulfathiazole, sulfapyridine and sulfadiazine were used in the form of powder, a 5 per cent ointment and a 20 per cent suspension. The drug to be tested was applied three times daily to one eye, while the other eye served as a control. These experiments yielded additional support to the contention that the sulfonamide compounds have an unfavorable effect on actively growing epithelium as shown by a greater than twofold increase in the time required for epithelial regeneration. They increase the amount of scarring. Therefore the local use of these drugs should be avoided in the treatment of injuries of the face or cornea.

### Arkansas Medical Society Journal, Fort Smith

40 29-42 (July) 1943

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40 43-58 (Aug) 1943

Industrial Dermatoses D W Goldstein—p 43

### Connecticut State Medical Journal, Hartford

7 453-516 (July) 1943

- Treatment of Scoliosis J R Cobb—p 467  
Ischuria from Incarceration of Retrodisplaced Pregnant Uterus H C Taylor—p 472  
Cold Agglutination of Own Serum, Treated by Heparin Intravenously Case J S Niclum—p 475  
A Psychiatrist Looks at War and Peace C C Burlingame—p 476

7 517-610 (Aug) 1943

- Resistance to Change as Contribution to Medical Progress L Clendenning—p 519  
Müllerian Duct Cysts C L Denning and R R Berneke—p 527  
Various Schools of Psychotherapy A A Brill—p 530  
Eight Years' Experience in Cancer in Twenty One Connecticut Hospitals Eleanor J MacDonald—p 536  
Male Sterility W W Williams—p 538  
Stromal Endometriosis Case Report L F Middlebrook—p 544

### Endocrinology, Springfield, Ill

33 1-66 (July) 1943

- Rapid Test for Pregnancy Gonadotropins on Basis of Induced Ovulation in Mice H O Burdick, H Watson, V Ciampa and T Ciampa—p 1  
Inhibition of Estrogenic Effects on Reproductive System of Male Rat by Testosterone Injections C K Weichert and H B Hale—p 16  
Beneficial Effect of Estrogens on Altitude Tolerance of Rats B D Davis and B T Jones—p 23  
Effect of Gonadotropic Hormones on Intraocular Prostatic Implants in Male Rabbit B Krichesky, J A Benjamin and B Rosenberg—p 32  
Androgens and Experimental Menstruation in Monkey (*Macaca mulatta*) F L Hsiao—p 39  
Variables Affecting Biologic Assay of Estrogens L I Pugsley and C A Morrell—p 48

### Indiana State Medical Assn Journal, Indianapolis

36 379-424 (Aug) 1943

- Allergic Aspects of Dermatology S W Becker—p 379  
\*Intradermal Vaccine Therapy in Brucellosis D L Urschel—p 383  
\*Treatment of Chronic Brucellosis with Sulfasuxidine N Davis—p 390  
Treatment and Rehabilitation of Hard of Hearing Child J K Isaacs—p 391  
The Sulfonamides F F Yonkman—p 394

**Intradermal Vaccine Therapy in Brucellosis**—According to Urschel intradermal injection of brucella vaccine or brucellergen causes the development of specific antibodies in the blood stream of the patient. The significance of these demonstrable antibodies in resistance to infection has not been demonstrated. In a small series of cases vaccine given by the intradermal route has given satisfactory clinical response. A mixed heat-killed stock vaccine was used. After the diagnosis has been made, treatment is begun with intradermal injections at five to seven day intervals (in an occasional case at three to five day intervals). The vaccine is injected into the forearm or into the medial surface of the thigh. Twenty intradermal injections of vaccine was the average in this group. Twenty-eight patients have received treatment by intradermal vaccine alone and three have had a combination of intradermal and subcutaneous vaccine. In 87.5 per cent of patients the intradermal administration of vaccine alone got results which were classified as fair, good or excellent. The intradermal route offers several advantages. The amount of vaccine necessary is small. The injections are relatively painless. The amount of reaction can be carefully watched and measured. Systemic reactions are few.

**Succinylsulfathiazole in Chronic Brucellosis**—Davis suggests that an intestinal antiseptic might solve the therapeutic problem of involvement of the digestive tract in patients with brucellosis. Since September 1942 the author has used succinylsulfathiazole for all patients with chronic brucellosis. To date he has used this drug in the treatment of 12 patients. Six are apparently cured, 6 are much improved but under treatment, and 2 have up to the present time shown no response to the drug. The author is unable to give any explanation of the two failures.

## Iowa State Medical Society Journal, Des Moines

33 295-368 (July) 1943

- Public Opinion and Professions V M Hancher—p 295  
Intraocular Neuritis E C Montgomery—p 298  
Public Health Today F J Underwood—p 301  
Barbiturate Poisoning J W Lawrence—p 303

33 369-408 (Aug) 1943

- Pelvic Surgery as Related to General Practice V S Counsellor—p 369  
Malaria Endemic in Iowa A W Bennett—p 372  
Kenny Treatment in Acute Poliomyelitis Report of First Year at Iowa Lutheran Kenny Cottage J E Dixon—p 375  
Mitral Endocarditis and Coronary Thrombosis F P McNamara—p 379

**Malaria in Iowa**—Bennett reports 4 cases of malaria. The histories indicated that the onset occurred the same day. The prodromal symptoms were similar. Each patient had the initial chill, which was severe and prolonged and was followed by temperatures reaching from 104 to 105 F with subsequent sweats and weakness. The four persons had met at a picnic in a lake resort. They recalled that the mosquitoes had been plentiful. It seems possible that the inoculation occurred at this time. It is not clear where the mosquito or mosquitoes became infected. Two sources seem probable. Lake McBride is a state park and many people from a distance visit it. Some one who previously had had malaria and was a carrier might have visited there and the mosquito or mosquitoes fed on him and thus became infected. The other possible source is that in many medical centers among them the State University of Iowa Hospital, certain patients are routinely treated with malarial inoculations. A strain of *Plasmodium vivax* is used for this purpose. The same strain was detected in these patients. The treatment of malaria proved difficult. During the initial attack these patients were all treated promptly and energetically with quinacrine and quinine as soon as the diagnosis was confirmed by blood findings. During each of the following relapses they were treated with quinacrine plasmochin and quinine. Each had from three to four recurrences, all verified by finding the parasite in the blood smears.

## Journal of Bone and Joint Surgery, Boston

25 503-730 (July) 1943

- Correlation of Clinical and Anatomic Facts Leading to Conception of Etiology of Congenital Hip Dysplasias President's Address C E Badgley—p 503  
Some Surgical Lesions of War W R Bristow—p 524  
Treatment of Difficult and Unusual Nonunions with Special Reference to Bridging of Defects H B Boyd—p 535  
Bone Changes in Acute and Chronic Scurvy An Experimental Study S W Banks—p 553  
Importance of Leaving a Good Amputation Stump A B Lemesurier—p 566  
Use of Cellophane as Interposition Membrane in Synovectomy D C McKeever—p 576  
Paralytic Scoliosis A Farkas—p 581  
Etiology of Undescended Scapula and Related Syndromes D Engel—p 613  
Stabilization of Articulation of Greater Multangular and First Metacarpal D B Slocum—p 626  
Pin Distraction as Cause of Nonunion A G Davis—p 631  
Experimental Uses of Sulfonamides and Other Drugs in Acute Purulent Arthritis C J Frankel and N W Larkum—p 644  
Kenny Treatment for Infantile Paralysis Comparison of Results with Those of Older Methods of Treatment R Bingham—p 647  
Recurrent Dislocation of Shoulder Joint Combination Procedure Preliminary Report F W Ilfeld and H G Holder—p 651  
Choice of Anesthetic Agent and Care of Patient in Relation to Anesthesia in Orthopedic Surgery I Lyford—p 659  
Care of Knee Following Excision of Meniscus S R Terhune T S Eddleman S B Thompson and B S Read—p 663  
Fractures of Neck of Metacarpal I Redler—p 670  
Etiology and Surgical Treatment of Intractable Pain About Fourth Metatarsophalangeal Joint (Morton's Toe) R T McElvenny—p 675  
Self-Adjusting Foot Piece for Preventing or Correcting Equinus Deformity When Traction is Applied to Lower Extremity L D Baker and F J Reed—p 680

**Pain in the Fourth Metatarsophalangeal Joint (Morton's Toe)**—According to McElvenny a typical case of Morton's toe is characterized by severe lancinating pain originating in the region of the fourth metatarsophalangeal joint. The pain is shooting in character and may travel up the calf as far as the knee. The pain comes on in paroxysms of varying intensity and in many subjects is accompanied by an almost uncontrollable desire of the victim to remove the shoe. The

disease occurs in men and in women in the proportion of about six to ten. This condition was first described by Morton of Philadelphia in 1876. The condition is often resistant to conservative treatment. It is caused by a tumor involving the most lateral branch of the medial plantar nerve. Careful palpation will usually reveal the tumor, which lies high in the web between the third and fourth toes. If symptoms justify it, excision of the tumor should be done. The author reports 11 cases treated by operation. Of the twelve tumors removed from 11 patients, five have had a microscopic study and appear to be either neurofibromas or angioneurofibromas. Grossly they are fatty and soft on the outside and firm, white and fibrous as the center is approached. The plantar nerve is embedded in the center.

## Journal of Clinical Investigation, Boston

22 471-634 (July) 1943

- Relationship of Dehydration and Overhydration of Blood Plasma to Collapse in Management of Artificial Fever Therapy H R Brown Jr W F Clark V Jones Johanna Walther and S L Warren—p 471  
Fractionation of Serum and Plasma Proteins by Salt Precipitation in Infants and Children I Changes with Maturity and Age 2 Changes in Glomerulonephritis 3 Changes in Nephrosis M Rapoport M I Rubin and D Chaffee—p 487  
Prolongation of Action of Subcutaneously Injected Medicines in Man F F Folde—p 499  
Effect of Opiates on Pain Threshold in Post Addicts H L Andrews—p 511  
Skin Resistance Changes and Measurements of Pain Threshold H L Andrews—p 517  
Study of Volume of Blood in Congestive Heart Failure Relation to Other Measurements in 15 Patients G R Meneely and N L Kaltreider—p 521  
Quantitative Relationship Between Basal Metabolic Rate and Thyroid Dosage in Patients with True Myxedema A W Winkler J Criscuolo and P H Lavietes—p 531  
Tolerance to Oral Thyroid and Reaction to Intravenous Thyroxine in Subjects Without Myxedema A W Winkler P H Lavietes C L Robbins and E B Man—p 535  
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Studies Regarding a Glutamine-like Substance in Blood and Spinal Fluid Including a Method for Its Quantitative Determination M M Harris with technical assistance of Roslyn T Roth and Ruth S Harris—p 569  
Effect of Insulin Hypoglycemia and Glucose Administration on Level of Glutamine-like Substance in Blood Serum M M Harris with technical assistance of Roslyn T Roth and Ruth S Harris—p 577  
Effect of Testosterone and Allied Compounds on Mineral Nitrogen and Carbohydrate Metabolism of Girl with Addison's Disease V B Talbot A M Butler and E A MacLachlan—p 583  
Mode of Excretion of Creatine and Creatinine Metabolism in Thyroid Disease V A Tierney and J P Peter—p 595  
Locus Action of Parathyroid Hormone Experimental Studies with Parathyroid Extract on Normal and Nephrectomized Rat T H Ingalls G Donaldson and F Albright—p 603  
Treatment of Burns by Closed Plaster Method with Certain Physiologic Considerations Implicit in Success of This Technique W W L Glenn Helen H Gilbert and C A Drinker—p 609  
Changes in Electrophoretic Pattern in Lymph and Serum in Experimental Burns G E Perlmann W W L Glenn and D Kaufman—p 627

## Journal of Experimental Medicine, New York

78 1-90 (July) 1943

- Antigenic Properties of Native and Regenerated Horse Serum Albumin J O Erickson and H Neurath—p 1  
Synergistic Action of Hemophilus Influenzae Suis and Svine Influenza Virus on Chick Embryo H F Bang—p 9  
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Studies in Sensitization to Snake I Prediction of Antivenom by Skin by Means of Synergistic Action of Hemophilus Suis and Svine Influenza Virus R H M P Sanger and H Vell—p 59  
Studies on Experimental Hemorrhage XXI Effect of Pre- and Post-hemorrhagic Hemorrhage on Hemorrhage I P Sanger and H Vell—p 67  
Studies on Experimental Hemorrhage XXII Effect of Pre- and Post-hemorrhagic Hemorrhage on Hemorrhage I P Sanger and H Vell—p 75



**Journal of Immunology, Baltimore**

46 347-504 (June) 1943

- Immunochemistry of Allergens. II. Antigenic Studies by Dale Method of Electrophoretic Fractionation Products of Protein Carbohydrate Fraction (S 1 A) from Cottonseed. I. J. Coulson, J. R. Spies and H. Stevens—p. 347
- Id. III. Anaphylactogenic Potency of Electrophoretic Fractionation Products of S 1 A from Cottonseed. I. J. Coulson and J. R. Spies—p. 367
- Id. IV. Effect of Dilute Acid on Anaphylactogenic Activity, Specificity and Serum Neutralization Capacity of Cottonseed Allergenic Fractions. I. J. Coulson and J. R. Spies—p. 377
- Evaluation of Antigenicity of Tetanal Toxoid. W. I. Koerber—p. 391
- Cross Protection Between Heterologous Agglutinogenic Types of Beta Hemolytic Streptococci of Group A. II. An Immunogenic Group of Four Types. Alice C. Evans—p. 399
- Use of Mice in Testing of Antigenic Power of Tetanal Toxoid. W. I. Koerber and Gertrude I. Mook—p. 411
- Studies of Antipneumococcal Serum. IV. Maximally Reactive Proportions of Antigen and Antiserum in Precipitation and Complement Fixation. Christine I. Rice—p. 427
- State of Simonelli Problem. S. Bornstein—p. 439

**Journal of Lab and Clinical Medicine, St. Louis**

28 1175-1204 (July) 1943

- Verification Test in Serology of Syphilis. R. I. Kahn—p. 1175
- Production of Chronic Hypertension in Dogs by Progressive Ligation of Arteries Supplying the Head. H. R. Fishback, F. I. Dutra and J. I. Metcalf—p. 1187
- Human Skin as Conductor of 60 Cycle Alternating Current of High Intensity Studied on Electroshock Patients. H. Lowenbach and J. I. Metcalf—p. 1195
- Some New Aspects of Morphine Action. Influence of Prostigmine Methylsulfate on Excretion. D. Shachter, C. R. Treadwell and J. W. Gah—p. 1199
- Immunologic and Toxic Properties of Casein Digest as Prepared for Parenteral Administration. H. C. Hopps and J. A. Campbell—p. 1203
- \*Caffeine Withdrawal Headache. R. H. Dreisbach and C. Pfeiffer—p. 1212
- Pathology of Migraine Syndrome—Physiologic Approach. C. Pfeiffer, R. H. Dreisbach, C. C. Roby and H. G. Glass—p. 1219
- Chronic Brucellosis Type of Ankylosing Spondylitis. L. Goldfarb—p. 1226
- Significance of Gross Character of Sputum in Prognosis of Pneumococcal Pneumonia. A. W. Frisch, A. L. Price and G. B. Myers—p. 1231
- Comparative Accuracy of Closed Circuit Bedside Method and Open Circuit Chamber Procedure for Determination of Basal Metabolism. R. C. Lewis, Alberta Ruff and Anna Marie Duvall—p. 1238

**Caffeine Withdrawal Headache**—Dreisbach and Pfeiffer attempted to produce and study caffeine withdrawal headache. In a survey of 128 migraine patients 25 stated that lack of their usual coffee intake would result in headache. Five patients volunteered the information that the headache was not of the migraine type. The authors attempted to produce headache by administration of caffeine over a suitable period, usually a week, and then abruptly withdrawing the drug. In 55 per cent of thirty-eight trials on 22 subjects, headache as extreme in severity as the subjects had ever experienced was produced by the sudden withdrawal of caffeine. In 29 per cent of the trials the headache was definite but did not require treatment. In 16 per cent of the experiments little or no headache resulted. The headache is without scotomas, slow in onset and central in origin, becoming generalized after four to six hours, it may be accompanied by nausea and vomiting. In migraine subjects the headache differs from their typical migraine headache. The blood studies indicate that a lowered serum calcium, an elevated serum phosphorus and possibly an increase in blood volume accompany the headache.

**Journal-Lancet, Minneapolis**

63 193-224 (July) 1943

- \*Rocky Mountain Spotted Fever. Nine Year Study of Wyoming Cases. G. E. Baker—p. 207
- War Wounds of Abdomen. D. L. Borden—p. 213
- Practical Problems in Blood Grouping and Blood Transfusion. R. F. Peterson—p. 215

**Rocky Mountain Spotted Fever**—Baker points out the close resemblance of endemic typhus to Rocky Mountain spotted (tick) fever. The degree of protection afforded by vaccine and the duration of such protection vary. As a rule those vaccinated in the spring of the year retain a considerable degree of immunity for at least the remainder of that year. Treatment of tick fever is purely symptomatic and supportive in character.

Bed rest with good nursing care is necessary. The author had occasion to study the various aspects of tick fever in a section of Wyoming where the disease occurs with considerable frequency. In 1934 Kamp and the writer received encouraging reports of responses obtained in typhus by use of neoarsphenamine dissolved in aqueous solution of metaphen. In the spring and summer of 1934 they used this treatment in 9 moderately severe cases of the disease. None of the patients succumbed to their illness. Since that time an average of 3 to 4 cases of tick fever have been under the writer's care each season. During the past eight years recovery has occurred in all cases so treated. A combination of the bactericidal action of metaphen, together with the spirocheticidal action of neoarsphenamine, on a micro-organism which is bacterium-like in character yet has staining properties similar to those displayed by spirochetes may be the secret of the success. In this treatment 0.3 Gm of neoarsphenamine was dissolved in 10 cc of an aqueous solution of 1,000 metaphen. The mixture was warmed and injected slowly into a vein. Administration is repeated at three or four day intervals. Three or four injections have customarily been sufficient to ameliorate the clinical picture so as to insure ultimate recovery. Should severe renal injury exist as a result of the infection, careful consideration must then be given the question as to whether the use of these medicaments is justified.

**Journal of Nutrition, Philadelphia**

26 1-104 (July) 1943

- Further Studies on Symptoms of Manganese Deficiency in Rat and Mouse. M. E. Shils and E. V. McCollum—p. 1
- Role of Dietary Protein in Hemoglobin Formation. Aline Underhill Orten and J. M. Orten—p. 21
- Effect of Concentration on Absorption of Vitamin A. A. G. Reisman, Lois F. Hallman and H. J. Deuel Jr—p. 33
- Nutritive Differences in Rations Containing Unhydrogenated or Hydrogenated Fats as Shown by Rearing Successive Generations of Rats. H. G. Miller—p. 43
- Amino Acids Required for Growth in Mice and Availability of Their Optical Isomers. C. D. Bauer and C. P. Berg—p. 51
- Biotin Content of Meat and Meat Products. B. S. Schweigert, E. Nielsen, J. M. McIntire and C. A. Elvehjem—p. 65
- \*Retention of Vitamins in Meats During Storage, Curing and Cooking. B. S. Schweigert, J. M. McIntire and C. A. Elvehjem—p. 73
- Studies of Calcium and Phosphorus Metabolism in Chick. I. Comparative Effect of Vitamins D<sub>2</sub> and D<sub>3</sub> and Dihydrocholesterol Given Orally and Intramuscularly. E. W. McChesney—p. 81
- Vitamin K and Prothrombin Levels with Special Reference to Influence of Age. F. W. Stamler, R. T. Tidrick and E. D. Warner—p. 95

**Vitamins in Meat During Storage, Curing and Cooking**—For the experiments carried out by Schweigert and his associates pork hams were taken from carcasses weighing approximately 190 pounds. Paired hams were used throughout the experiment. Two fresh hams were analyzed immediately and the two corresponding hams were stored for fourteen days in a freezer (−4 C) in order to determine the vitamin retention during storage. Two different hams were stored for fourteen days and the corresponding two hams were cured commercially in order to study vitamin retention during the curing process. Four additional hams were cured. Two of these were analyzed uncooked and the two corresponding hams were used for cooking tests. The authors found that average retention during storage is 92 per cent for the thiamine and nicotinic acid and 85 per cent for the riboflavin. The retention in curing was found to be 73 per cent for the thiamine, 84 per cent for the nicotinic acid and 92 per cent for the riboflavin. The average retention in the meat alone after roasting was 58 per cent for thiamine, 79 per cent for the nicotinic acid and 74 per cent for the riboflavin, after frying, 86 per cent for the thiamine, 85 per cent for the nicotinic acid and 77 per cent for the riboflavin. The average total retention in the meat plus drippings after roasting was 70 per cent for thiamine, 96 per cent for the nicotinic acid and 84 per cent for the riboflavin after frying, 92 per cent for the thiamine, 96 per cent for the nicotinic acid and 86 per cent for the riboflavin. The overall retention of the vitamins from fresh stored to cured and cooked samples agrees very well with the vitamin retention during curing and frying. From 10 to 15 per cent of each of the vitamins was found in the drippings from roasting and frying. A higher retention of thiamine in the meat alone was noted after frying, as compared with roasting, braising and broiling.

Journal Pharmacology & Exper Therap, Baltimore

78 215-320 (July) 1943

- Effect of Sodium Diphenyl Hydantoinate (Dilantin Sodium) on Utilization of Ascorbic Acid by Guinea Pigs A D Emmett E A R Hartzler and R A Brown—p 215  
Studies on Chemistry and Pharmacology of Melanophore Hormone of Pituitary Gland G Chen and E M K Geiling—p 222  
Studies on Veratrum Alkaloids III Qualitative and Quantitative Differences in Action of Cevine and Veratridine R Mendez and G Montes—p 228  
Chronic Selenium Poisoning in Dogs and Its Prevention by Arsenic M Rhian and A F Moxon—p 249  
Dihydroxypropyl Bismuthate Experimental Studies of New Bismuth Compound L M Wheeler—p 265  
\*Effect of Cholesterol Administration on Anesthesia F F Foldes and H K Beecher—p 276  
Treatment of Standardized and Graded Histamine Shock in Dogs with Solutions of Methyl Cellulose and Sodium Methanesulphate W C Hueper and C T Ichmowksi—p 282  
Narcosis Induced by Carbon Dioxide at Low Environmental Temperatures J H Barbour and M H Seever—p 296  
Stimulating Action of Colchicine on Pituitary Induced Ovulation of Frog M K McPhail and K M Wilbur—p 304  
Studies on Antimalarial Drugs Distribution of Quinine in Tissues of Fowl F E Kelly Frances K Oldham and E M K Geiling—p 314

**Effect of Cholesterol Administration on Anesthesia**—Foldes and Beecher were able to confirm for ether and a barbiturate the principal conclusion of Starkenstein and Weden that the depth and duration of anesthesia can be greatly increased by the previous injection of cholesterol. The cholesterol effect appears to be a potentiation the possibility that it may be additive cannot be eliminated at this time. In searching for an explanation of the cholesterol action one must look beyond physical solubility and transport effects. (a) Both olive oil and cholesterol increase the effectiveness of ether, but only cholesterol increases the effectiveness of the barbiturate. Olive oil has no effect on the barbiturate. (b) Ether has the same order of solubility in both cholesterol and lecithin yet cholesterol increases the anesthetic effect of ether (and barbiturate) while lecithin does not.

Missouri State Medical Assn Journal, St Louis

40 191-240 (July) 1943

- Plans for Postwar Medical Service M Fishbein—p 191  
Value of Strophanthin in Coronary Disease R Uhlmann—p 194

40 241-268 (Aug) 1943

- More Extensive Operation for Hypertension: Report of Cases R M Klemmer and R D Woolsey—p 241  
Use and Abuse of Sulfa Drugs R O Muether—p 245

New England Journal of Medicine, Boston

229 33 96 (July 8) 1943

- Physiologic Considerations in Treatment of Nephritis G W Thorn—p 33  
Meningococcal Meningitis with Purulent Arthritis Report of Case J P Cattell—p 49  
Clinical Catalytic Chemistry W T Salter—p 53

229 97-132 (July 15) 1943

- \*Thiouracil in Treatment of Thyrotoxicosis R H Williams and G W Bissell—p 97  
Spina Bifida and Cranium Bifidum V Arnold Chiari Malformation Study of 20 Cases F D Ingraham and H W Scott Jr—p 108  
Modification of Intestinal Motility by Drugs F J Ingelfinger—p 114

**Thiouracil in Treatment of Thyrotoxicosis**—Recently substances have been described which induce goiter presumably by their direct action on the thyroid. Such substances are the sulfonamides thiourea and thiourea derivatives. Following their administration to certain animals particularly rats, thyroid enlargement results in a few days. Microscopically one finds hyperplasia of the acinar cells and a decrease in the colloid of the follicles. A drop in the basal metabolic rate occurs. These changes can be prevented by the administration of desiccated thyroid or thyroxine. They can also be prevented by hypophysectomy but not by the administration of iodine. In rats fed sulguandine changes in the pituitary glands similar to those following thyroidectomy take place. These facts suggest that the drugs act directly on the thyroid gland inhibiting the

production of thyroxine thus in turn leading to a decrease in the body metabolism and to an increased activity of the pituitary gland. The authors have been studying some of the pharmacologic and therapeutic effects of thiouracil in patients with thyrotoxicosis. None of the patients were given iodine. Thiouracil was given by mouth usually in doses of 0.2 Gm. The authors give detailed histories of 9 unselected patients with thyrotoxicosis whom they treated with thiouracil. In each case the toxic manifestations disappeared and the basal metabolic rate returned to a normal range. Blood iodine studies conducted on 4 patients showed in each a fall of the protein bound iodine to a low normal or subnormal level. Studies have been performed of the blood levels of thiouracil and its excretion in the urine. No serious complications from the drug have been encountered, but all patients receiving the drug should be carefully followed. This report deals only with the early changes resulting from the treatment with thiouracil.

229 133-190 (July 22) 1943

- Oliver Wendell Holmes and Puerperal Fever F C Irving—p 133  
Care of Victims of Coconut Grove Fire at Massachusetts General Hospital O Cope—p 138  
Gastrointestinal Symptoms of Heart Disease L M Hurxthal—p 148  
Orthopedic Surgery W A Rogers—p 152

229 191-228 (July 29) 1943

- \*Diaphragmatic (Hiatus) Hernia Clinical Study W R Ohler and M Ritvo—p 191  
Acute Laryngotracheobronchitis in Children J A V Davies—p 197  
Diagnosis of Virus and Bacterial Pneumonia in Children M Finland—p 199  
Use of Sulfonamides in Treatment of Respiratory Infections in Children C A Janeway—p 201  
Lateral View in Roentgenologic Diagnosis of Lesions of Colon E G Wissing and R M Lowman—p 207  
Orthopedic Surgery (concluded) W A Rogers—p 211

**Diaphragmatic (Hiatus) Hernia**—Ohler and Ritvo collected from the records of the Boston City Hospital 128 cases of diaphragmatic (hiatus) hernia during a period of less than four years. They conclude that the condition is not rare. The symptoms are such as to justify its inclusion in the differential diagnosis of anterior chest or upper abdominal complaints or both. The typical symptom of hiatus hernia is a sense of epigastric pain, distress and fullness coming on shortly after or during meals. Often there is difficulty in swallowing solid food. Frequently there is epigastric pain or distress at night or when the patient is in the recumbent position. In most cases the pain is relieved when the patient assumes the upright position. There may be substernal pain or dyspnea or both—generally but not always unrelated to exertion. The pain may present radiation similar to that of angina pectoris, but just as frequently its radiation is atypical. The patient with hiatus hernia may bleed. The bleeding may explain the anemia characteristic of chronic blood loss. The x-ray examination should always begin with fluoroscopic observations without the opaque meal. A careful search is made for a gas containing shadow lying at or slightly above the level of the diaphragm. This is of particular importance, since in some cases the hernia reduces itself and disappears on ingestion of the opaque meal. Observations are first made with the patient breathing quietly, then in full inspiration and forced expiration. The frontal and oblique positions are used in the erect prone and supine positions. When the opaque meal is administered the fluoroscopic observations are best begun with the patient in the erect position. The great majority of hernias are not demonstrable in this position. The lesion will not be visualized if the x-ray observations are carried out only with the patient upright. Treatment is essentially medical especially in patients with small lesions. A bland high vitamin diet divided into four or six feedings is desirable. Food should not be given before bedtime. Assumption of the upright position after eating or for a few minutes during the course of the meal is often helpful. Sleeping at an angle of 45 degrees has relieved distressing night symptoms. Alkaline and antispasmodic drugs are frequently useful. Surgery is indicated when medical measures fail especially for patients having intractable pain or hemorrhagic tendencies.

**New Jersey Medical Society Journal, Trenton**

40 213-256 (June) 1943

- Plasma and Blood Banks in Wartime E. M. Katzin—p. 218  
Stricture of Rectum F. C. Yocomins—p. 222

40 257-296 (July) 1943

- Opferque per Orbem Dicor Presidential Address E. J. Marsh—p. 260  
Essential Procedures in Immediate Care of Fresh Major Traumatic Wounds J. M. Carlisle—p. 263  
Tuberculosis in Wartime and After E. Frankel—p. 266  
Traumatic Epilepsy Pathologic Factors K. W. Ney—p. 270  
Pregnancy and Labor Complicated by Heart Disease B. Tunis—p. 276

**Northwest Medicine, Seattle**

42 151-178 (June) 1943

- Psychoneuroses of War Care of Ill and Injured After Evacuation from Combat Zones K. M. Bowman—p. 154  
Military Mental Conservation and Rehabilitation A. A. Richles—p. 158  
Medical Civilian Practice in Wartime J. E. Hunter—p. 160  
Surgical Practice in Wartime E. A. Nixon—p. 161  
Medical Service in Industry H. I. Whitacre—p. 163  
War Civilian Security Program C. M. Smith—p. 165  
Endemic and Epidemic Diseases Including Tropical Disease T. B. H. Anderson—p. 167

42 179-206 (July) 1943

- Control of Blood Coagulability with Coumarin and other Drugs J. E. Rhoads, J. Walker and Lillian Pinzer—p. 182  
Surgical Experiences with Malignant Tumors J. W. Baker—p. 186  
Nonunion of Femoral Neck Fractures L. H. Edmunds—p. 190  
Indometria of Sigmoid R. S. Smith—p. 192  
Functional Supernumerary Mammary Glands J. V. Schwand—p. 195  
Administration of Histamine in Allergic Conditions W. A. M. Girling—p. 196  
Meningococcal Meningitis P. A. Woolley and T. Perry—p. 197

**Ohio State Medical Journal, Columbus**

39 609-704 (July) 1943

- Nutrition and Child Health A. A. Weech—p. 625  
Industrial Absenteeism Its Medical Phase R. F. Jukes—p. 629  
History and Incidence of Rabies L. R. Shaffer—p. 631  
Diagnosis Treatment and Prevention of Chigger Bites H. J. Parkhurst—p. 639  
Allergy to an Estrogen Dermatitis from Estradiol 17 Carbethoxyate R. D. Barnard—p. 642  
Significance of Rh Factor in Intragroup Transfusion Reactions and Fythroblastosis Fetalis Report to Physicians in Practice A. P. Falkenstein—p. 644  
Misconceptions Concerning Peripheral Vascular Diseases D. M. Palmer—p. 647  
Role of Aluminum in Nutrition I. Forman—p. 651  
Addison's Disease Due to Cytotoxic Contraction of Adrenal Cortex with Sudden Death Four Days After Appendectomy T. C. Luppely—p. 652

**Oklahoma State Medical Assn. Jour., Oklahoma City**

36 231-276 (June) 1943

- Medical Management of Diseases of Gallbladder and Biliary Tract F. C. Rewerts—p. 231  
Simplified Treatment for Impetigo Neonatorum C. E. White—p. 234  
Treatment of Burn Cases off the U. S. S. Wasp R. G. Jacobs—p. 235  
Consideration of Kenny Treatment of Infantile Paralysis D. H. O'Donoghue—p. 236  
Private Practitioner and War Industry D. H. Macrae—p. 239

36 277-322 (July) 1943

- Spontaneous Pneumothorax in Apparently Healthy Young Adults J. F. Moorman—p. 277  
\*Rocky Mountain Spotted Fever P. Sizemore—p. 282  
Plasma Bank A. R. Wiley—p. 285  
Neuropsychiatric Problems Arising in Civilian Population J. A. Willie—p. 287

**Rocky Mountain Spotted Fever**—Sizemore reports observations in 7 cases of Rocky Mountain spotted fever. The cases occurred in a family in the town of Armstrong in Bryan County, which is located in the south central section of Oklahoma. The family lived here for several years but had moved into a new, unpainted, green lumber house only a short distance from their previous home. The household consisted of a couple, their 3 children and the wife's mother. The latter, aged 67, died of the illness contracted by all of them. All developed what was first suspected to be typhus but later was identified as Rocky Mountain spotted fever. The attending physician, Dr. Flythe, aged 44, died of the disease. A man aged 47 who had

stayed at the home of the family while the first 3 members were ill became ill and died. The rash suggested that this fatality was also caused by the Rocky Mountain spotted fever. Questioning brought out the fact that all members of the household had been bitten repeatedly since moving to the new house by ticks which infested the yard. The gopher proved to be the ticks' host in the Armstrong area. The use of vaccine in infested areas each year is indicated. This is best given in late winter or early spring. The vaccination should be completed at least ten days before the first expected exposure. The vaccine is not recommended for therapeutic use.

**Pennsylvania Medical Journal, Harrisburg**

46 1009-1120 (July) 1943

- Summary of Endocrine Effects in Advanced Prostatic Cancer C. B. Huggins—p. 1023  
Clinical Observations on Estrogenic Therapy in Prostatic and Bladder Carcinoma and Benign Prostatism W. H. Hames and S. Mireli—p. 1025  
Testosterone Therapy in Male Hypogonadism J. F. McCahey—p. 1029  
Importance of Wheeze in Diagnosis of Pulmonary Tuberculosis J. S. Packard—p. 1034  
Study of Personality Factors in Group of Neuroses Seen in General Hospital B. L. Keyes and J. M. Flumerfelt—p. 1044  
Present Status of Analgesia and Anesthesia from Obstetrician's Viewpoint T. L. Montgomery—p. 1048  
Effects of Analgesia and Anesthesia on Prematures R. M. Tyson—p. 1051  
Pathologic Lesions of Asphyxia Neonatorum E. F. Burt—p. 1053  
\*Inadequate and Ill Advised Surgery in Treatment of Carcinoma of Cervix L. C. Scheffey and G. A. Hahn—p. 1056  
\*Carcinoma of Cervix Study of 233 Cases Including 103 Five Year Cases with Survival of 33.9 Per Cent J. R. Johnston—p. 1057

**Inadequate Surgery in Carcinoma of Cervix**—According to Scheffey and Hahn surgical measures of an ill advised or inadequate nature are being employed too frequently in carcinoma of the uterine cervix. They criticize operative management of this sort and emphasize the contraindications and technical limitations. Radical surgery for carcinoma of the cervix is a recognized method of treatment only on the condition that such a patient has been carefully selected. The lesion must be a relatively early one (groups I and II, Schmitz and League of Nations), the patient should be a reasonably good surgical risk and a radical operation must be performed by an operator thoroughly experienced in its exacting technique. The authors review results observed on 18 patients subjected to operation in whom recurrence was relatively prompt. Two groups consisting of 9 patients each were seen at the Jefferson and Oncologic hospitals of Philadelphia respectively. It is evident from the histories that in each instance either an inadequate operation was performed or proper indications for such an operation were lacking. The short survival of the patients subjected to vaginal hysterectomy is especially appalling when one considers that they were young women with supposedly operable lesions. The surgical procedure was probably not of the type of which Lynch, Bonney and others of similar experience are capable. If the decision to operate is made, it must be a selective operation not only carried out by one qualified to perform a truly radical operation but based on the premise that the lesion is undoubtedly early, that the patient is an excellent risk and that intracavitary irradiation with radium has been a preliminary procedure. The authors feel that carcinoma of the uterine cervix is best treated with radiation therapy alone. There may be certain patients, carefully selected, who might possibly have a better chance for longer survival when treated surgically by one experienced in the rigorous technique of the radical operation, preceded by irradiation, but in general this is not so. Hence it would be wiser to avoid surgery in the treatment of cervical carcinoma, for a simple type of vaginal hysterectomy or abdominal panhysterectomy is at best only a hazardous and delaying measure in such instances.

**Carcinoma of Cervix**—According to Johnston cancer of the cervix causes about 15,000 deaths each year in the United States, more deaths than any other gynecologic disease. The author reviews 233 cases of cervical cancer that were registered at the Tumor Clinic of the West Penn Hospital during the last ten years. Twenty-nine per cent occurred in women under 40 years of age. Patients present themselves too late for a

ment, as more than 50 per cent had symptoms for six months or longer. The diagnosis of cancer of the cervix is made by careful inspection and palpation of the cervix and by biopsy. At times, when no lesion is visible, a cancer can be detected by palpation, the hypertrophied indurated cervix indicating a carcinoma which can be proved by curetting the cervical canal. Biopsies should be made on all suspected lesions. Up to 1937 most of the cases were treated with radium followed by x-rays. Of late x-rays have been followed by radium. The x-ray dosage varies with the tolerance of the patient, usually from 1,600 to 2,200 roentgens to each of four ports over a period of three weeks. The radium is given in doses of 3,600 to 4,800 mg. hours. Some have had interstitial radiation in the form of four or five 10 mg. needles inserted in the parametrium. Treatment is not repeated unless there is a recurrence as proved by biopsy. The possibility of fistulas and rectal ulcers due to radiation reaction should be remembered and precautions taken to avoid them. The results in 103 five year cases show a survival rate of 33.9 per cent.

### Physiological Reviews, Baltimore

23 185-304 (July) 1943

- Role of Lipids in Atherosclerosis E F Hirsch and S Weinhouse —p 185  
Nature of Forces Between Antigen and Antibody and of Precipitation Reaction L Pauling D H Campbell and D Pressman —p 203  
Physiologic Study of Vertical Stance of Man T A Hellebrandt and Elizabeth Brogdon Franseen —p 220  
Noncaloric Functions of Dietary Fats G O Burr and R H Barnes —p 256  
Quantitative and Qualitative Variations in Normal Leukocytes C C Sturgis and T H Bethell —p 279

### Public Health Reports, Washington, D C

58 969-1000 (June 25) 1943

- Studies on Duration of Disabling Sickness IV Duration of Disability from Nonrespiratory Nondigestive Diseases Among Male Employees with Particular Reference to Older Worker W M Gaffafer and R Stiggeaves —p 969  
Health Officer's Place in Management of Mental Illness S W Hamilton —p 979  
American Q Fever Experimental Transmission by Argasid Ticks Ornithodoros Moubata and O Hermsi G E Davis —p 984

### Radiology, Syracuse, N Y

41 1-106 (July) 1943

- Correlation of Disability with Roentgen Findings Head Injuries L H Osmond —p 1  
Correlation of Disability with Roentgen and Clinical Findings in Silicosis Part I P Bovard —p 11  
Id Part II J W G Hannon —p 13  
Evaluation of Disability in Low Back Injuries F L Schumacher —p 18  
Correlation of Disability with Roentgen Findings The Extremities E C Baker —p 23  
Posteromental Pleural Line L H Garland —p 29  
Radiographic Posteromedial Border of Lung or Linear Thoracic Paraspiral Shadow J I Brailsford —p 34  
Value of Roentgen Therapy in Carcinomatous Metastases to Bone E C Koenig and G J Culver —p 38  
Chondro Osteodystrophy Morquio's Disease Case Observed During Pregnancy P E Russo —p 42  
Carcinoma of Cervix Complicated by Complete Procidentia Radiation Therapy R A Harvey and R N Ritchie —p 48  
Pedunculated Tumors of Stomach Prolapsing Through the Pylorus T B Weinberg and L Raider —p 52  
Effect of Roentgen Irradiation on Hormone Content and Secretion of Adrenal Medulla W Raab and A B Soule Jr —p 56  
Preliminary Notes on Effect of Roentgen Rays on Sulfonamides in Vitro I C C Tchaperoff —p 61

### Rhode Island Medical Journal, Providence

26 79-92 (June) 1943

- Sex Hygiene in the Navy E C Smith —p 80  
Presentation of Portrait of Charles F Cormi MD to Rhode Island Medical Society R Hammond —p 82  
Report of State Chairman for Procurement and Assignment of Physicians to Medical Profession of Rhode Island H DeWolf —p 86

26 93-106 (July) 1943

- Recognition and Management of Rheumatic Fever in Children A T Martin —p 93  
Extraperitoneal Cecostomy A N Migliaccio —p 96  
Leukemia in Infants P C Cook —p 100

### Surgery, Gynecology and Obstetrics, Chicago

77 1-112 (July) 1943

- \*Perineal Prostatectomy versus Transurethral Resection for Hypertrophy and Cancer of Prostate H H Young —p 1  
Metabolic Studies in Patients with Cancer of Gastrointestinal Tract XI Postoperative Hypoproteinemia and Relationship of Serum Protein Fall to Urinary Nitrogen Excretion I M Ariel, J C Abels G T Pack and C P Rhoads —p 16  
Treatment of Gastric Ulcer E S Judd and J T Priestley —p 21  
Rupture of Uterus Analysis of 30 Maternal Deaths C A Gordon and A H Rosenthal —p 26  
Heparin Tolerance Test of Clotting Mechanism G de Takats —p 31  
Y Shaped Osteotomy for Correction of Open Bite in Adults K H Thoma —p 40  
Osteochondroma of Coronoid Process of Mandible R T Shackelford and W H Brown —p 51  
Mammary Cancer in Youth T de Cholnoky —p 55  
Evolution of Circulation in Developing Femoral Head and Neck Anatomic Study W E Wolcott —p 61  
Chemical Considerations Governing Local Chemotherapy of Wound Infections T C Schmclkes —p 69  
Maximal Volume of Human Spleen P P T Wu —p 74  
Herniation of Nucleus Pulposus as a Complication of Preexisting Low Back Instability E M Deery —p 79  
Posterior Horn Lesions in Meniscal Injury D B Slocum and D E Moore —p 87  
Ten Years' Experience with Ribbon Gut in Urologic Surgery O S Lowsley —p 91  
Pattern of Uterine Motility Throughout Labor with Special Reference to Inertia Study of 105 Patients with Lorand Tocograph D P Murphy —p 101

**Perineal Prostatectomy versus Transurethral Resection**—Young analyzed the histories of all patients (now totaling 200) who have come to the Brady Urological Institute complaining of imperfect results following transurethral resection elsewhere. He concludes that in patients with considerably enlarged prostates complete enucleation of the hypertrophied lobes through the perineum gives better results and is no more dangerous than transurethral resection. Prostatitis and painful urination are certainly less common after perineal prostatectomy than after transurethral resection. Another great advantage of the perineal procedure is the opportunity which it affords to make a diagnosis and effect a cure of carcinoma of the prostate. Many conditions, particularly bars contractures and small hypertrophies can be dealt with efficiently by transurethral resection, but perineal prostatectomy is distinctly superior for the larger hypertrophies, calculi in the prostate and chronic prostatitis. Prostatism is so complex in its symptoms and so varied in pathologic aspect that it can be handled satisfactorily only by careful selection of the operative procedure best suited to obtain a radical cure. The exclusive use of transurethral resection for all types of prostatic obstruction, even the large and the cancerous is indefensible.

### Texas State Journal of Medicine, Fort Worth

39 53-168 (June) 1943

- Scientific Medicine is Fundamental J L Taylor —p 59

39 169-220 (July) 1943

- Methods of Reducing Mortality and Morbidity in Appendicitis Q B Lee —p 175  
Use of Acid Jelly Postoperatively After Vaginal and Cervical Operations and in Nonspecific Infections of Vagina K J Karnaky —p 178  
Staphylococcus Infection with Case Reports and Treatment R H Harrison —p 185  
Renal Hypertension Value of Translumbar Arteriography in Its Diagnosis Preliminary Report A K Doss —p 188  
Diagnosis of Intrathoracic Tumors R G McCorkle and C J Koerth —p 194  
New Era in Medicine E W Bertner —p 197  
Diverticulum of Esophagus Duodenum and Colon Report of Case W H Metz —p 200  
Complications and Sequelae of Cataract Operations E L Goar and J F Schultz —p 201

### Virginia Medical Monthly, Richmond

70 331-382 (July) 1943

- Three Gallbladders W L Peple —p 331  
Adams-Stokes Syndrome as Complication of Myocardial Infarction Report of 3 Cases Demonstrating Two Different Underlying Mechanisms J K Beckwith —p 336  
Further Observations on Treatment of Eclampsia M P Rucker —p 343  
Virus Pneumonia by Contrast with Other Types J H Smith —p 351  
Alcohol Abuse A Public Problem H Fetter —p 353  
Therapy of Meningitis I B S Perrow —p 353  
Fovix Arteritis L Smith —p 365  
Plagiograph X-Ray Technique A Fetter —p 371

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### Annals of Rheumatic Diseases, London

3 145-192 (May) 1943

Evaluation of Roentgenologic Findings in Arthritis J. D. Comp—p. 145

Rheumatic Fever and Nutrition J. F. Rinehart—p. 151

\*Visceral Lesions Associated with Rheumatoid Arthritis D. J. Fingerman and I. C. Andrus—p. 168

Blood Cultures in Rheumatoid Arthritis (Historical and Personal Observations) T. N. Fraser—p. 181

**Visceral Lesions Associated with Rheumatoid Arthritis**—Fingerman and Andrus examined the records of 192 cases with a diagnosis of arthritis. There were 61 cases of rheumatoid arthritis. The authors apply the term rheumatoid to the severe deforming type of chronic infectious arthritis. The criteria used in selecting these cases of rheumatoid arthritis were as follows: The disease must have been chronic, being present a minimum of several months. It must involve two or more joints. It must have caused deformities of the joints and their adjacent structures. It must be of a nonsuppurative type. The authors examined the clinical records and available pathologic material from 61 patients who had died with chronic rheumatoid arthritis. Lesions indistinguishable from those found in the rheumatic heart were encountered in 19 cases (31 per cent). Six of the patients with rheumatic heart lesions had congestive heart failure as evidenced by chronic passive congestion of the liver. Only 3 persons in the entire group had "Felty's syndrome," or chronic arthritis associated with splenomegaly and leukopenia. There were 6 other patients with splenomegaly along with the arthritis deformans who did not have leukopenia. Amyloidosis involving one or several organs was found in 13 patients (21 per cent). Glomerulitis was found in 8, of which 6 were in early subclinical stages, and the remaining 2 had clinical evidences of glomerulitis.

### British J. Children's Diseases, Dorking, England

40 31-62 (April-June) 1943

Teeth of School Children from Point of View of School Doctor C. Rolleston—p. 31

Cause of Death in Newborn Babies S. Engel and G. H. News—p. 36

### British Medical Journal, London

2 31-62 (July 10) 1943

Circulation in Arterial Hypertension G. W. Pickering—p. 31

\*Chemotherapy of Intestinal Infections Treated with Sulfonamide Compounds A. C. Clay—p. 35

Technic of Intravenous Drip Transfusion in Infants D. McCarthy—p. 36

Trigeminal Neuralgia at an Exceptionally Early Age Cured by Gasserian Alcohol Injection W. Harris—p. 39

Availability of Calcium of Milk Katharine H. Coward, Elsie W. Kassner and Letitia W. Waller—p. 39

**Sulfonamide Compounds in Intestinal Infections**—Clay reviews 273 cases of bacillary dysentery treated at the City Hospital of Aberdeen during 1941 and 1942, 4 cases of gastroenteritis in infants and 8 cases of paratyphoid B. Of the patients with bacillary dysentery 140 received no drug, 83 were treated with sulfaguanidine, and 50 received sulfanilamide. Adults not receiving chemotherapy were given 2 drachms (8 Gm) of sodium sulfate night and morning and children 1 drachm (4 Gm) night and morning. Those receiving sulfaguanidine were given a five day course based on body weight, the initial loading dose during the first twenty-four hours being 0.5 Gm per kilogram of body weight, followed by a maintenance dose of 0.1 Gm per kilogram for the next four days. Those receiving sulfanilamide were given a dosage amounting to half the quantity of sulfaguanidine. The tablets were powdered and administered in milk every four hours for the first twenty-four hours and three times daily for about the next four days. Fluids were given intravenously in the form of 5 per cent dextrose in isotonic solution of sodium chloride when necessary, and particular stress was laid on fluid intake by mouth, 8 to 10 pints for adults and proportionately less for children. The stay in the hospital and the number of days during which the stools remained positive were reduced by half for patients receiving

sulfaguanidine as compared with those not receiving chemotherapy except in the case of Sonne convalescent carriers, whose stay in the hospital and number of days bacteriologically positive were slightly increased. Of the patients receiving sulfanilamide both the stay in the hospital and the length of time during which stools remained positive were increased, but this may be accounted for by the small dosage of drug and by the small number of patients treated. Neither sulfaguanidine nor sulfanilamide produced toxic symptoms or disagreeable effects. Four patients with gastroenteritis and 8 with paratyphoid B were treated with sulfaguanidine without improvement.

### Deutsche medizinische Wochenschrift, Leipzig

68 313-340 (March 27) 1942 Partial Index

Surgical Wound Infection and How to Combat It H. Hellner—p. 313

\*Problems in Employment of Desoxycorticosterone and Similar Substances in True Adrenocortical Insufficiency F. Heni—p. 318

Tuberculosis of Infants E. Püschel—p. 322

Gastritis, Ulcer, Carcinomas J. Meinertz—p. 326

**Desoxycorticosterone in True Adrenocortical Insufficiency**—Heni investigated the cause of edema and hypertension in the course of treatment with desoxycorticosterone acetate. He describes observations on healthy subjects and on patients which convinced him that the chief action of desoxycorticosterone acetate is that on the sodium chloride and water economies. Sodium and water are retained in the blood and extracellular spaces and cause increase in blood pressure. If large doses of desoxycorticosterone acetate are used, edema may result. Edema, hypertension and acute shock are not caused by excessive intake of sodium chloride but by desoxycorticosterone acetate. The effect of this substance on the potassium exchange is not as noticeable as that on the sodium. The carbohydrate metabolism is not completely normalized and the fatigability of the patients is not counteracted when signs of excessive dosage appear already in the sodium chloride exchange. Desoxycorticosterone acetate in doses as large as possible was given to 4 patients with Addison's disease. It was impossible to obtain complete restoration in spite of prolonged medication. The patients still felt weak. Complete recovery was obtained only in those whose disease was moderately severe. The authors conclude that although desoxycorticosterone acetate is the best available remedy for Addison's disease their observations indicate that desoxycorticosterone acetate or desoxycorticosterone either are not identical with the adrenocortical hormone or do not represent the only hormone of this organ. Substances chemically related to desoxycorticosterone are capable of exerting favorable effects on the metabolic disturbances of Addison's disease. In severe forms of the disease only progesterone is effective, in mild forms testosterone and low doses of estrone (theelin) effect improvement. These substances do not act by way of the sodium chloride and water exchange, but they improve the glycogen reserve of the organism, particularly that of the musculature. Progesterone might be used in the treatment of severe Addison's disease if moderate doses of desoxycorticosterone cause disturbances in the sodium chloride and water economies.

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Prognosis of Biliary Disorders F. Munk—p. 341

\*Study of New Hereditary Agglutinable Factor in Human Erythrocytes P. Dahr—p. 345

Specific Biologic Treatment of Staphylococcal Diseases H. Gro—p. 347

Encephalitis like Manifestations and Disturbances of Kidney Function in Subacute Lead Poisoning E. Kirschner—p. 351

**New Hereditary Agglutinable Factor in Human Erythrocytes**—A new hereditary agglutinable factor could be detected in human erythrocytes by guinea pig immune serum produced with blood of rhesus monkeys. In 923 out of 1,129 blood tests, or in 81.5 per cent, the agglutinin which had been designated as Rh was found, whereas in 206 blood tests or 18.5 per cent, it was not found. The distribution among the ABO blood groups, the A subgroups and the MNP types seemed to be equal. Studies of 46 pairs of twins suggest that the agglutinin Rh is hereditary. Results of study in a number of 17 families are compatible with the assumption that agglutinin Rh is a simple dominant inherited character.

## Book Notices

**Convulsive Seizures How to Deal with Them a Manual for Patients Their Families and Friends** By Tracy J. Putnam M.D. Professor of Neurology and Neurosurgery College of Physicians and Surgeons Columbia University New York Cloth Price \$2.00 Pp 168 with 12 illustrations Philadelphia Montreal & London J. B. Lippincott Company 1943

There is a real need for a book to which the victims of convulsions and their families can turn for reliable information. In a large measure this book supplies that need. The task of any book which would instruct patients is a difficult one. Such a book must on the one hand be accurate and sufficiently complete to supply the patient with the required information without at the same time frightening him with rare and unlikely complications of his disorder and without providing just enough information to encourage self medication. A book which would treat of "epilepsy" has one other requirement which it must meet—it must help to brush away the superstitions, fears and inaccurate concepts which have grown up about the convulsive states of unknown origin. If the present book has any one general failing it is that it is not sufficiently forceful on the latter point. It says but it does not sufficiently stress the facts that in the majority of cases the convulsive seizures can be completely abolished if adequate treatment is begun early and persevered in and that such patients need have no fear of insanity or mental deterioration and can and should lead perfectly normal healthy lives with the same chances to achieve happiness and success in their chosen occupation as other people. The author tends far too much to view 'epileptics' as a group, making no effort to separate the mentally retarded with convulsions and those with uncontrollable seizures from the larger and far more favorable group. It is these less fortunate individuals, in particular, that bring down the average of physical fitness noted on page 23.

The author has also been too much impressed with some rather poorly considered statistics on the inheritance of convulsions or a convulsive tendency (pp 22 and 119). In these statistics, as he noted himself, the rather uncommon instances of definitely hereditary epilepsy were not separated from the far more common sporadic cases. Likewise he has been overly impressed with the value of electroencephalography in selecting individuals with or without the probable potentiality of perhaps producing epileptic children (see p 151). Not all of those with experience with electroencephalography would agree that the technic has any such capabilities.

Chapter 8, on medical literature, and chapter 9, on the legal aspects of epilepsy, had best be omitted from this book. The latter chapter could well be enlarged for publication in some journal for lawyers or for presentation before legislators. It detracts from the value of this book.

The author is to be complimented for having avoided fads and all peculiar forms of treatment which have found favor in only a few hands. The reviewer's experience would lead him to feel that the restrictions on alcoholic beverages for these patients should be complete and not as lenient as those given here (p 92).

This book can be recommended to some patients and to more families. No doctor should recommend it without first reading it. It should be placed only in the hands of intelligent and fairly stable people. It is not a book for the overapprehensive worrisome, easily agitated person. Such people would find more than enough to exercise them here.

**A Handbook for Emergency Commissioned Officers of the Indian Medical Service** By Lieut Colonel I. R. Dogra M.D. M.S. Foreword by Major General J. N. Thomson DSO MC Boards Pp 202 Bombay Thacker & Co. Ltd 1943

This handbook contains the essential information required to orient completely the emergency commissioned officer of the Indian Medical Service. In addition the book contains basic reference material which the officer will want to refer to until he becomes thoroughly acquainted with it. Any army medical department officer would find this handbook distinctly helpful if he should be destined for service in India or with the Indian army.

It will require four to five hours of careful reading to digest the 136 pages of subject matter. Appendix VII, appendix VIII and appendix IX should be studied carefully first. This procedure will eliminate too frequent reference to the appendix and permit continuous reading. By the use of many abbreviations many facts have been transmitted in comparatively few pages. It is hard to believe that this small handbook can and does include all of the following essentials: organization of the army in India, the medical officer and his relationship to the army, military life, military dress, military courtesy, military discipline, military law, organization, functions and operation of the medical units, duties of medical officers in their various capacities in field and garrison service, field sanitation and preventive medicine, collection and evacuation of casualties, preparation of orders, messages, estimates of the medical situation and medical forms, and, in addition, six appendices, which include translation of the Geneva Convention, uniform and equipment for emergency commissioned officers, lecture demonstrations, medical standing operative procedures, water sterilization, army forms required by the medical service, medicomilitary definitions and abbreviations.

The medical department officer of the United States Army who reads this book should review our own medical service procedure and installations before he reads it. More enjoyment will be gained thereby in the comparison. For example, he should be able to associate quickly such medical installations as the regimental aid post, advanced dressing station, main dressing station and casualty clearing station with respective stations of our service. He will then be able to trace the casualty through the echelons of evacuation as operated by the Indian Medical Service.

This book reveals a vast amount of experience on the part of the author, who has presented ideal and essential information in a condensed form. It is highly recommended to every Medical Department officer who has interest in medical service of another army or who might serve with the Indian Medical Service.

**The Determination of Blood Groups** Medical Research Council War Memorandum No 9 Paper Price 10 cents 4d Pp 19 New York British Information Services London His Majesty's Stationery Office 1943

The experience gained from the large scale blood group determinations in Britain during the last three years has suggested "that certain procedures, rigidly followed will reduce errors in grouping to a minimum." To that end the memorandum was compiled by members of the Blood Transfusion Research Committee appointed by the Medical Research Council. Tests for ABO blood groups subgroups of A, crossmatching tests, preparation and storage of test serums sources of error and the Rh factor are presented. The completeness of information offered in the sixteen pages of text, the excellent selection of the recommended methods and the emphasis on sources of error combine to make this pamphlet a most valuable contribution to be placed in the hands of clinical pathologists and of technicians who do pretransfusion tests. It can be recommended as the best of its size.

**Essentials of Proctology** By Harry E. Bacon B.S. M.D. F.A.C.S. Professor and Head of the Department of Proctology Temple University Medical School and Hospital Philadelphia Introduction by Curtice Rosser B.A. M.D. F.A.C.S. Professor of Proctology Baylor University Dallas Cloth Price \$3.50 Pp 345 with 168 illustrations Philadelphia Montreal & London J. B. Lippincott Company 1941

The author has taken from his own earlier work portions of those chapters which deal with practical phases of proctology and problems of interest to the physician as he goes about his daily tasks. It is a convenient little volume which should prove valuable to those who do not possess the author's more complete volume. In the foreword Dr Curtice Rosser wrote: "In *The Essentials of Proctology* which Dr Bacon here offers to the student the general practitioner the surgeon and the specialist in colorectal diseases is a concise fluent and detailed exposition of the author's own experience and current practice. This is an accurate appraisal of the character of the book."



## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. INNUMERABLE COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### UNCONSCIOUSNESS AT HIGH ALTITUDE AND OXYGEN SUPPLY

**To the Editor**—In *The Journal*, July 24, 1943, there is an article on a parachute jump made by Lieut. Col. William Lovelace from 40,000 feet. The statement was made in the third paragraph that unconsciousness occurred within fifteen seconds without oxygen at 40,000 feet. Since many people can hold their breath for a much longer period of time and even swim under water for longer than fifteen seconds I was wondering whether or not this was a typographic error or whether there were other factors.

Raul Pietri, M.D., Asbury Park, N. J.

**ANSWER**—Unconsciousness occurs within fifteen seconds without oxygen at 40,000 feet if the person continues breathing. Once a man is disconnected from his oxygen supply his first expiration empties his lungs and inspiration thereafter takes in air which is so deficient in oxygen that unconsciousness will ensue almost immediately. The actual saturation of blood at 40,000 feet, breathing pure oxygen, is slightly less than normal, consequently the decline in saturation or onset of unconsciousness occurs with extreme suddenness. This is inherent in the nature of the saturation curve of hemoglobin. If a man at 40,000 feet takes a deep breath and holds it, he will remain in much better condition than if he continues breathing after disconnecting his oxygen supply. It might be further stated that the actual oxygen consumption at 40,000 feet is approximately the same as at ground level or at 300 cc standard temperature and pressure dry per minute. The actual volume of oxygen in the lungs is approximately 1,000 cc standard temperature and pressure dry per minute when breathing pure oxygen at 40,000 feet. From this it readily can be seen that the interval of reserve is extremely small even when one is holding the breath.

### APLASTIC ANEMIA AFTER EXPOSURE TO FLOOR WAX AND FLY SPRAY

**To the Editor**—Can you inform me of the ingredients of Veeco Self-Polishing Wax, manufactured by the American Products Company of Cincinnati and of Wax Rite Floor Wax, manufactured by the Vestal Chemical Company of St. Louis? A 3 year old child was found to be suffering from a profound anemia and leukopenia. Bone marrow aspiration revealed an aplastic type of marrow. A history of exposure to these waxes was obtained, and it was also learned that the child had been exposed to fly spray used in a dairy barn. Are there any ingredients used in the more common fly sprays which are known to be toxic to the hemopoietic system?

John W. O'Neill, M.D., Eau Claire, Wis.

**ANSWER**—The two floor waxes mentioned by name are believed to be of the aqueous soap emulsion type and therefore contain only water as the solvent and none of the organic solvents widely common in some other varieties of floor waxes. Apart from certain hydrocarbon solvents later specified, floor wax ingredients do not cause the clinical manifestations mentioned in the query, although some may induce dermatitis. The organic solvents most likely to appear in floor waxes are toluene, trichloroethylene, naphtha, alcohols and petroleum ether. If benzene or carbon tetrachloride should be utilized potentially, highly dangerous situations might arise. Benzene is known to induce the symptoms described. If any of the floor waxes now questioned has been retained, analyses should be made for benzene although in both instances there is assurance from the manufacturer that no solvent other than water enters the formula. A typical formula for a floor wax of the non-soap emulsion type is East India gum 23 pounds, beeswax 6 pounds, Carnauba wax 20 pounds, Montan wax 8 pounds, naphtha 89 pounds, turpentine 10 pounds, pine oil 3 pounds. Pyrethrum is scarce in this country just now, earlier having chiefly been obtained from Japan. Some insecticides formerly containing pyrethrum as the main insecticidal agent no longer contain it. If, in fact, a pyrethrum spray was used, and this was a well known brand, some petroleum derivative such as naphtha was probably the extracting agent. However, almost any agent might have been employed under present conditions, including dichloroethylene, carbon tetrachloride, trichloroethylene and conceivably benzene. Since exposure probably was limited to a few short periods, this etiologic possibility seems remote.

### HYPERSENSITIVITY TO SULFONAMIDES

**To the Editor**—Has any work been done to determine how long sensitivity to sulfonamides is maintained and the amount necessary to cause exacerbation? Is it possible to desensitize an individual who is sensitive?

M.D., Massachusetts

**ANSWER**—It is not known from any extensive study how long a patient remains sensitive to sulfonamides. However, isolated cases are on record in which sensitivity was shown to persist for as long as three years. The amount of sulfonamide necessary to cause an exacerbation is usually small, so that a single dose of 0.6 Gm. may cause symptoms in a sensitive person. There are no good methods available for desensitizing patients. Sensitization to the sulfonamides is usually but not always specific. That is to say, there is usually no cross sensitization. If a patient is sensitive to one sulfonamide compound, another compound can usually be given with safety.

### VITAMIN B COMPLEX AND TINNITUS

**To the Editor**—What do you feel would be the proper dose of vitamin B<sub>1</sub> for a tinnitus, which ear, nose and throat specialists say has no apparent cause other than possible nerve involvement? There is no deafness.

M.D., New York

**ANSWER**—There is no satisfactory evidence that vitamin B<sub>1</sub> (thiamine hydrochloride) is of any help in cases of tinnitus or nerve deafness. Since vitamin deficiencies are generally multiple, it would seem wise to give the whole vitamin B complex rather than just the B<sub>1</sub> fraction.

An article by Shambaugh and Jennes in the *Archives of Otolaryngology* (35:513 [April] 1942) summarizes the literature on vitamin B in deafness and gives the results of use of large doses of B<sub>1</sub> in cases of tinnitus in deafness, which were entirely negative.

### BARBITURATES WITH SCOPOLAMINE IN OBSTETRICS

**To the Editor**—Can you give me information on the use of barbiturates combined with scopolamine for obstetric analgesia? I should like to know the dosage and how soon it could be repeated. Also is it free from the objections that "twilight sleep" has, that is, I suppose it was the morphine part of twilight sleep that was dangerous to the baby rather than scopolamine, wasn't it? Will you please set me straight on this.

George A. Bakke, M.D., Oakland, Calif.

**ANSWER**—The barbiturates can be used in conjunction with scopolamine to provide obstetric analgesia. Their effectiveness depends on the drug selected and the amount administered. Unlike morphine, which is primarily an analgesic drug, the barbiturates induce amnesia rather than analgesia. Large amounts are usually necessary to provide desirable effects during labor. The barbiturates, like the opiates, produce narcosis in the newborn. Effective doses will result in asphyxia, which is just as severe as that induced by morphine, or even more severe. An initial dose of such barbiturates as secobarbital or soluble pentobarbital in combination with scopolamine may be 3 to 6 grains (0.2 to 0.4 Gm.). The barbiturate may have to be repeated in four to six hours to maintain the desired effect. Larger doses have been advocated, but these are not desirable in most instances. Patients in labor under the effect of barbiturates must be constantly attended, for their semiconscious, often delirious, state may lead to unpleasant and serious complications.

### MALARIA IN ALABAMA

**To the Editor**—The answer to the query of "M.D., Florida" about malaria in southern Alabama, and particularly a "gulf town in Alabama" which appeared on page 1152 of *The Journal*, Aug. 14, 1943, would not lead an uninformed person to a proper conclusion. The reply errs in stating that "chances of contracting the disease by unacclimated persons would be great." To take a considerable and representative population such as that of Mobile County as a basis of measurement, the vast majority of persons never in their lifetimes have either acute or chronic malaria. If the infection rate is a hundred times as high as the death rate, which for the county varies between 0 and 9 per hundred thousand, the morbidity per year is only between 0 and 0.9 per cent. Those would not be all new cases, of course, but a total including reinfections and infections carried over. The significance of that last point is great because the disease is localized more than the statement would lead one to believe. Where residence is even moderately dense, *Anopheles quadrimaculatus* breeding has been mainly controlled, if it ever occurred, or, conversely, where breeding of this mosquito could not be controlled, residence has not become or remained dense. As an example, in the entire Mobile metropolitan or "defense" area last year so few *A. quadrimaculatus* mosquitoes could be found either in breeding areas or in adult catching stations that there was a repeated threat that all financial aid for survey and control activities would be withdrawn.

It is true that military forces and, in years past but probably not recently, industries have selected sites unfortunately without consideration of conditions which might affect malaria transmission. These, as well as individuals and families, could have settled in the same general area, or perhaps on sites only a mile or two away with a high degree of safety.

O. L. Chason, M.D., Mobile, Ala.

Health Officer, Board of Health

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## GASTROINTESTINAL DISTURBANCES IN THE COMBAT AREA

### I. PRELIMINARY OBSERVATIONS ON PEPTIC ULCER

CAPTAIN ALEXANDER RUSH  
MEDICAL CORPS, ARMY OF THE UNITED STATES

The basis for this report is the fruit of a year's experience in a large hospital in the South Pacific close to the zone of combat. The findings reported are the result of the study of 200 consecutive patients admitted to the medical service because of gastrointestinal disorders. This figure represents 6 per cent of the total number of medical admissions during the year. This percentage appears disproportionately low when compared with the experience of other institutions.<sup>1</sup> However, it does not include patients admitted because of either dysentery or jaundice.

In civilian practice it is seldom imperative to make an immediate diagnosis in dealing with a patient experiencing the symptoms of peptic ulcer. Especially when the diagnosis is not clear, supportive dietary measures may be sufficient to keep the patient at his job. In military practice the converse is true. Since a satisfactory dietary regimen is not possible while the patient is on active field duty and since the only other alternative—extended hospitalization—impairs the military efficiency of the soldier's unit, an early diagnosis is demanded. The soldier must be promptly and definitely declared either fit or unfit for active duty. Only on the basis of such information can unit commanders keep their organizations at peak strength and efficiency. Thus peptic ulcer in the field presents new ramifications to an old problem.

### INCIDENCE OF PEPTIC ULCER

Peptic ulcer was diagnosed in slightly over 10 per cent of all medical patients admitted during a twelve month period beginning in March 1942. This figure represents approximately 19 per cent of patients admitted to the wards for treatment of disorders of the upper gastrointestinal tract. Of the figures on hand at this writing, only those of the New Zealand forces in the Middle East compare favorably with these. They report the presence of peptic ulcer in 18 per cent of 100 patients admitted because of dyspepsia.<sup>2</sup> Allison and Thomas<sup>3</sup> reviewed 100 cases of dyspepsia among sailors and marines and gave 45 per cent as the figure for the incidence of peptic ulcer. Likewise Chamberlin and Berk described peptic ulcer as occurring in 31 per

cent and 41 per cent of those admitted to the gastrointestinal services of the Lawson and Tilton general hospitals respectively.<sup>1</sup> The explanation for these differences is not clear. However, the disparity may be related to the locality and the type of hospital from which the latter reports emanate. Both the New Zealanders and ourselves were drawing patients directly from the combat troops in the field. On the other hand, the large general hospitals frequently obtain the majority of their patients by transfer from other smaller installations. The latter have screened out the run of the mill medical patients and transferred the soldiers with serious incapacitating illnesses, such as peptic ulcer, to the general hospitals. Under these circumstances it can be seen that the incidence of certain diseases would appear higher in the clinical material of army general hospitals than in that of field hospitals.

### CLINICAL HISTORY

Approximately half of our patients with ulcer gave clearcut histories of previous attacks. This observation lends little support to the contention that army rations or living conditions in the field bear any direct relation to the production of peptic ulcer. A typical and classic history was obtained from 80 per cent of the patients with ulcer. There is no question that a careful chronological compilation of symptoms is of inestimable value in reaching a satisfactory diagnosis. However, soldiers soon learn that a certain set of complaints is commonly associated with peptic ulcer and that this disease is one for which they will be sent home. Consequently a classic history in the absence of corroborative evidence must be looked on with suspicion. On the other hand, the dictum that "the stomach is the greatest liar in the body" has been found to be equally true. Disconcertingly often a soldier who gave a history typical of irritable or spastic colon was shown by x-ray examination to have undeniable evidence of peptic ulcer. The gastrointestinal disturbance of 10 per cent of the patients with peptic ulcer was thus misdiagnosed as functional. In regard to another 10 per cent a similar misdiagnosis was made but with the added note "ulcer to be ruled out." This makes a total of 20 per cent wrong diagnoses based solely on the history. The two extremes described emphasize the importance of viewing the patient as a whole and of drawing on every available means of diagnosis. Reliance on a single symptom, sign or examination is likely to lead to serious errors.

### EXAMINATIONS

**Physical Examination**—Sixty per cent of the patients with ulcer had tenderness in the epigastrium. In one fourth of these the tenderness was unmistakable. No relation, however, could be established between the type and locality of the lesion and the character of the pain and tenderness.

**X-Ray Examination**—Sixty-seven per cent of the diagnoses of peptic ulcer were supported by x-ray evi-

<sup>1</sup> Chamberlin, Donald L. Peptic Ulcer and Irritable Colon in the Army. *Am J Digest Dis* 9: 245-248 (Aug) 1942 cited by Palmer W. L. The Stomach in Military Medicine. *J A M A* 119: 1155-1159 (Aug 8) 1942.

<sup>2</sup> Riley, C. Graham. Major. N. Z. M. C. Personal communication to the author.

<sup>3</sup> Allison, R. S. and Thomas, A. Re: Peptic Ulcer in the Royal Navy. Symptoms and Pathology. *Lancet* 1: 565 (May) 1941 cited in Dick, G. F. and others. The 1942 Year Book of General Medicine. Chicago Year Book Publisher Inc. 1942.

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dence. A crater was demonstrated in only 21 per cent of the patients with positive x-ray signs. This figure differs widely from those of some of the better known gastroenterologic services in large civilian hospitals, where direct x-ray evidence is said to be obtainable in approximately 95 per cent of the patients with ulcer.<sup>4</sup> Two factors may be responsible for this difference. In the first place the technical difficulties in the field have been great and mucosal relief studies have been out of the question with the equipment at hand. In the second place it is possible that an unusual state of affairs exists among military personnel on active duty, which may influence the roentgenologic demonstration of peptic ulcer.

This is illustrated by the following comparison. In civilian practice there is commonly a delay between the onset of the symptoms of ulcer and the x-ray examination. The first symptoms are seldom incapacitating, and the patient finds sufficient relief by eating between meals and by consuming quantities of alkali. Finally, after a period of time or after several bouts of distress increasing in severity, these simple measures are no longer effective. It is only then, some time after the first appearance of symptoms, that the patient comes before the physician and eventually the fluoroscopic screen. By this time the pathologic process may have had ample opportunity to proceed unhindered to the point where x-ray demonstration is relatively simple. In contrast, the soldier in most instances is required to perform hard physical work under conditions such that he is unable to obtain either food or medication between his regular meals. For this reason he probably seeks medical relief sooner than the majority of civilians. At this early date the chances of demonstrating a small lesion by the techniques available in the field are probably extremely poor. Thus it is felt that too much reliance cannot be placed on a negative x-ray report in the field.

**Gastric Analysis**—A fractional gastric analysis using alcohol, histamine or intravenously injected insulin as the stimulus was performed on every patient admitted to the gastrointestinal section. In no instance did a fractional gastric analysis contribute directly to a positive diagnosis of peptic ulcer. It is true, however, that a peptic ulcer was never found to occur in a patient who had no free hydrochloric acid in his gastric secretion. Furthermore, fasting gastric contents that were repeatedly high in free acid and of a volume greater than 150 cc invariably were associated with other definite evidence of peptic ulcer.

For the foregoing reason and because of the tremendous amount of time involved, the routine use of fractional gastric analysis was discarded in favor of examining the fasting contents alone. Should no free acid be demonstrated in the gastric juice on adding a few drops of Topfer's reagent, a suitable stimulus was given such as subcutaneously injected histamine or intravenously injected insulin. At one hour and at one hour and a half after the injection the gastric contents were again aspirated and titrated for free acid. The stated times for aspiration were selected because experience showed that they would bracket the peak secretion in practically all cases.

**Examination of Stools**—Three consecutive examinations of the stools for occult blood after a three day period during which the patient was fed a meat free diet represented a routine practice. Every patient

whose stools gave a positive benzidine reaction was given a proctoscopic examination to rule out a lesion of the lower sigmoid colon, rectum or anus as a source of blood. This procedure was especially indicated since a low grade chronic proctitis or cryptitis was an occasional sequel to the dysentery that affected many of the troops. A positive benzidine reaction for occult blood in the stools was of value in the diagnosis of peptic ulcer only when interpreted in the light of other findings and only when sources of blood other than peptic ulcer had been eliminated.

**Acid Test**—The patient strongly suspected on clinical grounds of having a peptic ulcer but with no lesion of the upper gastrointestinal tract demonstrable by x-ray examination presented a challenging problem. Fractional gastric analysis and examination of the stools for occult blood were usually of extremely doubtful value as aids to diagnosis in such cases. In our search for additional diagnostic procedure we turned to the acid test described by Palmer of Chicago.<sup>5</sup> The results of this test in our hands gradually assumed increasing importance in differentiating between a functional gastrointestinal disturbance and true peptic ulceration. This test is based on observation that the instillation of 200 cc of hydrochloric acid in physiologic concentration induces in a patient with a fresh, sensitive peptic ulcer the typical epigastric distress that is so characteristic of an active lesion and that this distress is promptly relieved by aspiration of the acid solution followed by instillation of a solution of sodium bicarbonate. Perhaps the greatest advantage of this procedure in our experience was that while the patients might have learned from others the usual pain-food-ease symptom complex they had little opportunity to know just what liquids were being instilled or just what the characteristic response should be in the event that an ulcer was present. This test we performed by completely emptying the stomach with a Levine tube and then instilling 200 cc of 0.3 per cent hydrochloric acid. At the end of a fifteen minute period the stomach was again emptied and left in this state for fifteen minutes. At the end of the second fifteen minute interval 200 cc of 2 per cent solution of sodium bicarbonate was introduced and the patient was observed closely during a final fifteen minute period. The character, the locality and the severity of distress noted during each fifteen minute period were recorded. In the presence of a sensitive ulcer the response was usually striking and unmistakable. For one third of the patients in whom typical distress was induced there was positive x-ray evidence of ulcer. In a control series composed largely of patients suffering from symptoms attributable to functional gastrointestinal disturbances no such clearcut responses were encountered. Distress was sometimes observed in this control group but it was invariably vague and ill defined.

There is another possibility that should be mentioned. It is conceivable that in severe ulcerative gastritis typical epigastric pain might be elicited by the instillation of acid. The need for gastroscopic studies to determine this point is evident.

#### RESPONSE TO THERAPY

As an additional aid in the differentiation between pain due to an active ulcer and pain due to a functional disturbance, response to therapy was given considerable weight in totaling the balance of evidence for a

<sup>4</sup> Palmer, W. L. Peptic Ulcer, in Cecil, Russell L. A Textbook of Medicine, ed 5, Philadelphia, W. B. Saunders Company, 1940.

<sup>5</sup> Palmer, W. L. The "Acid Test" in Gastric and Duodenal Ulcer. J. A. M. A. 88: 1778-1780 (June 4) 1927.

against an organic lesion. The patient suspected of having a peptic ulcer was given hourly feedings of 120 cc of equal parts of evaporated milk and water with gradual addition over the course of the ensuing two weeks of soft bland foods. If this dietary management failed to control symptoms, resort was had to a continuous alkaline milk drip as recommended by Winkelstein for a period of not less than forty-eight hours. One liter of equal parts of evaporated milk and water to which had been added 50 Gm of sodium bicarbonate was given over a period of eight hours. This was given at the rate of about 30 drops per minute. The response to this therapy in all the patients with ulcer was both prompt and gratifying. At the end of forty-eight hours it was usually possible to substitute hourly milk feedings for the continuous drip and to keep the patients comfortable and free of symptoms except for a few with severe pain at night. In striking contrast, those patients with a functional gastrointestinal disturbance, and there were many, almost uniformly failed to express any clearcut or more than transient relief of their symptoms. Perhaps the explanation of this significant difference in response to therapy lies in the fact that the majority of patients with functional gastrointestinal distress gave other evidence of an underlying severe emotional disorder. Their symptoms may well have represented an unconscious neurotic reaction which served to prolong hospitalization and provide an escape from an unpleasant situation.

#### ARMY GENERAL CLASSIFICATION TEST

The relationship between the results of the army general classification tests and diseases of the digestive tract are discussed in greater detail elsewhere. In brief, these tests are designed to determine a man's ability to learn the duties of a soldier. On the basis of his score a soldier is placed in one of five broad classes called army grades. These grades give an indication as to his relative ability to learn as compared with the average soldier. When the percentage of patients with ulcer in each grade was compared with the theoretical standard, it was found that there was no significant deviation. This contrasts sharply with our findings in patients suffering from functional disturbances of the digestive tract.

#### DISPOSITION

The question of disposition of the patient who develops a peptic ulcer in the field soon became an important one. At first there was an inclination to give the patient a thorough course of dietary treatment and rest and then return him to duty. Experience proved the inadvisability of this practice. In one instance a soldier with a clearcut clinical picture but only minimal deformity of the duodenum on x-ray examination was returned to duty symptom free after a course of what would generally be considered adequate medical care. His duties were ordinarily light, he had access to abundant food and fresh milk and was living under garrison conditions. This man remained well and symptom free for nearly two months. At the end of this time there was a sudden increase in responsibility, long hours, irregular meals and heavy physical labor. He endured these changed conditions for about ten days, at the end of which time he was brought into the hospital with an acute perforation of an ulcer in the duodenum. He was operated on successfully and recovered. This is but one case. However, this experience emphasizes the importance of removing the patient having peptic ulcer from the field and returning him to the zone of the

interior where facilities are adequate for their care and rehabilitation. Therefore it has become the policy of the disposition board of this hospital to recommend the transfer to a general hospital in the zone of the interior every patient known to have or strongly suspected of having a peptic ulcer.

#### CONCLUSIONS

- 1 The ulcer problem in the combat area presents new difficulties peculiar to military personnel.
- 2 The clinical history while of definite value cannot be relied on solely in the diagnosis of peptic ulcer.
- 3 Positive x-ray diagnoses in the field are limited by (a) technical difficulties and (b) the examination of patients before the pathologic process has become extensive.
- 4 Analysis of gastric contents and examination of stools for occult blood are of but limited value in the diagnosis of peptic ulcer.
- 5 A study of the results of the army general classification tests of patients with peptic ulcer indicates that there is no significant deviation from the normal.
- 6 The acid test described by Palmer and the relief following continuous alkaline milk drip therapy have proved to be two useful adjuncts in making the diagnosis of peptic ulcer.
- 7 The soldier with a peptic ulcer should be removed from the combat area as soon as is practicable after the diagnosis is made.

### CALCIUM PANTOTHENATE FOR HUMAN ACHROMOTRICHIA

LACK OF VALUE ON PROLONGED ADMINISTRATION

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AND

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A recent editorial<sup>1</sup> in *THE JOURNAL* entitled "Vitamins for Gray Hair" reviewed the experimental evidence relating to the use of pantothenic acid and para-aminobenzoic acid to prevent and correct nutritional achromotrichia.

Controlled clinical evidence to substantiate the view that pantothenic acid will restore color to hair in human beings is not available in the scientific literature. Two articles appearing in a monthly magazine directed to the interests of women in running a household refer to the value of pantothenic acid in this respect. Irrespective of the lack of controlled clinical evidence, calcium pantothenate has been offered to the public as an effective agent for restoring color to gray hair. It is interesting to note that in the labelings of products containing calcium pantothenate the representations for the substance are directed to all persons who desire to restore "the original color to the hair." Dissemination of information concerning this alleged virtue of calcium pantothenate has been rapid and widespread.

In view of the absence of corroborative clinical data which would serve to establish that calcium pantothenate can restore color to human gray hair it was decided to conduct a long-term study using calcium pantothenate

From the Federal Security Agency Food and Drug Administration  
1. Vitamin for Gray Hair editorial J. A. M. A. 116:102 (Jan  
24) 1942.

to observe its effect on graying hair. It was recognized at the outset that the isolation of calcium pantothenate and its introduction for general use had been within the past few years. Consequently there had been only a relatively short period of time in which reliable observations could have been made of the change, which is reported to require from one to six generally three months to manifest its effect in human beings.

Studies on black haired experimental animals indicated that deprivation of pantothenic acid in diets may produce among other changes, a patterned graying of young animals. This observation could not, however, be considered applicable to man since it has not been demonstrated as pointed out by Gordon,<sup>3</sup> that the human diet is deficient in pantothenic acid as a single factor. Furthermore, the production of graying had been accomplished only in young animals, yet the use of this article for human beings is designed for adults who have gray hair.

Recently Brandaleone, Mann and Steele<sup>4</sup> reported a study on the effect of calcium pantothenate on the gray hair of human beings. Their findings indicate that calcium pantothenate did not effect a change in hair color. Vorhaus, Gompertz and Feder, using calcium pantothenate in large doses by intramuscular injection, concluded that calcium pantothenate had "no effect upon gray hair present."

#### CLINICAL STUDY

Twenty-one white women and 6 white men ranging in age from 34 to 62 years volunteered to take calcium pantothenate for a six months period. Two white women and 4 white men in the age group 29 to 62 years offered to serve as controls by providing hair samples during the same period but they did not take calcium pantothenate. These persons represented degrees of decrease of hair pigment varying from beginning graying to 'all white'. Loss of hair color had been present for varying periods (none less than ten years except 1 person who had noted rapid graying in the past three years). Several persons indicated that premature graying was a family trait. The subjects were government employees who were in the salary group who could afford and did have adequately varied diets. Discussion of recognized sources of pantothenic acid in foods provided an opportunity to suggest to the subjects the advisability of using these foods in increased amounts in planning menus. No records of daily food intake were kept, since there is no evidence in the literature that human beings are spontaneously deficient in pantothenic acid. Furthermore the need for pantothenic acid in human nutrition has not been established. No studies of pantothenic acid levels in the blood, its absorption or excretion were undertaken.

In order to use an objective approach to evaluate the color change in the hair and thereby keep to a minimum the subjective element, it was decided to have color analyses made of the samples of hair collected before, during and at the close of the period of observation. Such color comparisons were to be made by an expert in the field of color analysis. In this manner it would be possible to obtain the unbiased opinion of one trained in color analysis who could employ without prejudice such color tests as were required and accepted, since this observer would be unfamiliar with the volunteers.

Representative samples could readily be obtained on men by collecting their hair cuttings. In the case of women, however, it was realized that during the six months period of observation no samples might be obtained. Thus it was found necessary to cut a sample of hair from a representative area of the scalp, and as the hair regrew the area was recut to furnish samples for comparison with the original sample cut shortly before the person began taking calcium pantothenate. The most significant samples were the original and the one obtained after completion of taking calcium pantothenate for six months.

For ease of administration, each user was provided daily with 2 tablets of calcium pantothenate (micro biologic analysis of the product revealed an average composition of 102 mg of d-calcium pantothenate per tablet). The generally recommended dose in the labeling of preparations of calcium pantothenate is 1 tablet (10 mg) per day. In order to provide an adequate amount of the substance, the suggested daily intake was doubled. Tablets were taken under personal supervision so that a daily opportunity to observe the persons was provided.

Observation of the volunteers throughout the period of the study revealed no change in hair color. None of the individuals reported a significant hair color change; however, several persons, particularly in the age group 34 to 40 years, felt that there was an increase in hair grayness. All the persons were satisfied that calcium pantothenate did not restore hair color. Several persons remarked that friends and acquaintances occasionally did state that they could see a "darkening" in the color of the hair, but the users themselves were unable to detect any change. It was generally acknowledged that this spurious change in hair color was occasioned by a variation in hair styling. It is obvious that frequent observation of the subjects is required in order to reach reliable conclusions. In one woman a "yellowing" effect was noted near the free ends of an isolated white band of her hair. This effect was observed after using calcium pantothenate several months. Follow-up two months after the termination of the study revealed that this yellow cast was appearing over the ends of other gray hair areas. The nature of this change is unknown, but apparently it is not significant since not infrequently such a yellow cast is noted in white and gray hair. Furthermore the color change does not represent the original color of this woman's hair. It should be pointed out that one of the volunteers in this study had had a yellow cast in her hair for several years and was interested in observing if any change could be effected by using calcium pantothenate. No change was brought about. No significant changes were observed in the control group.

2 Morgan, A. T., and Simms, H. D. Graying of Fur and Other Disturbances in Several Species Due to a Vitamin Deficiency, *J. Nutrition* 19: 233-250 (March) 1940. Unna, Klaus, and Sampson, W. L. Effect of Para Amino Benzoic Acid on Nutritional Achromotrichia, *Proc. Soc. Exper. Biol. & Med.* 45: 309-311 (Oct.) 1940. Görgs, Paul, and Poling, C. E. Further Experiments on Nutritional Achromotrichia in Rats and Mice, *ibid.* 45: 773-776 (Dec.) 1940. Emerson, G. A., and Evans, H. M. Growth and Graying of Rats with Total 'Filtrate Factor' and with Pantothenic Acid, *ibid.* 46: 655-658 (April) 1941.

3 Gordon, E. S., in Evans, E. A., Jr. The Biological Action of the Vitamins, Chicago, University of Chicago Press, 1942, p. 142.

4 Brandaleone, Harold, Mann, Elizabeth, and Steele, J. M. Effect of Calcium Pantothenate and Para Amino Benzoic Acid on the Gray Hair of Humans, *Proc. Soc. Exper. Biol. & Med.* 53: 47-49 (May) 1943.

5 Vorhaus, M. G., Gompertz, Michael L., and Feder, Aaron. Clinical Experiments with Riboflavin, Inositol and Calcium Pantothenate, *Am. J. Digest. Dis.* 10: 45-48 (Feb.) 1943.



It is of interest to note that 2 women complained that their fingernails were breaking and chipping more easily than usual. They questioned whether use of calcium pantothenate was a causative factor. In view of these complaints it is doubtful whether pantothenic acid can be ascribed as having a beneficial effect on the fingernails.

Color determinations of the respective samples for each of the 33 subjects, made by Dorothy Nickelson, color technologist, Research and Testing Division, Cotton and Fiber Branch, Food Distribution Administration, United States Department of Agriculture, employing visual comparisons to Munsell color standards by a method essentially the same as that described by Judd and Kelly,<sup>6</sup> "revealed no significant trend of color change for any individual whether under treatment or control." These color measurements corroborated the clinical impression gained by frequent observation of the hair of the volunteers.

#### SUMMARY AND CONCLUSIONS

1 Twenty mg of calcium pantothenate was administered daily for six months to 27 white men and women with graying hair. Close observation of the hair of these individuals revealed no significant change.

2 Color measurements of representative samples of hair obtained from each of the subjects at the outset during and at the conclusion of the study revealed no significant color change.

3 From these findings, from the clinical evidence available in the literature and from personal communications, it is concluded that calcium pantothenate is of no value in the restoration of color to gray hair.

6 Judd Deane B. and Kelly, Kenneth L. Method of Designation, Color Research Paper 1239, United States Department of Commerce, National Bureau of Standards 1939, p. 362, par. 1 of Procedure.

**Beginning of Orthopedics as a Specialty**—The beginning of orthopedics as a specialty, and the establishment of the first orthopedic hospitals can be traced back to the interest of the eighteenth century French humanitarians in crippled and deformed children. Jacques Mathieu Delpuch, professor of surgery at Montpellier was the real founder of the specialty. In 1828 Delpuch published a treatise entitled *Orthomorphie*, which is the earliest comprehensive discussion of bone and joint deformities. He also planned and built a charming orthopedic hospital in the country between Montpellier and Toulouse. A contemporary of his, Johann Georg von Heine, an instrument and brace maker to the faculty of the University of Wurzburg, founded an orthopedic institute in that city in 1816 which had a leading role in the development of the specialty in Germany. Heine's nephew, Bernard Heine, graduated in medicine from Wurzburg and became its first professor of orthopedics in 1838. In England the first orthopedic hospital was founded at Birmingham in 1817. William John Little, an eminent orthopedic surgeon who himself had a clubfoot, founded the Orthopedic Institute of London in 1837. Subsequently called the Royal Orthopedic Hospital, it became the leading British institution for the care of the crippled poor. In America two pioneer orthopedic surgeons both established special orthopedic clinics in the same year, 1861. Lewis A. Sayre of New York organized a clinic at Bellevue Hospital, and Buckminster Brown of Boston opened a small private hospital, the Samaritan Hospital. Two special orthopedic hospitals were shortly founded in New York: the Hospital for the Ruptured and Crippled in 1863 and the New York Orthopedic Dispensary and Hospital in 1866—Harrington C. D. and Floyd Windham F. B. A Hundred Years of Medicine, New York, Sheridan House, Inc. 1943.

## AUTOPSY NERVE GRAFTS IN PERIPHERAL NERVE SURGERY

CLINICAL APPLICATION, "GLUE" SUTURE TECHNIC

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Repair of peripheral nerves with preserved cadaver grafts has become one of the most promising fields of modern surgery. The results of animal experimentation and clinical application appear to justify this claim. This communication is a preliminary report dealing with the clinical application of experimental work of one of us<sup>1</sup> to 3 cases in which preserved cadaver grafts have been used to repair large defects in human peripheral nerves.

To appreciate the failures of peripheral nerve surgery in the past, the pathologic anatomy of the traumatized nerve must be considered. When a nerve is severed there is considerable hemorrhage into the injured area. In the process of repair this hemorrhage is replaced by scar tissue and neuroma formation even when directly sutured. The consensus is that neuromas are largely due to the outgrowth of the proximal end of the neurons trying to find their way down the distal portion of the nerve. That this is not the entire picture is suggested by the fact that when a peripheral nerve is not immediately sutured a neuroma will usually form at both the cut ends of the nerve. The proximal neuroma is usually larger than the one on the distal portion of the nerve, which suggests that neuroma formation is largely due to hemorrhage with scar formation and that growth of axons seeking their normal pathways increases the size of the neuroma on the proximal side.

The phenomenon of scar formation is largely responsible for failure to achieve a functionally perfect result in many cases in which primary suture of the nerve is possible. Even when the finest needles and suture material are used and when the sutures are placed very carefully, they will traverse the substance of the nerve causing microscopically enormous injuries to nerve bundles about the periphery of the nerves. This increases the element of hemorrhage and scar tissue formation. The problem is more difficult when a functionally important peripheral nerve is grossly damaged or destroyed so that a considerable gap exists between the severed nerve ends.

During the twentieth century several attacks have been made on the problem of peripheral nerve surgery. Fresh homografts from other small nonessential nerves have been utilized. Grafts of fat fascial flaps and nerve flaps all have been tried with equally discouraging results. The first forward step was contributed by Brille and Duval in 1932. These men were able to show excellent results in bridging a gap in the facial

from the Neurological Service of Roland M. Klemmer, M.D., Professor of Surgery, Chairman of the Division of Neurology, St. Louis University School of Medicine.

1. De Rezende, N. T. *New York J. Med.* 42: 124 (Oct. 15) 1942.  
2. Brille, C. A. and Duval, A. B. *Arch. Otolaryngol.* 75: 1 (Jan. 1942).  
19. *Tr. Am. Otol. Soc.* 1931: 1 (Jan. 1931).



nerve in the fallopian canal of baboons. They have also been able to bridge a similar gap in man by use of a graft taken from the external cutaneous nerve of the thigh of the same patient. No sutures were used, the graft being kept in place by careful dressing and by the bony configuration of the canal.

Bentley and Hill<sup>3</sup> in 1940 reported their experiences using sutures in their cases of experimental grafts from other animals of the same species, in the monkey. This was the first step in the solution of the technical problem of bridging gaps in peripheral nerves without the use of heroic measures such as nerve transplantation and plaster casts to hold extremities in positions favorable to nerve union.

Young and Medawar<sup>4</sup> of Oxford in the same year suggested the use of coagulable plasma with the consistency of "glue" to replace the sutures of severed nerves. They advocated the use of a fortified cockerel plasma with chick embryo extract as the clotting agent. This plasma "glue," rich in fibrinogen, was placed in the gap forming a bridge between the severed ends

nerve injuries. On May 29, 1941 at the Harvey Cushing Society, Rochester, N. Y., and in 1942 at the annual meeting of the New York State Medical Society one of us<sup>1</sup> reported the results of the use of sections of "cadaver grafts" (sections of peripheral nerves of cadavers) in bridging gaps of various lengths in sciatic nerves of monkeys, dogs, cats and rabbits. This work was carried out at the Yale University School of Medicine Laboratory of Physiology and extended over a period of two years' time, thus allowing a rather extensive study of the problem.

A search was made for a better and more accessible "glue" than any before suggested. The results indicated that 50 per cent pure acacia or acacia fortified with vitamin B and B complex caused the least tissue reaction and gave the best result. The free nerve ends and graft were first anchored lightly in place by "bridges of silk," silk sutures placed over the free nerve ends and the graft into surrounding tissue but not entering any of these structures.

In further prosecution of this work at the Mayo Clinic in the Experimental Institute in conjunction with Dr. H. E. Essex, Rezende<sup>6</sup> utilized the modified "ear window" of Clark to study this problem further. It was found that in rabbits the first observable phenomenon at the site of a "glued cadaver graft" of the posterior auricular nerve of a rabbit was an outgrowth of capillaries from the proximal side across the gap into the graft. This capillary framework was followed by the outgrowth of the severed axons. This study suggests that the role played by the acacia glue is merely that of a cement holding the graft in place. The cadaver graft merely acts as a framework of tubes for ingrowth of the severed axons.

#### CLINICAL APPLICATION

Three clinical applications of these experiments have been completed at the present time. In others the elapsed time is not great enough to include in this report. The grafts and glue have been prepared as suggested by Rezende<sup>1</sup>. The glue used was 50 per cent acacia prepared by slowly dissolving the acacia in boiling distilled water. This percentage gives a thick glue when cooled to room temperature. The glue may be autoclaved without deleterious effect.

The cadaver grafts were obtained under practically sterile conditions in the autopsy room. The sections of nerves were handled very gently and all connective tissue was removed as completely as possible. The grafts were placed on cardboard by means of thumb tacks and then suspended in solution of formaldehyde U. S. P. diluted 1:10. They were left in this solution for from ten to thirty days, after which time they were washed in distilled water for forty-eight hours. They were transferred to 75 per cent alcohol two or three days before the proposed operation. One half hour before the operation they were transferred from the alcohol to saline solution.

The injured nerves were carefully exposed and the damage to the nerves was assayed. Flaps of the nerve sheaths were then carefully dissected from both sides of the neuroma proximally and distally (fig. 1B). These flaps were then sutured to the surrounding connective tissue before the removal of the neuroma. This keeps the proximal and distal nerve sections anchored and allows a stable position for location of the graft. The neuroma is next resected distally and

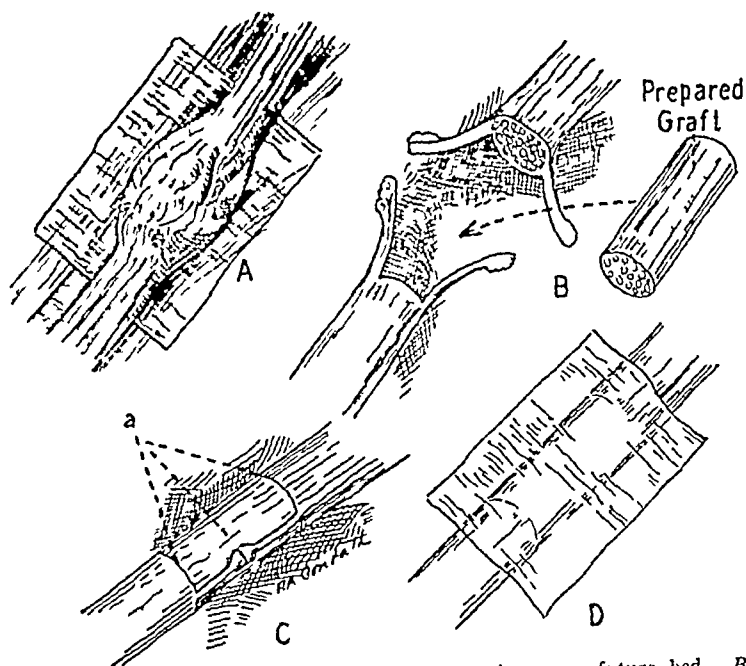


Fig. 1—A, neuroma, and the allantoic membrane as future bed. B, flaps of the nerve sheath dissected from both sides of nerve, proximally and distally. C, prepared graft cut to size. D, prepared graft in place—glued. E, allantoic membrane placed around nerve ends and graft.

and forming a trestle for the growth of the proximal axons into the sheaths of the distal fragments of the severed nerves.

Tarlov and Benjamin<sup>5</sup> of New York found considerable fibrosis at the site with the use of this material when they repeated these experiments. They in turn evolved the method of using autologous plasma fortified with autologous muscle extract. They state that this is easy to prepare and that this material causes less inflammatory reaction and subsequent scar formation at the site. They concluded, however, that this material was not practicable when there was any tension on the severed nerve ends and that silk sutures were probably better in these cases.

The subject of peripheral nerve surgery was made most important in this country on Dec. 7, 1941. Statistics from various and sundry wars have shown that from 1 to 3 per cent of war casualties have peripheral

3 Bentley, F. H., and Hill, Margaret. Brit. M. J. 2: 352-353 (Sept. 14) 1940.

4 Young, J. Z., and Medawar, P. B. Lancet 2: 126-128 (Aug. 3) 1940.

5 Tarlov, I. M., and Benjamin, Bernard. Science 95: 258 (March 6) 1942.

6 de Rezende, N. T. Work to be published.

proximally. Light pressure is exerted on the severed nerve ends to stop hemorrhage. When this has been done the graft is carefully cut to fit, a new safety razor blade being used for this purpose. A bed of allantoid membrane (insultoic) is next placed around the nerve ends, and the graft is placed on this bed between the severed ends (figs 1A and C). Two or three drops of 50 per cent acacia prepared as described are then placed on each junction. A second layer of allantoid membrane is then placed over the graft and the proximal and distal ends of the peripheral nerve, which at this stage must be in good alignment (fig 1D). This is allowed to stand for a few minutes. The wound is closed carefully in layers with interrupted silk sutures. An ordinary snug fitting bandage is used and no further immobilization is necessary.

The first patient was operated on on Aug 27, 1942

CASE 1—V S., a white girl aged 8 years, admitted to St. Louis City Hospital on March 4, 1942 because of a rather large laceration of the right popliteal space, had fallen from a swing at 5:45 p.m. on the date of admission and had cut the right popliteal area on a sharp piece of tin. A tourniquet had been applied to stop the bleeding, and the child was brought to the hospital. Tetanus antitoxin and perfringens antitoxin were administered in the accident room.



Fig 2—Sensory loss before operation

The patient complained bitterly of pain behind the right knee. The temperature was 99 F, pulse rate 124 and respiratory rate 26. Blood pressure was 120 systolic, 80 diastolic. Examination of the extremities showed a 4 inch laceration extending horizontally across the right popliteal space. This extended through the skin and subcutaneous tissues, exposing the deep structures. The skin margins were widely separated. The patient was taken to the operating room and the laceration was sutured in the usual fashion after lebridement. The tendons of the semitendinosus and the gastrocnemius muscles were found to be severed. The common peroneal and the sural nerves had also been cut. The cut ends of the tendons and of the common peroneal nerve were approximated and sutured with fine silk. The leg was placed in an anterior plaster splint with 120 degrees flexion. The wound healed nicely and the sutures were removed on March 20. The patient was discharged on April 17, 1942 with a walking right ankle stop brace. She continued to have a foot drop and sensory defect (fig 2).

She was readmitted on Aug 3, 1942 complaining of continued foot drop and sensory defect. On August 26 a nerve graft operation was done.

Under ether anesthesia, iodine and alcohol preparation an incision was made over the popliteal fossa on the right to expose the common peroneal nerve. The deep fascia was incised and retracted laterally. The neuromas were then encountered at the separated ends of the common peroneal nerve. These were freed. All bleeding was controlled. A bed of amniotic membrane (insultoic) was prepared beneath the nerve ends and clipped in place with Klemme clips. The neuromas were then excised and a prepared graft was adjusted between the cut ends of the nerve. These were held in place with bridges of silk as described which did not penetrate the nerve sheath. The wound was then closed loosely with interrupted silk sutures. A dry gauze dressing was applied.

The patient's postoperative course was uneventful and she was discharged from the hospital on Sept 11, 1942. At the present time she is walking with a slight limp but without a brace. She can tap dance and runs easily on both feet. The

sensory defect is clearing rapidly and the size of the calf of the leg is almost equal to that of the left leg. She is now receiving hot-wet applications to the limb twice daily.

CASE 2—C S., a white man aged 35, was first admitted to St. Louis City Hospital on July 28, 1942 complaining of pain and loss of sensation in the fourth and fifth fingers of the left hand. Ten months before admission he had suffered a bullet wound in the left chest while cleaning a rifle. From that time on there had been sensory and motor changes in the left hand including paralysis of the fingers, some difficulty in movement of the arm and anesthesia of the little and ring fingers. Three days before admission his left little finger began to swell at the tip. This swelling gradually extended proximally. Along with this swelling he experienced considerable pain. The patient was chronically addicted to alcohol, drinking about a pint of whisky a day. Examination showed an area of anesthesia involving the lateral half of the lower arm extending over the lateral half of operation.

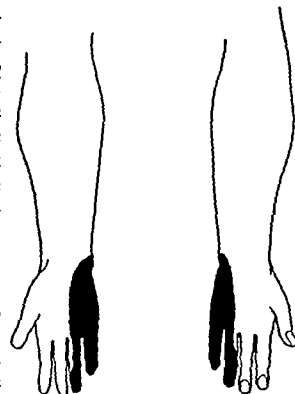


Fig 3—Sensory loss before operation

the ring finger and the little finger. There was a scar over the knuckle of the little finger, and the phalanx distal to this was swollen and red. There was no pain on pressure over this finger. The temperature on admission was 100.6 F and was normal thereafter. The swelling of the finger rapidly subsided. The laboratory work was entirely normal. The patient was discharged on Aug 1, 1942.

He was readmitted on Oct 26, 1942 for a nerve graft operation. The operation was done on November 16.

With the patient under ether anesthesia an incision was made along the lateral border of the left pectoralis major muscle. The brachial plexus, axillary artery and vein were exposed. A neuroma of the ulnar nerve was isolated and separated from the axillary vein. Nerve sheath flaps were dissected free from proximal and distal ends of the neuroma and sutured in place. The neuroma was then excised, leaving a gap in the nerve about 2 cm long. This was replaced by a cadaver nerve graft. Fifty per cent acacia was then used to cement the nerves together. A piece of allantoid membrane (insultoic) was then placed over the graft and the severed nerve ends. The wound was closed carefully in layers with interrupted silk sutures. No drain was used.

The postoperative course was completely uneventful. The section of neuroma removed consisted of fibrous tissue con-

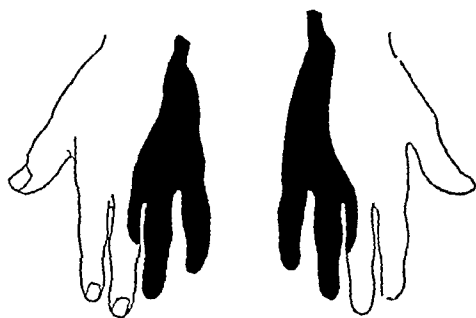


Fig 4—Sensory loss before operation.

taining bundles of medullated nerve fibers. The fibers stained poorly and contained many vacuolated areas.

The patient was discharged on Nov 23, 1942. When last seen he was beginning to have return of function in his finger.

CASE 3—N T., a white youth aged 18 referred by Dr. D. J. Zerboho of Bend III, admitted to St. Mary's Hospital on Jan 15, 1943 complained chiefly of paralysis of the fingers of his left hand for six and one-half months. He had fallen and cut his left wrist on a plate glass window. The wound was immediately sutured a day or two later. He had lost

sensation in his little and ring fingers and weakness of those fingers. Physical examination was negative except for the left hand. There was a sensory loss over the lateral half of the ring finger and over the entire little finger and the hypothenar eminence. There was a loss of abduction and adduction of the fingers. A 2½ inch scar showed on the volar aspect and the ulnar side of the forearm. The laboratory work was negative. An operation was done on Jan 18, 1943.

With the patient under avertin with amylene hydrate and ether anesthesia an incision was made through the old scar. The ulnar nerve was isolated and a rather large neuroma was found in the nerve. Four small strips of nerve sheath were sutured to the surrounding tissue and the neuroma was excised. The prepared nerve graft was then placed between the cut ends on a bed of allantoic membrane (insultoric). Fifty per cent acacia was placed over the nerve junctions and the wound was closed in layers with interrupted black silk sutures. A dry gauze dressing was applied.

The patient was discharged on Jan 22, 1943. At the present time he is doing well. Complete function has not returned to the fingers but it is still too early to judge the result.

#### COMMENT

*Time of Operation*—The majority of surgeons have emphasized that there are two optional times for operation: one as soon as possible after the injury has occurred, the other, after wound healing is complete. In the first three hours following an injury it is possible in the majority of cases to change contaminated wounds into clean wounds and to carry out repair. Healing is thus effected by primary union. If an open wound heals without infection a secondary operation can be performed three or four weeks later. If the original injury is complicated by infection, a secondary operation must be postponed until the wound is clean and all inflammatory reaction has disappeared completely. We believe that the advent of the sulfonamides and streptomycin will mean a great advancement in this kind of surgery, sterilizing the infected wounds and permitting an early operation.

The question of how to treat a freshly severed nerve is a difficult one. If there is any tension on the nerve we believe that a graft, if available, should be used to bridge the gap. However, a graft can always be applied later if immediate suture is unsuccessful.

*Graft*—Professor Lavrentjev of Russia has studied many aspects of the regeneration of peripheral nerves and claims to have found evidence of a "chemicomotor role" of the distal (peripheral) segment in attracting nerve fibers to itself. Using pieces of spinal cord as transplants for bridging gaps after nerve lesions he found that the best results were obtained by using nerve treated with formaldehyde, since this was quickly vascularized and delayed the proliferation of the connective tissue elements of the scar.

*Sutures*—We do not believe that it is possible to suture the epineurium of nerves without laceration of a great number of the axis bundles, even with the finest needles and finest silk. Of course, in small nerves it is impossible to suture without laceration of the majority of nerve fibers. For these reasons we think that the acacia "glue" reinforced with "flaps of the neuroma" and if necessary also with the "bridge of silk" is the ideal way to keep the graft and nerve ends in good alignment.

*Control of Hemorrhage*—In surgery of peripheral nerves the control of hemorrhage is of paramount importance if scar tissue formation is to be prevented. Some surgeons use an inflated blood pressure cuff on the extremity located proximal to the wound during the

operation. We have not used this procedure but prefer to control the hemorrhage of each vessel that bleeds. Before excising the neuroma the assistant should apply light pressure with a small piece of cotton soaked in saline solution to the proximal and distal portion of the nerve after the neuroma has been excised. This pressure should be sufficient just to stop any bleeding from the severed nerve. The graft is then placed in the gap between the two ends of the nerve and at the same time two or three drops of acacia "glue" are applied to the junction of the graft and severed nerve to act as a cementing agent. If the intraneural hemorrhage is prevented, the tendency toward neuroma formation is obviated and an ideal situation is created for the neurotization of the graft. These findings will be reported in greater detail in a later communication.

*Physical Therapy*—From observations made with the ear window of Clark, it seems that measures directed toward the promotion of vascularization of the graft give the most aid in obtaining a successful clinical result. Accordingly, two weeks after operation we advise application of moist heat to the grafted area. Lavientjev<sup>7</sup> has also emphasized that "the only means found for accelerating nervous regeneration is heat."

*Immobilization*—A simple snug fitting bandage was used for immobilization in each of these 3 cases. We believe that elaborate systems of splints are unnecessary and harmful. In the first place they are likely to produce trophic ulcers unless very carefully applied. In the second place moderate activity of the extremity promotes vascularization of the nerve graft and more rapid growth of nerve fibers.

*Massage and Motion*—Gentle massage and motion are begun not earlier than two weeks postoperatively.

*Electrotherapy*—The results of investigations are not in agreement about the effects of electrical stimulation in retarding the rate of atrophy following denervation of muscles. Fischer<sup>8</sup> and the Guttmanns<sup>9</sup> reported favorably, but Choi and his co-workers<sup>10</sup> obtained discouraging results. Hines, Thomson and Lazere<sup>11</sup> at the University of Iowa concluded that "artificial stimulation retarded the rate of atrophy and enhanced the regeneration of denervated muscle." We have used gentle stimulation in some instances and we are of the opinion that it is of value in bringing about more rapid return of function after nerve grafting has been done.

#### CONCLUSIONS

The first clinical application of cadaver graft, using 50 per cent acacia to glue the severed ends together has been made. The first patient already has a good clinical result with return of motor and sensory function. The second patient is already beginning to get return of function. The third case is too recent to make it possible to judge.

The postoperative care of a patient operated on with a peripheral nerve injury is a very important factor for recovery. Any method that can increase the local circulation will be of primary importance in the process of physiologic recovery.

4952 Maryland Avenue.

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## PERITHYROIDITIS

## A DISTINCT ENTITY

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As I<sup>1</sup> pointed out in a recent article on the subject, I feel that Riedel's struma is the result of a previous perithyroiditis which causes a partial constriction of the vessels entering the thyroid gland. Another case of Riedel's struma, in which I lately operated, has served to strengthen my belief that such is the etiology of this condition and has in addition, focused my attention on perithyroiditis as a distinct entity.

My own observations on a series of cases, including the one here reported in detail, have convinced me of the etiologic relationship between perithyroiditis and woody thyroiditis. I believe that as a result of the perithyroiditis the fibrous growth characteristic of the disease begins outside rather than within the thyroid gland. Histologic evidence indicates that, as a sequel to perithyroiditis and its complications, there results partial occlusion of the blood vessels entering the gland with subsequent formation of the fibrous tissue characteristic of Riedel's struma. In other words, because of the perithyroiditis it appears to me that Riedel's struma is a vascular rather than a glandular disease.

From all of this evidence I believe that perithyroiditis warrants more consideration than seems to have been given to it in the past. Indeed, little if anything has been written about perithyroiditis. A search of the available medical literature has failed to reveal any reference to such a condition. A similar search of the current textbooks on medicine, surgery and pathology was also in vain. This paucity of information is rather surprising in view of the fact that for some time surgeons have recognized evidence of perithyroiditis in the form of adherent muscles and perilymphangitis.

It is quite possible that the clinician has been diagnosing cases of this type as acute nonsuppurating thyroiditis when in reality they were cases of perithyroiditis. If perithyroiditis really occurs as a clinical entity—and the evidence which I have accumulated indicates that it does—what are the acute symptoms and what are the pathologic changes?

The thyroid gland as observers know is covered by a network of lymphatic vessels and lymphatic glands. Although this concept was never established by proof it was thought at one time that the thyroid secretions left the thyroid gland by way of these channels. However, evidence has been found that lymphangitis is present in many cases of goiter even those of a chronic nature. In perithyroiditis lymphangitis is often a concomitant part of the elements contributory to Riedel's struma.

Since becoming interested in the subject of perithyroiditis I have encountered a number of patients with diffuse enlargement of the thyroid gland (from two to three times normal size) who gave a history of an acute onset with varying degrees of fever and occasionally chilliness. These patients complained of pain in the thyroid region and the thyroid gland was tender on palpation. However there was no visible evidence of inflammation. Moreover when these patients were seen as late as eight weeks after onset of their illness

the lobes were still tender although the temperature and the blood count had returned to normal. These symptoms are typical and in my opinion characterize the entity perithyroiditis.

Because of the continued tightness of the throat, the persistent enlargement of the thyroid and the nervousness of these patients I have operated on a number of them shortly after subsidence of the acute symptoms, that is after periods ranging from two to twelve weeks. In all instances the basal metabolic rates were normal or only slightly elevated. Thus, in 2 cases previously reported<sup>1</sup> the average basal metabolic rates were plus 16 and plus 20 respectively.

One recent case is rather interesting and indicative of the course of events during and following perithy-

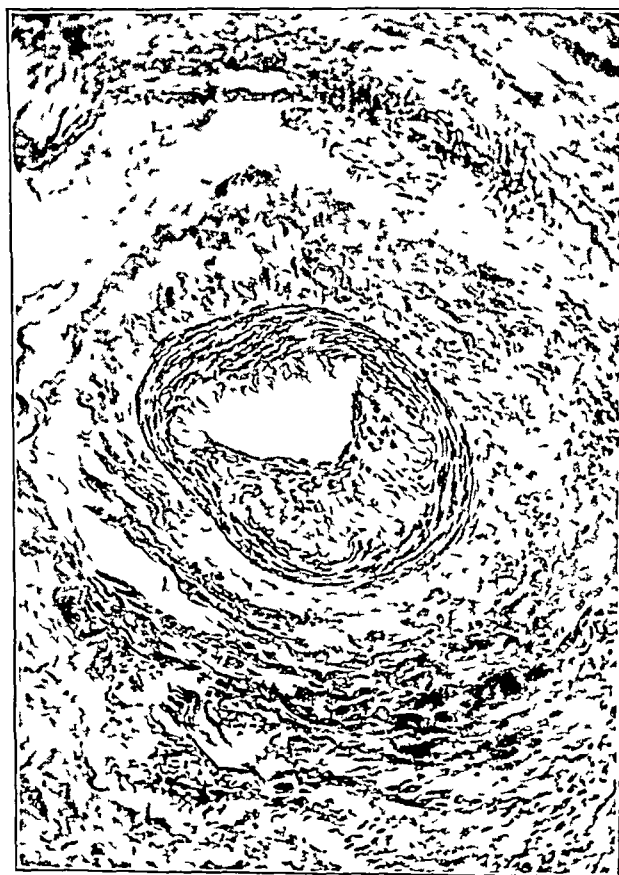


Fig 1—Section of a small artery showing hypertrophy of the media with reduction of the lumen and a surrounding collar of dense hyalinized connective tissue. Hortege silver impregnation stain.

roiditis. The temperature ranged from 99 to 101.6 F for a period of eight weeks without any evidence of suppuration. Chemotherapy was instituted but did not influence the course of the disease. After eight weeks of hospitalization during which the patient was kept in bed high voltage roentgen therapy was applied. Following a few treatments the temperature returned to normal and the tenderness disappeared. Nonetheless the hard swollen condition of the gland persisted with the consistency of woody thyroiditis. Six months have now elapsed but the patient refuses operation and complains only of some tightness around the throat and slight nervousness.

The other cases in which surgical intervention has been undertaken including those already reported and the one to be herein discussed presented the typical

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<sup>1</sup> DeCourcy, J. I. New Theory Concerning Etiology of Riedel's Struma. *Surgery* 12: 754 (Nov.) 1914.

picture of Riedel's struma with adherent muscles surrounding the gland. The evidences of perithyroiditis included pseudo giant cells, arteriolar sclerosis and other distinctive characteristics of the disease. These are



Fig 2.—Section of a precapillary arteriole showing subintimal thickening, medial thickening and a collar of dense hyalinized connective tissue. The entire structure is surrounded by dense connective tissue stroma. Hortege silver impregnation stain.

quite apparent in the photomicrographs of histologic sections previously and herewith presented.

The following report of a case which I was able to follow through to a satisfactory conclusion serves to substantiate my views not only with regard to perithyroiditis as an entity but also with respect to its relationship in the etiology of Riedel's struma.

#### REPORT OF CASE

C. N., a married woman aged 33, who entered the Good Samaritan Hospital on Feb. 13, 1943, developed what seemed to be a mild sore throat three weeks prior to admission while in Detroit. She had daily chills after which her temperature went to 103 F. A physician treated her for three weeks, during which time the chills and fever continued. Before leaving for Detroit, and one month prior to the onset of the present illness, she had a complete physical examination at the clinic. The patient reported that she had no enlargement of the thyroid gland and no symptoms pertaining to the gland prior to her present illness.

When examined at the Good Samaritan Hospital in Cincinnati, where she reported as a result of an exacerbation of her condition, her temperature was found to be 101.4 F., the pulse rate 120 and the respiratory rate 20. Blood examination revealed hemoglobin 85 per cent, red blood cells 4,500,000, white blood cells 14,500, polymorphonuclears 82 per cent, lymphocytes 16 per cent, monocytes 1 per cent and eosinophils 1 per cent. The urine had a specific gravity of 1.017, was negative for albumin, sugar and acetone, and showed 4 white blood cells per high power microscopic field and no red blood cells.

The patient had three chills followed by fever on three successive days after admission to the hospital. After this her temperature returned to normal without treatment.

An electrocardiogram taken on February 14, the day after admission, showed definite sinus tachycardia with one premature ventricular systole. X-ray examination of the chest on the same day gave negative results.

Blood examination on February 15 revealed hemoglobin 87 per cent, red blood cells 4,500,000, white blood cells 8,200, polymorphonuclears 77 per cent, lymphocytes 19 per cent, eosinophils 1 per cent, monocytes 3 per cent and stab cells 8 per cent.

Blood cultures made on February 15, 16 and 17 were negative after eighteen hours, forty-two hours and three days. A blood culture made on February 18 was negative after forty-two hours. The blood was negative for malarial parasites, typhoid bacilli, *Brucella melitensis* and *Brucella abortus* of bovine origin.

A tentative diagnosis made by the house physician was "possible subacute bacterial endocarditis."

On February 17, four days after her admission, I examined the patient in consultation. She was a rather small woman who did not look particularly sick. Her temperature was 99.2 F., the pulse rate 110, the respiratory rate 18. There was a slight tremor to the outstretched fingers. A mild systolic murmur was heard at the apex of the heart. Ocular signs were absent. Two basal metabolic tests gave rates of plus 16 and plus 14.

The thyroid gland was about two to three times the normal size and of hard consistency. The lobes were tender to the



Fig 3.—Section of precapillary arteriole showing it is surrounded by dense hyalinized connective tissue. Hortege silver impregnation stain.

touch. The tenderness extended laterally and upward to the neck beyond the lobes. The patient stated that she had noticed the tenderness over her neck when, one week after the onset of her illness, her nephew, aged 5, had thrown his arm around her neck. There was no external evidence of inflammation.

A diagnosis of Riedel's struma was made. Strong solution of iodine was given in the dosage of 10 drops three times a day for one week.

Operation performed on February 24 confirmed the diagnosis both grossly and microscopically. The muscles were found to be adherent over both lobes of the gland, the process extending well up the sides. The microscopic diagnosis was made by Dr. William German, pathologist to the Good Samaritan Hospital, who reported that section showed extensive diffuse fibrosis replacing gland bearing tissue. There were progressive strangulation of lobules, abundant new formation of connective tissue and numerous pseudo giant cells. The small arterioles showed extensive sclerosis with perivascular sclerosis. Some of this had been of rapid and recent origin and had resulted in small focal areas of necrosis, similar to those found in necrotizing arteriolonephrosclerosis. The amount of actual lymphoid tissue was scanty. There was pronounced sclerosis of the gland capsule. No cancer was present. The diagnosis was Riedel's struma (struma fibrosa of the thyroid gland).

The patient made an uninterrupted convalescence. By March 3 the heart murmur had disappeared.

#### COMMENT

This is the fifth case of Riedel's struma with an acute onset seen by me during the past eighteen months. Three of these cases have been verified by operation. Two were reported previously. Two of the patients refused operation.

In addition to the acute onset, all of these cases presented certain common characteristics which I consider to be a part of the perithyroiditis entity. Among these may be included such symptoms as fever of varying degrees (often with chilliness), pain or other discomfort in the thyroid region, absence of visible inflammation and persistence of tenderness in the lobes after other symptoms, more especially the fluctuations of temperature, have subsided. In general, the history is negative as to previous involvement or dysfunction of the thyroid gland.

The basal metabolic rate appears to be unaffected or at most only slightly elevated. Subsidence of acute symptoms has generally been followed by nervousness, fine tremors, continued tightness of the throat and persistent enlargement of hardened consistency. Riedel's struma has been the end result as verified post-operatively in 3 of 5 cases displaying this train of symptoms.

The surgeon seldom sees Riedel's struma until the acute phase has subsided. I have been fortunate enough to secure good case histories which enabled me to obtain a clearer picture of the complete syndrome. On the basis of my observations it seems likely that in diagnosing acute nonsuppurating thyroiditis observers have been witnessing the onset of Riedel's struma. None of the glands affected with this disease suppurate. It has been my experience that suppurative thyroiditis develops within a comparatively short time and that it is usually accompanied by cellulitis of the neck. In contrast early fibrosis was the rule in the cases under discussion.

One must not overlook the fact that during the acute phase of perithyroiditis the febrile symptoms are so mild as to cause many of the patients to go untreated. Not infrequently the condition is diagnosed as grip or cervical adenitis. The soreness disappears and the patient leaves the physician's care only to seek a surgeon later.

In view of these findings the explanation which I offer is that primary perithyroiditis with the adherent edematous muscles and lymphangitis partially occludes the blood vessels entering the thyroid gland and causes

the entity known as Riedel's struma. In brief, Riedel's struma is a vascular rather than a glandular disease.

This contention is borne out by both the gross and the microscopic appearance of the excised glands, but more especially by the histologic sections. In the photomicrographs presented it may be seen that the picture strikingly resembles that of the kidneys described by Goldblatt and his associates<sup>2</sup> in which the renal arteries were partially constricted.

While on the subject I should like to revert briefly to the role of iodine in the etiology of Riedel's struma. In the previous discussion<sup>1</sup> I expressed doubt that iodine entered the picture. These doubts have been strengthened as a result of further observations. Iodine does not seem to be a causative factor, because in a recent case of eight weeks' standing the patient had been given no iodine before the onset of the disease.

#### SUMMARY AND CONCLUSIONS

Perithyroiditis is a distinct entity with a definite train of symptoms and sequelae. Perithyroiditis is the etiologic factor in the formation of Riedel's struma. Additional evidence submitted tends to confirm the view that Riedel's struma is a vascular rather than a glandular condition.

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#### ELECTRONMICROGRAPHY OF MURINE POLIOMYELITIS VIRUS PREPARATIONS

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Following isolation and identification of the murine strain of SK poliomyelitis virus<sup>1</sup> in this laboratory, subsequent work has been concerned with purification of the infectious agent. By using physical and chemical methods of extraction and concentration, highly potent virus preparations were obtained from infected mouse brains. These preparations possessed an appreciable degree of physical homogeneity, as determined by ultracentrifugation, and reacted in precipitin tests with specific antiviral serums.<sup>2</sup> The purified material seemed to offer a good opportunity to gather additional information on the morphologic characteristics of the infectious agent by means of further study with the electron microscope. For the same purpose there were also available tissue culture preparations of SK murine virus. The latter were examined in the unpurified state.

The work to be described in this paper was carried out in collaboration with the staff of the Physics Divi-

<sup>2</sup> Goldblatt, Harry, Lynch, J., Hanzal, R. F. and Summerville, W. W. Studies on Experimental Hypertension. Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia. *J. Exper. Med.* 59: 347 (March) 1934. Goldblatt, Harry. Studies on Experimental Hypertension. Production of Malignant Phase of Hypertension. *ibid.* 67: 809 (May) 1938. Experimental Hypertension Induced by Renal Ischemia. Harvey Lecture. *Bull. New York Acad. Med.* 14: 523 (Sept.) 1938.

From the Department of Bacteriology, Columbia University College of Physicians and Surgeons.

This work was supported by grants from the Warner Institute for Therapeutic Research, the Philip Hanson Hiss Jr. Memorial Fund and gifts from anonymous donors.

<sup>1</sup> Jungeblut, C. W. and Sander, Murray. Studies of a Murine Strain of Poliomyelitis Virus in Cotton Rats and White Mice. *J. Exper. Med.* 72: 407 (Oct.) 1940. Jungeblut, C. W., Sander, Murray and Feiner, R. R. Further Experiments with the Murine Strain of Poliomyelitis Virus. *ibid.* 75: 611 (June) 1942.

<sup>2</sup> Beardillon, Jacques. Further studies on the reactions of the murine strain of SK poliomyelitis virus to various antiviral chemicals. In press.



sion of the Research Laboratories of the American Cyanamid Company at Stamford, Conn. The instrument employed was the commercial RCA model which permitted primary magnifications between 1:5,000 and 1:8,000. The original negatives were further enlarged to final scales of from 1:14,500 to 1:20,000.

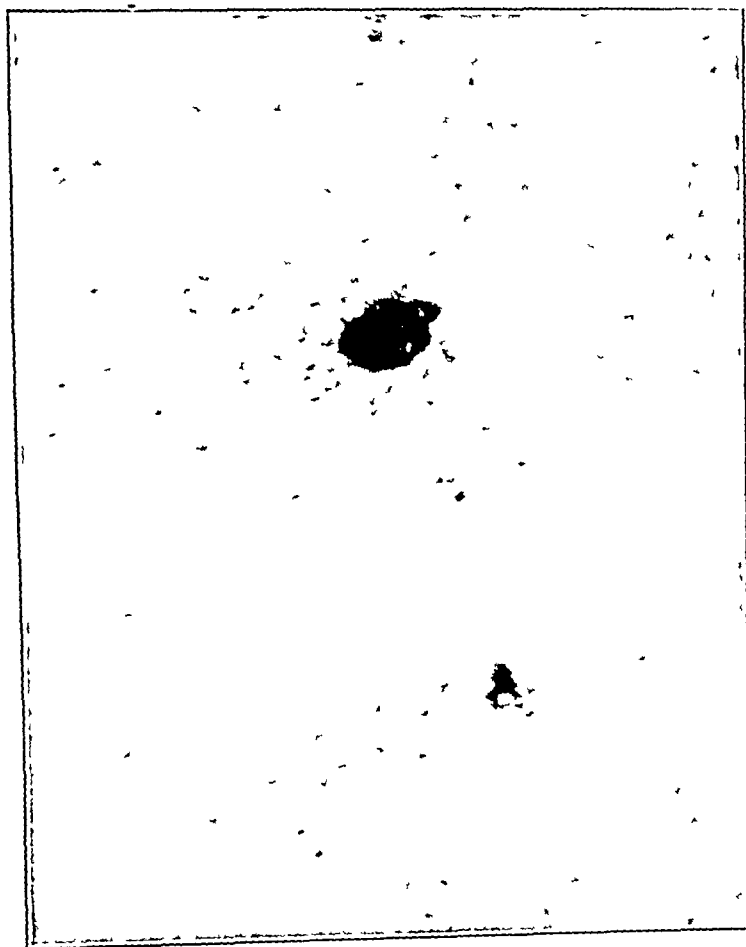


Fig. 1—Sample of purified SK murine virus prepared by extraction from infected mouse brains and suspended in a 0.01 per cent solution of sodium phosphate,  $\times 14,500$ .

#### EXPERIMENTAL WORK

**Materials**—Purified SK murine virus obtained from infected mouse brains (270th-320th passage) by chemical extraction and sedimentation in the ultracentrifuge, as described in detail elsewhere,<sup>2</sup> was dialyzed in a cellophane bag against distilled water or dilute buffer for twenty-four hours at icebox temperature. The sample, when tested for potency in mice, had an intracerebral titer of between  $10^9$  and  $10^{10}$  minimum lethal doses. A control preparation, made from normal mouse brain by using the same methods of purification, was similarly dialyzed. It was noninfectious for mice. SK murine tissue culture virus was obtained by growing the strain for three days at 37°C in a medium consisting of minced embryonic mouse brain in ox serum ultrafiltrate. The composition of this medium and the properties of SK tissue culture virus have been fully described before.<sup>3</sup> The supernatant fluid of SK murine virus tissue cultures (200th and subsequent passages), when tested for potency in mice gave an intracerebral titer of  $10^6$  minimum lethal doses. These virus preparations, without preliminary purification of any kind, were dialyzed against distilled water for twenty-four hours in the icebox. A control preparation made from noninoculated, but incubated, tissue culture medium was similarly dialyzed.

Electron microscope preparations were made from the various virus and control materials described by

applying a drop of fluid to a collodion film which, after thorough drying, was exposed to the electronic beam. In the case of each preparation, at least four different fields were selected and photographed. Focusing was greatly handicapped by the fact that most preparations contained little or no material that could be seen directly on the fluorescent screen.

**Results**—A considerable number of pictures were thus obtained. Most of these showed a confusing multitude of bodies of varying size and shape or amorphous aggregates. Because of their haphazard occurrence in both viral and control material, it was obvious that none of these forms bore any manifest relationship to the infectious agent. In certain photographs of virus preparations, however, structures were observed which could not be found in any of the several control preparations examined. The electronmicrograms of these particular virus preparations together with photographs of corresponding control preparations are reproduced in the accompanying illustrations.

Figure 1 shows an electronmicrogram ( $1 \times 14,500$ ) of a sample of purified SK murine virus prepared by extraction from infected mouse brains and suspended in a 0.01 per cent solution of sodium phosphate. It reveals the presence of a large number of small, round or elliptic, fairly well defined bodies, some of which occur without distinct grouping whereas others seem to be aligned in pairs or short chain formation. These

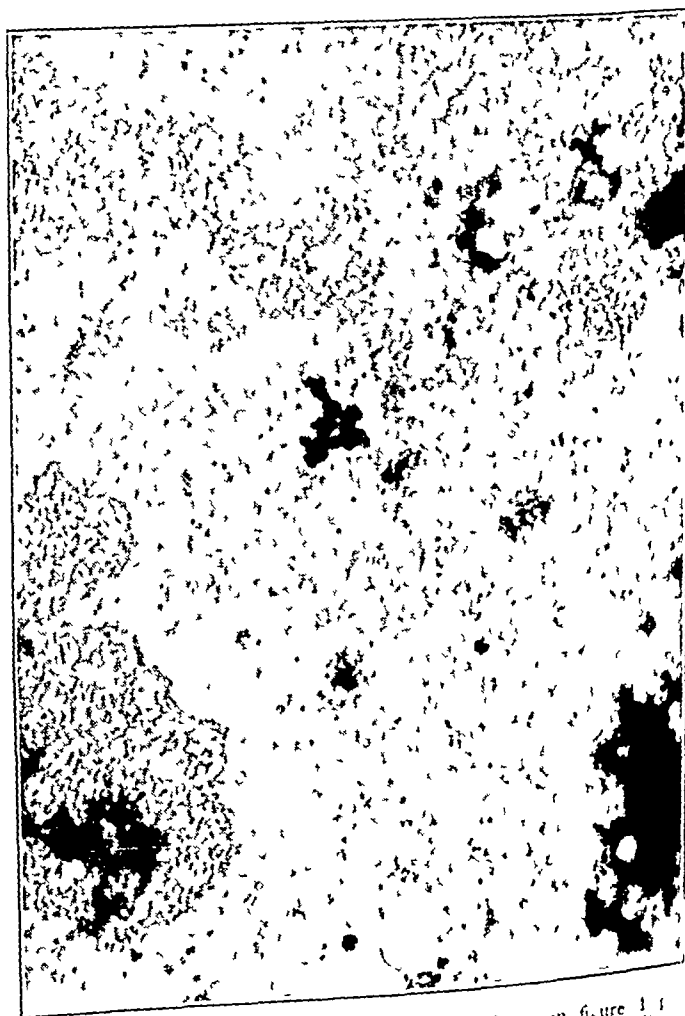


Fig. 2—Another sample of the preparation shown in figure 1 previously treated with 0.25 per cent calcium chloride solution  $\times 14,500$ .

bodies appear to be all of more or less uniform size measuring slightly less than 0.5  $\mu$ m in diameter on the picture, which would correspond to an actual size of 25 to 30 millimicrons. In figure 2 is shown an electronmicrogram ( $1 \times 14,500$ ) of another sample of the same preparation, but previously treated with 0.2-

<sup>3</sup> Sanders, Murray, and Jungblut, C. W. Cultivation of the Murine Strain of SK Poliomyelitis Virus, J. Exper. Med. 75: 631 (June) 1942.

per cent calcium chloride solution. This picture presents, among much aggregated material, bodies of essentially similar morphology except that they possess a slightly sharper contour. Figure 3 is an electronmicrogram ( $1 \times 14,500$ ) of a control sample of material obtained by extracting and concentrating normal

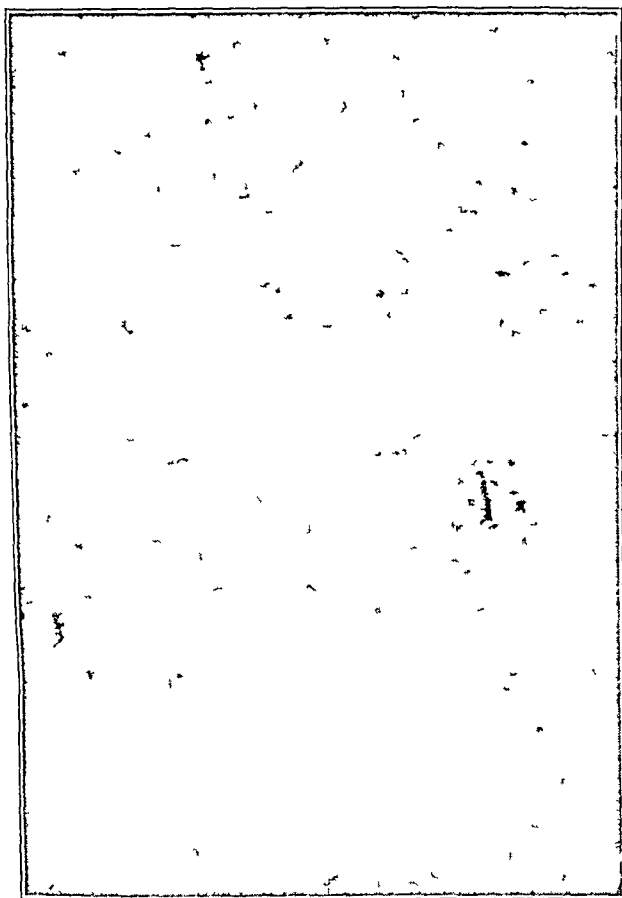


Fig. 3—Control sample of material obtained by extracting and concentrating normal mouse brain  $\times 14,500$

mouse brain by chemical and physical procedures analogous to the procedure employed for the purification of infected mouse brain. This picture shows the presence of a large number of ill defined, heterogeneous structures mostly of dissimilar size, none of which bear any morphologic resemblance to the bodies observed with the two virus preparations mentioned before.

The next three illustrations deal with electronmicrograms obtained from unpurified tissue cultures of SK murine virus and uninoculated tissue culture preparations. Figure 4 is an electronmicrogram of SK murine tissue culture virus ( $1 \times 20,000$ ). It shows among much heterogeneous material the presence of numerous thin but rather long filamentous threads which sometimes lie so close together that they appear to form a network. Occasional threads seem to contain, at certain points along their axis or at the end, small spherical or elliptic bodies which give to the entire structure the appearance of beads or buds. The individual threads seem to be all of the same width, i.e., approximately 20 millimicrons, but of different length, varying from about 75 to 5,000 millimicrons or perhaps even more. Another electronmicrogram ( $1 \times 20,000$ ) of the same virus preparation is presented in figure 5. It shows essentially the same forms though less numer-

ous and seemingly of two different densities. The same characteristic beaded or budded appearance is well recognizable in this picture. Figure 6 is an electronmicrogram ( $1 \times 14,000$ ) of the supernatant fluid of uninoculated tissue culture medium which had been incubated for five days at  $37^{\circ}\text{C}$ . The picture shows the presence of numerous bodies of variable size and shape but none which resemble the threadlike structures observed with the two virus preparations mentioned before. Another control preparation was made by growing a strain of western equine encephalomyelitis virus in the same type of tissue culture medium as was used for the propagation of the two strains of murine poliomyelitis virus. An electronmicrogram was obtained from this preparation (titer  $10^4$  minimum lethal doses intracerebrally). It showed a large number of very poorly defined small spherical bodies but failed to reveal the presence of any threadlike structures.

#### COMMENT

The observations made in this work are presented merely to preserve an experimental record. In view of the present difficulties in properly interpreting electronmicrograms of viruses it would be premature to make any attempt to evaluate this information. In certain experiments, however, the biologic activity of murine poliomyelitis virus (SK strain) was evidently associated with the presence in the infective material of certain fairly well defined structures as determined by photography with the electron microscope. Since these structures occurred only in virus preparations and not in corresponding virus free control material, it

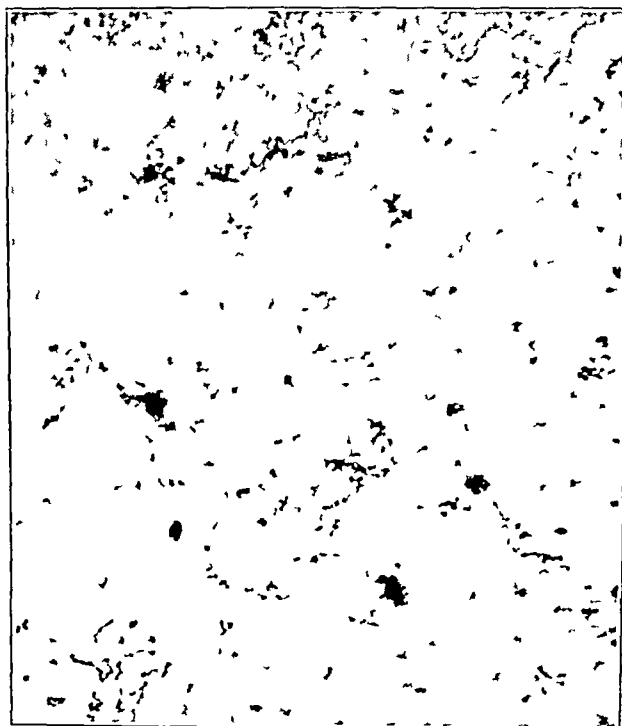


Fig. 4—SK murine tissue culture virus, reduced from a photograph with a magnification of 20,000 diameter

is conceivable that we were dealing with the infectious unit itself. On the other hand it must be pointed out that such structures could be found only in very few virus preparations out of a great many examined and that the ordinary means of identification by serologic methods were missing.

Two different types of structures were observed, first, elliptic bodies, occurring singly or in short chains, and, second, filamentous threads, which, in some instances at least, seemed to be made up of a series of such bodies held together by some cohesive material in linear association. The bodies had a diameter of

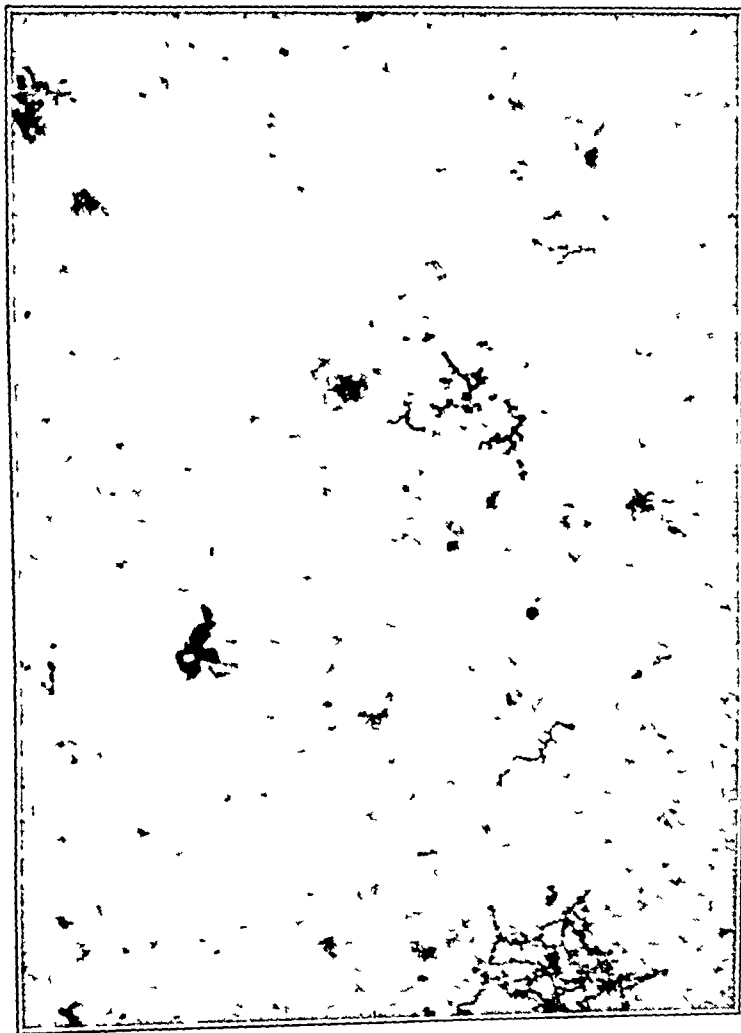


Fig 5 Virus preparation shown in figure 4, reduced from a photograph with a magnification of 20,000 diameters

between 25 and 30 millimicrons. The diameter of the threads measured about 20 millimicrons while their length appeared to vary considerably from about 75 to as much as 5,000 millimicrons. The first form was observed with purified virus preparations extracted from infected mouse brains, the other with unpurified tissue culture virus preparations. It is impossible to say at present whether the two forms are in some way connected with different biologic stages of the virus or whether the difference is an artificial one, peculiar to the methods of handling the respective virus preparations. The dimensions of these structures—in one diameter at least—are appreciably larger than has previously been computed for the virus on the basis of ultrafiltrations.<sup>4</sup> They correspond closely, however, with calculations derived from the sedimentation rate in the ultracentrifuge.<sup>2</sup>

After this paper had been submitted for publication there became available the report of a similar investigation carried on by a group of Swedish workers (Gard, Petersen, Svedberg and Tiselius) in Uppsala.<sup>5</sup> A verbal quotation (page 143, lines 4-16) from Dr Gard's monograph of the pertinent data concerning

Theiler's virus of mouse encephalomyelitis (obtained from infected mouse brains) or of human poliomyelitis virus (obtained from spinal cords) follows:

The micrographs of murine neurovirus showed mainly long filaments, almost exclusively single fibers in a loose network with wide meshes. Now and again impurities appeared to be adsorbed to the fibers, forming bead-string-like structures. The tendency to bundle formation seemed to be less pronounced. In the human neurovirus preparations a finely dispersed substance predominated. It seemed to be rather uniform with regard to particle size and shape, forming rounded elements of about 10 millimicrons in diameter. In the bulk of this substance single fibers were embedded, sometimes branched but seldom in netlike arrangement. Bundles were never observed. A third component in the shape of rounded particles might have been present, very difficult to distinguish from aggregates of the main component.

The apparently close agreement between the two sets of observations—one dealing with natural murine and human strains, the other with a mouse adapted strain of human poliomyelitis virus—seems noteworthy.

#### SUMMARY AND CONCLUSIONS

1 Electronmicrograms of SK murine poliomyelitis virus, obtained either from infected mouse brains or from tissue culture preparations, were made.

2 Purified virus preparations from mouse brain showed fairly clear and uniform particles 25 to 30 millimicrons in diameter, while noninfectious control material contained only structures of ill defined morphology.

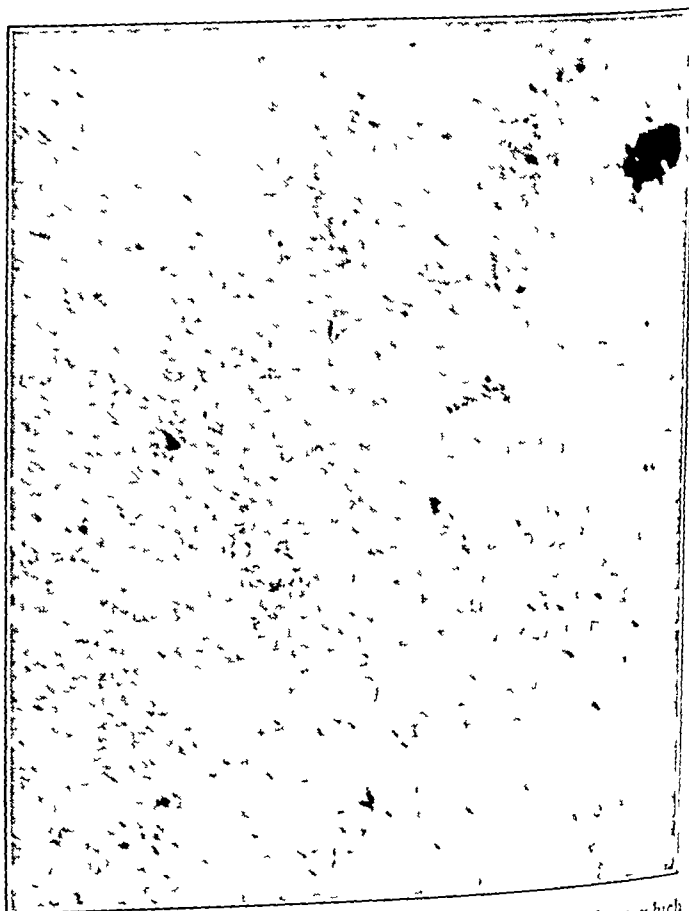


Fig 6—Supernatant fluid of uninoculated tissue culture medium which had been incubated for five days at 37°C slightly reduced from a photograph with a magnification of 14,000 diameters

3 Unpurified virus tissue culture fluid showed long threadlike structures measuring 20 by 75 to 5,000 millimicrons, which were not found in noninfectious control material.

4 The nature of the described structures at present must remain undetermined.

630 West 168th Street

<sup>4</sup> Elford, W. J., Galloway, I. A., and Perdrau, J. R. The Size of the Virus of Poliomyelitis as Determined by Ultrafiltration Analysis, *J. Path. & Bact.* **40**: 135 (Jan.) 1935. Theiler, Max, and Gard, Sven. Encephalomyelitis of Mice. I. Characteristics and Pathogenesis of the Virus, *J. Exper. Med.* **72**: 49 (July) 1940.  
<sup>5</sup> Gard, Sven. Purification of Poliomyelitis Virus. Experiments on Murine and Human Strains, *Acta med. Scandinav.*, supp. **143**: 1173 1943.

MEASURING EYE FLASH FROM  
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DAVID G COGAN, M D  
AND  
PHILIP DRINKER, Sc D  
BOSTON

In our shipyards today we are employing over 100,000 welders. These workers and their neighbors have a certain amount of exposure to ultraviolet radiation, although every effort is made to supply and use suitable eye shields, goggles and screens. About 40 per cent of the calls at our shipyard dispensaries are because the patient has received what he thinks may be an "eye flash".<sup>1</sup>

Our purpose in the present study was to derive a practical rule whereby one can estimate in terms of time, intensity of radiation and distance the safeness of any exposure to a welding arc.

Verhoeff and Bell<sup>2</sup> showed that the ultraviolet radiations responsible for ocular lesions in rabbits were shorter than 305 millimicrons and that about  $2 \times 10^6$  erg seconds per square centimeter were required for a minimal effect. They also showed that the biologic response varied with the duration of the exposure and inversely with the square root of the distance. That is, a four second exposure was twice as severe as one of two seconds, but an exposure at 4 feet was only one fourth as serious as one at 2 feet. Moreover, they found that within a twenty-four hour period the effects of repeated dosages were additive. The sources of radiation in their experiments were a mercury vapor lamp and a magnetite arc. No one, to our knowledge, has determined the exposure from a welding arc necessary to produce minimal ocular symptoms in human beings.

For our exposure studies we employed a welding machine set to operate on straight polarity at 300 amperes and 35 volts. Five-sixteenths inch Hubbard covered electrodes were used and welding was performed on a half inch thick block of iron.

In order to make our data readily applicable to operating conditions an ordinary Weston photographic light meter was calibrated in foot candles and used as a measure of dosage. The intensity of the radiations varied three or four fold from moment to moment, so that it was necessary to estimate the average intensity throughout the exposure period. The average meter reading in foot candles multiplied by the duration of exposure in minutes is used as an "exposure" coefficient or time-intensity factor. The units thus become foot candle-minutes.<sup>3</sup>

The dosage measured by the light meter is due almost entirely to the visible portion of the spectrum rather than to radiations in the ultraviolet shorter than 305 millimicrons, which are the ones known to be responsible for the deleterious ocular effects. Thus for light meter readings to be a valid index of the ocular hazard it is necessary to know whether the quantity of ultraviolet radiations bears an essentially constant ratio to

the quantity of visible radiations under various conditions encountered in welding. Through the courtesy of Drs H C Rentschler and Arthur W Ewell of the Westinghouse Lamp Company, who provided us with a tantalum photoelectric cell<sup>4</sup> and click meter, we were able to measure the amount of ultraviolet radiation from arcs produced at several different amperages and by electrodes from six different manufacturers. The results of all these experiments are summarized in table 1. It will be observed from the table that there is considerable variation in output between electrodes but that the average readings of the light meter did parallel the amount of ultraviolet radiation as indicated by the number of clicks on the click meter. Moreover, the ratio of the amount of ultraviolet to visible radiation from the electrodes of various manufacturers appeared to be approximately the same. It will be noted that several of the types of electrodes tested produced somewhat greater amounts of radiant energy. Considering the variability

TABLE 1—Constancy of the Ultraviolet Visible Radiation at Various Operating Currents and for Different Makes of Electrodes

Make of Electrode	Current Setting Amperes	Num ber of Cafes	Average Dosage Foot Candles	Dosage of Ultraviolet Clicks per Minute		
				Range	per Minute	Range
Hubbard	300	6	300	170-450	33	15-69
Hubbard	180	5	260	200-700	20	24-30
Hubbard	100	4	100	75-112	11	
Austin Hastings	300	2	475	400-550	64	50-72
Westinghouse	300	3	375	350-400	48	40-62
Welding Engineering Sales Company	300	3	400	350-450	42	36-48
Lincoln Welding (light)	300	2	350	350	36	36
Harvey Steel	300	3	367	300-400	33	30-50
Austin Hastings Sheet Weld	300	3	333	300-350	33	28-36

Each click of the meter represents 220 micro watt seconds per square centimeter of equivalent 2.537 angstrom radiation.

of the readings for any given make of electrode and the few tests made we doubt whether this has any significance.

All the eyes were checked before exposure to make sure they were normal and again approximately eighteen hours after irradiation. The eyes were examined with the biomicroscope with and without fluorescein staining. Mottling of the cornea as revealed by the use of a Placido disk was found to be the most sensitive index of injury. Signs of exposures just in excess of those required to produce minimal injury were keratitis epithelialis, conjunctival and ciliary injection and, in human beings, epiphora. In none of our experiments was the dosage used sufficient to produce visible infiltration of the cornea. The chief symptoms noted by the men exposed were foreign body sensation and photophobia. To show roughly the severity of the injury a grading system of — through +++ is used in the tables which summarize the results. A ± indicates mild mottling with minimal diffuse staining. A +++ indicates a fairly definite keratitis epithelialis with conjunctival and ciliary injection and in human beings sensation of a foreign body.

The first experiments were performed on animals the eyes being held open manually for the exposure.

<sup>4</sup> The upper wavelength limit of the tantalum photoelectric cell is 1000 angstroms; the lower limit is about 2400 angstroms and its sensitivity is about 2600 angstroms.

<sup>1</sup> From the Howe Laboratory of Ophthalmology, Harvard Medical School (Drs Kinsey and Cogan) and the U S Maritime Commission and Harvard School of Public Health (Dr Drinker).

<sup>2</sup> Rieke F F. Arc Flash Conjunctivitis. *Actinic Conjunctivitis from Electric Welding Arc*. J A M A 122 734-736 (July 10) 1943.

<sup>3</sup> Verhoeff F H and Bell Louis. The Pathological Effects of Radiant Energy on the Eye. *Proc Am Acad Arts & Sciences* 51 630-749 1916.

<sup>4</sup> The distance at which measurements were made makes no difference since the unit incorporates foot candles.

Ten rabbit eyes were irradiated with doses having exposure coefficients below 100 foot candle-minutes. No appreciable injurious results followed. A second group of rabbits and three dogs were then exposed. Table 2 summarizes these results. It will be seen that an exposure coefficient of 333 foot candle-minutes is required

TABLE 2—Intensity of Exposure to Welding Arc (300 Amperes) Necessary to Produce Ocular Lesions in Rabbits and Dogs

Time of Exposure, Seconds	Exposure Coefficient Foot Candle Minutes	Severity of Signs
Rabbits		
15	100	
15	100	
30	200	+
60	400	++
110	700	+++
135	900	+++
Dogs		
15	100	
15	100	
45	300	
70	333	
90	600	+
135	900	++

All exposures were at 7 feet

to produce observable signs in rabbits and that considerably larger doses, namely an exposure coefficient of 600 foot candle-minutes was required to produce the only injury observed in dogs.

Table 3 illustrates the results on human volunteers. The subjects (young men) held the exposed eye open throughout the period of irradiation and were asked to fix on an object about 15 degrees to the side of the arc in order to avoid production of bothersome scotomas. It will be observed that an exposure coefficient of 200 foot candle-minutes is required to produce minimal ocular damage consistently in men. In actual practice this required, with one exception, a thirty second exposure at a distance of 7 feet. From the fact that a twenty second exposure (exposure coefficient 133) sometimes produced damage, we believe that approximately 150 foot candle-minutes would represent the average exposure coefficient necessary to produce minimal ocular injury in 50 per cent of the subjects. With these minimal exposures the average time at which initial symptoms were noted was eight to ten hours after the exposure.

Provided it was possible to determine total exposure time accumulated by an individual throughout a working day, repeated exposures being approximately additive during a twenty-four hour period,<sup>2</sup> it should be possible from the foregoing data to estimate the probable ocular hazard in any given welding situation by simply measuring at night the intensity with a light meter calibrated in foot candles. For example, if it is assumed that a person working near where welding is being performed might accumulate a fifteen minute exposure in the course of a day, one would predict a definite danger of ocular symptoms if the intensity at this distance from the arc was equal to 10 foot candles or more.

(i.e.  $\frac{150 \text{ foot candle minutes}}{15 \text{ minutes}} = 10 \text{ foot candles}$ )

Since daylight intensities vary from about 100 foot candles to several thousand, it would be impracticable to measure changes of 10 foot candles. That is sunlight would offer too much interference. However, if the

arc intensities are measured at night or in a dark room interference can be avoided.

Chiefly because of the uncertainty in estimating the probable time a person might be exposed, it would appear safer in practice to provide protection in the form of shields or goggles unless a safety factor of about tenfold can be allowed. Thus, after estimating the maximum time which an individual might be exposed in the course of a day, preferably by direct inspection under working conditions, an exposure coefficient of the order of 15 foot candle-minutes would seem to afford a sufficient margin of safety that the danger of ocular symptoms would be nil.

It is evident that time of exposure required to produce symptoms is not consistent with the general idea of "flash" exposures, and therefore the term appears as a misnomer. Thus there appears to be little need to provide protection for persons who will be exposed but momentarily. Moreover, since ordinary crown and flint glass are essentially impermeable to radiations shorter than 305 millimicrons, it follows that any spectacle or goggle having a thickness of 2 millimeters or more, whether colored or not, will afford practically complete protection from electric arc welding provided some shield is available to prevent lateral exposure.

Theoretically it would be possible to give these rules for safe welding in terms of distance from the arc. To do so one must assume that arcs are constant as to intensity. If the intensity varies, as it will in changing from an arc drawing 100 amperes to one drawing 300, the distance factor would have to be altered. It is better, we believe, to measure the effect of the arc by means of the light meter, which combines the effects of distance and intensity into a single figure.

Shipyards using a single type of welding machine and a constant intensity presumably can estimate the distances which apply to their particular conditions.

TABLE 3—Intensity of Exposure to Welding Arc (300 Amperes) Necessary to Produce Ocular Lesions in Human Beings

Time of Exposure Seconds	Exposure Coefficient Foot Candle Minutes	Severity of Signs
	133	+
20	133	-
20	133	-
20	133	+
20	133	-
20	133	-
20	133	-
20	200	+++
30	200	+
30	200	++
30	200	++
30	200	++
30	200	++
10	268	+++

All exposures were at 7 feet excepting the last one, which was at 3 1/2 feet

SUMMARY

A light meter calibrated in foot candles was found to give an adequate, although arbitrary, measure of the dosage of radiation from electric welding arcs which produce ocular injury. The exposure to such arcs necessary to produce minimal ocular signs and symptoms in rabbits, dogs and human beings has been measured. As to time and intensity of radiation, a minimum standard of safety for men in the neighborhood of electric welding arcs has been recommended as one that required to produce minimal ocular effects.

ACUTE VIRUS INFECTION WITH  
NERVE ROOT INVOLVEMENT  
SIMULATING APPENDICITIS

CAPTAIN WINFIELD L. BUTSCH

MEDICAL CORPS ARMY OF THE UNITED STATES

A D

LIEUTENANT COLONEL JAMES C. HARBERSON

MEDICAL CORPS ARMY OF THE UNITED STATES

This report is concerned with acute pain and tenderness occurring in the right lower abdominal quadrant in 50 patients who did not have appendicitis. The admission diagnosis in all patients except 2 was acute appendicitis. This series of 50 patients were young men observed during a six month period at a station hospital. Among the early patients in the group 13 were operated on and in each instance a normal appendix was removed. As more patients were seen and the findings pieced together the syndrome became more apparent and fewer patients were treated surgically. None of the latter patients exhibited any signs or sequelae of appendicitis in their subsequent course.

## ONSET

The abrupt onset was one of the salient features of this infection. Young men who had felt perfectly well at work, playing football sitting in a classroom or taking a walk while off duty were suddenly seized with a knifelike abdominal pain which caused many of them to double up. This pain awakened them out of a deep sleep and on one occasion struck a medical officer just as he was reaching for his alarm clock. This medical officer had undergone appendectomy some years before. His observations on himself were helpful in providing orientation.

Nausea and vomiting practically always occurred in the first few hours, which added to the suspicion of appendicitis. There was no prodromal period of malaise or lack of appetite. Often a full meal had been eaten just before the pain began. The patients did not complain of a cold preceding the onset with any more frequency than one would expect colds during the fall season of the year.

This pain struck in the right middle or lower part of the abdomen as a rule. It might also be felt in the right loin. It was localized at the onset. There was no shifting or localization of initial generalized pain as in appendicitis. In the latter type of pain occurs our treatment is immediate operation for appendicitis. Coughing or deep respiration reproduced the pain. Frequently the patient stated that the whole right side of the abdomen was sore and tender. The pain did not radiate.

A striking feature of this pain was the fact that it was always worse at night. This was true for every patient. A number of the patients were able to remain on duty for several days because the pain was lessened when they were up and about. They stated that as soon as they lay down after duty the pain became severe and grew worse through the night. It was after an uncomfortable night of pain that they sought admission to the hospital. At times the pain was extremely severe and persisted for hours, requiring morphine for relief.

Nausea and vomiting were confined to the first few hours. Only in 2 instances were these symptoms present later. The patients did not experience malaise

or a febrile sensation. Their appetite was only fair but they did eat. Urinary symptoms and diarrhea were not present.

## PHYSICAL FINDINGS

The flushed face presenting a brick red appearance formed a strong impression and immediately aroused suspicion of the nature of the complaint. The brick red appearance was not limited to the malar eminences but involved the entire face. A faint generalized flush of the skin might be present. The conjunctivas were likewise heavily injected supporting the impression that this was a systemic infection. The patient had a drowsy appearance and turned on his side to sleep when not questioned by the examiner.

The appearance of the soft palate was characteristic. It was entirely covered with a raised plaque or edematous mucous membrane of a salmon pink. On closer inspection small papular elevations with yellow centers could be seen interspersed over this area. The pharynx was not involved. The patient had no sensation of sore throat. This finding was noted in the soft palate of 48 of the 50 patients. It was less prominent when the complaint was of more than a week's duration.

The patient could always point to a definite area on the abdomen where the pain had its onset and was maximal. In 30 of the cases this was to the right of the umbilicus (area I of fig. 1). The pain was felt to a lesser extent throughout the right side and in the right flank. This was also true of the tenderness. The tenderness could often be traced along the course of the tenth intercostal nerve. In eliciting the tenderness one noted that there was definite soreness in the skin. The patient flinched and voluntarily tightened the abdominal muscles the moment the skin was touched. When the patient's confidence was gained one could often palpate deeper and deeper without causing more pain. Hyperesthesia was commonly found throughout the right side of the abdomen. In 3 cases hypesthesia was noted on the right side. True muscle spasm was not found. The abdomen was noteworthy for its scaphoid appearance and laxity to gentle palpation after the first flinching of the patient was overcome.

Certain characteristics designated this pain as that of nerve root. It was reproduced in the area to the right of the umbilicus by coughing or deep breathing. Careful flexing of the neck without causing the abdominal muscles to tighten reproduced the pain in the same area in about half of the cases. Asking the patient to sit up with knees extended reproduced pain in the abdomen and in the flank simultaneously. In addition the previously mentioned nocturnal exacerbations fitted in well with this conception.

The next most common abdominal area where the pain was felt was the right lower quadrant (area II of fig. 2). The maximum of pain and tenderness was found in this area in 17 patients. This area lay slightly below and nearer to the inguinal ligament than McBurney's point, though this was not striking enough to constitute a significant differential observation. Here again the fact that deeper palpation did not increase pain is of interest. The right upper quadrant as shown in area III of figure 2 was the site of maximal pain and tenderness in 3 patients.

Two of the patients were admitted with the diagnosis of acute cholecystitis. The illness of one later followed the course of a virus pneumonia and the x-ray appearance was consistent with that diagnosis. In every



patient pain and tenderness were elicited all over the right side of the abdomen but were maximal in the areas just discussed. Many of the patients referred pain to the right side of the abdomen when the left side was palpated. This finding is of interest because of the absence of acute appendicitis.

Eight patients with similar histories and physical findings were seen and not included in this group. The reason is that the pain was maximal either in the epigastrium, the left upper quadrant of the abdomen or to the left of the umbilicus and would not be confused with the pain of appendicitis. These patients showed the same clinical findings aside from the site of the pain as did the reported group. The areas in which the pain and tenderness were found are illustrated in figure 3. Undoubtedly, localization of pain in these sites was just as common as localization in the right side of the abdomen. However, circumstances prevented their coming to our attention. Patients with pain in these areas were less likely to consult their infirmity phy-

16 patients with a leukocyte count of over 10,000 and but 4 with a polymorphonuclear percentage over 75.

Lumbar punctures were done on 5 patients. No increase in spinal fluid pressure or cell count was found.

Two patients had x-ray findings consistent with a diagnosis of virus pneumonia, which rapidly cleared. In other instances in which roentgenograms of the chest were taken they showed no pulmonary involvement.

The urine was always normal.

#### COURSE

When these patients were first seen in the late summer and early autumn the pain was neither as severe nor as prolonged as it was later in the autumn when all respiratory diseases were more frequent and severe. At first the pain rarely lasted longer than twelve or twenty-four hours. In the late autumn and winter the average duration was from a week to ten days. One patient continued to have severe pain every night for

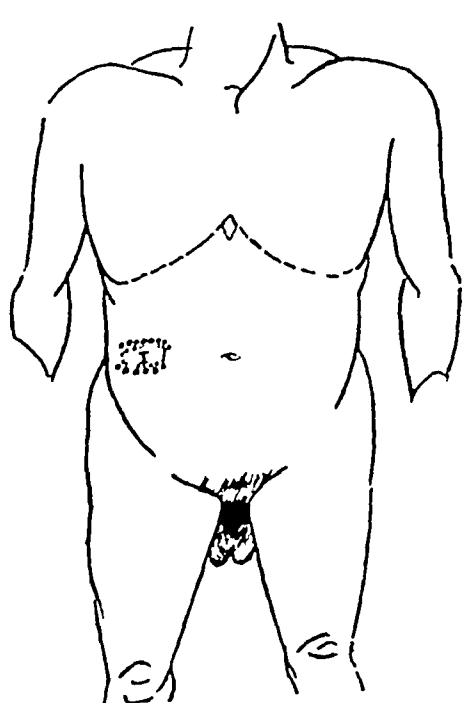


Fig. 1—Areas where pain and tenderness were most commonly found

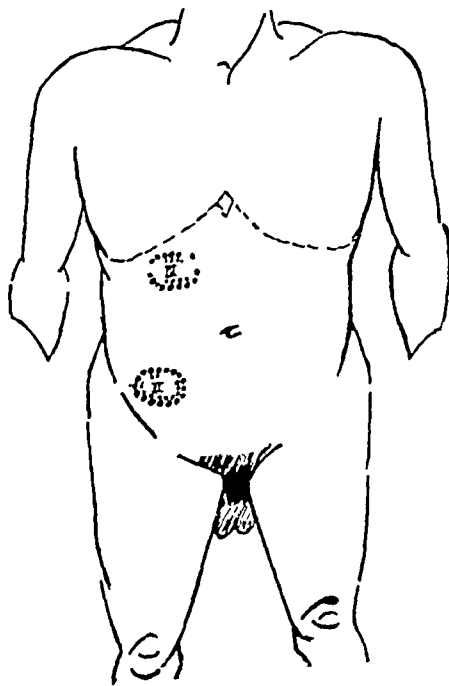


Fig. 2—Areas where pain and tenderness were next most commonly found

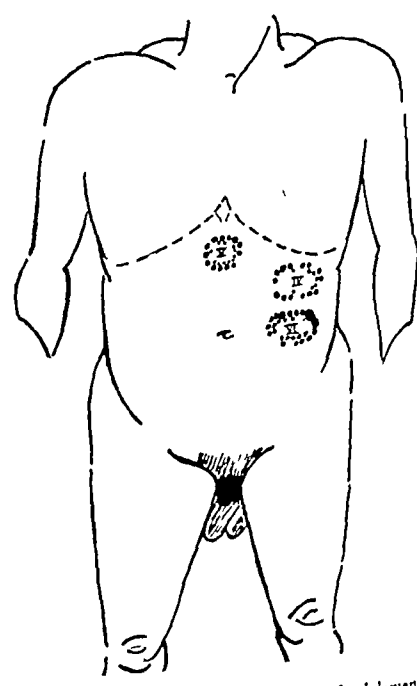


Fig. 3—Areas on left side of abdomen where pain and tenderness were found

sician. If they consulted him he was less likely to send them to the surgical ward with a diagnosis of possible appendicitis. The group we are reporting were seen for the most part in one surgical ward.

During August, September and early October these patients uniformly showed no elevation of temperature or of pulse rate. This was of value in arriving at an opinion. But as the common infections of the respiratory tract became more prominent in the late autumn they were at times combined with this syndrome. Thus a temperature as high as 102 F and a pulse rate of 100 were found because of associated rhinitis, sinusitis or tonsillitis.

#### LABORATORY FINDINGS

As has been stated, the temperature was usually normal or elevated only when there was associated infection of the respiratory tract. In the series there were only 12 patients with a temperature above 98.6 F and only 3 with a temperature above 100 F.

The tendency of the white blood cell count was to be normal with a normal or less than normal percentage of polymorphonuclear leukocytes. Here again mixed infection somewhat confused the picture. There were

eighteen days without relief. At this time the abdomen was explored with no abnormal findings. A normal appendix was removed.

Without exception the patients stated that they felt fairly well during the day but that they had severe pain at night while they remained in the hospital. They did not have nausea and vomiting after the onset. They were able to eat fairly well, and some were able to be up and about. They did not have elevated temperature in the hospital unless there was associated rhinitis or tonsillitis.

The nocturnal pain was sometimes severe enough to require morphine. Costovertebral nerve block was induced with procaine hydrochloride in 5 patients. Relief lasting only six to eight hours was gained from this procedure. Herpetic or other lesions of the skin were not seen.

#### COMMENT

We wish to emphasize that no syndrome, however well defined, which includes pain and tenderness in the right lower quadrant of the abdomen can ever be easily assumed not to be appendicitis without the most careful and repeated observations. At four and eight hours

intervals the history, physical findings and white blood cell count were rechecked until appendicitis no longer seemed to be a possibility.

Early in the series many of the patients were operated on as we were becoming familiar with the syndrome and were not certain of our differential diagnosis. The abdomen was carefully explored. The appendix, the cecum and the terminal part of the ileum were found to be normal in each instance. Particular attention was given to the appearance of the glands in the mesentery of the terminal part of the ileum. They were not enlarged or inflamed in any instance. Thirteen of the 50 patients were operated on. Observation of the progress of the remaining 37 patients did not suggest appendicitis.

Four patients who previously had undergone appendectomy were admitted with this syndrome. Their pain was equally severe, and in one it lasted as long as thirteen days.

We were particularly cautious when confronted with patients who gave a history of epigastric or generalized abdominal distress which localized later in the right lower quadrant. We were also suspicious of patients with a leukocyte count over 12,000 and a polymorphonuclear percentage over 75. Despite the presence of the other features of this syndrome an acutely diseased, suppurative appendix was removed from each of 2 patients who presented the stated findings indicative of appendicitis.

Two patients had two admissions to the hospital with this syndrome. One of these showed a definite change in symptoms twenty-four hours after the second admission. He developed nausea and vomiting during the night and in the morning and a sharply localized deep tenderness over McBurney's point. A tightly distended appendix that was beginning to show signs of redness was removed.

We realize that definite evidence that the infection was due to a virus is almost entirely lacking. The fact that we had not seen this syndrome before entering a station hospital where virus infections have been common, plus the characteristically low white blood cell count, plus the singling out of the nerve roots for involvement, plus the appearance of the soft palate have influenced us tentatively to call this a virus infection for purposes of cataloguing it.

#### SUMMARY

The following features of an acute infection with pain and tenderness in the right lower quadrant of the abdomen aid in distinguishing it from acute appendicitis:

1. Sudden, sharp onset of localized knifelike pain maximal immediately.
2. A flushed face and a punctate erythematous edema of the soft palate suggesting a systemic infection.
3. Pain that is worse on lying down and at night like pain of nerve root irritation.
4. Pain intensified by coughing, flexing the neck and flexing the trunk like pain of nerve root irritation.
5. Tenderness over the course of intercostal nerves.
6. Absence of elevation of either the total or the polymorphonuclear leukocyte count.

Two case reports are presented.

#### REPORT OF CASES

**CASE 1**—A man aged 26 entered the hospital with the history that two days previously while sitting in a classroom he suddenly suffered a severe knifelike pain in the right mid-abdomen. He had eaten a good lunch before the onset of the pain. That night he vomited once. There had been no diarrhea or urinary complaints. The pain had continued in the same area since onset. It was much worse at night. In addition the entire right side of the abdomen was sore.

The patient appeared to be in good general condition. His entire face was flushed, presenting a brick red color. The conjunctivas were injected. The mucous membrane of the soft palate was edematous and of salmon pink. There were numerous papular elevations with yellow centers throughout the palate. The pharynx was not inflamed. The abdomen had a scaphoid appearance and was soft. To the right of the umbilicus was a tender area the size of the palm of the hand. The tenderness was superficial and caused the patient to flinch and tense his abdominal muscles as soon as the skin was touched. The entire right side of the abdomen from the costal margin to the inguinal ligament was sore to the touch. The tenderness could be traced around the flank to the costovertebral angle. Palpation of the left side of the abdomen caused the pain to be referred to the right side of the abdomen. Flexing the neck caused the pain to be accentuated in the right side of the abdomen.

His temperature on admission was 99 F. The red blood cell count was 5,530,000 per cubic millimeter and the hemoglobin content 90 per cent. The white blood cell count was 8,700 per cubic millimeter with 64 per cent polymorphonuclears, 33 per cent lymphocytes, 1 per cent basophils and 2 per cent monocytes. The urine was normal.

The patient continued to have pain in the right side of the abdomen for the next seventeen days. Repeated examinations and blood counts were made. None of them were suggestive of acute appendicitis. This pain was always worse at night. X-ray examination of the kidneys, ureter and bladder showed no abnormality. The abdomen was explored. The appendix, the cecum and the terminal part of the ileum were normal. There were no enlarged lymph glands in the mesentery of the terminal part of the ileum. The appendix was removed.

The postoperative course was uneventful. The patient did not complain following the operation. He was up and about on the first postoperative day and left the hospital on the twentieth postoperative day.

**CASE 2**—A man aged 20 entered the hospital because of a sudden sharp pain which developed in the right lower quadrant of the abdomen twenty-four hours previously while he was on a march. During the first day of the pain it was continuous. That evening there were nausea and vomiting, and the pain became worse. The pain was still present the following morning when the patient entered the hospital.

The patient was healthy appearing. His face was a brick red and the conjunctivas were injected. The soft palate was edematous and of a salmon pink. Small papules with yellow centers were seen scattered throughout the soft palate. The pharynx was normal. The abdomen was soft and scaphoid. The maximum pain and tenderness were in an area somewhat below and nearer to the inguinal ligament than McBurney's point. The tenderness could be traced about into the loin. Flexing the neck reproduced the pain in this area. Flexing the trunk reproduced the pain both in the right loin and below McBurney's point.

The temperature on admission was 98 F. The white blood cell count was 9,100 per cubic millimeter with 65 per cent polymorphonuclears, 32 per cent lymphocytes and 2 per cent mononuclears. The results of a urinalysis were within normal limits.

After forty-eight hours stay in the hospital the pain had entirely disappeared, the flush left the face and the patient was discharged.

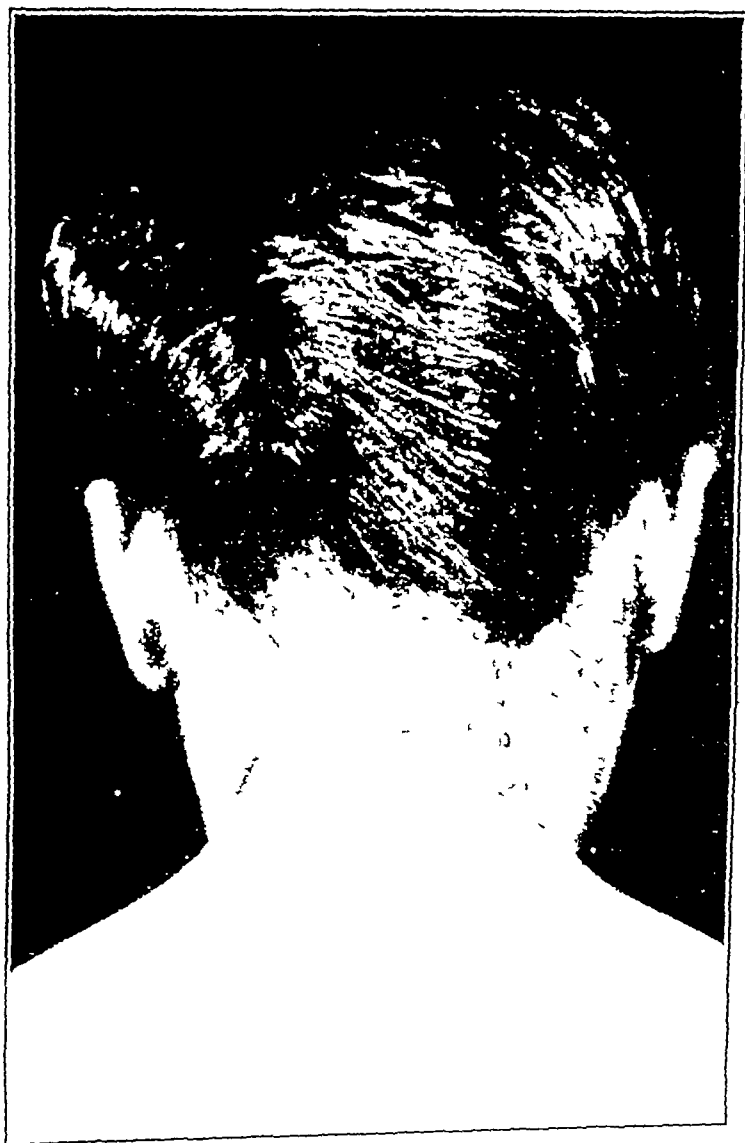
Station Hospital Camp Carson, Colorado

## Clinical Notes, Suggestions and New Instruments

### CONTACT DERMATITIS FROM HAIR LACQUER

J. B. HOWELL, M.D., DALLAS, TEXAS

The success and beauty of the "up sweep" hair style is made possible by a quickly drying lacquer. Although this form of hair dress has been popular in the South for about five years, a sudden outbreak of dermatitis from this cause appeared only during the last month. Whether or not this is due to a change in the constituents of lacquer has not been determined. Downing<sup>1</sup> recorded an incidence of eczema of the ramus of the left jaw and eyelids due to nail polish. Prior to the onset of the dermatitis this patient recalled spilling a bottle of ink eradicator. After mopping up the fluid with a cloth she noted



Contact dermatitis of the ears, sides and back of the neck from hair lacquer pads

itching of the face. Two months later her hair was set and sprayed with lacquer. "That night she suffered from severe itching and redness of the sides of the face." Patch tests with the hair lacquer and ink remover elicited positive reactions. Downing concluded that the substances contacted in nail polish, ink eradicator and hair lacquer were allergenically alike. No other case of sensitivity to hair lacquer or to both nail polish and hair lacquer in the same person could be found in reports published during the past seven years.

In the private practice of Dr. Bedford Shelmire and myself, a young housewife was observed with a dermatitis of the eyelids. This eruption was a classic example of an eczematous contact dermatitis due to nail polish. The diagnosis was con-

firmed in forty-eight hours by the appearance of an erythematous plaque at the patch site where nail enamel was applied to the neck. The dermatitis cleared promptly following removal of the nail lacquer.

One month ago this patient was again seen with an acute contact dermatitis of three weeks' duration. The ears and back of the neck were pruritic, swollen and covered with fine erythematous papules. The dermatitis was said to have appeared one week after she started using hair lacquer for the first time. Contact tests were made with all of the materials used on her scalp. A negative test reaction followed the application of a soap used for shampoo, a hair rinse and hair tonic. A positive reaction was noted in twenty-four hours at the site of the contact test with Renee hair lacquer. The dermatitis cleared promptly after discontinuing its use.

This presented an interesting problem of whether the patient had developed a totally new and added sensitivity or was merely sensitive to some ingredient common to nail polish and hair lacquer, as recorded by Downing. She was rather definite about an interval of seven days between the initial spraying of lacquer on her hair and the appearance of the dermatitis. This suggested an incubation period of sensitivity to hair lacquer. Had she already been sensitive to this liquid the latent period would have been only twenty-four to forty-eight hours and certainly less than five days.

Ten women who had previously been treated for the usual eczematous contact dermatitis from nail polish and who gave positive patch reactions to nail lacquer tests were tested with hair lacquer. Five stated that they used their lacquer occasionally without resulting dermatitis. Patch tests with Renee, Admiracion and Henri Maison hair lacquer were uniformly negative. A dermatitis could not be produced in these nail polish sensitive women by applying hair lacquer directly to a recently healed site of previous nail lacquer dermatitis, as the eyelids.

A few days after observing the aforementioned patient we saw a second housewife with a healing eczematous dermatitis involving both ears, the eyelids and the back of the neck. This had appeared twenty-four hours after having sprayed lacquer on her hair. Three similar incidents had been experienced. A positive reaction followed a patch test with the Henri Maison brand of hair lacquer which she had employed. The reaction to contact tests with Renee hair lacquer and Revlon nail polish were negative. The eruption healed promptly and she remained well after avoiding hair lacquer. Nail enamel was worn continuously by this woman during attacks of dermatitis.

Hair lacquer is applied as the last step in the coiffure. The professional beauty operator usually administers the liquid as a spray. The ears, sides, and back of the neck are frequently covered with an appreciable amount of lacquer following this procedure. Other portions of the neck and face will be contaminated unless some protective measure is taken while the spray is being used. Many women have learned to apply the lacquer to their hair with an atomizer or with the finger tip.

It is therefore easy to understand why the ears, back and sides of the neck adjoining the hair margin, eyelids and forehead are the sites most commonly sensitized by hair lacquer. A dermatitis of the arms and forearms has been seen following the habit of resting the head on an arm during sleep.

Approximately four weeks ago a new method of application with special lacquer pads was introduced in this vicinity. During the last week 9 additional cases of hair lacquer dermatitis were proved to be due to the use of these pads. Women who had employed liquid hair lacquer for several years were attracted to this manner of application because of its simplicity.

Following a change to the frequent application of Huber lacquer pads, an incubation period of sensitivity of one to two weeks was observed before the dermatitis appeared. This incubation period was noticed in all patients who had used liquid hair lacquer for several years as well as those who had used it initially as lacquer pads. Patch tests with Huber lacquer pads, the brand employed by these patients, elicited positive reactions within twenty-four to forty-eight hours after sensitivity had developed. Patch tests to several brands of nail enamel in this group of patients sensitive to the liquid lacquer were uniformly negative. Contact tests to three different brands of liquid hair lacquer were also negative in this group.

<sup>1</sup> Downing, John G. Dermatitis Due to Ink Eradicator and Cosmetic Lacquers, Arch. Dermat. & Syph. 44: 465 (Sept.) 1941.

The principal chemical components of lacquer pads are reported to be two synthetic resins, 1 per cent caustic soda and 1½ per cent ammonia.

## COMMENT

The sudden appearance of a large number of cases of hair lacquer dermatitis is comparable to the episode of resin finished underwear dermatitis observed some two years ago. At the time of writing 11 cases of hair lacquer dermatitis have been observed in our office. Fourteen similar cases were seen during the past two weeks by the other dermatologist in this city. This suggests that some new sensitizing material has recently been added to hair lacquer or lacquer pads. Lacquer pads were the offending agent in 23 of the 25 cases.

Most patients were found to be sensitive on patch test to only one brand of hair lacquer. This is contrary to the finding in nail polish dermatitis. When an individual is sensitive to one kind of nail polish he is usually allergic to all brands of nail enamel. An individual who is allergic to nail lacquer is not necessarily sensitive to hair lacquer. One example of dual sensitivity was observed.

ADDENDUM—Ten additional cases of lacquer dermatitis have been observed in our office since this paper was submitted for publication two weeks ago. Nine developed after the use of Hubere Lacquer Pads and one after Nutrine Lacquer was sprayed on the hair at a beauty parlor.

1719 Pacific Avenue

CONTACT DERMATITIS CAUSED BY HAIR  
LACQUER PADS

## A CHARACTERISTIC CLINICAL PICTURE

STEPHAN EPSTEIN, M.D., MARSHFIELD, WIS.

The 'up do' hair style has made it necessary to make more extensive use of lacquers than heretofore to keep the hair and locks in the desired position.

During the past few months hair lacquer pads have been introduced. They consist of powder puffs which are soaked with some form of lacquer. Beauty parlor operators and patients tell me that the lacquer of these pads is more "gluey" than the older fluids, which were usually sprayed on with an atomizer. For home use the pads provide a convenient means of application and are becoming more popular.

Recently I have seen several instances of contact dermatitis from this source. These cases presented a characteristic clinical picture. As there are—as far as I know—no reports of this form of dermatitis, it seems justifiable to call attention to its etiologic factor.

## REPORT OF CASE

Mrs. T. H. and her two daughters, 4 and 6 years of age, were referred to me by their family physician on account of a puzzling symmetrical dermatitis of the face which had affected the three female members of the family about the same time. The clinical picture was strikingly similar in all three patients. The region of the ears and the adjacent areas over the parotid gland presented a more or less acute dermatitis. One of the girls exhibited considerable swelling which at first glance suggested a parotitis. On close inspection, however, the clinical picture was that of a typical contact dermatitis with redness, swelling, vesiculation and slight crusts. The mother had signs of a similar but milder eruption also on the back of her neck and on her forehead. Both she and one of the daughters had lately noticed a slight eruption on the inside of the right upper arm. During the following few days the dermatitis of the girls spread also to the face.

Questioning revealed the cause of this somewhat perplexing eruption. The mother who had an up do coiffure all around the head had used hair lacquer pads for about a month on several occasions. On Labor Day Mrs. H. had also applied pads to the temples of both girls in order to keep their hair in shape all day long. Seven and nine days later, respectively, the dermatitis appeared on the ears and cheeks of the girls.

Patch tests which have been carried out on the three affected members were positive about forty-eight hours after the application. The test was performed by touching a small area of

normal skin three times with a lacquer pad. No tape was applied. All three patients had a negative test to finger nail polish. The hair lacquer pads used in this case were manufactured by Hubere Cosmetics, Chicago.

## COMMENT

The history and clinical appearance leave no doubt as to the relationship of the hair lacquer pads to the dermatitis. The location of the dermatitis corresponded exactly to the areas to which the pads had been applied. The incubation period of seven and nine days as observed in the girls demonstrates the allergic nature of the eruption. The discovery of the exciting factor was easy in this family eruption. It may be less apparent in isolated cases such as the following. A young woman presented a slight dermatitis of the back of the neck. She had used these pads only to hold some "stragglers" in line on the back of the head. Discontinuation of the use of the pads led to complete recovery within a short time.

The reported cases show that the use of these lacquer pads may produce a rather typical clinical picture, namely a symmetrical dermatitis of the ear and parotid areas. Irritation of sites distant from the application may also occur, for example, of the arms on which the patient's head may rest while asleep. In these respects it resembles nail polish dermatitis. It is furthermore noteworthy that all three female members of the family were affected and that one single application was sufficient to provoke a dermatitis in the girls. This indicates a highly sensitizing property of the pads. With their widespread use one might expect similar cases to occur not infrequently, especially among war workers who have to apply their make up in a hurry.

RESECTION OF THE LEFT VAGUS NERVE FOR  
MULTIPLE INTRATHORACIC NEUROFIBROMAS

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AND

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Neoplasms arising from nerve tissue in the posterior mediastinum are rather common. Not infrequently neurofibromas in this location are associated with other stigmas of neurofibromatosis (von Recklinghausen's disease). The present case is in this category but was unique because the intrathoracic neurofibromas were multiple and involved both the left vagus nerve and the thoracic sympathetic nerves. Two of the tumor masses arose from and were part of the left vagus nerve and two neoplasms entirely separate from the others, arose from the posterior-superior sympathetic chain. All the tumors were removed successfully and microscopic sections revealed that their histologic characteristics were identical. In order to remove the tumors involving the vagus, it was necessary to resect 15 cm. of the nerve and it is noteworthy that no deleterious effects were noted following the resection of the nerve itself.

## REPORT OF CASE

**History**—A well developed white soldier aged 35 had no signs or symptoms referable to the mediastinal tumor. The lesion was discovered during a routine examination when a roentgenogram of the chest was made. The physical examination was not significant except that café au lait spots were evident in both axillae and on the chest. This finding suggested strongly that the mediastinal tumor might be a neurofibroma. X-ray films of the chest revealed widening of the posterior-superior mediastinum. The trachea was not displaced. The widening was to the left of the midline and presented itself as one homogeneous mass. There was no clue from the x-ray examination that the tumors were multiple in character since the masses were superimposed in both the frontal and lateral projections on x-ray films (fig. 1). After all diagnostic pro-

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bilities had been exhausted including a test dose of roentgen therapy, surgical exploration of the thorax was recommended.

*Operation.*—Under intratracheal cyclopropane anesthesia an incision was made in the left posterior chest extending from the level of the fourth thoracic vertebra following the curve of the scapula and extending to the anterior axillary line (fig 2). The

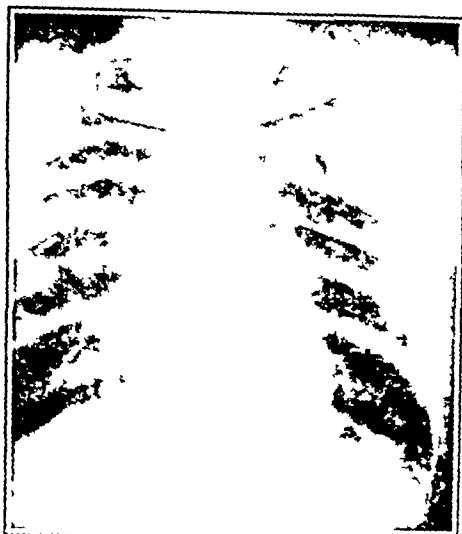


Fig. 1—Homogeneous shadow in the posterior superior portion of the left thorax.

underlying muscles were divided and the bony thoracic cage was exposed. The entire length of the fifth rib was resected subperiosteally and the underlying pleura opened. Rib spreading retractors were inserted and the left pleural space was exposed. The left lung was free of adhesions and there was no evidence of tumor in it. In the posterior-superior sulcus of the thorax there was a pedunculated mass about 10 cm in diameter. The tumors

were beneath the parietal pleura. The pleura was incised and the tumors were dissected free without difficulty. It was evident that the origin of the neoplasms was from the sympathetic nerve trunk. The left side of the mediastinum had a lumpy appearance, and palpation revealed two tumor masses which were lying within the mediastinum beneath the mediastinal pleura. Accordingly the mediastinal pleura was opened and two egg shaped masses each about 5 cm in diameter, were identified and isolated. These tumors originated in the left vagus nerve and were obviously neurogenic in origin. The left recurrent laryngeal nerve was identified and saved. The

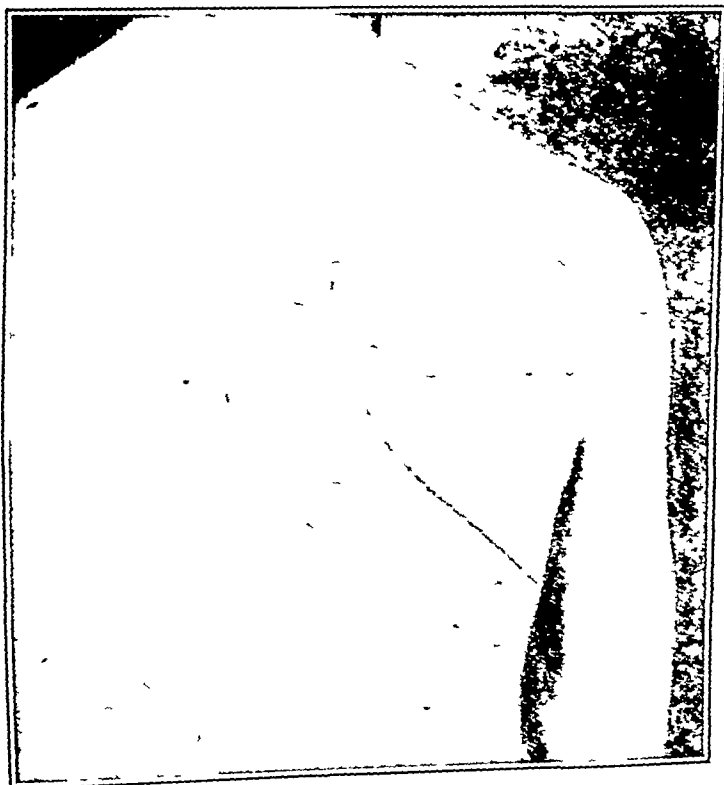


Fig. 2—Incision employed for exposure of the mediastinum and left pleural cavity.

left vagus and the two tumors were dissected free from the vagal plexus about the hilus of the left lung and about 15 cm. of the nerve was exposed. After the tumors and the nerve were isolated from the other structures in the mediastinum, the two neoplasms and the involved portions of the left vagus were removed (fig 3). One mass was just below the arch of the aorta the second and interior mass in the vagus was

at the level of the left pulmonary hilus. The mediastinal pleura was closed. 10 Gm of sulfamilamide crystals was placed in the pleural space and the chest wall was reconstructed in layers. The wound was closed without drainage. There were no changes in respiratory rate, blood pressure or pulse noted during the resection of the segment of the vagus nerve or at any time during the operation.

*Postoperative Course.*—This was uneventful. At no time was there evidence of shock. Pulse rate, respirations and blood pressure remained within normal limits. Three hundred cc. of bloody fluid was removed from the left pleura on the second postoperative day. The patient was out of bed and eating free from symptoms fourteen days after the operation.

A transient cervical sympathetic paralysis (Horner's syndrome) appeared as a result of manipulations of the sympathetic nerves, and paralysis of the left vocal cord became evident.

These effects were attributed to edema caused by manipulation of the nerves during the dissection. Immediately after the operation, during the routine postoperative bronchoscope examination the vocal cords were visualized and moved normally. Paralysis of the left vocal cord became evident on the second postoperative day, and normal function did not return for two weeks.

#### COMMENT

A case of perineural fibrosarcoma of the left vagus nerve has been reported by Furrer and Fox.<sup>1</sup> The lesion was uncovered at postmortem examination. We have not been able

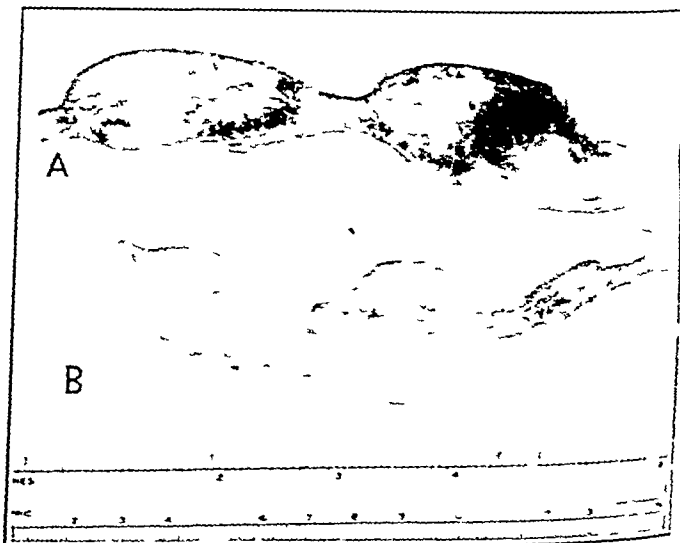


Fig. 3—Tumors. A—two tumors of the left vagus nerve resected. B—two tumors originating in the posterior-superior sympathetic nerve.

to find a recorded case of a primary nerve tumor of the vagus nerve subjected to operation. The sympathetic nerve is a frequent site of origin of neurogenic tumors but involvement of both the sympathetic and parasympathetic nerve trunks in the same patient with surgical removal has not been described.

The necessity of resecting a large part of the vagus nerve was not considered a serious handicap to the patient. The operation was performed. Since the recurrent laryngeal nerve could be saved, it was anticipated that no serious physical effects would be manifested after the removal of the remaining portion of the left vagus in the thorax. This proved to be the case. Experiences during the performance of total parathyroidectomy, resection of the thoracic esophagus and other thoracic procedures where accidental or deliberate division of the vagus may occur have furnished convincing clinical evidence that the interruption of one vagus nerve in the thorax is of little consequence. Moreover, it seemed logical to assume that in our case function of the left vagus had already been altered or destroyed by the two large tumors of the mediastinum.

It is generally recognized that primary nerve tumors of the mediastinum have a definite tendency to become malignant. There was no hesitation therefore to excise a sufficient length of the involved nerve trunk to insure removal of the tumors. The soldier is now on duty.

<sup>1</sup> Furrer, E. D. and Fox, I. R. *Ve.* 1, 5: 35, 45, 1930.

## Council on Pharmacy and Chemistry

### REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT  
AUSTIN I. SMITH, M.D., Secretary

#### THE LOCAL USE OF SULFONAMIDE COMPOUNDS IN DERMATOLOGY

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CLEVELAND

##### HISTORICAL

Domagk,<sup>1</sup> working in the experimental laboratory of the I. G. Farben Industrie Elbertfeld, in 1935 reported that a compound (4-sulfamido-2',4'-diamino-benzene hydrochloric acid), which he called prontosil, acted favorably on hemolytic streptococcus infections in mice. For this he was granted the Nobel prize, which the German government denied him accepting. At the May 17, 1933 meeting of the Dusseldorf Dermatologic Society Schreus,<sup>2</sup> from his dermatologic clinic at Dusseldorf, reported that a boy aged 1½ years suffering from an apparently fatal staphylococcal infection had been given 0.05 Gm of prontosil twice a day. In four days the temperature fell to normal. The medication was continued for several weeks with short intervals of rest and the boy was well. Schreus stated that the I. G. Farben Industrie had sent him some of the compound to try out.

Sulfanilamide had been synthesized in 1908, though nobody paid any attention to it medically for years. Schnitker<sup>3</sup> points out that in 1909 some of the first azo dyes were prepared with sulfanilamide and substituted sulfonamide groups. One of these, chrysoidin (2',4'-diamino benzene) was used in the dye industry for years. Then it was found that these dyes had a bactericidal effect in mice and it was suggested as a chemotherapeutic agent. In 1932 there was synthesized a derivative of chrysoidin in the form of a hydrochloride of 4-sulfamido-2',4'-diamino benzene. It was this derivative of chrysoidin that Domagk called prontosil and which was the original effective dye substance. It is converted into sulfanilamide in the human body. It is not used in the United States. Neoprontosil is the disodium salt of prontosil and is known also as prontosil soluble and prontosil solution. Since then many of these derivatives of the prontosils have been worked out and tried clinically, but, as Long<sup>4</sup> puts it, "Knowledge concerning optimal doses and the fate of the prontosils in the human body lags behind that which is known for sulfanilamide." This compound is known as prontosil album in Germany.

In the United States the Council on Pharmacy and Chemistry early recognized the significance of the sulfonamides. And, moreover, in view of the multiplicity of these preparations and of names, the Council

attempted to exercise discretion and conservatism in accepting, under a careful system of nomenclature, those compounds which seemed to be of the greatest therapeutic value in terms of lowest toxicity. Thus was avoided the deplorable confusion in sulfonamide nomenclature such as is seen in Europe today, here in contrast the compounds are known by single names. The following compounds have thus far been accepted for N. N. R. sulfanilamide, sulfathiazole, sulfapyridine, sulfaguanidine, sulfadiazine, succinylsulfathiazole and the sodium salts of sulfapyridine, sulfathiazole and sulfadiazine.

##### LOCAL USE OF SULFONAMIDES

These preparations were first used orally for the treatment of infections and it was only later that their external use was suggested. As in the case of many other potent drugs, this employment has often been abused and many times they have been tried where there was no indication for their use. Nevertheless there are certain dermatologic infections in which sulfonamides are not only helpful but definitely of value. Thus as early as 1938 Baccaredda<sup>5</sup> pointed out that local applications of sulfanilamide were often more active than other methods of antiseptics. He also considered the drug well tolerated and he observed no resultant dermatitis medicamentosa. Lam<sup>6</sup> in 1940 reported his experiences with sulfanilamide used locally. Sulfanilamide is soluble only to 0.8 per cent in water but much more so in glycerin and alcohol. He employed a supersaturated solution in glycerin in all cases of impetigo, acute infectious folliculitis, septic ulcers and other streptococcal and staphylococcal infections. MacKenna<sup>7</sup> successfully treated impetigo and ecthyma by dusting a fine powder containing sulfapyridine on the lesions and then covering them with zinc paste and a tight dressing. Spink,<sup>8</sup> in reporting the successful local use of sulfathiazole in a group of staphylococcal wounds and ulcers emphasized the necessity for debridement and the freeing of the lesions from purulent and necrotic material before making the applications. Combes and Canizares<sup>9</sup> treated a few cases of impetigo with 10 per cent of sulfanilamide in olive oil and hydrous wool fat. The cases responded in four to seven days. Several chancroidal infections were cured by the use of sulfanilamide powder. Hrad<sup>10</sup> worked with albucid (acetylsulfanilamide) and prontosil (4-sulfamido-2',4'-diamino-azo-benzene). With ointments alone the results were good in pyodermas and impetigo. He found that bases, water soluble in type, gave better results. In certain of the cases concomitant internal use of the compound also was found helpful.

Schneider<sup>11</sup> at Ramel's clinic at Lausanne tried various sulfonamides in impetigo, perleche, ecthyma, impetiginous eczema, secondarily infected dermatoses

From the Department of Dermatology and Syphilology of the Western Reserve Medical School and of the Cleveland City and University hospitals.

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occupational in type and retroauricular dermatitis. He used prontosil soluble in aqueous solution (disodium 4-sulfamidophenyl-2'-azo-7'-acetylamino-1'-hydroxy naphthalene-3',6'-disulfonate), also known as azosulfamide and prontosil red (known in France as rubiazol, the chemical formula of which Long tells us has been changed at least once), ultron (sulfamid-dimethyl-sulfanilamide) and then sulfapyridine. With the last they had excellent results though occasionally local intolerance developed. Then he tried sulfamidothiazole (sulfathiazole), which was better tolerated and had the advantage of the thiazole group against the staphylococcus. They treated 124 cases including secondary furunculosis, infected acne vulgaris folliculitis, anthrax, mycoses ulcers of the legs and psoriasiform parakeratoses. Naturally, results were not so good in the last group of cases.

Pillsbury, Wammock, Livingood and Nichols<sup>12</sup> treated 190 cases of infections of the skin. In 137 of them in which pyogenic infection was partially or solely the cause, results with sulfathiazole ointment in an oil in water emulsion were excellent. The authors tried sulfanilamide, sodium sulfadiazine and sulfathiazole. The last was relatively effective in staphylococcal and streptococcal infections. They mentioned the greater solubility of the sodium salts of these drugs, but also their higher  $pH$ .

Keeney, Pembroke, Chataud and Ziegler<sup>13</sup> reported good results from 5 per cent of sulfathiazole in a base of hydrous wool fat and vanishing cream. They also used a 5 per cent sodium sulfathiazole ointment and noted no difference in their results. They treated 16 infected eczemas in children. In 1 case they used the compound three times a day, bringing the infection under control in forty-eight to seventy-two hours. There was no effect on the eczema. The infant was then put back on liquor carbonis detergens ointment and became reinfected. They then put the sulfathiazole in the liquor carbonis detergens ointment with good results. They also had favorable effects in infected varicose eczema, seborrheic dermatitis of the scalp and concomitant involvement of the external auditory canal. Ten children with impetigo of the face and scalp and two of the torso as well were better in forty-eight hours and cured in seven days. An adult with furunculosis of the thighs was treated with sulfathiazole ointment applied to the lesions and adjacent skin three times a day, there was no further spread, and the furuncles gradually cleared up.

The Robinsons<sup>14</sup> found sulfathiazole ointment superior to ammoniated mercury ointment in the treatment of pyoderms, impetigo, ecthyma and paronychia. Results were not so striking in sycosis vulgaris. Two chancroidal infections responded nicely. Twenty-six patients in whom the primary condition was coccogenic responded nicely and in secondary pyogenic infection the complicating infection cleared up. The drug was of no value for dermatophytosis per se, granuloma inguinale, uncomplicated contact dermatitis and dermatitis herpetiformis.

Abramowitz<sup>15</sup> likewise agrees that the sulfonamides are valueless in uncomplicated mycotic infections. He even feels that they should not be used in impetigo and minor infections of the skin unless ordinary measures fail.

Miller<sup>16</sup> treated 115 cases of various skin infections with sulfanilamide, sulfathiazole, sodium sulfathiazole and sulfadiazine. The preparations, varying in strength from 5 to 50 per cent, were incorporated in two different bases, essentially water in oil emulsions. The drugs were in a suspended state, the size of the suspension approaching the colloidal state. The effects of the drug were checked by cultures on blood agar plates.

There were 45 cases of impetigo which were cured in three to ten days. In 14, white precipitate ointment and in 7 gentian violet had previously been employed. It was his custom to employ hot boric acid compresses followed by the selected ointment twice a day. The results from sulfadiazine were not as good as from sulfanilamide and sulfathiazole. In 12 cases of ecthyma cure took place within ten to twenty-five days. The results in 12 cases of sycosis vulgaris were not so gratifying. Three were cured in one month, in 1, sensitization to sulfathiazole occurred in the process. It had no effect on dermatitis repens, and 1 of 2 cases of folliculitis was cured. In secondarily infected infantile eczema, chronic recalcitrant dermatitis of the fingers, allergic eczema and mycotic infections, the infection cleared up but not the basic trouble. In epidermolysis bullosa, psoriasis, pustular acne, seborrheic dermatitis and pustular bacterid there was no result. The author advised against use of high concentrations of the drug for fear of sensitizing patients. He found that sodium sulfathiazole showed no greater efficiency and, because of its greater alkalinity, was more likely to produce irritation.

Kalz and Prinz<sup>17</sup> think that sulfanilamide and sulfathiazole are more suitable than sulfapyridine for treatment of skin disorders because of their greater solubility. The sodium salts are soluble even up to 30 per cent but they are also very alkaline with a  $pH$  even up to 10 to 13. With ointments used in 2 to 10 per cent strength and with poor solubility of the compounds they think it must be difficult to achieve a sufficient tissue level by a concentration lower than 5 per cent in the vehicle. They do not like petrolatum as a base—it does not mix with serum and it coats the particles with a nonsoluble substance. The solubility of sulfathiazole in glycerin is ten times that in water at room temperature. Kalz and Prinz used 30 per cent of sulfanilamide and sulfathiazole suspended by emulsifying agents in glycerin. The resultant cream was miscible with water and serum. It was white, soft, with a  $pH$  between 6 and 7 and when applied to the skin formed an elastic half dry adherent coating. After some experimenting with these two compounds in 15 cases they used sulfathiazole exclusively. It was superior in its effects, the crystals of sulfanilamide were very hard, gritty and irritating. Moreover, with sulfanilamide the resultant blood level in infants was higher, which they considered unfavorable. They treated a

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17 Kalz, F., and Prinz, M. V. N. The External Use of Sulfonamides in Dermatology, *Canad M A J* 16 457 (May) 1942.

total of 130 cases with their sulfathiazole glycerin paste and of 107 superficial infections, 99 were cured within fourteen days. The preparation was valuable in impetigo and ecthyma cures occurring in seven days. It also was effective in infected dermatoses and dermatophytosis. Later the mycotic infection could be handled with other measures as sulfathiazole is not fungicidal. Acute cases of syphilis vulgaris reacted better than chronic ones. In infectious eczematoid dermatitis the results were doubtful.

Very recently Harris<sup>18</sup> in reviewing the entire subject of treatment of impetigo by the sulfonamides, has called attention to a new physical form of the sulfonamides named "microcrystalline" by Chambers<sup>19</sup> who first prepared the microcrystals at the University of Pennsylvania. A number of the commonly used sulfonamides in this form have been prepared by the Smith, Kline and French Laboratory Philadelphia. Harris used a 20 per cent microcrystalline sulfathiazole. A drop or two of the suspension was poured out on a small gauze dressing. The area to be treated was carefully washed with soap and water with removal of all the crusts. If necessary the area was shaved. The gauze dressing was then applied to the area the bit of sulfathiazole paste being placed in contact with the lesion. On removal of the dressing twenty-four hours later the impetigo was always healed. Fifteen children with a total of 293 lesions were thus treated and 290 of the 293 gave identical results. In 3 lesions treatment for another day or two was employed. In no case did a lesion recur or new areas develop. I have found these compounds to be invaluable in treating impetigo and ecthyma.

Greenblatt<sup>20</sup> reports excellent results from vaginal insufflation with sulfathiazole or sulfadiazine powder in the treatment of Trichomonas infection. He used a powder containing sulfathiazole 1 part and beta lactose 3 parts. Eight Gm of the mixture was insufflated daily for four treatments. Flagellates lost their motility in ten to fifteen hours. Blood sulfathiazole levels were not raised to dangerous levels, which is quite understandable as 2 Gm of the drug daily would not be a large dose.

There is one local infection for which powdered sulfonamides appear to be practically a specific—chancroidal infection. Combes and Camzars used 80 per cent of sulfanilamide and 20 per cent of starch. Lepiny<sup>21</sup> employs the foregoing or the pure sulfanilamide powder dusted on the ulcer alone. Many other investigators have also noted the beneficial effect not only of sulfonamides internally in chancroidal infection but also the almost miraculous effect of their local use. We thoroughly endorse the use of these compounds for Hemophilus ducreyi infection. It is the custom in the Cleveland City and University Hospital dermatology and syphilology services to cleanse the ulcers carefully and dust them with either sulfanilamide or sulfathiazole. The powder readily adheres to the open ulcer and literally seals it. In fact, it is rather difficult to

remove it. Care should be exercised to put the powder on the ulcer only. It may be soaked off and replaced daily or every other day. Usually the ulcer heals within a matter of a week. If there is extensive ulceration with concomitant bubo formation, simultaneous therapy by mouth is in order.

#### MODE OF ACTION OF SULFONAMIDES

An editorial<sup>22</sup> in the London *Lancet* stated that the sulfonamides had a local bacteriostatic action, further, that they occasion no interference with the healing processes of phagocytosis, leukocytic infiltration and the formation of granulation tissue even with the high local concentration of the drugs. The opinion was expressed that powdered sulfathiazole was more potent against streptococci and pneumococci and even influenced staphylococci—more than sulfanilamide and sulfapyridine. Schmitz in his careful review of the whole subject says their local use allows a high concentration to act bacteriostatically and bactericidally. Keefer<sup>23</sup> thinks sulfanilamide is a bacteriostatic agent. It stimulates phagocytosis. It alters organisms so that phagocytosis can take place.

On the other hand, Veal and Klepser<sup>24</sup> think the continued use of pure sulfanilamide retards the growth of granulation tissue. They state that there are no toxic reactions, that sulfanilamide when instilled into pyogenic wounds, acts locally by inhibiting growth of certain organisms chiefly the streptococcus, staphylococcus colon group and *Pseudomonas aeruginosa* (*Bacillus pyocyaneus*). Bick<sup>25</sup> thinks that local applications of sulfonamide drugs to normal and soft tissues in a cleancut operative incision in which primary suture is indicated retards healing at least 50 per cent and may promote excessive scarring. However, its use is almost obligatory in cases in which infection may be anticipated such as in contaminated wounds under field conditions.

Hawking<sup>26</sup> showed that when 0.2 Gm of sulfanilamide was inserted into an experimental wound of the thigh in a guinea pig it was absorbed and disappeared in less than twenty-four hours. With sulfapyridine this took seven to ten days and with sulfathiazole four to five days. He also studied the absorption of sulfonamides in tubular wounds in the back of rats. Sulfanilamide will travel from the central cavity of the wound down into crevices. It will slowly penetrate into fragments of dead tissue, by local action it will not penetrate far into tissue with intact circulation. The best compound to use is sulfanilamide. It is cheaper and has a high local concentration, greater power of concentration and diffusibility. It disappears rapidly and has lower bacteriostasis. Sulfathiazole persists longer and has a higher bacteriostasis but lower concentration and diffusibility. Sulfapyridine has no advantage as compared to sulfathiazole and has the disadvantage of still lower concentration.

But how do these various sulfonamide compounds act in the clearing up of infection? Mention has already been made of their bacteriostatic and bactericidal effect.

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SATURDAY, OCTOBER 16, 1943

## DOES THE UNITED STATES NEED A MEDICAL REVOLUTION?

### THE WAGNER-MURRAY-DINGELL BILL I

The Wagner-Murray-Dingell Bill proposes a complete revolution of medical practice in the United States. Nearly every institution concerned in the prevention, diagnosis and treatment of disease would have to modify its method of rendering service. The type of medical education and research and the administration of hospitals would be grossly altered. The immediate results of revolution are almost always destructive. For several years the institutions that protect and maintain the health of the American citizens would certainly be so disrupted as to make the efficient performance of their functions for the protection of the health of the American people almost impossible.

Is our situation today so desperate as to call for so radical a remedy? Medicine never hesitates to use radical measures when required in desperate situations. Do present conditions indicate defeat in the battle against death and disease? The reverse is true, according to reliable vital statistics. Never was the general death rate lower or falling more rapidly in relation to all the conditions that affect that rate than now. The infant death rate, accepted throughout the world as the most accurate measure of public health, is lower in the United States today than in almost any other country in the world. Although this decline has continued for many years and therefore might be expected to be approaching a minimum, it has shown an accelerated fall in recent years. Life expectation is greater here than in almost any other country and definitely longer than in any having systems of compulsory sickness insurance. The recent phenomenally rapid increase in the birth rate in recent years, which has always hitherto been accompanied by an increase in maternal infant death rates, has been accompanied by a decline in these rates in the United States.

The public health movement is certainly not declining in scope or efficiency. Public health departments, which almost invariably owe their origin and protection from

the corrupting influence of politics to the activity of physicians either singly or in organizations, have now attained a momentum which is carrying their work into every community. The constant watchfulness of the medical profession has secured the administration of increasing numbers of these departments by competent trained personnel and strengthened their power to protect the public against disease.

The claim that American hospitals are in general best equipped of any in the world cannot be challenged. They are the models admired by other nations. Medical education, which at the beginning of the century was considered in many of its aspects disgraceful, has, thanks almost exclusively to the active supervision of the medical profession in the United States, attained world leadership.

These are not the conditions that call for revolutionary activity. Every phase of medical development in this country testifies to the soundness of the progress that has been made and indicates the desirability of continuing evolution.

The United States gained its leadership in medical education and care by methods that have been tested in the crucibles of time and economic hardship. Now it is proposed to abolish these institutions and methods and to substitute others whose trial in many countries has failed to produce health conditions equal to those existing here. The Wagner-Murray-Dingell Bill would abolish the volunteer control and inspiration that have brought medical education, hospital management, drug purity, research and medical service to their present eminence. As a substitute the people are offered a system controlled by salaried political bureaucrats. Scientists have too many aphorisms warning against such "ersatz" to participate in destroying what they have found good.

## PREFRONTAL LOBOTOMY

Prefrontal lobotomy, surgical division of the central core of the white matter within the frontal lobes, is empirically designed to sever the connections of the frontal cortex and especially to interrupt the projections which connect the frontal regions with the thalamus and hypothalamus. The consensus is that the frontal lobes are concerned with imagination, the social sense, self consciousness and similar mental activities. While the frontal lobes are important for the psychic life of man, the concept of psychic centers similar to those for vision, for motor control of the limbs and for speech has not been established. Moniz<sup>1</sup> believes that certain cortical areas associated with other areas in the diencephalon and metencephalon correspond to certain psychic manifestations. Apparently loss of one frontal lobe can be functionally replaced by the activity of the other. In man one frontal lobe can be extirpated without producing psychic changes. In a case described by

<sup>1</sup> Moniz, Egas. Les premières tentatives opératoires de traitement de certaines psychoses. *Encephale* 2:1 (June) 1936.

Brickner<sup>2</sup> both frontal lobes were removed because of the presence of a meningioma. Psychic disturbances resulted including impairment of memory particularly loss of memory for recent events and loss of control of the emotions. Spurling<sup>3</sup> states that there was no definite permanent defect produced in the intellectual status of a patient whom he studied by removing the entire right prefrontal lobe even though there had occurred previously partial destruction of the left prefrontal area.

In the insane there are fixed morbid complexes to which all other activity is subordinated, these are related to cellular aggregations which appear to be fixed. Moniz proposed to treat such patients by destroying these cellular interrelations, particularly their connections with the frontal lobes.

In this country Watts and Freeman<sup>4</sup> have apparently had the most extensive experience with the operation. They have reported 136 instances of bilateral prefrontal lobotomy. Anatomic studies of their patients who died some time after the operation showed that there is integrity of the cortical architecture in the frontal lobe but that degeneration occurs in the nucleus medialis dorsalis of the thalamus. They believe that this bundle is of importance in linking ideational with affective experience and that interruption of this pathway is the greatest factor in producing alteration in emotional responses of the patient. They performed the operation under local anesthesia and state that little shock was associated with it. In their experience the patient who has undergone prefrontal lobotomy is friendly, cheerful, agreeable, relaxed and interested in what goes on about him, he is always ready for the next meal and never complains of indigestion, nor does he worry about heart disease or any other malady, he sleeps soundly and without dreams, sometimes he is mentally indolent, at other times he seems oblivious to sensations of fatigue, he is a procrastinator, he likes to spend money when he has any but gets along just as well when he has none, he is able to worry, but more about externals than about himself, he is a complete extrovert. Their best results were obtained in the obsessive tension states and in the involutional depressions.

In a panel discussion<sup>5</sup> held at the Cleveland session of the American Medical Association those who participated agreed that the operation produces a defect and that this defect cannot be easily tested by the ordinary formal tests of intelligence. It was also felt that delimitations of the usefulness of the operation have

not been clarified. The editorial comment<sup>6</sup> in *THE JOURNAL*, while not condemning the procedure, asserted that more scientific evidence will be required before the operation can be regarded as a worthwhile procedure.

In a recent symposium by English authors Rees<sup>7</sup> stated that the operation is indicated for the relief of such symptoms as anxiety, apprehension, self mutilation, suicidal tendencies, destructiveness, attacks of violence and states of tension which may be found in many forms of psychosis or psychoneurosis. Patients best suited for prefrontal lobotomy are those with functional mental disorder who have symptoms of active conflict and have failed to respond to other methods of treatment and in whom the prospects of spontaneous recovery are remote. Knight<sup>8</sup> performed prefrontal lobotomies on 30 patients with mental disorder and noted the disappearance or lessening of depression in 4 out of 7 with melancholia, improvement in conduct and behavior of the 16 remaining patients and the improved quality and output of work of 13. Among the undesirable results were loss of initiative and spontaneity, persistence of delusions or hallucinations and development of emotional lability or euphoria, retardation, irritability, aggressiveness and volubility. The more physical sequelae included loss of sphincter control, development of voracious appetite, trophic disturbances and occurrence of epileptiform fits. Fleming and McKissock<sup>9</sup> reported the results of prefrontal lobotomy on 15 patients. Of the 12 patients with melancholia 7 have made complete recovery and 1 has shown considerable improvement, but the other 4 have shown little improvement. Hutton<sup>10</sup> reported the results obtained with 50 patients subjected to prefrontal lobotomy, the mortality was 4 per cent. One patient died of cerebral hemorrhage caused by section of the anterior cerebral artery. No patient was reported as being worse after the treatment than before. Hutton emphasizes that rehabilitation after the operation is of utmost importance. Personal attention and encouragement are necessary, and when these are lacking the results tend to be disappointing. The greatest success is obtained with patients of good intelligence whose relatives have sufficient interest, affection and understanding to help in the process of reeducation. Golla<sup>11</sup> states that the lack of prevision in these patients (postoperatively) is related to the forethought necessary to appreciate the situation of the self in relation to the environment. The patients become careless because they no longer seem to appreciate their social obligations or to pay

6 Frontal Lobotomy editorial *J A M A* 117:534 (Aug 16) 1941

7 Rees T P. The Indications for Prefrontal Leukotomy. *J Ment Sc* 89:161 (April) 1943

8 Knight G C. Observations on Surgical Technique. *J Ment Sc* 89:174 (April) 1943

9 Fleming G W, T H and McKissock Wylie. Prefrontal Leukotomy: Further Contribution, *Lancet* 1:361 (March 20) 1943

10 Hutton E L. Results of Prefrontal Leukotomy. *Lancet* 1:362 (March 20) 1943

11 Golla F L. The Range and Technique of Prefrontal Leukotomy. *J Ment Sc* 89:189 (April) 1943

2 Brickner R M. The Intellectual Functions of the Frontal Lobes. A Study Based on Observation of a Man After Partial Lobotomy. New York: Macmillan Company, 1936

3 Spurling R G. Notes on the Functional Activity of the Prefrontal Lobes. *South M J* 27:4 (Jan) 1934

4 Watts J W and Freeman Walter. Prefrontal Lobotomy: Six Years Experience. *South M J* 36:478 (July) 1943

5 Panel Discussion at Cleveland Session. Neurosurgical Treatment of Certain Abnormal Mental States. *J A M A* 117:517 (Aug 16) 1941

much attention to their relations with others. The mortality rate from the operation ranges from zero in Lyster's<sup>12</sup> series of 55 cases to 22 per cent in the series of Watts and Freeman and 4 per cent in the series reported by McKissock.<sup>13</sup> The most important immediate complication is cerebral hemorrhage. Epileptic convulsions as a remote sequela developed in 8 per cent of McKissock's series and in 10 per cent of Watts and Freeman's. In this series also there was 1 case of permanent hemiplegia. Watts and Freeman believe that the operation gives more permanent results than shock therapy. Ström-Olsen<sup>14</sup> expressed the belief on the basis of 30 personal cases that certain disturbing mental symptoms may be alleviated by this operation in about one half the total number treated."

Prefrontal lobotomy on the basis of the experiences here cited, would appear to be beneficial in some types of psychotic patients in whom all other methods of treatment have failed and when chances of remission or recovery are remote.

#### FOOD RATIONING FOR INVALIDS

Elsewhere in this issue (page 422) appears a report made by the Subcommittee on Medical Food Requirements of the Committee on Drugs and Medical Supplies of the Division of Medical Sciences of the National Research Council to the War Food Administration relative to the recommended allowances of certain types of foods for invalids in various categories. The subcommittee contains in its membership representatives of the various sections of the American Medical Association and of special societies in the field of diabetes hospitals and similar agencies which are greatly concerned with these matters.

The regulation of the distribution of essential foods during war is one of the most difficult problems that have confronted governmental agencies. From available information it is clear that physicians in certain areas have not hesitated to recommend for certain types of disease large amounts of food substances entirely without relationship to the scientific criteria that should prevail in matters of this sort. Since the local rationing boards are, in most instances, not equipped by virtue of the knowledge of their members or in any other way to decide matters of this kind, the requests of patients accompanied by the certificates of physicians have in many instances been granted. While the total amount of food lost in this way has not been great, the damage to public morale in unwar-ranted dissipation of necessary food materials has been considerable.

As a part of the report of the special subcommittee there appear also two recommended forms to be used

by patients and physicians in making their needs known to the local rationing boards. No doubt the Office of Price Administration will extend the important information here supplied to the local rationing boards so that they may be guided by the advice of this authoritative group in making their allowances to invalids who may require extra amounts of important food substances. The mechanism of administration provides for appeals from the decisions of local rationing boards to regional offices and indeed from the regional offices also to the national office. In many instances regional boards have themselves established advisory bodies of physicians to aid them in making decisions on such appeals as might come to them.

### Current Comment

#### FEDERAL FUNDS FOR RELOCATION OF PHYSICIANS

The President has transmitted to the Speaker of the House of Representatives supplemental estimates for the Public Health Service amounting to \$4,427,550. Of this sum \$2,350,000 will be used, it is proposed, for an extended program of malaria control for the United States' share of a joint Anglo-American venereal disease control program for the protection of soldiers stationed in the Caribbean area "and for the supplying by the Public Health Service on request of state authorities, of needed medical and dental care, either by temporary financial aid or by direct employment of doctors and dentists, in certain critical areas where acute shortages have developed which cannot be met without recourse to emergency measures." The transmitted estimates, pending in the House Committee on Appropriations, contain the following provision:

*Provided*, That the Surgeon General is authorized, on request of a state health department (1) to assign medical and dental personnel of the Public Health Service to areas found to be in critical need of additional medical and dental services, such services to be furnished the public in accordance with schedules of fees approved by the state health departments and the Surgeon General of the United States, which fees shall be collected by, and used at the direction of, the state departments of health, to defray the expenses thereof incident to the rendition of such medical and dental services, the balances at the end of the fiscal year to be covered into the treasury as miscellaneous receipts, and (2) to enter into agreements with private practicing physicians and dentists under which, in consideration of the payment to them of a relocation allowance of not to exceed \$250 per month for three months and the actual cost of travel and transportation of the physician or dentist and his family and household effects to the new location, such physician or dentist will agree to move to and engage in the practice of his profession in such area for a period of not less than one year.

Strictly as a war measure the technique proposed may be the only possible answer to the needs of certain areas in the United States which are now without medical service. The appropriation is to be used for this purpose only for the present fiscal year. Whether or not physicians can easily be found to meet this need, whether or not the time has come to discuss it.

<sup>12</sup> Lyster, J. G. in discussion on Watts and Freeman.  
<sup>13</sup> McKissock, Wylie. The Technic of Prefrontal Leukotomy, J. Ment. Sc. 89 194 (April) 1943.  
<sup>14</sup> Ström-Olsen, R., List, S. L., Brody, M. B., and Knight, G. C. Results of Prefrontal Leukotomy in Thirty Cases of Mental Disorder, J. Ment. Sc. 89 165 (April) 1943.

mechanisms thus far prevailing in meeting this need, whether or not state health departments can be helpful in assuming this function, are questions which remain to be answered if the Congress makes the appropriation

### INFORMATION

Under the heading of Medicine and the War in this issue of *THE JOURNAL* appears the announcement of a grant of funds made available by the Johnson and Johnson Research Foundation to the Division of Medical Sciences of the National Research Council to be used in collecting and disseminating information regarding advances in medical science. There is in medicine a cultural lag as there is in every other phase of human activity. The time required from the development of an important advance in the field of medicine to the moment when it becomes the property of workers in the field is, in most instances far too long. Anywhere from a year to ten or a dozen years may elapse before a new discovery is so widely disseminated as to be generally applicable in the care of the sick. Particularly in wartime does the cultural lag become significant. Physicians actively engaged in military services are unable to devote the necessary time to the acquiring of information and to its transmission. For instance, the treatment of burns and the treatment of wounds vary not only among the armed forces of the various nations engaged in war but even among various branches of the armed forces of the same nation and also perhaps among various agencies of the Army, Navy, Air Force or similar groups. The grant made available by the Johnson and Johnson foundation will permit not only the collection and dissemination of individual reports coming from all the world regarding certain phases of medical service but also the sending of actual observers for the collection of complete information regarding any special problem of medical care of national or worldwide importance. Already many medical leaders have reflected the view that there will be in the postwar period a dissemination to the United States of conditions previously seen only in the tropics and about which American medicine is not yet fully informed. A series of reports on such conditions based on immediate first hand study will be of great service in the control of such diseases. Another project of the Committee on Information of the Division of Medical Sciences of the National Research Council is the compilation and publication of a history of medicine in this war. Through the subcommittee under the chairmanship of Dr. John F. Fulton, which has this work in charge, there is being collected a vast storehouse of information becoming available throughout the world. The work has been outlined, and editors, special editors and authors have been appointed for the various sections. Much of the material that will be collected under the auspices of the new grant will become available for ultimate inclusion in this important historical contribution. The contribution of the Johnson and Johnson foundation thus becomes of the greatest significance for medical progress.

### RHEUMATIC FEVER IN CHILDREN

Rheumatic fever according to the Bureau of the Census reports, is responsible for more deaths of children from 5 to 14 years of age than any other cause and accounts for a large number of deaths in older age groups as well. The appropriation of federal funds for services for crippled children under the Social Security Act of 1935 has been extended to include aid to state agencies for the development of services for children affected with rheumatic fever.<sup>1</sup> At present fourteen states have programs in operation for the care of children with rheumatic fever or heart disease, five others are reported intending to submit plans for rheumatic fever programs during the fiscal year of 1943, at least ten additional states have informed the Children's Bureau of their interest in such a program. The program includes education of parents in recognition of early symptoms, provision of hospital facilities and convalescent wards, public health nurses for home visiting and like measures. Accurate evaluations of the practical results of these measures have as yet appeared. If it can be demonstrated that the incidence of rheumatic fever can be reduced and the crippling effects mitigated, rapid extension of the effective features of the program should be encouraged.

### EGG CULTURE METHOD IN ETIOLOGIC DIAGNOSIS OF MENINGITIS

The chick embryo is a good medium for culture of bacteria and other microbes. Blattner and his associates<sup>1</sup> have obtained favorable results with that medium in the diagnosis of acute meningitis. At times the older cultural methods yield negative results in meningitis even when smears of the spinal fluid reveal the presence of bacteria. The failure of bacteria to grow under these conditions may be due to the method used or to the state of the bacteria themselves. In 52 cases of acute meningitis Blattner and his associates failed to obtain bacteria in cultures on agar mediums in 8 per cent and on egg medium in only 2 per cent. Of these 52 cases 39 were due to meningococci which were obtained in culture in all but 1 case, in 3 cases blood agar culture remained sterile but the egg cultures were positive, and in 14 cases meningococci were obtained in egg cultures twenty-four to eighty-seven hours before any growth had developed on agar. Analogous results were obtained in pneumococcal and influenzal meningitis. In pneumococcal meningitis prompt isolation and typing are important in order that proper treatment may be given with the least delay. The egg method is of great value in the prompt identification of the bacterial cause in meningitis, especially when the smear of the spinal fluid reveals no bacteria or doubtful forms. That viable organisms may persist in spinal fluid apparently sterile on the older agar mediums, lends support to the continuation of chemotherapy after the apparent clinical cure of the patient.

<sup>1</sup> State Programs for Care of Children with Rheumatic Fever Under the Social Security Act title V, part 2 Children's Bureau U. S. Department of Labor 1943. Huse Betty. Rheumatic Fever in Children the Child Department of Labor Children's Bureau Washington D. C. 7 158 (May) 1943.

<sup>2</sup> Blattner R. J. Hess F. M. and Hartmann A. F. Advances of Egg Culture Technique in Infectious Disease Arch. Path. 36 262 (Sept) 1943.



# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## FOOD RATIONING IN WARTIME

### RECOMMENDATIONS OF THE NATIONAL RESEARCH COUNCIL

With the inauguration of a point system of rationing on March 1, 1943 the Office of Price Administration became the administrative agency, and the public's traditional peacetime latitude of dietary choice, limited only by ability to pay, was abruptly curtailed. As point rationing was extended to include a broad range of meats, fats and processed foods, it became evident that certain institutions and certain groups of the population would, because of special dietary needs, require special consideration. Prominent among these were hospitals and those sick and convalescing whose illness demands rationed foods in amounts greater than that provided by their "points." On the Food Distribution Administration of the Department of Agriculture developed responsibility for the equitable distribution of food and therefore responsibility for assuring the needs of the sick and of institutions caring for the sick.

Furthermore, it was recognized that in recent years great advances have been made in the understanding of the vital role that dietary components play in the body economy under conditions of health, stress, disease and convalescence. The role of these components can be evaluated with increasing precision in the light of modern nutritional research. Therefore in April 1943, at the request of Mr. Roy Hendrickson, director of the War Food Administration, Dr. Ross G. Harrison, chairman of the National Research Council, appointed a group of nationally known physicians to advise the War Food Administration concerning the extent of these special needs and the best method of meeting them.

Within the Division of Medical Sciences of the council this group was organized as the Subcommittee on Medical Food Requirements under the general jurisdiction of the Committee on Drugs and Medical Supplies, of which Dr. Walter W. Palmer of Columbia University is chairman. The subcommittee was composed of physicians representing various fields of medicine and consisted of Dr. William Stroud, Philadelphia, chairman, Dr. Cecil Striker, Cincinnati, Dr. Alton Ochsner, New Orleans, Dr. C. W. Munger, New York, Dr. Clark Finnerud, Chicago, Dr. Gilbert Levy, Memphis, and Dr. Walter W. Palmer (ex officio), New York. A first meeting was held in Washington on April 30 and May 1 at which the broad outlines of the problems involved were reviewed and discussed. At this and at subsequent meetings, representatives of the Civilian Food Requirements Branch, War Food Administration, and of the Food Rationing Division, Office of Price Administration, were present to acquaint the subcommittee with administrative aspects of the rationing program. Other committees of the National Research Council were called in consultation, notably the Committee on Surgery and the Subcommittee on Tuberculosis. The opinions of individual specialists in certain fields of medicine were solicited. Finally all recommendations of the subcommittee were reviewed and approved by the parent Committee on Drugs and Medical Supplies before transmission to the War Food Administration.

#### PRECEDENT

In the Food Rationing (Special Diets) Advisory Committee of the British Medical Research Council, the National Research Council's Subcommittee on Medical Food Requirements has had precedent. The British committee acts in an advisory capacity to the Ministry of Food, which implements its recommendations. Maximum allowances of extra rations have been formulated for a specific list of qualifying diseases. Likewise diseases and con-

ditions qualifying for priority claims on milk and eggs have been designated, and provision is made for the consideration of appeals for extra rations under circumstances not already stipulated. The British program has worked well and abuses have been minimized by requiring that the certifying physician provide strict medical evidence for most of the illnesses specified. Authority for certification of patients has been exclusively limited to licensed practitioners of medicine.

However, there are outstanding differences in the British supply position and that of the United States which have a direct bearing on food rationing in both its dietary and its administrative aspects. Great Britain depends heavily on importation of foodstuffs, the Ministry of Food owns approximately 98 per cent of the imported food supply, the nation geographically is small and cohesive, dietary habits are relatively uniform. The reverse of these factors obtains in the United States, which is primarily a food producing nation, where shortages for which no substitutes are available are unusual. The problem has been one of assuring equitable distribution and of insuring against the obtaining of more than a fair share by the less scrupulous.

#### GENERAL CONSIDERATIONS

The recommendations of the Subcommittee on Medical Food Requirements have been formulated in the light of present needs and restrictions. Recognition is made of the fact that poultry, fish and eggs, fresh fruits and vegetables are not at present rationed, that meats and fats are rationed together on "red points", that rationing of whole milk, in regions where it has been instituted, is imposed at the level of the producer and distributor rather than of the consumer, and that overall food supplies, though curtailed, are adequate to provide generous rather than minimal allowances. Nor should these recommendations be interpreted as representing optimal allowances for it is recognized that in some instances they might be materially further reduced, if necessary, without jeopardizing the health of the individual. It should be clearly recognized that these recommendations represent no attempt to provide an exclusive compendium of conditions in which extra rations are thought medically indicated. They are rather a guide to the vast majority of such conditions, any attempt to define all of which would vitiate the scientifically necessary flexibility inherent in any wise system of rationing for the sick. They are susceptible of revision as changing conditions dictate.

And, finally, with these last considerations in mind, the subcommittee is fully aware of the desirability of organizing medical appeal committees composed of appropriately qualified physicians, whose duty it should be to evaluate and pass on requests for additional food allowances for patients with conditions not already specifically stipulated as qualifying them for extra rations. In some areas such appeal committees have already been established by the field offices of the Office of Price Administration. The scientific necessity for appeal boards has already eloquently been testified to by the reported experience of one such panel.<sup>1</sup>

#### DURATION AND CONDITIONS OF CERTIFICATION

It is the recommendation of the subcommittee that "authority" for certification of patients be restricted to persons licensed to practice medicine and surgery in their respective state.

Varying periods of validity for certification for extra rations are recommended. Where none is specified the following

<sup>1</sup> The Doctor Prescribes a Diet editorial New England J M 229:281 (Aug 26) 1943

recommendation of the Subcommittee is pertinent "Certification of patients for special food requirements should be renewed once a year and, in case of change of residence, the patients' credentials of certification should be transferrable to the local board having subsequent jurisdiction"

#### ADVICE ON USE OF RATION POINTS

Recognizing that many patients would benefit by and would welcome advice on how most intelligently and economically to use their ration points, the subcommittee recommended that an invitation be extended to the American Dietetic Association to assist the local ration boards in a voluntary advisory capacity. In response to this request the Diet Therapy Section of the American Dietetic Association, through its chairman, Miss Dorothea Turner, has expressed willingness to cooperate in such a capacity.

#### RECOMMENDATIONS

The following recommendations are for maximal allowances. Consideration, in prescribing them, should be given to the availability of unrationed foods which may in part or in full, be substituted for dietetically equivalent rationed foods. Examples of such possible substitutions under present rationing restrictions, are fish, poultry, eggs for rationed meats and cheese, cream and, to a lesser extent peanut butter and mayonnaise for butter and margarine, fresh for processed fruits and vegetables. The prescribing physician should bear in mind that there are other excellent sources of dietary protein, notably the legumes.

#### DIABETES MELLITUS

"Provisions for patients with diabetes mellitus may need to include per week not more than meat, including fish and poultry, 64 ounces bacon 8 ounces, butter or margarine, 16 ounces other fats and oils 7 ounces, eggs, 7, milk, adults, 7 pints, milk children to age 16, 7 quarts, fruits and vegetables, 72 ounces. This allowance applies only to processed fruits and vegetables. It does not indicate total carbohydrate requirements. If these amounts of food are not available to the patient from the rationed foods to which he normally would be entitled together with commodities obtainable from unrationed sources, sufficient supplementary ration points should be allotted to provide them.

'To be eligible to receive any supplementary allowances of rationed foods, the patient with diabetes mellitus must surrender his sugar ration.'

#### TUBERCULOSIS

A generous allowance of processed citrus fruits and tomato juice for patients with active tuberculosis has the endorsement of the Subcommittee on Tuberculosis of the National Research Council. It is directed toward providing an ample intake of ascorbic acid and should be regarded as a maximal allowance and not a recommended optimal allowance. When fresh citrus and tomato juice are available, they are to be preferred, in view of the unsatisfactory and uncertain content of much of the processed juice. The recommendation is as follows:

Patients with active tuberculosis should receive not more than 56 ounces of processed citrus fruit and tomato juices per week in addition to their ordinary allowance of processed fruits and vegetables and the following allowance of meats including fish and poultry, eggs, milk and fat and oils per week: meats, including fish and poultry, 64 ounces eggs, 7 milk, 7 quarts, fats and oils, including butter and margarine, 13½ ounces. If these amounts are not available from rationed foods together with unrationed food procurable by the patient, sufficient supplementary points should be allotted to provide them."

#### CHRONIC NEPHRITIS, NEPHROTIC TYPE, CIRRHOSIS OF THE LIVER, SEVERE HEPATITIS, AND CHRONIC ULCERATIVE COLITIS

The rationale for a high protein diet in nephrotic nephritis, cirrhosis and hepatitis may be disputed; many physicians will prefer to prescribe otherwise but there is an increasing body of scientific evidence to substantiate the following recommendation:

Patients with the nephrotic type of chronic nephritis, cirrhosis of the liver, severe hepatitis and chronic ulcerative colitis should be allowed a maximum of 7 pounds of meat (including fish and poultry) per week.

"A diagnosis of chronic ulcerative colitis should not be recognized unless certified to by three physicians and that certification must be renewed every four months and may be authorized by one physician."

#### CHRONIC SUPPURATIVE DISEASES

The importance of maintaining a positive nitrogen balance to favor wound healing and tissue repair has been conclusively demonstrated, likewise, that there is a large and significant loss of nitrogen in the pus from profusely draining lesions. Adequate replacement of this loss may be of critical value. In view of this subcommittee recommended that:

"Provisions for patients with chronic suppurative processes, especially empyema, osteomyelitis, extensive suppurative lesions of soft parts, subcutaneous tissues or muscle and those infections in which there is profuse pus formation, may need to include, per week, meat, including fish and poultry, 64 ounces, milk 7 quarts, eggs, 7.

"Certification of patients with chronic suppurative diseases must be renewed at sixty day intervals."

#### SRUPE

The sprue syndrome, including tropical and nontropical sprue and celiac disease, is characterized by faulty absorption from the gastrointestinal tract, especially of fat. Carbohydrate is better absorbed and protein is relatively well digested and absorbed. Present evidence suggests that the sprue syndrome represents a deficiency disease and that the unknown replacement factor is present in liver. The milk recommended should be skimmed. The recommendation follows:

Patients with sprue may need up to 7 pounds of lean meat including nonfatty fish and poultry and from 14 to 21 quarts of milk per week. Sufficient supplementary ration points should be allocated to provide what is required but in no case more than the maximum amount allowable.

"A diagnosis of sprue should not be recognized unless certified to by three physicians."

#### EVAPORATED MILK

There are many areas in the United States where fluid milk, for reasons of production, transportation or storage, is relatively unobtainable. This is especially true of certain areas in the South and Southwest. These recommendations are made with such areas especially in view. The needs of infants and children are envisioned in the first of the following group of three recommendations:

"In areas where unrationed fluid milk is not available, 1 pint of evaporated milk should be considered the equivalent of 1 quart of whole milk and should be made available in the amounts recommended to patients for whom milk is specifically indicated."

*Evaporated Milk for Pregnant and Lactating Women*—"In areas where unrationed fluid milk is unobtainable, pregnant and lactating women should be allowed sufficient extra points to provide 1 pint of evaporated milk daily."

*Evaporated Milk and Frozen Foods for Hospitals*—When hospitals are demonstrably unable to procure satisfactory substitutes in whole or in part for evaporated milk and for frozen foods in large containers, allocation to them of points in amounts adequate to provide the equivalent dietetic needs of their patients should be made.

Amendment 116 of Ration Board No. 5 allows ration boards to grant necessary supplementary allowances to hospitals on request of the administrative officer.

#### COFFEE

At the time of writing this recommendation is academic. However the attention of the subcommittee had been called to numerous claims for extra rations of coffee on grounds of therapeutic need. All such claims were considered unjustifiable and the subcommittee recommended that coffee is not an essential dietary substance.

#### ADMINISTRATION

The administrative aspects of rationing as they apply to the sick and institutions caring for the sick have been of necessity considered in the formulation of recommendations. For instance,

to define a hospital for purposes of rationing involves considerations apart from those which would dominate a definition for other kind or public health purposes. Such a definition has been formulated.

A form simple, clear and practical, designed best to fulfil the needs of the prescribing physician, his patient and the local rationing board to which the request must be referred, is necessarily likewise an important part of the mechanisms of food distribution. A form fulfilling these requisites is suggested.

And finally provision for appeal such as will assure equitable consideration of the needs of the patient, the judgment of his physician and the best interests of the public welfare is inevitably a keystone in any scientifically contrived structure of rationing and food distribution for the sick.

The following are the recommendations of the Subcommittee on Medical Food Requirements for such a structure.

**Definition of a Hospital**—A hospital, for purposes of rationing may be defined as an institution which maintains and operates in conformity with local and state laws, organized facilities for the diagnosis or care or treatment of human illness including convalescence and care during and after pregnancy where persons may be admitted, under the care of a person licensed to practice medicine and surgery in the state in which the institution is located, excepting such institutions as provide exclusively for medical care over periods of less than forty-eight hours.

**Form for Certification of Patients**—This is presented in the accompanying tabulation.

#### Form to Be Executed by Patient

To Ration Board No. \_\_\_\_\_ state of \_\_\_\_\_  
I hereby request an extra allotment of such rationed foods as have been designated for the disease with which I am suffering, namely

(name of disease), and hereby  
authorize my attending physician,

(name of physician)  
to certify to the existence of such disease for the purpose of obtaining the designated foods.

(Signature)

(Address)

(Date)

(Number of ration book)

#### Form to Be Executed by Physician

I hereby certify that I have examined  
that my diagnosis of his (her) condition is \_\_\_\_\_  
and that he (she) has been under my care for \_\_\_\_\_ months.  
I further certify that he (she) needs the amount of food specified  
for the disease for 2 4 6 8 10 12 months  
(encircle appropriate number)

(Signature)

(Degree)

(Address)

(School of graduation)

(State and year of licensure)

(Date)

**Medical Advisory Boards**—"Local ration boards should be instructed to refer all requests for special dietary consideration to a Regional Medical Appeal Committee, except where such special consideration is provided for under the list of diseases specifically accorded supplementary dietary allotments."

"In regions where advisory committees have not been formed, the subcommittee recommended that the central office in Washington advise the regional board to appoint such a committee, emphasizing the importance of selecting highly qualified leading representatives of the various fields of medicine concerned with problems of nutrition, such as internal medicine, surgery, obstetrics, dermatology, pediatrics and hospital administration."

"Where such committees are already in existence, the advisability of supplementing or reorganizing them to insure qualified representation in these specialty fields was emphasized."

#### CONCLUSIONS

Food rationing, as it affects the sick and institutions caring for the sick, presents certain problems, scientific, social and administrative. 1 It is of primary concern that the dietary needs of the sick be assured. 2 Since extra allowances of rationed foods granted to the sick must be drawn from the total supply available for distribution to the public, strict criteria of need should determine eligibility for such extra rations, and these rations should conform in amount to scientifically established allowances. 3 Provision should be made for administration such that the best interests of patient and public are equitably served.

The Subcommittee on Medical Food Requirements of the National Research Council submits recommended allowances for patients suffering from certain diseases and suggests certain procedures for assuring the dietary needs of the sick.

## NAVY

### MEDICAL AND DENTAL STUDENTS APPLYING FOR NAVY ENLIST- MENT OR TRANSFER

The Bureau of Naval Personnel of the Navy Department, Washington, D. C., in Naval Officer Procurement Circular Letter No. 11-43 Navy V-12 Bulletin No. 98, Subject G, in a release dated September 27 in regard to medical, dental, premedical and predental students applying for enlistment in or transfer to V-12 program for appointment as ensigns H-V(P), gives the following information:

Apprentice seamen class V-12, U. S. Naval Reserve, who enter the Navy V-12 Program direct from civil life will be assigned to premedical or predental training on the basis of their standing in the V-12 test taken prior to enlistment. Selections will be made from among candidates who indicate at time of enlistment their preference for medical or dental training, apprentice seamen class V-12 who express such a preference and are not selected for assignment to premedical or predental training will be assigned to another curriculum in the Navy V-12 Program.

Qualified civilians between the ages of 19 and 30 who are in attendance at or accepted for the next convening class of an approved medical or accredited dental school, and who wish to complete their medical or dental education on inactive duty at their own expense should make application for appointment as

ensign H-V(P) as heretofore. Successful applicants will be appointed ensigns H-V(P) and will remain on inactive duty until satisfactory completion of the prescribed course.

Qualified civilians who are in attendance at or accepted for the next convening class of an approved medical or accredited dental school and who wish to be ordered to active duty in the Navy V-12 program should, if 17 years of age, apply for enlistment as apprentice seaman class V-12(S) or, if between the ages of 18 and 30, apply for induction as apprentice seaman class SV-12(S). If there is an appreciable lapse of time between completion of premedical or predental work and beginning of medical or dental school, students selected for medical and dental training will be placed on active duty under instruction in naval hospitals or in other naval activities as apprentice seamen during the interim. Applications for enlistment as apprentice seamen class V-12(S), and for induction and subsequent enlistment as apprentice seamen class SV-12(S), should be processed in the same manner as applications for appointment as ensign H-V(P), including form B. N. P. No. 944 with the exception that officer applicant special qualifications report to the Congress may be omitted for SV-12(S) and V-12(S) applicants. The forwarding endorsement should show the specific classification desired, i. e. ensign H-V(P), apprentice seamen class V-12(S) or apprentice seaman class SV-12(S). The physical requirements for appointment as ensign H-V(P) U. S. Naval Reserve are as specified in chapter 11 of

Manual of the Medical Department. The physical requirements for enlistment as apprentice seaman class V-12(S) or for induction into class SV-12(S) are the same as for appointment as ensign H-V(P) with the following exceptions:

- Height Minimum 5 feet 4 inches  
Maximum 6 feet 4 inches
- Vision 12/20 each eye correctible to 20/20  
Color perception must be able to read correctly one plate of each of the following A O C color chart groups 1-4, 7-14, 17-22
- Weight In proportion to height
- Teeth Eighteen sound vital teeth, with at least two molars in functional occlusion and not more than four incisors missing which are satisfactorily replaced

Successful applicants for enlistment in class V-12(S) will be enlisted by the director or officer in charge on authorization by the Bureau of Naval Personnel. Successful applicants for induction in class SV-12(S) will be inducted in the following manner:

A candidate reported by the Bureau of Naval Personnel as qualified in all respects for class SV-12(S) will be given a form letter of directed assignment by the director [enclosure (A)], this letter will be addressed to the Commanding Officer, Armed Forces Recruiting and Induction Station, stating that he is in all respects qualified and acceptable for training in the officer candidate class, class SV-12(S) U S Naval Reserve. Each letter will have an expiration date not later than sixty days from date of issue. On receipt of the letter of acceptability the candidate will present himself to his local selective service board and volunteer for induction. If the candidate is not in a deferred classification, the local selective service board will send him to an armed forces recruiting and induction station for induction.

At the armed forces recruiting and induction station the candidate will present his letter of acceptability as an officer candidate to the commanding officer. The candidate will then be assigned to the Navy and forwarded to the nearest navy recruiting station for induction as apprentice seaman USN-I. After induction the candidate will volunteer for and be enlisted by the recruiting officer in, class SV-12(S), USNR and returned to inactive duty. Recruiting officers have no responsibility for investigation of citizenship, character or general acceptability, as suitable investigation of such candidates will have already been made.

The same forms will be used for inducting SV-12(S) candidates as are prescribed by Recruiting Circular Letter No 6-43 for Apprentice Seamen USN-I, and will be distributed in the same manner. Recruiting stations will forward all enlistment papers to the Office of Naval Officer Procurement which originally processed the applicant. The Office of Naval Officer Procurement will forward to the Bureau of Naval Personnel all enlistment papers except the health and service records. The inductee will continue his education on inactive duty under the jurisdiction of the director of naval officer procurement until placed on active duty under authority from the Bureau of Naval Personnel.

Applicants for apprentice seamen class V-12(S) and class SV-12(S) will be retained on or returned to inactive duty and ordered to active duty as appropriate to the next convening term at medical or dental school, to the next convening term in a V-12 unit as a premedical or predental student, or to a U S naval hospital or other naval activity on completion of required premedical or predental work pending entrance to medical or dental school. Applicants who have completed their required premedical or predental work and whose induction is not completed in time to be ordered to medical or dental school should proceed to medical or dental school on inactive duty. They will receive active duty orders to report on the date of commencement of the next term in medical or dental school.

Civilian premedical and predental student applicants for induction and subsequent enlistment in class SV-12(S) who are married may be enlisted if in all respects qualified but such students will not be ordered to active duty until the commencement of the term in the medical or dental school for which they have been accepted. When an apprentice seaman class

V-12(S) or class SV-12(S) who entered the program unmarried is actually in attendance in a medical, dental or theological school under the Navy V-12 Program, he may marry. All other apprentice seamen in the Navy V-12 Program will not be permitted to marry until commissioned or otherwise eliminated from the program.

Ensigns H-V(P) who must complete one or more additional terms in order to meet the requirements for a medical or dental degree will be permitted to resign their commissions for the purpose of enlisting as apprentice seamen class V-12(S). These men may be enlisted as apprentice seamen class V-12(S) on presentation of their resignations to the director, if qualified physically or if they are able to present a waiver granted at the time of original appointment for any defects revealed in the examination which are of the same degree. The bureau will consider waiving defects of greater degree or other nonorganic defects. Resignation forms (in duplicate) of men found qualified physically by the directors should be forwarded to the Bureau of Naval Personnel via the Bureau of Medicine and Surgery. Resignation forms of men whose reports of physical examination are forwarded for recommendation should be held until the recommendation of the Bureau of Naval Personnel is received. Resignation forms (in duplicate) of men who are considered qualified for enlistment by the Bureau of Naval Personnel should then be forwarded as prescribed.

The director of naval officer procurement will arrange for physical reexaminations of ensigns H-V(P) who have undergone corrective surgery or dentistry or other treatment for physical defects in order to qualify as apprentice seamen class V-12(S). If the examination indicates the corrective measures to have been successful the director of naval officer procurement is authorized to proceed with enlistment and to forward the report of physical examination to the Bureau of Naval Personnel via the Bureau of Medicine and Surgery. The director of naval officer procurement is not expected to initiate the reopening of cases of ensigns H-V(P) who are rejected for enlistment in class V-12(S) because of correctible physical defects.

The papers required for enlistment in class V-12(S) of former ensigns H-V(P) are as follows:

- 1 Shipping Articles B N P 603, with part 2 carbon attached
- 2 Copy of pages 7, 8, 9 and 10 of Service Record B N P 952
- 3 Pension affidavit NRB form 70 (Duplicate to be retained with S R)
- 4 Service Record B N P 952
- 5 Application for Enlistment NRB Form 24A

All enlistment papers will be forwarded to the Bureau of Naval Personnel except service record, which will be retained by the appropriate director of naval officer procurement until the man concerned is ordered to active duty. On enlistment of these men the director of naval officer procurement concerned will request their health records as ensigns H-V(P) from the commandants of the naval districts who have custody of them. If the commandant is unable to supply a health record on request, the director of naval officer procurement may prepare one.

Apprentice seamen class V-12(S) who have resigned as ensigns H-V(P) should continue their normal educational program in civilian status until their resignations have been accepted and orders to active duty have been received.

Ensigns H-V(P) (medical) and apprentice seamen classes V-12(S) and SV-12(S) (medical) will, on completion of the requirements for the medical degree, be commissioned as lieutenant (jg) MC-V(G), U S Naval Reserve, if fully qualified therefor. They will then intern in civilian hospitals with which they have contracted (the Navy Department will not arrange for such internship) in an inactive duty status unless they have applied in accordance with V-12 Bulletin No 75 (subject C) and have been accepted for an internship in a Naval hospital in which case they will serve on active duty in the rank of lieutenant (jg) MC USN with the grade of acting assistant surgeon.

Ensigns H-V(P) (dental) and apprentice seamen class V-12(S) and SV-12(S) (dental) will, on completion of the requirements for the dental degree, be commissioned as lieutenants.

tenant (jg) DC-V(G), U S Naval Reserve, if fully qualified therefor. Those lieutenants (jg), DC-V(G), U S Naval Reserve, who have contracted for a civilian internship which has been approved by the Bureau of Medicine and Surgery will remain on inactive duty to serve such internship. Other students appointed lieutenant (jg), DC-V(G), U S Naval

Reserve, will be ordered to active duty and will be afforded an opportunity to submit an application for authorization to take the next regular examination for appointment as assistant dental surgeon with the rank of lieutenant (jg), DC-V(G), U S Navy. Examinations for the Dental Corps, U S Navy, are held not more than twice a year.

## MISCELLANEOUS

### NEW INFORMATION PROGRAM OF NATIONAL RESEARCH COUNCIL

Dr. Ross G. Harrison, chairman of the National Research Council, has announced the acceptance by the National Academy of Sciences, National Research Council, of a grant from the Johnson and Johnson Research Foundation in the amount of \$75,000. The grant was made to enable the Division of Medical Sciences of the council, under the chairmanship of Dr. Lewis H. Weed, to gather current medical information pertaining to the war effort and to disseminate summaries. The program of the Division of Medical Sciences of the National Research Council contemplates coverage of the various medical reports and bulletins which emanate from civilian and military activities throughout the world related to the present emergency. The enterprise should fill a much needed gap in the war effort in medicine. One of the greatest difficulties encountered in medicine today is the provision of adequate up to date information to the medical officers of the armed services both in this country and abroad, also to make the experience of war medicine available as far as possible to civilian physicians. It is contemplated that a central office will be organized in Washington so that the many reports coming from various agencies may be gathered in one place. These reports will be carefully indexed and abstracted, and when possible the information will be issued in published form and distributed to medical personnel.

Many of the observations and laboratory studies cannot be released today because of the classified information contained in them—information of military importance. Such materials will be carefully held until release may be made. Every effort will be made, however, to issue bulletins containing current advances in medical practice and medical research that are not military secrets but which should be made available to the medical profession at the earliest possible date. This material will form basic source material for later summaries of medical experience in the present world war. Data not only from the armed forces will be included but also from other federal agencies and from civilian enterprises.

The Johnson and Johnson Research Foundation appropriation to the National Research Council becomes immediately available, in accordance with present plans it will be utilized in the period up to June 30, 1945. A central office will be established and reporters will be appointed in various foreign countries, so that there will be a staff of special observers working under the direction of the central office in Washington.

In a global war the various theaters of operation present different medical problems in which climate, season of year, distribution of insects and distribution of disease all play different roles. Reports from different parts of the world will be of greatest medical importance, and it is hoped that out of the combined efforts much of significance will be achieved.

The informational service will be under the direction of the Committee on Information of the Division of Medical Sciences, which includes Dr. Morris Fishbein, chairman, Dr. John F. Fulton, Dr. Richard M. Hewitt and Dr. Robert N. Nye.

The Johnson and Johnson Research Foundation was established on Jan. 1, 1940 as a nonprofit philanthropic organization by Johnson & Johnson, New Brunswick, N. J., with the express purpose to devote full energy to research and development of products to serve the medical profession. It has supported both fundamental and developmental investigations and is currently sponsoring about one hundred projects. At the present time twenty-eight universities are carrying on research under grants from the foundation. The fields of medical interest which have largely been supported are pharmacology (including antiseptics), allergy and physiologic studies in pediatrics and human fertility.

### CARE OF WIVES AND BABIES OF SERVICEMEN

The following announcement was made by the Office of War Information on September 29:

More than 200,000 additional wives and babies of servicemen will be able to receive maternity and infant care during the remainder of this fiscal year as a result of the additional funds which the Congress voted yesterday (Tuesday) to the Children's Bureau in a deficiency bill, Secretary of Labor Frances Perkins stated today (Wednesday).

"Servicemen and their families have reason to feel gratified and reassured that Congress has acted so promptly to replenish the funds needed to continue the maternity and infant care program, initiated last March," Miss Perkins said.

"With the additional \$18,600,000 now made available in deficiency appropriation by action of the House and the Senate within two weeks of their reconvening, there will be no interruption in this humanitarian service, which was threatened with termination through lack of funds.

"Since the first appropriation for this service made by Congress in March of this year forty-four states, the District of Columbia, Alaska and Hawaii have submitted plans for cooperation in this program to the Children's Bureau and have received approval from the bureau. Of the remaining four states, Colorado and Texas are at present working out plans, Louisiana and North Dakota have so far failed to submit plans.

"Cases of nearly 50,000 servicemen's wives and babies have been authorized for care between the time the first state, North Carolina, received approval of its plan on April 8 and September 1. At the rate at which state health departments are requesting funds, it appears that for the remaining months of this fiscal year care will be requested for 20,000 to 25,000 cases each month.

"All of us, citizens in general as well as servicemen and their families, owe a debt to the state health departments which have given devoted service, without any financial assistance from federal funds, to get this program working. A heavy burden of responsibility rests on these departments, which not only prepare basic plans of operation but carry the full administrative weight of the operation of the program within their states. The thousands of doctors who are caring for the wives and babies also deserve our enthusiastic commendation. For many of them this service imposes an extra claim on time that is already crowded. The spirit of cooperativeness and loyalty which physicians have shown has contributed in large measure to the reassurance our servicemen have a right to feel that we at home are providing adequately for the safe birth of their children."

An amendment passed with the deficiency appropriation Miss Perkins pointed out, limits the program to wives and infants of enlisted men in the four lowest pay grades. Between July 1 and October 1 wives and infants of servicemen in the top three grades below commissioned officers were also covered. These are now barred.

To obtain care under this emergency maternity and infant care program a serviceman's wife selects the doctor, either a private practitioner or a clinic physician whom she wishes to provide care, and obtains from him a simple application form. Her doctor completes the application and forwards it to the state health department or other public health agency which may designate. Both the doctor or clinic and the patient are then notified of the approval of the application. Similar notification can be made when medical care is needed by the child during the first year of life. Applications can also be obtained from the local Red Cross chapter, hospitals or local health

agencies. Payment for services is made by the state health department to the doctor or clinic and to the hospital, if one is used.

Complete maternity service is obtainable during the antepartum period, childbirth and six weeks thereafter, including care of complications, operations, postpartum examination and medical care for the newborn baby. Hospital care is paid for at ward rates whether patients are cared for in wards or other accommodations. The money cannot be used to pay part of the cost of luxury accommodations.

On the basis of latest reports from the states, the Children's Bureau indicates the total number of cases authorized in each state from the date of approval of state plans up to September 1 as follows:

Over 4000 Illinois, May 8 (date when plan was approved)  
From 2,000 to 3,000 North Carolina, April 8, Michigan, May 12, Wisconsin May 14, Indiana, May 12, Oklahoma, April 27, Kansas, May 21, Kentucky, May 8, New Jersey, April 27.

From 1,000 to 2,000 Mississippi, April 19, Missouri, May 29, Minnesota, June 4, South Carolina April 17, Arkansas, May 4, Maryland, April 9, Utah May 8, West Virginia, April 24, Florida June 3, Connecticut May 14, Nebraska June 3.

Under 1,000 California, June 30, Washington May 28, New Mexico, April 20, Ohio, August 2, Maine, May 4, New York, June 30, Montana, June 3, Arizona, May 8, South Dakota, May 21, District of Columbia, June 22, Delaware, April 29, New Hampshire, June 8, Idaho May 24, Nevada, April 27, Wyoming, April 30, Hawaii, May 31, Iowa, June 30, Virginia, July 22, Tennessee, July 21, Alaska July 10.

No record of cases yet available from these cooperating states: Georgia, August 18, Massachusetts August 30, Oregon, September 18, Pennsylvania, September 20.

#### WARTIME GRADUATE MEDICAL MEETINGS

A three day session under the auspices of Wartime Graduate Medical Meetings will be given on October 18-19-20 in the Red Cross Building at the Station Hospital Davis-Monthan Field, Tucson, Ariz. Lectures and demonstrations will include traumatic surgery of the abdomen, maxillofacial surgery, thoracic surgery, anesthesia, blood plasma and blood banks, neurology, neurosurgery, malaria, rheumatic fever, coccidiosis, mycosis, clinical significance of the  $\phi$  factor and psychiatry. Among the physicians taking part are Drs. Henry K. Ransom, Tracy Putnam, Ernest Sachs, Claude Mason and many officers of the medical corps. A practically identical program was held at the station hospital at Kirtland Field, Albuquerque, N. M., October 13-14-15.

#### PRIORITY RATING FOR EGGS AVAILABLE TO HOSPITALS

The U. S. Department of Agriculture, Washington, D. C., issued a memorandum September 27 concerning the priority rating for eggs available to hospitals. While egg shortages, if they occur, are likely to be local and of brief duration it is expected that egg dealers in shortage areas generally will undertake to supply hospitals voluntarily without the need of priority certificates. Priority certificates, however, will be issued to hospitals if they have exhausted all other means of obtaining eggs. Since military hospitals are assured of supplies under a different plan, only civilian hospitals will be eligible for priority certificates which will be issued by regional offices of the Food Distribution Administration. Hospitals which need help in obtaining their requirement of shell eggs or which want additional information should write to the office of the Food Distribution Administration at the address nearest them:

5 South Wabash Avenue, Chicago  
921 Market Street, San Francisco  
4-5 Wilton Building, Dallas, Texas  
150 Broadway, New York  
700 Old Colony Building, Des Moines, Iowa  
1536 Welton Street, Denver  
Western Union Building, Atlanta, Ga.

#### AIR EVACUATION OF WOUNDED

United States and Canadian officers met recently in Canada and in Washington, D. C., to discuss allied interest in air evacuation of ill and wounded men. Air Commodore J. W. Tice, director of medical service for the Royal Canadian Air Force, Lieut. Col. Richard L. Meiling, Office of the Air Surgeon, Army Air Forces Headquarters, and Lieut. Col. R. T. Stevenson, commandant of the School of Air Evacuation at Bowman Field, Kentucky, participated. Commodore Tice and Brigadier B. Chussholm, director general of the Medical Service of the Royal Canadian Army, recently returned the visit by calling on Brig. Gen. David N. W. Grant in the Air Surgeon's office in Washington. The Royal Canadian Air Force is developing an air evacuation school similar to the one at Bowman Field, Kentucky. The officers are coordinating air evacuation wherever United States, Canadian and British troops are fighting.

#### PUBLIC HEALTH UNDER HITLER

*Paris-Midi* (North Zone) of June 22 asks whether the precipitous rise in prices of objects of primary necessity is justified. An ordinary household broom now costs 300 francs instead of 50 francs. In a big store a cup and saucer of ugly earthenware cost 70 francs, a simple bowl 35 to 40 francs and a glass tumbler 25 francs. The former prices were respectively 6, 10 and 2 francs. The cheapest toothbrush costs 82 francs instead of 8, and the shop girl whispers that it is the last to be had. This is alarming. It is always the last packet of cigarettes, the last kilogram of sugar, the last pair of trousers or the last beefsteak before the new rise in prices. A packet of cigarettes will then cost 140 francs and a toothbrush 110 francs. A luxury toothbrush costs 350 francs in a small shop near the Saint-Lazare station. A brush for cleaning the kitchen tiles costs 80 francs. The last piece of chamomile leather costs 500 francs. A marketing bag of waxed canvas, formerly costing 38 francs, cannot now be found for 175 francs. Writing paper is so dear that one love letter costs 7 or 8 francs. The street hawker's price is no better, as he sells stationary for 10 francs instead of the former 1 franc. A comb worth 3 francs now costs 30 francs. In a chain store a pullover of mixed wool and cotton costs 570 francs. At a furniture dealer's a small white stool costs 80 francs instead of the former 10 francs. A quite ordinary scarf at a shop on the boulevard Chcliv is priced at 1,500 francs, or the monthly salary of a stenographer. A small haberdasher asked 7,000 francs for a dressing gown of artificial silk. In the windows of a big shop a kitchen suite consisting of five pieces of furniture of white wood was marked at 11,027 francs.

*Social Demokraten* of July 14 reports from a private source coming from Berne that in Marseilles pregnant women are barely allowed half the prescribed rations. Newborn babies in Paris weigh less than 3 Kg. According to Professor Ritchet more than 10 million French people are suffering from undernourishment. These and millions more, already in bad health, will be in great danger owing to their lack of resistance to epidemics of tuberculosis, typhus, skin diseases and scabies. It is expected that the famine in France will be as severe as in Greece.

According to DNB of June 30 it has become necessary to point out that oils for technical purposes of all kinds must not be used for the manufacture of food or for cooking. They are a serious danger to health. Even the consumption of small quantities of fat mixtures containing technical oils may have serious consequences. Therefore people must be warned urgently not to use technical oils to prepare food or even to grease baking tins.

*Le Petit Parisien* (North Zone, July 12) states that there are no strawberries or cherries available in Paris but wild strawberries and other luxurious fruit can be found at very high prices. The newspaper deplores that only people who can pay 150 to 200 francs for a kilogram of strawberries or 30 to 40 francs for one peach can eat fruit.



## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF MORE OR LESS GENERAL INTEREST SUCH AS LETTERS TO SOLICIT ACTIVE THIS NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

### CONNECTICUT

**Canada Sends Groups to Yale for Training in Health Education**—Five brothers and two fathers, members of religious orders, will receive one year's training in health education and public health at Yale University School of Medicine, New Haven, under a cooperative program with six teaching orders with Dr. Jules A. Gilbert, Granby, Que., director of public health education, and with the financial assistance of the ministry of health, Quebec. On their return to Quebec the seven will devote themselves primarily to school health education work in the normal schools of their respective orders, in cooperation with the ministry of health.

**Memorial Room to Dr. Trask**—A memorial room in the Yale University School of Medicine, New Haven, dedicated to the memory of the late Dr. James D. Trask, has been completed and is now in use for lectures and seminars by the department of pediatrics. Dr. Trask, who graduated from the Sheffield Scientific School in 1913 and was associate professor of pediatrics at Yale, died on May 24, 1942 while serving as consultant to the Secretary of War in the investigation of epidemic diseases in the Army. According to the *New York Times* the decorating and furnishing of the memorial room were made possible by funds contributed by medical students, by alumni of the pediatric service of the New Haven Hospital and by other friends and associates of Dr. Trask.

### DISTRICT OF COLUMBIA

**Hospital News**—A new 50 bed addition to the venerable disease hospital at Gillinget Municipal Hospital, Washington, was to be available by October 1 under the direction of Sidney Olansky, assistant surgeon, U. S. Public Health Service Reserve.

**Dr. Abarbanel Awarded Prize**—Dr. Abraham R. Abarbanel, fellow in obstetrics and gynecology, George Washington University School of Medicine, Washington, was recently presented with the foundation prize of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons for 1943. Dr. Abarbanel's thesis was entitled "The Spasmodic Action of Magnesium upon the Tetanically Contracted Human Uterus."

**Memorial to Dr. Sofie Nordhoff-Jung**—A convalescent ward is to be maintained in Georgetown University Hospital with \$290,000 bequeathed by the late Dr. Sofie A. Nordhoff-Jung, professor of gynecology emerita at the Georgetown University School of Medicine. The physician, who died on June 6, declared in her will that with the exception of small sums her whole estate would go to the hospital. A bequest of \$35,000 was left outright to the president and directors of Georgetown University, the sum to be added to \$15,000 previously given for the ward. The convalescent ward will be named as a memorial to Dr. Nordhoff-Jung and her husband, the late Dr. Franz A. R. Jung. In 1923 Dr. Nordhoff-Jung established a cancer prize to encourage researches in the etiology, prevention and treatment of cancer.

### FLORIDA

**Meeting of New Graduate Faculty of Medicine**—On August 14 the first official meeting of the faculty of the department of medicine of the Graduate School of the University of Florida was held in Jacksonville with Dr. Turner Z. Cason, Jacksonville, director of the department, presiding. The tentative program for developing the department calls for the division of the department into eleven sections:

- Section on Roentgenology, Dr. Joshua C. Dickinson, Tampa
- Section on Internal Medicine, Dr. William C. Blake, Tampa
- Section on Public Health, Dr. Henry Hanson, Jacksonville
- Section on Pediatrics, Dr. Thomas E. Buckman, Jacksonville
- Section on Ophthalmology, Dr. Shaler A. Richardson, Jacksonville
- Section on Urology, Dr. Robert B. McIver, Jacksonville
- Section on Obstetrics, Dr. Samuel R. Norris, Jacksonville
- Section on Gynecology, Dr. Charles J. Collins, Orlando
- Section on Otolaryngology, Dr. H. Marshall Taylor, Jacksonville
- Section on Pathology, Dr. Lucien Y. Drenforth, Jacksonville
- Section on Surgery, Dr. Edward Jelks, Jacksonville

In each section a staff of instructors who have been certified by their specialty boards will serve with the chairman. The work of the department will be carried on by the University of Florida with the cooperation of the state medical association and the state board of health with Dr. Cason in general charge.

as director. At the meeting Dr. Cason requested each section chairman to prepare a syllabus, appoint instructors and suggest the number of hours required and the time of year best suited to offer graduate work. The new department of medicine, which will conduct graduate courses and promote research in medicine and surgery, is the outgrowth of the annual graduate short course for doctors of medicine inaugurated about ten years ago (*THE JOURNAL*, April 17, p. 1296).

### ILLINOIS

**Dr. Goodloe Named Deputy Commissioner at Peoria**—Dr. Ollie M. Goodloe, assistant director of county health work, Kentucky State Department of Health, has been appointed deputy commissioner and director of maternal and child health of the Peoria City Department of Health. He succeeds Dr. Hugo V. Hullerman, who was recently named chief of the division of maternal and child hygiene of the Illinois Department of Public Health (*THE JOURNAL*, July 10, p. 756). Dr. Goodloe, who graduated at the University of Louisville School of Medicine in 1932, was to take over his new work on October 1.

**Advisory Committee to Assist Aid Commission in Help for Blind**—An advisory committee consisting of four physicians and four other citizens of the state who are interested in the problems of the blind has been appointed to assist the Illinois Public Aid Commission in administering the state's program for the blind. Physicians on the advisory committee are Drs. Watson Gailey, Bloomington, Harry S. Gradle, Chicago, Charles H. Phifer, Chicago, and Walter D. Stevenson, Quincy. Citizen members of the committee are Herbert F. Geisler, attorney, Chicago, Miss Audrey Hayden, Chicago, executive secretary, Illinois Society for the Prevention of Blindness, Samuel S. Holmes, Highland Park, attorney, and Frank M. Lay, Kewanee, manufacturer. The committee will advise the commission on such special problems relating to blindness as examinations, remediable conditions, rehabilitation, employment and social adjustment and on relationships with existing services for the blind in the state. Assistance under the program will supplant the blind pensions now being furnished by the counties from funds provided jointly by the counties and the state. Blind assistance under the new program will be financed by the state and federal governments through the social security board. Grants under the new program are planned for award during October.

### Chicago

**Distinguished Service Award Goes to Nathan Davis**—The Mississippi Valley Medical Society at its meeting in Quincy, September 30, presented its distinguished service award for 1943, consisting of a gold medal and certificate, to Dr. Nathan S. Davis. The citation accompanying the award acknowledged Dr. Davis's contributions as an investigator and clinician.

**Dr. Koch Honored**—Fred C. Koch, Ph.D., Frank P. Hixon distinguished service professor emeritus of biochemistry, University of Chicago, was guest of honor at a dinner in the Morrison Hotel, October 1, given by the Chicago Section of the American Institute of Chemists. Dr. Koch was presented with a scroll testifying to his numerous contributions in scientific research. Among the speakers were Hilton I. Jones, Ph.D., of the Chicago chapter of the institute, who was the toastmaster, Edward A. Doisy, Ph.D., professor of biochemistry, St. Louis University School of Medicine, St. Louis, Victor Conquest, director of research of Armour and Company and George K. K. Link, Ph.D., professor of plant pathology at the University of Chicago.

**Physician's Conviction on Abortion Charge Upheld**—The Illinois Supreme Court in Springfield upheld the conviction of Dr. Emil Gleitsman, Chicago, who was found guilty of murder by abortion in the Cook County Criminal Court in 1942 and was sentenced to fourteen years in prison. According to the *Chicago Tribune* the physician has a police record going back to 1928, when the grand jury refused to indict him for abortion. In 1934, the report stated, he was convicted three times on a charge of manslaughter by abortion but each time the supreme court reversed the conviction and the charge was eventually dropped. After the recent decision Dr. Gleitsman was surrendered by his bondsman and taken to the Cook County jail to await transfer to the penitentiary, it was stated.

### LOUISIANA

**Personal**—Dr. L. Everard Napier, for twenty years professor of tropical medicine at the Calcutta School of Tropical Medicine, is visiting professor of tropical medicine at the University of Louisiana School of Medicine, New Orleans.

has also been appointed consultant on tropical medicine to the Secretary of War—On August 4 Ernest Carroll Faust Ph D, professor of parasitology and acting head of the department of tropical medicine Tulane University of Louisiana School of Medicine, New Orleans, was presented with a diploma of corresponding membership by the Academia Nacional de Medicina of Mexico

#### MARYLAND

**Personal**—Dr Herbert C Blake, Baltimore on August 16 was elected state commander of the American Legion—New appointments to the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, include those of Francis G Evans, Ph D, formerly instructor in zoology, Duke University, Durham, N C as assistant professor of anatomy and Robert S Anderson Ph D biophysicist Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York as assistant professor of physiology

#### MASSACHUSETTS

**New Appointments to State Medical Board**—Dr George L Schadt, Springfield was recently appointed a member of the state board of registration in medicine to fill the expired term of Dr Harry L Stevens New Bedford and Dr William F O'Reilly Lynn, to fill the unexpired term of the late Dr Francis R Mahony Dr H Quimby Gallupe Waltham is the secretary

#### MICHIGAN

**Crippled Children's Society Changes Name**—The Michigan Society for Crippled Children has changed its name to the Michigan Society for Crippled Children and Disabled Adults Percy C Angove, Detroit is the secretary

**Physician Indicted for Conspiring Against Government**—Dr Fred William Thomas Detroit was one of a group named by the Federal Grand Jury September 17 on charges of "conspiring under the wartime espionage act to supply the German government with information regarding defense and war moves of the United States" newspapers reported Conviction of the physician as charged could result in the death penalty or five to thirty years' imprisonment

**Dr McKhann Joins Parke, Davis & Company**—Dr Charles F McKhann has resigned as professor of pediatrics and communicable diseases at the University of Michigan Medical School, Ann Arbor to become assistant to the president of Parke, Davis and Company effective October 15 Dr McKhann, who will devote his time entirely to the scientific activities of the company, is also giving up his position as professor of maternal and child health in the School of Public Health at Michigan A graduate of the University of Cincinnati College of Medicine Cincinnati in 1923 Dr McKhann became associated with Harvard Medical School in 1929 where in 1940 when he joined the Michigan faculty, he was associate professor of pediatrics and communicable diseases He held a similar appointment in the Harvard School of Public Health From 1935 to 1936 he had been visiting professor of pediatrics at Peking Union Medical College Peking China He is vice president of the American Society for Clinical Investigation and in 1936 was president of the Society for Pediatric Research

#### MINNESOTA

**The Judd Lecture**—The eleventh E Starr Judd Lecture will be delivered in the Museum of Natural History Auditorium at the University of Minnesota Minneapolis December 6 by Major Gen Norman T Kirk surgeon general of the U S Army His subject will be "Surgery in War"

**New Officers of Southern Minnesota Group**—Dr Carle B McKaig, Pine Island was elected president of the Southern Minnesota Medical Association at the annual meeting held in Austin August 23 Dr Charles M Robillard Faribault and Dr Charles L Sherman Luverne are vice presidents and Dr Austin C Davis, Rochester is secretary treasurer

**Personal**—Dr Gustaf A Hedberg assistant medical director of the Nopernung Sanatorium, has been appointed medical superintendent to succeed Dr Arthur T Laird who has held the position since its inception in 1912—Dr Heitor P Froes, Brazilian specialist in tropical diseases, gave a lecture on August 30 at the Mayo Clinic, Rochester, on 'Old and New Tropical Diseases in Brazil'—Dr William A O'Brien, director of postgraduate medical education at the University of Minnesota Medical School, Minneapolis has been awarded an honorary fellowship by the American College of Hospital Administrators for interest and service in hospital administration

#### MISSOURI

**Physician Indicted on Narcotics Charge**—Dr Donnell M Pearson Louisiana, was named in an indictment returned by the federal grand jury, September 17, according to the St Louis *Post-Dispatch* The physician is accused of acquiring narcotics for the purpose of supplying addicts and for failure to keep adequate records of his dispensation of the drugs The newspaper stated that the physician bought more morphine in the last two years than was used by all the St Louis hospitals

**Fifty Years' Membership**—On October 5 the following members of the St Louis Medical Society were honored at a meeting in recognition of their completion of fifty years in the practice of medicine Drs Orril L G Suggett Asheville N C Adelheid C Bedal, Kirkwood and Vilray P Blair, Arthur H Bradley Harry S Crossen, William Anton Hall, Joseph J Meredith, William Jackson Miller, Frederick P Parker, Ferdinand O Sturheim Joseph M Trigg, Harry R Barton all of St Louis, and Clarence M Nicholson Charlotte, C H, Va The meeting also served to honor members of the society who are now with the armed forces The speakers included Philip A Shaffer, Ph D, dean of Washington University School of Medicine, who presented 'A Salute to Our Colleagues at the Front,' and Father Alphonse M Schwitalla S J, Ph D dean of the St Louis University School of Medicine, "Medicine and Our Victory"

#### NEW JERSEY

**Dr Paton Celebrates Ninetieth Birthday**—Dr Thomas L Paton, Paterson, reported in the newspapers as the oldest practicing physician in New Jersey, observed his ninetieth birthday August 15 Dr Paton has practiced fifty-five years in Paterson and for the past eighteen years has been medical inspector of the Paterson public schools The *Passaic Herald News* states that Dr Paton had worked as a textile engraver for eighteen years before he began the study of medicine at the College of Physicians and Surgeons, Baltimore, where he graduated in 1887

#### NEW YORK

**Cancer Teaching Day**—A cancer teaching day was held at the Black River Valley Club Watertown, October 14, under the auspices of the medical societies of the counties of Jefferson Lewis and St Lawrence, the state medical society and the state department of health The speakers were

Dr Ethan F Butler Ithaca Cancer of the Lung  
Dr Walter T Murphy Buffalo What the Practitioner Should Know About Radiation  
Dr Lloyd F Craver New York Significance of Enlarged Lymph Nodes  
Dr Clyde L Randall Buffalo The Significance and Management of Abnormal Vaginal Bleeding

**Medical Society Rejects Federal Maternity Care Plan**—The Albany County Medical Society, in a resolution made public on October 1 approves the intent of the state health department for allocation of federal money for maternity care of servicemen's wives but attacks the methods provided as an infringement on the "individual rights and freedom" of the wives receiving benefits The resolution also states that the plan establishes "a direct government-physician relationship which we sincerely believe to be detrimental to the well-being of wives of service men and ultimately to the interests of the nation as a whole As a substitute for the plan the medical society proposed that allotments be paid to eligible wives and that they be permitted to use the funds as they see fit in paying hospital and doctors bills Officers of the society said it was stated in spite of its disapproval of the plan put into effect several weeks ago that no woman or child would lack medical care

#### New York City

**First Harvey Lecture**—Dr Harold G Wolff associate professor of medicine Cornell University Medical College will deliver the first Harvey Society Lecture of the current series at the New York Academy of Medicine, October 28 He will discuss 'Some Observations on Pain'

**Russian Medicine**—Dr Henry E Sigerist, director of the Johns Hopkins University Institute of the History of Medicine Baltimore, addressed the New York Society for Medical History, September 30, on 'Russian Medicine Past and Present' The address was discussed by Dr Jack M Rowe medical adviser to the Soviet Government Commission and Dr Arthur F Chace, president of the New York Academy of Medicine

**The Niles Lecture**—Dr Edward A Strecker professor and head of the department of psychiatry University of Pennsylvania School of Medicine Philadelphia and consultant to the Army Navy and Air Forces in psychiatry will deliver the annual Walter L Niles Memorial Lecture at Cornell University Medical College October 19, under the auspices of the Tau

Chapter of *Nat. Sinema Nu*. This subject will be "The Neuropsychiatry of Global War." The lecture is given annually in memory of Dr. Niles, a former dean of the medical college and for many years professor of clinical medicine at Cornell.

**Drive for Funds Exceeds Goal**—The first annual development fund appeal made by the Long Island College of Medicine, Brooklyn raised \$42,118, exceeding its intended total of \$40,000. The fund will be used to pay larger professional salaries, to provide departments with more technical assistance and to strengthen the teaching, research and service program in other ways. Gifts from business interests totaled \$13,158, contributions by the general public \$18,592, and the medical profession gave \$10,368. The effort represented the first step toward building up an annual educational fund of at least \$300,000.

**Wartime Rules for Visitors in Hospitals**—The posting in member hospitals of Blue Cross placards bearing wartime rules for visitors was announced recently by the Associated Hospital Service of New York. The visiting regulations request that visitors voluntarily restrict the frequency of their visits and send fewer gifts to patients, especially if the gifts require care. Visitors are further asked to make their stay as brief as possible, not to discuss war, illness or anything that will excite the patient and to speak quietly, walk softly and make no unnecessary telephone calls so that the telephone lines will be kept open for emergencies.

## OHIO

**One Hundredth Anniversary at Western Reserve**—The week of October 24 will be devoted to a celebration of the one hundredth anniversary of Western Reserve University School of Medicine, Cleveland. Anniversary ceremonies will be held on October 27 and alumni clinics and commencement activities will take place on October 28. Among the speakers on October 27 will be Dr. George H. Whipple, dean of the school of medicine and dentistry, University of Rochester, N. Y., on "Blood Plasma Proteins: Their Production, Function, Substitution and Replacement" and Dr. Alan Gregg, director for the medical sciences, Rockefeller Foundation, New York, "The Matrix of Medicine." In the evening Dr. Reginald Fitz, Boston, will address a dinner on "The Crimson Thread." On October 28 the speakers will be

Dr. Horace M. Korns, Iowa City, The Modern Treatment of Chronic Congestive Heart Failure  
Dr. Ralph M. Waters, Madison Wis., Indications for and Complications of Cerebral Anesthesia  
Dr. Clarence D. Selby, Detroit, The Future of Industrial Medicine  
Dr. Daniel B. Kirby, New York, One Hundred Years of Progress in Cataract Surgery  
Dr. Marion A. Blankenhorn, Cincinnati, Multiple Peripheral Neuritis  
Dr. Harry Goldblatt, Cleveland, Hypertension  
Dr. Francis P. Corrigan, Caracas, Venezuela, S. A., Treatment of Malaria  
Frederick C. White, Phila. D., Cleveland Episodes in One Hundred Years  
Dr. Torald H. Sollmann, Cleveland, Farewell 1943, Hail 2043

## OKLAHOMA

**State Department Rejects Maternal Care Plan**—The Oklahoma State Department of Public Health recently announced that it was withdrawing from participation in the federal maternal and child care plan. According to a report, a ruling by the attorney general of the state gave right of participation to any person, either a layman or a medical man. Under these circumstances the state health department was unwilling to continue its activities any further. Pending further notice, physicians who are caring for patients under the plan should now make other arrangements for remuneration, it was stated.

## SOUTH DAKOTA

**Lectures on Tropical Medicine**—Dr. Marcos N. Fernandez, professor of pathology and bacteriology in the Marquette University School of Medicine, Milwaukee, toured South Dakota, September 19 to 26, lecturing on tropical diseases to medical groups in Aberdeen, Huron, Sioux Falls, Pierre, Rapid City and Fort Meade. The trip was sponsored by the South Dakota State Board of Health and the U. S. Public Health Service to bring the latest developments in tropical medicine to the medical profession of South Dakota.

**Public Health Association Meeting**—The annual meeting of the South Dakota Public Health Association was held in Huron, September 21, under the presidency of Dr. George L. Hickman, Bryan. A round table discussion was held on the "Problems of the Public Health Officer" conducted by Dr. Antony Triolo, Pierre, director of the divisions of maternal and child health and crippled children, of the state board of health. Other speakers included

Mr. I. R. Vaughn, Pierre, Vital Statistics and Public Health Education  
Dr. Marcos Fernandez, Milwaukee, Tropical Diseases  
Dr. William L. Meyer, Senator, Follow Up Technique in Tuberculosis  
Dr. Gilbert Cottam, Pierre, Public Health in South Dakota

## WEST VIRGINIA

**Community Medical Service Plans Approved**—Regional nonprofit medical service plans will be immediately developed as community projects with the endorsement and support of component medical societies in accordance with unanimous action of the council of the West Virginia State Medical Association on September 30. The project was submitted to the council in the form of a report of the fact finding and planning committee on September 29. As presented in the report, the plans will be operated by group hospital service with the joint supervision of an advisory committee elected by the county medical society and a central state committee appointed by the president of the state medical association. A medical service contract will be offered to the public on a periodic prepayment plan to pay the cost, in whole or in part, of surgical, obstetric and medical service while a bona fide patient in a hospital. The details of these plans and contracts will be left to each community and nothing will be done that might in the least interfere with the doctor-patient relationship, the patient to have the free choice of hospital and physician. Under the setup it will be the duty of the state committee, together with the committee representing hospital plans operating within the state, to formulate a basic contract, and particularly to see that this service is made available to every community of the state, with particular emphasis on rural areas. As the care of the indigent sick is a joint responsibility of the community and the medical profession, the report urges further study in each community toward improving such care if necessary. Each county society is urged, through a committee, to survey its plan for the care of the indigent sick and to report to the state fact finding and planning committee. The report also recommends that the public health work be extended and that measures be taken to assure adequate public health units for every county or group of counties, pointing out that the work of these units should be limited to preventive medicine, immunization, and particularly to education of the public in health matters.

## GENERAL

**Medical Woman's Journal Observes Fiftieth Anniversary**—With the publication of its September issue, the *Medical Woman's Journal* completes fifty years. The publication was founded by the late Margaret Hackedorn Rockhill. Dr. Elizabeth Mason Hohl, Los Angeles, is the editor in chief.

**Special Society Elections**—Dr. Donald C. Smelzer, Philadelphia, was chosen president-elect of the American Hospital Association at its recent annual meeting and Frank J. Walter, Denver, was installed as president. Dr. Harley A. Hyman, Ann Arbor, is treasurer and George Bugbee, Chicago, executive secretary. Dr. Fred B. Moor, Los Angeles, was chosen president-elect of the Society of Physical Therapy Physicians at its meeting in Chicago, September 8, and Dr. William H. Schmidt, Philadelphia, was installed as president. Dr. William D. Paul, Iowa City, is vice president and Dr. Milton G. Schmitt, Chicago, is the secretary-treasurer. Dr. Miland F. Knapp, Minneapolis, was chosen president-elect of the American Congress of Physical Therapy at its twenty-second annual session in Chicago in September and Dr. Kristian G. Hamon, New York, was installed as president. Other officers include Drs. Richard Kovacs, New York, secretary, John S. Coulter, Chicago, treasurer and Walter J. Zetter, Cleveland, executive director. The gold key of merit was awarded to Dr. Coulter.

**New Home for Institute of Physics**—A five story building at 57-59 East Fifty-Fifth Street, New York, formerly a private residence, has been acquired by the American Institute of Physics for its national headquarters and its affiliated scientific societies. The institute has been occupying rented space since its establishment in 1931. It is anticipated that occupying its own home will enable the group comprising the institute to carry forward their aims for "high professional standard improvement of publications and meetings improvement of the teaching of physics in high schools and colleges, expansion of facilities and resources for research, rehabilitation of interrupted careers and extended activities to advance the work of physics and facilitate the work of physicists." The American Institute of Physics is composed of the American Physical Society, Optical Society of America, Acoustical Society of America, American Association of Physics Teachers, Society of Rheology, Associated with the institute, the American Society for X-Ray and Electron Diffraction, and the Electron Microscope Society of America.

**Stamps for Cancer Fund Raising in Other Countries**

—Fifty-one stamps have been issued by various countries that have been used to raise funds for the control of cancer and for the treatment of cancer, according to an article in the Bulletin of the American Society for the Control of Cancer. The stamps consisted of regular postal issues that prepaid postage on letters. Postal tax stamps were also issued. These did not pay postage, but their use was compulsory on every letter passing through the mails for certain periods of time. The money derived from the sale of these stamps provides for a cancer fund. The last type of stamps issued were semipostal stamps. These were sold for a premium over their face value to raise money for some purpose. The countries that have issued these stamps are Afghanistan, Cuba, Danzig, Denmark, Ecuador, France, French Colonies, Morocco, Norway, Panama and Sweden.

**Child Care Units Only Partly Successful**—A survey of manufacturing cities, reported in the *New York Times* September 24 shows that the child care centers and nursery schools, set up for the benefit of working mothers in areas where government contracts have increased the ordinary working conditions, are standing idle or are only partly utilized. Officials have agreed that the program, established by local initiative and by funds supplied by the Federal Works Agency, so far has proved only in part successful. Ignorance of the facilities provided to care for children while mothers work on the assembly lines was the explanation most generally offered. In New Jersey Dr. Ellen C. Potter, chairman of the child care committee of the New Jersey State Civilian Defense Office, Trenton, reported on September 30 that the child care centers for children of preschool and school age throughout the state are being ignored by working mothers who leave their children with neighbors or relatives when they go to work. To date, she said, twelve communities in the state have received Lanham funds for community centers and five grants are pending. On September 15 registration at seven units was 230 but actual attendance was down to 187. Reasons for the poor showing given by some mothers were the difficulty in transporting children to and from the nurseries in getting both children and mothers ready in the morning and fathers objecting to having family life dislocated.

**MEDICAL BILLS IN CONGRESS**

**Bills Introduced**—The President has transmitted to the Congress supplemental estimates of appropriation for the Public Health Service as follows: (1) an estimate of \$10,000,000 to be used in carrying on the nurses' training program for the period Jan. 1 to March 31, 1944 (H. Doc. No. 311) and (2) an estimate of \$2,350,000, an undisclosed part of which will be used for the supplying by the Public Health Service, on request of state authorities, of needed medical and dental care, either by temporary financial aid or by direct employment of doctors and dentists, in certain critical areas where acute shortages have developed (H. Doc. No. 321). Under the latter estimate too the Public Health Service would be authorized to assign its medical and dental personnel to critical areas when so requested by a state department of health. The services of such personnel it is proposed, will be furnished the public in accordance with schedules of fees approved by the state health departments and the Surgeon General of the United States, which fees will be collected by and used at the direction of the state departments of health, to defray the expenses thereof incident to the rendition of such medical and dental services. Any balances remaining at the end of a fiscal year will be covered into the treasury as miscellaneous receipts. These estimates are pending in the House Committee on Appropriations. H. R. 3379, introduced by Representative Bulwinkle, North Carolina, proposes to codify the laws relating to the United States Public Health Service. According to Representative Bulwinkle, this bill is designed to bring together in one enactment all of the laws relating to the Public Health Service to permit the administrative reorganization of the service to adjust the wartime status of the commissioned corps of the service to reconcile the conflicts and eliminate the overlapping in the law and to make certain mechanical revisions found necessary by long administrative experience. This bill, in the words of Representative Bulwinkle, is in no sense a measure designed to place the Public Health Service into new fields of operation or to enlarge its functions and powers. Its sole purpose is to enable the Public Health Service to perform its present statutory functions more effectively.

**LATIN AMERICA**

**Health Activities in Latin America**—Dr. George C. Dunham, formerly director of the division of health and sanitation of the coordinator of Inter-American Affairs, on September 2 was appointed executive vice president of the Institute of Inter-American Affairs and assistant coordinator in charge of the basic economy department. Dr. Albert R. Dreisbach was named director of the division to succeed Dr. Dunham.

**Construction**—A 14 bed hospital was established in La Boca Camp during July along the eastern border of Lake Yojoa, Honduras. A 50 bed hospital and health center is planned in Paraguay by building an addition to the existing 18 bed Barrio Obrero Hospital.

**Search for Cinchona**—According to the *Inter-American Economic News* a hitherto undeveloped cinchona area has been surveyed in the Balsa Pampa region of Central Bolivia. A number of new cinchona regions have been discovered in Peru and in the Huarí Huarí Valley.

**Leprosy Control Program**—Dr. Manuel Gimenez Uriarte has been appointed director of the Colony at Sapucay by the minister of health of Paraguay. It has also been proposed that Dr. Uriarte, who has recently returned from Rio de Janeiro from a fourteen months study of leprosy, be in charge of the clinic and isolation hospital facilities for patients with leprosy planned for Asuncion.

**Malaria**—Malaria control activities are a major development in the health and sanitation of the Amazon Project in Brazil where the disease is the chief cause of morbidity and mortality. A number of medical posts have been established to provide dispensary medical care and serve as the centers for malaria control activities. In Marmelade, Haiti, sixty deaths from malaria had occurred during the three months prior to July 22. The town of Marmelade has a population of less than 1,000 persons.

**Fellowships**—The John Simon Guggenheim Memorial Foundation, New York, recently awarded fifteen fellowships to Latin Americans seven to biologists.

Jose Antonio Goyco, assistant in chemistry, School of Tropical Medicine, University of Puerto Rico, Santurce, P. R.

Mario Autuori, assistant in the Biological Institute, Sao Paulo, Brazil.  
Dr. Isabel P. Farfante, instructor in zoology, Faculty of Science, University of Havana, Cuba.

Juan Ignacio Valencia, agrostologist, Darwin Botanical Institute, Buenos Aires, Argentina.

Raul Cortes Pena, entomologist, Ministry of Agriculture, Santiago de Chile.

Dr. Gabriel Gasic Livacic, chief of the laboratory, Institute of Biology of the University of Chile, Santiago de Chile.

Dr. Fabio Leoni Werneck, chief of the laboratory, Instituto Oswaldo Cruz, Rio de Janeiro, Brazil.

**Tuberculosis**—The News Letter of the Health and Sanitation Division states that tuberculosis ranks second only to malaria as a major public health problem throughout the other American republics. It is the principal cause of death in Lima, Sucre, Rio de Janeiro and Caracas. Tuberculosis control programs are being conducted in Colombia, Ecuador, El Salvador, Honduras, Nicaragua and Paraguay. Plans are being formulated to include Bolivia, Chile and Peru. Tuberculosis dispensaries have been established. In Nicaragua the national department of health has an administrative division for tuberculosis. The tuberculosis control project started there seeks to provide the health department with adequate space and equipment necessary for tuberculosis control throughout the country and to train public health nurses to carry on tuberculosis work. In Ecuador a 300 bed tuberculosis hospital is now being constructed at Guayaquil.

**Floating Launches**—For the Amazon project in Brazil a fleet of boats is planned some to serve as floating dispensaries to take medical supplies to the isolated scattered population groups along the rivers and others to serve as a means to transport medical personnel and supplies. Twenty of these launches have already been placed in operation. The dispensary launch *Constantino* returned during July to Iquitos, Peru from a months trip on the Amazon and Marañon rivers and the lower part of the Pastaza and Morona rivers. During the trip the launch visited 101 settlements, villages or groups of houses. A total of 674 patients were treated, 332 for intestinal parasites, 101 for malaria and 73 for yaws. During this trip all of the military garrisons along the river were visited and medical care was given to any of their personnel who were ill. No atabrine distribution points were established at San Lorenzo, Nauta, Tamchivacu and Concordia.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Aug. 27, 1943

#### Nervous Disorders of Swallowing

At the Laryngological Section of the Royal Society of Medicine, Sir Arthur Hurst dealt with nervous disorders of swallowing, a subject on which he has done important work. His researches on the sensibility of the alimentary tract have shown that tactile sensibility extends beyond the mouth to the junction of the pharynx and esophagus but no farther. However, the esophagus is sensitive to cold and heat, though thermal stimuli produce no sensory response in the stomach, and distention produces a feeling of fullness which merges into pain when the stimulus is increased. Consequently if food is masticated until it is semifluid and has acquired the body temperature, its passage beyond the pharyngoesophageal sphincter is not appreciated, but if swallowed in unchewed lumps while still hot or cold its passage can be felt as far as the cardia. The esophagus being a fixed organ localization of sensory response to thermal and distention stimuli is accurate.

Theoretically there is no reason why hysterical dysphagia should not develop in the form of paralysis or incoordination of the voluntary muscles concerned in the first two stages of swallowing in which food passes through the sensitive buccopharyngeal cavity. But it would be unlikely to develop in the esophagus or at the cardia, as the passage here is entirely independent of voluntary action and normally is not felt, the food disappearing into the void after passing the pharyngoesophageal sphincter, except when very cold, very hot or in large lumps. Hysterical dysphagia is rare. In the last war Hurst saw more than 100 cases of hysterical aphonia and over 50 of hysterical vomiting in soldiers but no case of hysterical dysphagia.

Dysphagia may occur in various organic nervous diseases as a result of paralysis of the muscles concerned in the first and second stages of swallowing. The esophagus itself and the cardia are never involved. In diphtheria the toxin ascends by the lymphatics of the nerves from the site of the lesion to the central nervous system, where it puts out of action the corresponding nuclei. Therefore the paralysis of the soft palate which results in regurgitation of food through the nose, and the rare pharyngeal paralysis which results in severe dysphagia, occur only in faucial diphtheria. In motor neuron diseases, which include progressive muscular atrophy and amyotrophic lateral sclerosis, dysphagia may occur if the vagal nucleus is involved. It always occurs in progressive bulbar palsy. Myasthenia gravis, though a primary muscular disease, produces a similar upper dysphagia. Upper dysphagia in anemic women was first described by R. D. Paterson in 1906 but attracted so little attention that it was redescribed as the Plummer-Vinson syndrome. Hurst therefore calls it Paterson's syndrome. It occurs in about 15 per cent of cases of simple achlorhydric anemia, which is common in women, especially in those between 30 and 50. It is the direct result of iron deficiency, which causes not only the anemia but also atrophy of the mucous membrane of the tongue and pharynx, cracks at the angles of the mouth, loss of teeth and spoon shaped brittle nails. The atrophy of the pharyngeal mucosa results in loss of sensibility, so that the afferent side of the reflex, on which the second stage of swallowing depends, is impaired. Treatment consists in administration of iron, which often restores to normal the atrophied mucosa. In neglected cases this may undergo malignant degeneration.

The commonest nervous disorder of swallowing is achalasia of the cardiac sphincter. It produces stagnation of food and dilatation of the esophagus, although there is no organic obstruction. The complete absence of hypertrophy of the sphincter

found post mortem shows that cardiospasm is not the cause, as was believed. In 1915 Hurst suggested that the obstruction might be the result of absence of relaxation of the sphincter. He believes that this accounts for every case of megaesophagus. In 1924 he suggested that it might be due to organic disease of Auerbach's plexus, which proved correct. The simplest and most effective treatment is by means of mercury bougies, which Hurst devised in 1913.

#### Too Many Facts

In his introduction to the fifth edition of McGregor's Synopsis of Surgical Anatomy, the professor of anatomy at Witwatersrand University, R. A. Dart, discusses a problem which the vast increase of human knowledge has rendered pressing. It has been stated that the brain of man can absorb only 200,000 distinct facts. But the one subject of anatomy is so great that if a student absorbed the whole he would, according to this calculation, have no mental room left for the absorption of anything else. In 1756 the surgeon Cheselden published a textbook of anatomy in which he was able to dispose of the whole subject in three hundred and thirty-four pages of text and sixteen of index. Today the subject has reached such monumental proportions that in one book the index occupies 113 pages and contains sixteen thousand subject references. Professor Dart describes the unfortunate student as called on to memorize an excessive number of isolated facts not lending themselves to logical connection or correlation in our present state of knowledge. He therefore requires the help of supplementary books written by discerning men whose single ambition is to provide the examination candidate with much needed assistance in a difficult situation and the prospective surgeon with the more significant anatomic facts relevant for practical application. This is what McGregor has done in his eminently successful book.

Too many facts (or alleged facts, for which life is too short), have become a difficulty in every branch of medicine. One way of surmounting it is by specialization which, though it has already reached a high degree, still goes on. But the loss of breadth of view, and even of common sense, of the specialist mind has become proverbial. Further, not all can become specialists, there remains a sphere which can be filled only by the general man. The remedy seems to lie in the fact that the advance of science involves development as well as growth. Knowledge becomes more definite and new principles are formulated. The accumulated facts are seen to be only examples of these principles and can largely be dispensed with in teaching. But new principles develop all too slowly, while new facts, or more often alleged new facts, accumulate at an enormous rate. Hence the increased size and increased number of our journals and books, for which, again, life is too short.

#### The Clinical Picture of Gas Gangrene

Gas gangrene due to *Clostridium oedematis maligni* is often overlooked in its early stages. The *Army Medical Department Bulletin* therefore calls attention to the more detailed clinical picture recently given. An important early symptom is a feeling of weight in the affected limb (or amputation stump) followed in two to eight hours by much local pain. Considerable edema soon appears, accompanied by profuse yellowish or brownish yellow serous discharge from the wound. Blood stained discharge seldom, if ever, occurs. Gas has not been a noticeable feature. Diagnosis must not depend on the detection of smell, since it occurs only when there is gross contamination with other organisms. Discoloration of skin appears late.

The general condition is poor, for the toxemia is out of proportion to any obvious local lesion. The pulse is rapid and of poor volume and the blood pressure falls low at an early stage of the disease. Pyrexia is not remarkable, seldom over 101° F. If there is much oozing hemoglobin may rise to 139 per cent. Mental changes are not prominent. The affected tissue is



grossly swollen shiny and in the early stages, firmer than normal. At first they are pale but later become dark purple, friable and almost deliquescent. Essentially the picture is one of severe toxemia with little local reaction other than swelling. It is important that this local lack of obvious signs in the wound should not delay diagnosis.

#### Artificial Insemination

In the House of Lords Lord Brabazon drew attention to recent advances in regard to insemination. He understood that in the United States there was an increasing demand that, if a husband was sterile, his wife rather than adopt a child, should be inseminated by an unknown father. It was estimated that there were ten thousand applicants among childless couples. A child so produced would be regarded by the world as legitimate, and only the doctor would know the truth. This was open to grave abuses. Some women might prefer to have children without marriage. The church would have to face that question.

Viscount Bledisloe hoped that in this country we would do everything to discourage a process which could only in the long run tend to break down family life. For the government the duke of Norfolk, joint parliamentary secretary to the Ministry of Agriculture, said that the minister of health was closely watching the question. Artificial insemination in animals today provided a means of improving live stock. The use of a valuable sire could be extended. A small farmer was able to use a sire which he could not otherwise. In certain respects the process was a safeguard against spreading disease. Two large experimental stations had been set up.

#### Improvement of the Milk Supply

The government has decided on a progressive policy for the improvement of the milk supply. The basis of a sound milk policy must be a well bred healthy dairy herd. At present many herds are not inspected at all. It is proposed to arrange for a minimum of one inspection each year of every dairy herd and to inspect more frequently those herds with a bad disease history or where the milk is not heat treated before sale. Owing to transport difficulties much of the tuberculin tested milk now produced is bulked with ordinary milk. To encourage the production of this valuable milk the government proposes to pay a uniform production premium of 8 cents a gallon. The minister of food will take steps to insure that as much milk as possible from tuberculin tested herds is sold to consumers under proper label. The price will be only slightly higher than that of ordinary milk. In certain areas where the policy is possible the government will prohibit the sale of milk to the public unless it is either (1) from tuberculin tested herds, (2) accredited milk sold by a retailer who sells the milk of a single accredited herd or (3) rendered safe by heat treatment.

#### Death of Sir Beckwith Whitehouse, President of the British Medical Association

Sir Beckwith Whitehouse, president of the British Medical Association, died suddenly after attending a meeting of the council. He was in his sixty-first year. After a distinguished university career he settled in Birmingham as an obstetrician and gynecologist. In 1924 he was appointed professor of midwifery and diseases of women at the university, a chair previously held by Lawson Tait. A brilliant expositor and skilful operator, he was a powerful influence in the medical school. He originated some surgical procedures and invented a cecal retractor for appendectomy, by which the appendix and part of the cecum were isolated from the peritoneal cavity and edges of the wound. In 1933 he visited the United States at the invitation of the American College of Surgeons of which he was made an honorary fellow. He was also made an honorary fellow of the Canadian Medical Association. He edited the fourth edition of Eden and Lockyer's *Gynecology* which was published in 1935. In the last great war he served as an officer in charge of a surgical division.

## BRAZIL

(From Our Regular Correspondent)

Aug. 31, 1943

### A Survey of Hospitals

A chapter of the 1942 annual report of the director general of the Brazilian National Department of Health is devoted to the division of hospitals, created in the department a little more than a year ago. Dr. Theophilo de Almeida is head of the division. One of the first efforts of Dr. de Almeida was the organization of a roster of the hospitals of Brazil. Some averages computed from the first information gathered provide an interesting picture of the hospital situation of the country. At the end of 1942 a rather complete roster of the hospitals (only those with at least 25 beds are called hospitals) gave a total of 1,303 institutions for the whole of the twenty states, the Acre Territory and the Federal District (city of Rio de Janeiro). As Brazil has an area of 3,287,595 square miles and the 1942 population was reckoned at 43,027,000, each hospital has to serve an average of 2,523 square miles and 33,021 people. Owing to the large differences in the density of population and in the general development of the several sections of the country, these averages for the individual sections show notable variations. It seems strange at first glance that the Acre Territory should occupy the highest position, with 7.23 hospitals per hundred thousand of population, but this territory, far inland in the Amazon valley bordering Bolivia and Peru, has just a few centers of population where the federal government which directly administers this area, is doing good work to assist in the struggle against the great tropical scourges. With this exception the northern, tropical states have few hospitals—about 1 per hundred thousand of population. Above this level are only the states of Sergipe, Mato Grosso and Amazonas, respectively with 3.42, 3.39 and 3.04 hospitals per hundred thousand of population. The southern, more populated and more developed states are better equipped with hospital facilities. Minas Geraes 3.16 per hundred thousand, Rio de Janeiro 3.52, Parana 3.92, São Paulo 4.23, Santa Catarina 5.28 and Rio Grande do Sul 6.54. The Federal District, with 93 hospitals for 1,860,000 population, has exactly 500 hospitals per hundred thousand.

Out of this total of 1,303 hospitals 457 are specialized institutions (lying-in hospitals, hospitals for children, for tuberculous patients, for the leprosy, for nervous and mental patients and others). According to the report, the remaining 846 institutions, considered as general hospitals, have 58,820 beds, or an average individual capacity of 69.5 beds. The same source shows that this capacity also varies widely through the different states. The highest average rate of beds per hospital is that of the Federal District: the 42 general hospitals there have a total capacity of 8,433 beds, or 200.8 beds per hospital. Next come the states of Para with 124.3 beds per hospital, Piahy 99.3, Pernambuco 96.0, Mato Grosso 77.0, Amazonas 76.8, Rio Grande do Norte 74.6, São Paulo 73.3, Parahyba 72.9, Ceara 66.5, Rio Grande do Sul 62.6, Alagoas 62.4, Bahia 57.0, Minas Geraes 53.7, Rio de Janeiro 53.5, Maranhão 53.0 and Parana 50.4. The remaining states (Sergipe, Espírito Santo, Santa Catarina and the Acre Territory) have less than 50 beds per hospital.

The report also gives a description of the plan prepared by the division of hospitals for cooperation with the states to develop progressively a network of hospitals needed in Brazil to improve health conditions. An important sum is set aside by the federal government this year to start the construction of small hospitals in the section where they are most needed.



## Deaths

**Louis Blanchard Wilson** † noted pathologist and medical educator, died in Rochester Minn. October 5, aged 76.

Dr. Wilson was born in Pittsburgh, Dec. 22, 1866, and graduated at the Pennsylvania State Normal School at California, Pa., in 1886. He taught biology in the Central High School, St. Paul, from 1888 to 1896, receiving in this year his medical degree from the University of Minnesota. He was associated with the Minnesota State Board of Health from 1896 to 1905, first as assistant in and later assistant director of the bacteriologic laboratory, and for a time taught as assistant professor of clinical pathology at his alma mater.

In 1905 Dr. Wilson joined the Mayo Clinic to organize and develop its laboratories. When the division was subdivided in 1920 he became head of the section on general pathology. He had been director of the Mayo Foundation and professor of pathology of the Graduate School of the University of Minnesota from 1915 to 1937, when he became emeritus.

During World War I he was a major in the medical corps of the U. S. Army from January 1918 to June 1919, serving for fifteen months as assistant director

of the Laboratory Division of the American Expeditionary Forces. He was promoted to the rank of colonel and in 1920 received the Distinguished Service Medal. To him goes a large part of the credit for the collection and preparation of pathologic specimens from the World War in the Army Medical Museum, Washington.

From 1917 to 1918 Dr. Wilson was chairman of the Section on Pathology and Physiology of the American Medical Association and from 1923 to 1931 member of the Association's Council on Medical Education and Hospitals. A specialist certified by the American Board of Pathology, Inc. and a former member of the National Board of Medical Examiners, Dr. Wilson held memberships in numerous societies including the Southern Minnesota Medical Association, the Association of American Physicians, the American Association of Pathologists and Bacteriologists, the American Association for Cancer Research, the Association of Military Surgeons of the United States, the Czech Medical Society of Prague and the Royal Academy of Medicine. He was also a member of the Minnesota Horticultural Society and the National Rifle Association and an honorary member of the American Society of Clinical Pathologists and the Alumni Association of the Mayo Foundation. He was president of the

Advisory Board for Medical Specialists from 1935 to 1937, of the Association of American Medical Colleges from 1931 to 1933 and of the National Society of Sigma Xi from 1932 to 1934. He was also chairman of the medical section of the American Association for the Advancement of Science from 1931 to 1932. In 1928 he had been ordered to active duty in the army medical department to serve on a commission conducting experiments in the ballistics of wound production. At the time of his death Dr. Wilson was senior consultant to the laboratories of St. Mary's Hospital, of which for many years he had been in charge.

Dr. Wilson was a respected leader in the field of graduate education in medicine. Calm judgment made him a most useful member of the numerous boards and committees on which he served. The fellowships, the library and the editorial sections of the Mayo Clinic testify to his interest in these fields.

**William Osler Abbott**, Wynnewood, Pa., University of Pennsylvania School of Medicine, Philadelphia, 1928, assistant professor of medicine at his alma mater, where he had been associate in medicine, F. M. Kirby Fellow in surgical physiology, Smith, Kline and French Fellow in medicine, instructor in medicine and assistant instructor in pharmacology, professor of medicine at the Graduate School of Medicine, University of Pennsylvania, member of the Medical Society of the State of Pennsylvania, American Gastro-Enterological Association, American Society for Clinical Investigation, Amer-

ican Clinical and Climatological Association, Philadelphia Physiological Society and the American College of Physicians, specialist certified by the American Board of Internal Medicine and diplomate of the National Board of Medical Examiners, began active duty as a major in the medical reserve corps of the U. S. Army in May 1942, attached to the 20th General Hospital, Camp Claiborne, La., and was honorably discharged because of physical disability in September 1942, associate attending physician at the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, served as physician in the gastrointestinal section of the medical clinic and assistant ward physician at the Hospital of the University of Pennsylvania, member of the editorial board of *Digest of Treatment*, aged 41, died in Wauquoit, Mass., September 10, of leukemia.

**Edward William Wallace**, Cranford, N. J., the School of Medicine of the Division of the Biological Sciences, University of Chicago, 1935, joined the University of Cincinnati College of Medicine as an assistant professor of pharmacology and later became an associate professor, on July 1, 1942 was given a leave of absence to serve as director of the toxicologic laboratories of Merck and Company, Inc., Rahway, formerly assistant in pharmacology and instructor at his alma mater, at one

time on the staffs of the National Institute of Health, Washington, D. C., and the Food and Drug Administration, received a grant from the National Advisory Cancer Council to carry on research on the endocrine relationships of cancer, received the doctor of philosophy degree from the University of Chicago in 1932, aged 34, died in Keyport, July 11, of a compound fracture of the skull and other injuries received when he fell from the mast of a boat.

**William Bean Anderson** † Brownwood, Texas, Vanderbilt University School of Medicine, Nashville, Tenn., 1888, Medical Department of Tulane University of Louisiana, New Orleans, 1894, one of the organizers and twice president of the Fourth District Medical Society of the State Medical Association of Texas, member of the American Academy of Ophthalmology and Otolaryngology, a charter member of the Texas Society of Ophthalmology and Otolaryngology, fellow of the American College of Surgeons, a founder, director and chief of the eye, ear, nose and throat department of the Medical Arts Hospital, served for many years as trustee of the Howard Payne College, aged 80, died, July 6, of coronary thrombosis.

**Donald Cole Barber** † Grafton, Ohio, George Washington University School of Medicine, Washington, D. C., 1930, served overseas during World

War I and was given several citations, including the Croix de Guerre from the French government and the Silver Star, first lieutenant in the medical reserve corps of the U. S. Army not on active duty, aged 42, died, August 13, of coronary thrombosis.

**George L. Barr**, Owensboro, Ky., Hospital College of Medicine, Louisville, 1898, member of the Kentucky State Medical Association, on the consulting staff and for sixteen years a member of the board of trustees of the Owensboro City Hospital, now known as the Owensboro-Daviess County Hospital, aged 72, died, August 4, of prostatic hypertrophy.

**Samuel Cushing Beach**, Chicago, Rush Medical College, Chicago, 1892, consultant and industrial medical inspector, division of industrial hygiene, Illinois Department of Public Health, division surgeon of the Chicago, Burlington and Quincy Railroad at McCook, Neb., and the Illinois Central Railroad, aged 73, died, July 31, of complications following a fractured leg received in a fall.

**Francis Everett Bedinger** † Walton, Ky., Creighton University School of Medicine, Omaha, 1932, commissioned a first lieutenant in the medical reserve corps of the U. S. Army, October 1939, physically incapacitated for active duty, relieved from active duty in December 1941, aged 34, died August 2, of Hodgkin's disease.



LOUIS B. WILSON, M.D., 1866-1943

**Edward Berninzoni**, Denver, Regia Università degli Studi di Firenze Facoltà di Medicina e Chirurgia, Italy 1889, aged 78, died in the Mercy Hospital, August 4, following an operation on the prostate gland

**S Price Blackwood**, Corning, Ark (licensed in Arkansas in 1907), aged 57, died August 1, of pneumonia

**George G Douglas**, Elmwood, Neb., Missouri Medical College, St Louis, 1891, aged 80, died, July 16, of heart disease

**Yervant S Elmadjian**, Boston American University of Beirut School of Medicine, Syria 1914, aged 60, died, June 12, of coronary occlusion

**William Kellogg Foote**, Omaha, Chicago Homeopathic Medical College, 1893, aged 72, died, July 22

**Daniel Reid Gunn**, Memphis, Tenn., Memphis Hospital Medical College, 1910, aged 56, died, July 17, of cirrhosis of the liver

**Thorne Sanford Harris**, Shenandoah, Pa., University of Pennsylvania School of Medicine, Philadelphia, 1927, assistant surgeon on the staff at the Locust Mountain State Hospital, aged 44, died in St Luke's and Children's Medical Center, Philadelphia, July 26

**Notley William Hawkins** & Farmington, Mo. Washington University School of Medicine St Louis, 1926, specialist certified by the American Board of Otolaryngology, served on the staff of the Bonne Terre Hospital, aged 42, died in the Barnes Hospital, St Louis July 27 of brain tumor

**Samuel Edward Hudson** & Austin Texas Medical Department of Tulane University of Louisiana New Orleans 1886, on the staff of the Seton Infirmary, now known as the Seton Hospital consulting physician to the Southern Pacific Railroad, aged 82, died in the Brackenridge Hospital, July 1, of coronary occlusion

**George M Jones**, Springtown Texas (licensed in Texas under the Act of 1907), aged 76, died July 15, of heart disease and diabetes mellitus

**Vincent J Keating** & Los Angeles, Chicago College of Medicine and Surgery 1909, past president of the Wyoming State Medical Society and the Sheridan County Medical Society, member of the medical board of the retirement fund of the city board of education on the staffs of the Queen of Angels Hospital and St Vincent's Hospital, where he died July 3, of atelectasis of the lungs following an operation for acute appendicitis, aged 58

**Harry Lloyd McCarthy** & Los Angeles University of Pennsylvania School of Medicine Philadelphia, 1910, served on the staff of St Vincent's Hospital, aged 64, died, July 26, of heart disease

**Mark Allen Newland**, Center Point Iowa State University of Iowa College of Homeopathic Medicine Iowa City, 1892, member of the Iowa State Medical Society, aged 73, died, July 27, of arteriosclerosis

**Huger Richardson**, Loris, S C., Medical College of the State of South Carolina Charleston 1910, trustee of schools, aged 59, died, July 27, of heart disease

**Daniel Scott Schenck**, La Jara, Colo. Jefferson Medical College of Philadelphia 1903, aged 61, died suddenly, July 1, of heart disease

**Charles Robert Starkweather**, West Cummington, Mass. College of Physicians and Surgeons New York 1882, justice of the peace and member of the board of health, aged 95, died, June 18, of senility

**Henrik Tillisch**, Brookings S D. Northwestern University Medical School, Chicago 1901, member of the South Dakota State Medical Association, senior member of the Brookings Clinic, president of the hospital board of directors of the Brookings Municipal Hospital since 1930, head of the student health service at the South Dakota State College of Agriculture and Mechanic Arts, aged 65, died, June 20, of coronary thrombosis

**Emil S Tobie**, Buffalo Université de Paris Faculté de médecine France 1888, member of the Medical Society of the State of New York, for many years on the staff of the Buffalo Hospital of the Sisters of Charity and the Deaconess Hospital, aged 80, died July 1, of pneumonia and myocardial failure

**Harvey Ainsworth Tyler** & Chicago Rush Medical College Chicago 1889, at one time instructor of gynecology and obstetrics at his alma mater, formerly professor of gynecology at the Chicago Polyclinic, served as consultant to the woman's department of the House of Correction and as medical director of the House of the Good Shepherd, aged 74, died, July 3, of blood's stasis

**Robert A Van Allan**, Rochester, N Y., Pulte Medical College, Cincinnati, 1885, died, July 8, of chronic nephritis, arteriosclerosis and chronic myocarditis

**Dell Williamson Van Gilder**, Cuyahoga Falls, Ohio, Rush Medical College, Chicago, 1900, veteran of the Spanish-American War and World War I, served on the staffs of St Luke's and St Anthony's hospitals, Denver, aged 65, died, July 14, of heart disease

**Allison Moore Van Horn**, Sea Breeze, N Y., Eclectic Medical Institute, Cincinnati, 1905, member of the Medical Society of the State of New York, aged 60, died, June 6, of terminal bronchopneumonia, hypertensive cardiovascular disease and diverticulitis of the sigmoid with pelvic abscess

**James Heber Varnum**, Benton Ridge, Ohio, Western Reserve University Medical Department, Cleveland, 1893, member of the Ohio State Medical Association, member of the board of education, aged 74, died, June 30, of arteriosclerosis

**John Dillon Wakefield**, Cincinnati, Miami Medical College, Cincinnati, 1893, served in the medical corps of the U S Army during World War I, for many years medical examiner for the Veterans Administration, aged 74, died, July 17, of cerebral hemorrhage

**Frank Alfred Walsh**, Erie, Pa., Jefferson Medical College of Philadelphia, 1895, member of the Medical Society of the State of Pennsylvania, fellow of the American College of Surgeons, past president of the Erie County Medical Society, served on the staff of the Hamot Hospital and for many years on the staff of St Vincent's Hospital, aged 76, died, July 29, of coronary thrombosis

**Henry Smith Williams**, Los Angeles, Chicago Medical College, 1884, assistant physician and pathologist to the State Hospital, Independence Iowa, 1887, assistant physician at the Manhattan State Hospital, New York, in 1888 and the Bloomingdale Asylum, New York, in 1889, at one time medical superintendent of the Randall's Island (N Y) Hospitals, author of numerous books, editor of "Historians' History of the World" in twenty-five volumes and "Works of Luther Burbank" in twelve volumes, aged 80, died, July 4, of arteriosclerosis

**Will Reese Williams**, Richlands Va. Medical College of Virginia, Richmond, 1897, member of the Medical Society of Virginia, a member of the state board of Health, a director and first vice president of the Merchants and Farmers Bank, established in 1906 and the first and only president of its successor, the First National Bank, first president of the Richlands Rotary Club and for many years served on the town council, founder of the Grundy Hospital and the Mattie Williams Hospital, where he died July 17, of uremia, aged 70

**Pearl C Wray** & Breckenridge, Texas, Gate City Medical College, Texarkana Ark. 1906, formerly assistant health officer of Fort Worth and health officer of Kent County, for many years health officer of Breckenridge and physician for the Breckenridge High School football team, president of the Kent County Draft Board during World War I, recently medical examiner for the Selective Service Board, aged 65, died at a Fort Worth hospital, June 8, of heart disease

#### DIED WHILE IN MILITARY SERVICE

**Edgar Fremont Haines** & Lieutenant Colonel, M C, U S Army, Chelsea Mass. Boston University School of Medicine 1906 U S Army Medical School in 1933, commissioned a first lieutenant in the medical reserve corps of the U S Army in August 1909 and appointed a first lieutenant in the medical corps of the regular Army in August 1917, rose through the various grades to that of lieutenant colonel in April 1937, at one time professor of military medicine at the Boston University School of Medicine, member of the American College of Physicians, aged 60, died in the Tilton Hospital Fort Dix N J, July 22, of adenocarcinoma of the sigmoid

**Edward Henry Herbert Old** & Medical Director, Captain U S Navy, retired Charleston S C University of Virginia Department of Medicine Charlottesville 1899, entered the U S Navy in September 1905 and retired in October 1940, retained on active duty as district medical officer of the Sixth Naval District, commanding officer of the U S S Solace, a hospital ship in World War I, and was awarded the Navy Cross for outstanding performance of duty, fellow of the American College of Surgeons, aged 66, died in the United States Naval Hospital July 1, of adenocarcinoma of the splenic flexure of the colon

## Correspondence

### HAIR LACQUER DERMATITIS

*To the Editor*—I was about to mail you a report on 4 patients with hair lacquer dermatitis of the neck, ears and face when I saw the notice in this morning's Philadelphia *Inquirer* that your office is aware of this condition. All these patients were seen within one month. Patch tests were positive in two of my patients.

The hair lacquer in all 4 of my patients was "Huber's," and two of the biggest department stores here, Wanamaker's and Strawbridge & Clothiers with whom I have been in contact, have removed this particular hair lacquer from sales.

I am awaiting a chemical analysis of the substance to send you a fuller report.

SIGMUND S. GREENBAUM, M.D., Philadelphia

### CUTANEOUS ERUPTIONS FOLLOWING TOPICAL AND ORAL SULFATHIAZOLE

*To the Editor*—Dermatitis following local application of sulfathiazole has been the subject of four recent reports appearing in *THE JOURNAL*:

Livingood, C. S., and Pillsbury, D. M. Sulfathiazole in Eczematous Psoriasis: Sensitization Reaction to Successive Local and Oral Therapy. Report of Twelve Cases, Feb. 6, 1943, p. 406.

Cohen, M. H., Thomas, H. B., and Kalisch, A. C. Hypersensitivity Produced by the Topical Application of Sulfathiazole, Feb. 6, 1943, p. 405.

Weiner, A. L. Cutaneous Hypersensitivity to Topical Application of Sulfathiazole, Feb. 6, 1943, p. 411.

Shaffer, Bertram, Lentz, I. W., and McGuire, J. A. Sulfathiazole Eruptions: Sensitivity Induced by Local Therapy and Elicited by Oral Medication. Sept. 4, 1943, p. 17.

The authors have variously interpreted these phenomena either as contact dermatitis (dermatitis venenata) resulting from exogenous cutaneous hypersensitivity or as dermatitis medicamentosa resulting from absorption and endogenous hypersensitivity. It is also known that an individual may be sensitive to sulfathiazole in both of these respects and therefore that the two phenomena may be observed in the same individual. The matter is further complicated since sulfathiazole eruptions rather frequently follow oral administration of the drug and since local application may sensitize an individual to subsequent oral or parenteral administration. In such instances there need not necessarily have been a dermatitis at the time of the original topical application, but if this has been present the dermatitis following ingestion of the drug may appear initially and more severely in the formerly affected sites. Finally, attention has been called to the tendency of sulfathiazole eruptions so induced to mimic the preexisting dermatosis for which treatment was initially intended.

It follows that contact dermatitis from topical application of sulfathiazole can be established by means of patch testing. In dermatitis medicamentosa following oral administration or following absorption from topical application one would expect to find negative patch tests but positive passive transfer reactions (Prausnitz-Kustner). This was recently demonstrated in an article by Shaffer, Lentz and McGuire.

This dual ability of sulfathiazole to cause both dermatitis venenata and dermatitis medicamentosa either from ingestion or from cutaneous absorption is by no means unique. It is seen also with quinine and mercury and other drugs employed therapeutically by ingestion or injection and by local cutaneous application.

It is my opinion that physicians other than dermatologists may not have a clear understanding of the several mechanisms involved in the production of sulfathiazole eruptions by local

and oral administration. The various clinical reports have failed to emphasize these differences. The popularity of sulfathiazole therapy indicates that a clearer conception of the aforementioned processes might be of value in the management of and prevention of recurrence of cutaneous hypersensitivity to sulfathiazole.

ALFRED L. WEINER, M.D., Cincinnati  
Assistant, Department of Dermatology, University  
of Cincinnati College of Medicine

### SOUTH CAROLINA MEDICAL STUDENTS ON THE WAGNER-MURRAY- DINGELL BILL

*To the Editor*—The students of the Medical College of the State of South Carolina in discussing the Wagner-Murray-Dingell bill have decided that it is a treacherous piece of legislation and that it would not only shackle the medical profession but lead to totalitarianism.

A meeting of the student body was called on August 13, at which time the following resolution was unanimously adopted: "We, the medical students of the Medical College of the State of South Carolina, assembled for the purpose of discussing the Wagner-Murray-Dingell bill (U. S. Senate bill No. 1161) now introduced in congress, are alarmed at the obvious intention to establish state operation of medical services in such a totalitarian fashion under the sole direction of one person."

A committee to outline and initiate action against the bill was formed and immediately began to function. Brief outlines of the bill were written together with letters to be sent to the families and friends of the students informing them of the contents of the bill and urging them to write their congressmen about it. Articles were written to the newspapers of this area for publication, and conspicuous cooperation was received from the editors. To this method of publicity were added several radio speeches by prominent men. Every medical college in the country was informed of our intent and actions. Pleasingly enough, those replies we have received were in full accord with our views.

The efforts of the students came to the attention of the Army and Navy authorities, who immediately ordered the members of the armed forces taking part to cease, as no member of the armed forces is allowed to participate in any activity which has to do with government policy. This order resulted in the cessation of a great deal of the activity on the part of the students, since the vast majority are members of the armed forces, however, those of us who still retain civilian status are going ahead with the original program.

The efforts we made toward publicizing this bill have met with a great deal of success. The editors of the newspapers here and over the rest of the state have become interested and carried on with spontaneous editorials. The radio presentations were accepted by the public with enthusiasm, and the interest of the public manifested itself through letters to their congressmen and to the editors of the various papers, all letters have been in accord with our views. Even the clergy in this area have contributed in this manner.

These procedures have brought excellent results. The congressmen of this area have publicized their opposition to the bill and stated that they will not only vote against it but will do all in their power to prevent it from reaching the floor of Congress.

We believe that our actions have been to some degree responsible for these results, we urge that similar action be taken by the profession and other civilian medical students.

BENJAMIN J. STEINFELD,  
105 Rutledge Avenue  
Charleston 16 S. C.

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Oct 9 page 376

#### BOARDS OF MEDICAL EXAMINERS

- ALABAMA Montgomery June 20 22 Sec Dr B F Austin 519 Dexter Ave Montgomery
- ARKANSAS \* Medical Nov 3 4 Sec Dr D L Owens Harrison Electric Little Rock Nov 4 Sec, C H Young 1415 Main St Little Rock
- CALIFORNIA \* Written Sacramento Oct 18 21 Sec Dr Frederick N Scatter 1020 N Street Sacramento
- CONNECTICUT \* Written Hartford Nov 9 10 Endorsement New Haven, Nov 23 Sec to the Board Dr Creighton Barker 258 Church St New Haven Homeopathic Derby, Nov 9 Sec, Dr Joseph H Evans 1488 Chapel St, New Haven
- DELAWARE \* Written Dover Jan 11 13 Endorsement Dover Jan 18 Sec. Medical Council of Delaware Dr Joseph S McDaniel 229 S State St Dover
- DISTRICT OF COLUMBIA \* Washington, Nov 8 9 Sec Commission on Licensure Dr G C Ruhland, 6150 E Municipal Bldg Washington
- FLORIDA \* Jacksonville Nov 22 23 Sec Dr William M Rowlett Box 786 Tampa
- GEORGIA October or November Sec State Examining Boards Mr R C Coleman 111 State Capitol Atlanta
- IDaho Boise Jan 11 Dir Bureau of Occupational Licenses Mrs Lela D Painter 355 State Capitol Bldg Boise
- IOWA \* Iowa City Dec 27 29 Dir Division of Licensure and Registration Mr H W Grefe Capitol Bldg Des Moines
- KANSAS Kansas City Feb 23 Sec Dr J F Hassig 905 N Seventh St Kansas City
- KENTUCKY Louisville Dec 6 8 Sec Dr Philip E Blackerby 620 S Third St Louisville
- MAINE Portland Nov 9 10 Sec, Dr Adam P Ieighton 192 State St Portland
- MARYLAND Medical Baltimore, Dec 14 17 Sec Dr J T O Mara 1215 Cathedral St Baltimore Homeopathic Baltimore Dec 14 15 Sec Dr J A Evans 612 W 40th St Baltimore
- MASSACHUSETTS Boston Nov 16 19 Sec Board of Registration in Medicine Dr H Q Gallupe 413 F State House Boston
- MINNESOTA \* Minneapolis Oct 19 21 Sec Dr J F DuBois 230 Lowry Medical Arts Bldg St Paul
- MISSOURI St Louis Nov 15 17 Sec State Board of Health Dr James Stewart State Capitol Bldg Jefferson City
- NEVADA Endorsement Carson City Nov 1 Sec Dr G H Ross 215 Carson St Carson City
- NEW JERSEY Trenton Oct 19 20 Sec Dr E S Hallinger 28 W State St Trenton
- NORTH DAKOTA Grand Forks Jan 4 7 Sec Dr G M Williamson 4 1/2 S Third St Grand Forks
- OHIO \* Written Columbus Dec. 4 Sec Dr H M Platter 21 W Broad St, Columbus
- OKLAHOMA \* Oklahoma City Dec 27 29 Sec Dr J D Osborn Jr Frederick
- OREGON \* Endorsement Portland Oct 23 Exec Sec Miss Lorraine M Conlee 608 Failing Bldg Portland
- PENNSYLVANIA Philadelphia and Pittsburgh January Act Sec Bureau of Professional Licensing Department of Public Instruction Mrs Marguerite G Steiner 358 Education Bldg Harrisburg
- SOUTH CAROLINA Charleston Dec 20 22 Sec Dr N B Heyward 1329 Blanding St Columbia
- SOUTH DAKOTA \* Pierre Jan 18 19 Dir Medical Licensure State Board of Health Dr Gilbert Cottam Pierre
- VERMONT Burlington Dec 16 18 Sec Dr F J Lawless Richford
- VIRGINIA Richmond Dec 14 17 Sec Dr J W Preston 30 Franklin Road Roanoke
- WEST VIRGINIA Charleston Oct 25 27 Commissioner Public Health Council Dr John E Offner State Capitol Charleston
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## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Taxes Hospital Service Plan Corporation Not a Corporation Organized and Operated Exclusively for Charitable Purposes**—The Associated Hospital Service Corporation of Massachusetts was incorporated under a Massachusetts statute authorizing the organization and operation of "corporations for the purpose of operating a nonprofit hospital service plan whereby hospital care may be provided for subscribers to the plan under contracts which entitle subscribers to certain hospital care." The corporation entered into contracts with subscribers which entitled them on the payment to the corporation of a specified annual subscription fee stated hospital care when necessary, to be rendered by so-called hospital participating members of the corporation. The corporation in turn agreed to pay the hospitals rendering that care on a specified scale. If there was a deficiency in any one year subscribers were not to be assessed to meet the deficiency but the participating hospital members were to suffer a pro rata deduction in payments to be made them during the ensuing year. The corporation brought suit in the district court of the United States for the district of Massachusetts against the local collector of internal revenue to recover taxes paid by it under protest alleged by the collector to be due under the taxing provisions of the federal social security act. The taxing provisions of the federal social security act specifically exempt from the payment of those taxes "a corporation organized and operated exclusively for charitable purposes no part of the net earnings of which inures to the benefit of any private shareholder or individual." The corporation claimed that it was such a corporation and consequently was exempt from the payment of those taxes. From a judgment in favor of the corporation the collector appealed to the circuit court of appeals, first circuit.

If, said the circuit court of appeals, the plaintiff corporation is a corporation organized and operated exclusively for charitable purposes it is exempt from the tax provisions of the social security act. The plaintiff corporation maintains that it is such a corporation since its object is the promotion of health its deficiencies are not assessed on subscribers nor its earnings divided among them, any surplus created is to be used to reduce rates or increase services in the future and the principal officers of the corporation serve without compensation. We cannot accept the plaintiff's argument. In our opinion the corporation is being conducted more on a business than on a charitable basis. The payment of a fee is a prerequisite to the receipt of benefits and the relationship existing between the corporation and the subscriber is contractual. The subscribers consider themselves neither charitable donors nor the recipients of charity. The corporate capital is not composed of charitable contributions but of fees exacted from subscribers. Without the subscription payments the corporation could not function. Membership is not limited to the needy but as a matter of fact is composed largely of the middle class and well to-do. It is difficult to distinguish the plaintiff corporation from a mutual insurance company or an employee benefit plan. Here we

have what is essentially a business arrangement under which a group of people have banded themselves together to purchase at rates as low as possible hospital care in the event of sickness or accident. These rates are subject to approval by the Massachusetts Commissioner of Insurance. Such a corporation is not charitable. While the charging of fees does not necessarily render an institution noncharitable, still the plaintiff corporation exacts a fee as prerequisite to the receipt of benefits in every case. This is not true of the ordinary charitable organization. Many charitable educational institutions charge fees, but they do not require payment in every case and ordinarily the fee bears no precise relation to the cost of the benefit conferred.

The plaintiff contended that it was different from the ordinary mutual insurance company in that it does not make assessments on its subscribers for the payment of deficiencies nor does it divide any surplus among them by way of dividends. The fact answered the court, that it meets deficiencies out of future subscription fees and uses its surplus to reduce rates or increase services for future members is not sufficient to make the plaintiff a charity. The mutual insurance company returns at least some of its surplus for the benefit of future members. This partial retention of surplus does not render a mutual insurance company a charitable organization. The mere fact that the plaintiff retains its entire surplus for the benefit of future members is not sufficient to make the organization a charitable one. The plaintiff further contended that the main distinction between it and a mutual insurance company is that any surplus which the plaintiff may have on liquidation must be devoted to some charitable purpose, whereas the surplus of a mutual insurance company on liquidation will be divided among the members of the company. This, said the court, is not enough to make the plaintiff charitable. It is extremely unlikely that there will ever be any surplus to liquidate. So long as the corporation is successful it will continue to operate. If it is not successful there will be no surplus. We do not feel that a corporation should be classified as a charity on the basis of a contingency unlikely to happen. Moreover, the subscribers responsible for the creation of the surplus do not act out of any charitable motive but pay their subscriptions solely on a business basis with full knowledge that if there is any surplus in a particular year they can become members in the following year and get the benefit of the reduced rates or increased services resulting from the surplus.

That Congress did not intend organizations similar to the plaintiff to be considered corporations organized and operated exclusively for charitable purposes, continued the court, is borne out by a careful examination of the statutes. The subsections of the social security act the construction of which are here involved are exactly the same as subsection 6 of section 101 of the internal revenue code, which exempts such corporations, among others, from income taxation. The exempting section of the income tax law, however, differs from the exempting sections of the social security act in one important respect. In addition to the exemption granted to corporations organized and operated exclusively for charitable purposes, the income tax law in other subsections of section 101 also grants exemptions to certain types of mutual savings banks, fraternal beneficial societies, cooperative building and loan associations and banks, cooperative cemetery companies, voluntary employees' beneficial associations and a number of other similar organizations. Not one of these specific exemptions is contained in the social security act. The fact that Congress specifically mentioned these organizations, even though the statute contained the exemption granted to corporations organized and operated exclusively for charitable purposes, would seem to indicate that Congress did not consider these organizations specifically mentioned to be within the scope of a charitable organization. Since the plaintiff closely resembles many of the organizations specifically exempted, Congress could not have intended it to fall within the scope of a corporation organized and operated exclusively for charitable purposes.

The Massachusetts statute authorizing the formation of corporations such as the plaintiff describes the corporation as "charitable and benevolent" and exempts it from taxation. An act was passed also in the District of Columbia by the Congress authorizing the organization of similar corporations in the District and exempting them from taxation as "charitable and benevolent." The plaintiff relied on these two statutory designations as binding with respect to classifications for the payment of federal taxes. But, said the court, it appears to be clear that both the Massachusetts legislature and Congress were desirous of exempting such organizations from local taxation even though they felt that these organizations were not charitable in the ordinary sense. If they were charitable organizations in the accepted meaning, there would have been no need by statute to describe them as charitable and specifically to exempt them from taxation. The Massachusetts statute designating the plaintiff corporation as a "charitable and benevolent" corporation is important here so far as it affects the rights, duties and powers of the plaintiff corporation. We consider the characteristics of the plaintiff as established by state law, particularly its power with respect to surplus. Beyond that, state nomenclature is not binding on us. As was said by the Supreme Court of the United States in *Morgan v Commissioner*, 1940, 309 U. S. 78, 60 S. Ct. 424:

State law creates legal interests and rights. The federal revenue acts designate what interests or rights, so created shall be taxed. Our duty is to ascertain the meaning of the words used to specify the thing taxed. If it is found in a given case that an interest or right created by local law was the object intended to be taxed, the federal law must prevail no matter what name is given to the interest or right by state law.

We have concluded that the plaintiff corporation has not the characteristics of a charitable organization in the ordinary meaning of the term. The fact that the Massachusetts law labels it a charity and that Congress labels a similar plan in the District of Columbia a charity would also seem to be unimportant.

The judgment of the district court in favor of the plaintiff corporation was reversed and the cause remanded—*Hassett, Former Acting Collector of Internal Revenue, v. Associated Hospital Service Corporation of Massachusetts*, 125 F. (2d) 611 (1942).

## Society Proceedings

### COMING MEETINGS

- Aero Medical Association of the United States, Cincinnati, Ohio, Oct 26-27 Dr David S Brachman, 5440 Cass Ave., Detroit, Secretary
- American Society of Anesthetists, New York, Dec 9 Dr McManis L. Phelps, 745 Fifth Ave., New York 22, Acting Secretary
- Association of American Medical Colleges, Cleveland, Oct 25-27 Dr Fred C Zapfee, 5 South Wabash Ave., Chicago, Secretary
- Association of Military Surgeons of the United States, Philadelphia Oct 21-23 Colonel James M Phalen, Army Medical Museum Washington, D. C., Secretary
- Inter State Postgraduate Medical Association of North America, Chicago Oct 26-29 Dr Arthur G Sullivan, 16 North Carroll St Madison Wis Managing Director
- Oklahoma City Clinical Society, Oklahoma City, Oct 18-21 Dr Clark H Hall, 117 North Broadway, Oklahoma City, Secretary
- Omaha Mid West Clinical Society, Omaha, Oct 25-29 Dr J D McCarthy, 1036 Medical Arts Bldg., Omaha Secretary
- Pacific Coast Society of Obstetrics and Gynecology, San Francisco Nov 4-5 Dr T Floyd Bell, 431 Thirtieth St., Oakland Calif., Secretary
- Radiological Society of North America, Chicago Nov 29-Dec 3 Dr Donald S Childs, 607 Medical Arts Bldg., Syracuse, N. Y. Secretary
- Seaboard Medical Association, Richmond Va Nov 30-Dec 2 Dr Clarence P Jones, 3117 West Avenue Newport News Va., Secretary
- Southern Surgical Association, New Orleans Dec 7-9 Dr Al Ochsner, 1430 Tulane Ave., New Orleans, Secretary
- Southern Medical Association, Cincinnati, November 16-18 Mr C. P Loran, Empire Building, Birmingham, Alabama Secretary
- Virginia Medical Society of, Roanoke, Oct 25-27 Miss A. S. Edwards, 1200 East Clay St Richmond Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### Alabama State Medical Assn Journal, Montgomery

13 1-64 (July) 1943

- Perforating Peptic Ulcer J E Cameron —p 1  
Infants and Overfeeding M G Neely —p 4  
Venereal Disease Problem in Alabama W H Y Smith —p 7  
The Wounded Must Not Die Marguerite Wales —p 9

#### American J Digestive Diseases, Fort Wayne, Ind

10 283 318 (Aug) 1943

- \*Experimental Production of Gastric Ulcers in Dogs by Inducing Vascular Spasm with Pitressin A J Nedzel —p 283  
Low Incidence of Cancer of Stomach in Iowa T W Mulrow —p 297  
Study of Significance and Accuracy of Cholecystographic Findings A M Serby and G M Lichtenstein —p 300  
Abdominal Puncture—Its Value in Differential Diagnosis Between Coronary Closure and Perforated Abdominal Viscus I Kross —p 301  
Effect of Potassium and of Cardiac Glucosides on Vagus Reactions of Heart and Stomach of Turtle Dorothy Fetter Helen C Coombs and F H Pike —p 303  
Motor Changes Observed Fluoroscopically in Colon of Patient Afflicted with Tumor in Hypothalamic Region A Mayoral —p 305  
Gastric Secretion and Sugar Metabolism C L Glaessner —p 307

**Experimental Production of Gastric Ulcers with Pitressin**—Nedzel injected into young dogs intravenously 20 pressor units of pitressin for every 5 kilograms of body weight. His observations pointed to a conditioning of the blood vessels as the immediate cause of ulcer formation. Pitressin injected intravenously provokes a spasm of the small blood vessels as well as a spasm of the muscular tissues, which in their turn add to the compression of the blood vessels. The contraction is later followed by dilatation of the same blood vessels. A normal biologic rhythm of this type keeps the vascular supply and demand in constant equilibrium, but the same contraction whether due to changes in the blood vessels or to contraction of the extrinsic muscles, if prolonged or exaggerated, injures the parenchymal cells, because it will be associated with undue general or local anoxia. The greater the discrepancy between the demand for oxygen and the supply, the greater the changes which will follow. With the pressor phase as it occurs under natural conditions of life (e g with cold, with relative alkalosis, with sympathicotonia) or after injections of pitressin, contractions of the blood vessels occur which may reach such a degree that a vessel may rupture and establish a hemorrhage directly into the stomach. Small hemorrhages and foci of necrosis can be observed in the mucosa and dilated blood vessels in the submucosal and muscular layers. An exudate containing fibrin and formed elements which have passed through the undamaged epithelial layer may collect on the surface of the mucosa. Erosions, edema of the wall of the stomach, necrosis of the mucosa associated with an increased number of mononuclear cells, healing of the erosions and ultimately typical ulcer formation may be discerned. Persons subject to ulcer formation are usually asthenic with labile nervous and vascular systems. The disease is seasonal and occurs mostly in the northern latitudes. It is likely that during the late winter and spring there is a greater tendency toward inflammatory reaction and toward digestion of tissue. Animals which have been fatigued and are more acid, and thus biologically weaker evince greater autonomic difficulty in adjustment to meteorologic changes and in them superimposed pressor effects from injections of pitressin apparently lead more readily to prolonged spasm and to delayed recovery from the effect of spasm.

#### American Journal of Public Health, New York

33 925-1042 (Aug) 1943

- National Board of Health 1879 1883 W G Smilie —p 925  
Preventive Medicine Program of United States Army J S Simmons —p 931  
Home Drying Methods and Their Effect on Palatability Cooking Quality and Nutritive Value of Foods Esther L Batchelder —p 941  
Blood and Malaria Parasite Staining with Eosin Azure Methylene Blue Methods R D Lillie —p 948  
Radio Listening Habits of Mothers Who Attend Well Baby Clinics Margaret I Murray and C E Turner —p 952  
Surveys of Nutrition of Populations 2 Protein Nutrition of Rural Population in Middle Tennessee J B Youmans, E W Patton W R Sutton, Ruth Kern and Ruth Steinkamp —p 955  
Field Experience for Health Education Personnel Minnie Krueger Oed —p 965  
Dehydration Procedures and Their Effect on Vitamin Retention R S Hollingshead —p 969  
\*Losses of Vitamin Which May Occur During Storage of Dehydrated Vegetables D K Tressler, J C Moyer and Katherine A Wheeler —p 975  
Ultraviolet Irradiation as Means of Disinfection of Air A Hollaender —p 980  
Health Education in Medium Urban Community E G Brown —p 985

**Losses of Vitamin During Storage of Dehydrated Vegetables**—Tressler and his associates studied the carotene, thiamine and ascorbic acid contents of rutabagas, beets, cabbage and potatoes during commercial dehydration and subsequent storage under controlled conditions. Prior to storage the dehydrated vegetables were packaged (1) in glass containers, (2) under carbon dioxide in glass containers or (3) in either moisture proof cellophane or plox film bags. Storage temperatures employed were —40, 33, 58 and 75 F. Little carotene was lost from any of the vegetables during dehydration, but the loss of this vitamin was relatively rapid at all storage temperatures above —40 F. Storage under carbon dioxide helped to prevent rapid loss. Some thiamine is dissolved out during hot water blanching. Subsequent storage caused no further loss. Potatoes lost nearly all of their ascorbic acid content during blanching in hot water and subsequent dehydration. The fresh beets contained a relatively small amount of ascorbic acid. About one third of this was lost during precooking and subsequent dehydration. The resultant product was not a good source of vitamin C. Rutabagas lost approximately 85 per cent of their ascorbic acid during water blanching and dehydration. The remainder was fairly well retained at the lower storage temperatures, but at either 58 or 75 F more than half is lost in four months. Storage under carbon dioxide had little effect in retarding the rate of loss during storage. Cabbage retained its vitamin C content better than any other vegetable during dehydration and subsequent storage. That tested was high in vitamin C containing more than 3 mg of ascorbic acid per gram of dehydrated cabbage.

#### Am J Roentgenol & Rad Therapy, Springfield, Ill

50 1-148 (July) 1943

- Effect of Heparinization on Experimental Postirradiation Tissue Changes in Lung Preliminary Study F Boys and I D Harris —p 1  
Roentgen Diagnosis of Malignant Nasopharyngeal Tumors W G Belanger and C G Dyke —p 9  
Enlargement of Ileocecal Valve R Golden —p 19  
Sigmoiditis S L Casper —p 24  
\*Gastric Herniation at Esophageal Hiatus J W Turner —p 33  
Liquefaction Necrosis in Bilateral Symmetrical Conglomerate Lesions of Anthracosis of Lung Report of Case B J McCloskey —p 42  
Mitalization of Cardiovascular Silhouette in Posteroanterior Roentgenogram R Shapiro —p 46  
Esophageal Erosion from Pott's Abscess Report of Case L D Van Antwerp —p 54  
Anomaly of Cervical and Upper Dorsal Vertebrae (Klippel Feil Syndrome) Report of 2 Cases J B Hudson —p 57  
Gargolism Report of 3 Probable Cases S Larson and J A Licht Jr —p 61  
Dosage System for Roentgen Therapy M R Camiel and I H Blatz —p 67  
System of Tumor Dosage Records and Technique as Employed at Brooklyn Cancer Institute W E Howes and L Bernstein —p 76  
Radiation Therapy in Cancer of Esophagus Analysis of 85 Cases Observed During Last Decade E A Poble and R R Benson —p 89  
Localization and Concentration of Staphylococcus Antitoxin Areas of Rabbit Skin Treated with Ultraviolet Radiation R H Rigdon —p 101

**Gastric Herniation at Esophageal Hiatus**—In reviewing the incidence of hiatus hernia among 1500 upper gastrointestinal examinations Turner found a frequency of 35 per cent. Hiatus hernia is least frequent in males and nulliparous females.



under 30 years of age. Most cases occur in well nourished persons past middle age. Like diverticulosis, gastric herniation at the esophageal hiatus may exist without symptoms but, like diverticulitis, it may assume great significance in certain cases. The decided difficulty which sometimes occurs in distinguishing this condition clinically from gallbladder disease and from coronary disease in particular contributes to its importance. The hematemesis and the type of pain are often clinically suggestive of cancer but not likely to be confused with peptic ulcer. Timely recognition of hiatus herniation may avoid a needless cardiac regimen or unnecessary surgical procedures. Estimation of a degree of gastric constriction which occurs at the hiatus, estimation of mobility of the stomach in relation to the hiatus and attention to the rugal pattern in the herniated portion of the stomach are of paramount importance. Mobility and the degree of constriction should be estimated because of the relation of incarceration and adhesions to symptoms. The observation of the barium filled stomach in the supine patient during the Muller effort (in which the patient inspires with closed passages after complete expiration) is suggested as an aid for study of functional caliber of the hiatus. Fluorographic and other methods of complete x-ray demonstration of mucosal pattern in the herniated portion of the stomach deserves more attention because of the association of mucosal congestion with symptoms. A broadly dilated esophageal hiatus with a freely mobile and distensible herniating portion of stomach and normal rugal pattern is least often connected with symptoms. Conversely, a portion of stomach persistently herniated at the hiatus with no mobility, limited distensibility and definite prominence of rugal pattern is most likely productive of symptoms. Large abdominal tumors or large accumulations of ascitic fluid or both may cause herniation of the stomach by increase in intra-abdominal pressure.

### Am J Syphilis, Gonorrhea and Ven Dis, St Louis 27 393-524 (July) 1943

- Gonorrhea from Standpoint of Navy C S Stephenson, G W Mast and F W Reynolds—p 393  
Resume of the Year's Research in Gonorrhea A Cohn—p 403  
Renaissance of Gonorrhea Control Program Address of President, 1942 R A Vonderlehr—p 411  
Highlights in Diagnosis and Treatment of Gonorrhea in Women A Jacoby and H Kruff—p 415  
Management of Gonorrhea in Female R M Lewis—p 418  
\*Primary Gonorrheal Cutaneous Infection E C Lowry and A G Franks—p 428  
Control of Venereal Diseases Among Industrial Workers O L Anderson—p 432  
Economy of Contact Investigation in Venereal Disease Control With Special Reference to Efficiency of Contact Tracing Visit N W Guthrie—p 439  
Effect of Prolonged Tryparsamide Therapy on Liver Function I Kopp and H C Solomon—p 445  
Problem of Treatment of Resistant Syphilis Value of Mapharsen (Arsenoxide) in Healing of Lesions H Beerman, N R Ingraham Jr and H Pariser—p 460  
Oral Administration of Mapharsen in Treatment of Experimental Administration H Brown, J A Kolmer and Anna M Rule—p 480  
Toxicity and Therapeutic Effectiveness of Mapharsen by Intramuscular Administration H Brown, J A Kolmer and Anna M Rule—p 488  
Influence of Ammonium Chloride on Mobilization and Excretion of Bismuth H Brown, J A Kolmer and Anna M Rule—p 501

**Primary Gonorrheal Cutaneous Infection**—Lowry and Franks report the occurrence of an eruption on the shaft of the penis of a man aged 33 thirty-five days after exposure to a prostitute. The eruption was associated with pruritus and burning and was elevated, hard and papular. Later the hard lesions became soft and some pus oozed from them. After admission to the hospital a new lesion developed posterior to the existing eruption. There were four discrete lesions 0.5 cm in diameter involving the ventral portion of the midshaft of the penis. The Kahn and Wassermann tests were negative. Repeated darkfield examinations of the material from the lesions were negative for *Treponema pallidum*. No Ducrey organisms were found. Many gram negative intracellular diplococci morphologically consistent with gonococci were found on repeated examinations. Material from a pustule on the shaft of the

penis produced gonococci in pure culture. Local applications of boric acid solution dressings were applied to the lesions. A routine course of sulfathiazole therapy was ordered. Soaks of potassium permanganate (1:8,000), also 2 per cent urea solution and sulfathiazole powder, were used over an adequate period of time without obvious improvement. Gentian violet and scarlet red dyes were applied to the lesions without benefit. After all chemotherapy had failed, the Davis-Bovie coagulating current was used for the excision and cauterization of the pustular lesions. The treated areas healed slowly. This case is noteworthy because gonorrheal infection involving the skin of the penis in the absence of gonorrheal urethritis has not been previously reported.

### American Review of Tuberculosis, New York

48 1-64 (July) 1943

- Types of Lung Diseases Encountered in an Army Camp M C Thomas—p 1  
Bronchiectasis Secondary to Pulmonary Tuberculosis A B Rillace and B Gerstl—p 8  
Congenital Tuberculosis Tuberculosis Studies in Offspring of Mother Guinea Pigs Heavily Infected Intravenously H J Corper and M L Cohn—p 25  
Action of Some Derivatives of 4,4'-Diaminodiphenylsulfone in Experimental Tuberculosis M I Smith, E W Emmart and E F Stahlman—p 32  
Effect of Aromatic Iodine Compounds on Tubercle Bacillus A A Siz, F R Johnston, A Burger and F Bernheim—p 40

### Annals of Internal Medicine, Lancaster, Pa

19 1-182 (July) 1943

- \*Experiences Associated with Transfusion Unit in 700 Bed Hospital An Annual Survey of Over 3,500 Administrations of Blood and Plasma (Dried) L A Erf and H W Jones—p 1  
\*Chronic Seasickness R S Schwab—p 28  
Occlusions of Abdominal Aorta Study of 16 Cases of Saddle Embolus and Thrombosis N E Reich—p 36  
\*Significance of Joint Pains Caused by Sterile Streptococcus Toxin P S Rhoads and M L Afremow—p 60  
Duplicate Measurements of Circulation Time Made with Saccharin Method K H Esser and K Berliner—p 64  
\*Gold Therapy in Rheumatoid Arthritis A E Price and B Leichtenritt—p 70  
Some Legal Aspects of Heart Disease and the Electrocardiogram J E F Riseman and H W Smith—p 81

### Transfusion Unit in 700 Bed Hospital—Erf and Jones

discuss the clinical experiences and the practical problems associated with the blood transfusion plasma unit of Jefferson Hospital for the year ended July 1, 1942. During this year 3,857 bottles of blood, each with approximately 500 cc, were withdrawn from 3,906 donors. "Out dated" bottles of blood, 1,177 in number, were centrifuged and the plasma removed. The plasma was frozen by the adtevac process. The blood transfusion unit issued 2,869 blood transfusions, 32 per cent of which were followed by reactions, and 695 plasma (dried) infusions, 0.14 per cent of which were followed by reactions. The reactions were classified as (1) chills without fever, (2) chills with fever, (3) urticaria and (4) incompatibilities. The pyrogenic reactions, or chills with fever, were most frequent. It is assumed that many of the pyrogenic reactions were due to circulating foreign proteins in the recipient. Since the percentage of reactions was much lower following plasma infusion, it must be assumed that the red blood cells of the transfused blood are the agents that react with the circulating foreign proteins of the recipient. Dried human plasma will ultimately be the agent universally used in shock. Concentrated plasma almost invariably causes hemodilution and a rise in blood pressure. When plasma must be given in ten holes on a rolling battleship or ambulance or in civilian emergencies, long rubber tubes and drip bottles cannot be used conveniently. But 10 or five fold concentrated plasma obtained by injecting with a 50 cc syringe of 40 cc of distilled water into a vial containing 16 Gm of plasma (the amount present in a pint of blood) can be administered intravenously or intrasternally within a few minutes. The necessary equipment for the administration of concentrated plasma can be carried in a coat pocket and weighs only 1 pound. Concentrated plasma can be given to dehydrated patients without harm. Intrathecal and intracerebral (intrasternal and the like) of administering blood or plasma have been life saving in the authors' experience.

**Chronic Seasickness**—Schwab examined 115 naval personnel with chronic seasickness severe enough to bring them to the hospital. He found that 50 per cent of these men showed abnormalities in the gastrointestinal tract. These were detected by barium fluoroscopy, which demonstrated (1) irritability of the pylorus and duodenum with a resulting pylorospasm, (2) increase in gastric secretion even with fasting, (3) some increase in the gastric rugae and (4) loss of peristalsis. These conditions persisted in some patients for three or four weeks, gradually becoming less pronounced and in 1 case nearly disappearing after three months. Different diagnoses mask the actual incidence of seasickness. The reason for this is that being seasick is considered as something of a weakness or a disgrace. Therefore medical officers and pharmacists, mates out of kindness, will often give to the seasick sailor a diagnosis such as psychoneurosis, gastric neurosis, gastric ulcer, gastritis, headache, sinus disease, appendicitis or back strain. A large percentage of persons subject to seasickness show neurotic trends. A man with pronounced nausea, vertigo, headache, vomiting and apprehension and discouragement is not as able a man as his unaffected fellow. This difference in ability is not easy to measure, but it involves alertness, skill, temper, resistance to infection, cold, heat and immersion. The condition is not to be disregarded, since it has a definite military bearing. The situation is to try to keep out of the service those individuals suffering from chronic motion sickness in the past, and these can be picked by a questionnaire. Those found in the service should be sent to shore jobs if their abilities warrant their retention in the service.

**Joint Pains Caused by Sterile Streptococcus Toxin**—Rhoads and Afremow investigated the health of a group of student nurses who had multiple joint pains as a reaction to one or more immunizing doses of scarlet fever toxin. They were considered particularly suitable subjects because they are frequently exposed to hemolytic streptococcus infections. During the years 1934 to 1940 a group numbering 181 was found to have reported this reaction. Their health records were carefully tabulated. An equal number of nurses who were similarly immunized but reported no joint pains as a reaction to the doses were chosen from the records of each year as a control group. The observations support the view that sensitiveness to a hemolytic streptococcus toxin is present in a high proportion of persons who have had rheumatic infections or who harbor chronic streptococcal infection which is not present in other persons. It is manifested by joint pains when streptococcus toxin is introduced into their tissues. Such persons appear to develop rheumatic disorders such as heart disease, polyarthritis and erythema nodosum more frequently than other persons not similarly sensitized.

**Gold Therapy in Rheumatoid Arthritis**—Price and Leichtenritt present an analysis of gold salt therapy in 101 roentgenologically studied cases of rheumatoid arthritis. For an evaluation of late results a follow-up study on 81 available subjects of this series is included. Gold sodium thiomalate (myochrysine) was used in 91 cases and gold thioglucose (solganol-B oleosum) in 10. Gold sodium thiosulfate was used in 2 cases to complete courses started with myochrysine. The sodium thiomalate and thioglucose preparations were given intramuscularly, gold sodium thiosulfate intravenously. Gold is an effective remedy for the treatment of rheumatoid arthritis, aiding in the alleviation of joint symptoms and effecting rehabilitation in a significant percentage of patients. Aurotherapy should be limited to rheumatoid arthritis. It is most effective in the early stages of the disease. It is frequently effective in relieving pain and stiffness in advanced cases and is therefore worthy of a trial in these. Careful and repeated follow up observations should be made before drawing final conclusions, since there is a high incidence of relapse and remission in the natural course of rheumatoid arthritis. Gold is a toxic drug and should be used only by those having experience with it. The toxicity is probably the result of individual drug sensitivity rather than of intoxication caused by a heavy metal. The administration of 7 to 9 Gm. of a gold salt without the development of toxic reactions would tend to support this contention. The exact mode of action of the gold preparations is not known.

## Annals of Surgery, Philadelphia

118 1-160 (July) 1943

- \*Experiences with Battle Wounds of Head R A Money and T Y Nelson—p 1
- \*Communications Between Coronary Arteries Produced by Application of Inflammatory Agents to Surface of Heart P Schildt E Stanton and C S Beck—p 34
- Stab Wound of Heart Case Report of Successful Suture J P Bruckner—p 46
- Surgical Management of Solitary Cysts or Cystlike Structures, of Pulmonary Origin M D Tyson—p 50
- Spread of Carcinoma of Rectum Invasion of Lymphatics, Veins and Nerves P H Seefeld and J A Bergen—p 76
- Choledochus Cyst Final Report of 2 Cases W B Swartley—p 91
- Routine Cystic Duct Drainage Following Cholecystectomy D Mac Donald—p 97
- Intestinal Obstruction Due to Gallstone R L Nitkin and A Lesser—p 101
- Results of Gallbladder Surgery in Diabetes Mellitus H E Eisele—p 107
- Absorbable Cotton Paper and Gauze (Oxidized Cellulose) Virginia Kneeland Frantz—p 116
- Use of Thrombin on Soluble Cellulose in Neurosurgery Clinical Application T J Putnam—p 127
- \*Convulsions During General Anesthesia Report of 12 Cases B S Ray and V F Marshall—p 130
- Acute Postoperative Necrosis of Liver Experimental Study J E Sutton—p 149

**Experiences with Battle Wounds of Head**—Money and Nelson review observations on 78 cases of all types of head wounds which were treated between July and December 1942 during the fighting in the vicinity of El Alamein. The thoroughness of the initial examination and toilet of the wound is more important than the time factor, at least up to four days as long as prophylactic sulfonamide therapy is maintained during the period of waiting. Surgeons with field surgical units must have a knowledge of neurosurgical technic and be provided with adequate facilities if this class of wound is to be correctly dealt with in forward areas. It is better to stabilize these facilities at a place where the patients can be held after operation, and so arrangements should be made to transport the patient back as rapidly as possible, preferably by air ambulance to a special center. An alternative plan is the provision of a field surgical unit with operating theater and beds entirely on wheels which can keep pace with the advancing or retreating troops or be replaced by another similar unit when its accommodation is filled. The removal of indriven bone fragments and inorganic debris is more important than the extraction of metallic foreign bodies. Even minute missiles making a small wound in the scalp and outer table of the skull, are likely to drive large comminuted pieces of the inner table deeply into the brain and cause more extensive damage than the size of the missile and the condition of the patient would indicate. Closure of the tear in the dura mater should be attempted in order to prevent the formation of hernia cerebri, cerebrospinal fluid fistula and aerocoele. The actual concentration of sulfonamide in the cerebrospinal fluid of every patient varies with the same dosage and must be checked at frequent intervals by colorimetric methods to make sure an adequate concentration is being attained and maintained in case of intracranial infection.

**Communications Between Coronary Arteries Produced by Inflammatory Agents**—Schildt and his collaborators proved experimentally that trauma applied to the surface of the heart brings about the development of communications between one coronary artery and another. The trauma was produced by abrasion of the surface of the heart. The authors attempted to find a substance which, when applied to the heart produces the same effect. Various substances were introduced into the pericardial cavity of dogs through a small opening in the parietal pericardium which was then tightly sutured. The pericardium was opened at the end of one, two and three weeks under surgical conditions. Intercoronary communications were determined by a special method. Among the substances investigated were croton oil, oil of sandal, formaldehyde, acriflavine, typhoid vaccine, sodium morrhuate, sodium ricinoleate, iodized and chlorinated oil, tragacanth, magnesium silicate, silicon, water glass, agar, cotton gauze, a mixture of boric, aluminum and starch, dried human skin and asbestos. Silicate in the form of powdered asbestos produced the most favorable reaction. It

caused the development of new communications between one coronary artery and another, it reduced the mortality following ligation of a coronary artery, and it reduced the size of the infarct which develops after the coronary artery has been ligated. The application of asbestos to the surface of the heart is a safe surgical procedure in animals provided a dose of about 0.1 to 0.2 Gm is used rather than larger doses. Inflammatory agents used on the heart may not be without harmful side effects and they should not be used indiscriminately.

**Convulsions During General Anesthesia**—Ray and Marshall report 12 cases in which convulsions occurred out of a total of about 75,000 subjected to general anesthesia during the past ten years at the New York Hospital. Convulsions occur in about 1 in 6,000 patients subjected to general anesthesia. The mortality rate is 25 per cent—too high to be the result of convulsions alone. The term 'ether convulsions' is misleading, since the convulsions may occur during other types of general anesthesia. Most of the alleged causes of the convulsions are not of a nature to be alone or directly responsible, but most of them bear some relationship to the delivery, transportation and utilization of oxygen for tissue respiration, thus suggesting anoxia as the chief factor in precipitating the convulsions. Since the cells of the brain are more sensitive to anoxia convulsions often appear before other signs, but when the convulsions do appear in advanced state of anoxia may already exist. The incidence of convulsions during anesthesia may be lowered by attention to the preparation of the patient for operation, to the proper administration of the anesthetic and to the contributing effects of the operation itself. When convulsions do occur it is advisable to discontinue the anesthetic, to terminate the operation as quickly as possible, to administer oxygen, to correct any unfavorable position on the operating table, to keep the airway open (bronchoscopic aspiration may be required in case of atelectasis), to give some form of soluble barbiturate intravenously to control the convulsions, such as sodium amital, sodium phenobarbital or pentothal sodium, to replace blood or fluid loss, and to allay hyperthermia by sponging the body or irrigating the rectum with cold water. An oxygen tent provides the dual service of cooling and supplying adequate oxygen. There may be advantage in administering hypertonic dextrose solution intravenously, particularly to combat unrecognized hypoglycemia, and intravenous calcium gluconate or intramuscular parathyroid injection to correct calcium imbalance.

### Archives of Ophthalmology, Chicago

30 167-290 (Aug) 1943

- Story of Asthenopia. Important Part Played by Philadelphia, What of the Present and the Future? W. B. Lancaster—p. 167.  
Lymphomatoid Diseases Involving Eye and Its Adnexa. J. S. McGavie.—p. 179.  
Epinephrine Mydriasis. L. Hess—p. 194.  
\*Primary Tuberculosis of Conjunctiva. Olga Sitchevska and Margaret Sedam—p. 196.  
\*Keratoconjunctivitis Sicca. S. R. Gifford, I. Puntenney and J. Bellows—p. 207.  
Primary Herpes Simplex Keratitis. Clinical and Experimental Study. E. Gallardo—p. 217.  
Therapeutic Experiences with Corneal Ulcer Due to *Bacillus Pyocyaneus*. E. H. Brown—p. 221.  
Achromatopsia. Report of 3 Cases. S. D. Lewis and J. Mandelbaum—p. 225.  
\*Thrombosis of Central Retinal Vein Treated Successfully with Heparin. Report of 2 Cases. C. M. Rosenthal and J. T. Guzek—p. 232.  
Cholesteatoma of Orbit. G. M. Constans—p. 236.  
Astigmatic Accommodation. M. W. Morgan Jr., Jack Moliney and J. M. D. Olmsted—p. 247.  
Angiomatosis Retinae. Report of Successful Treatment in 1 Case. P. M. Lewis—p. 250.  
Mineral Constituents of Sclerosed Human Lenses. P. W. Salit—p. 255.  
Paradoxical Esotropia During Cycloplegia. H. S. Sugar—p. 259.  
Night Vision. W. J. Homes—p. 267.

**Primary Tuberculosis of Conjunctiva**—Sitchevska and Sedam report the occurrence of primary tuberculosis of the conjunctiva with complete recovery in a child 18 months old. The diagnosis of primary tuberculosis was made because (1) a lesion was not present in any other organ of the body, (2) the process was unilateral and (3) there was involvement of the preauricular and other regional lymph nodes, which according to Ranke is typical of the primary complex. The source of the

infection was not certain. Tubercle bacilli were found in the smear and culture of pus from the preauricular lymph node and in excised tissue from the conjunctival lesion. The taking of a specimen from the conjunctiva for biopsy apparently acted as a therapeutic measure, as the eye improved rapidly after the biopsy. The suppurated lymph nodes responded well to aspiration and several fractional doses of x-rays. The outcome was favorable, which is in accordance with the results obtained in the majority of cases reported in recent years.

**Keratoconjunctivitis Sicca**—Gifford and his associates observed during the past four years 49 patients with evidence of deficient lacrimation. They divide these patients into three groups. Group 1 comprised 16 patients showing a lacrimal deficiency with moistening of less than 15 mm on the Schirmer test after five minutes, but no corneal or associated changes. Group 2 contained 21 patients who showed fairly severe lacrimal deficiency with corneal and conjunctival changes of such a degree as to be visible only with the slit lamp and as a rule no associated signs. Group 3 comprised 12 patients showing the typical Sjogren syndrome, with almost no lacrimal secretion on Schirmer's test, pronounced corneal and conjunctival changes, and one or more of the extraocular signs of that syndrome, usually a deficiency of salivary secretion. The diagnosis of Sjogren's syndrome presents no difficulties. A dry, ropey secretion with shreds adhering to the corneal epithelium is seen in practically no other condition. Filaments may be seen, and staining with fluorescein will usually show a few areas large enough to be seen grossly. The slit lamp will show many more staining areas. The conjunctiva appears dry, red and more or less thickened. In extreme cases it is so thick and velvety as to suggest trachoma. The associated symptoms and examination of the mouth will clinch the diagnosis. It is the mild forms which present difficulties in diagnosis. These forms may easily be diagnosed as chronic conjunctivitis. Slit lamp examination, after staining with fluorescein, will reveal corneal changes. The fact that patients were seen with definite lacrimal deficiency but no corneal changes indicates that some other factor may be necessary to produce the typical picture. A diagnosis of keratoconjunctivitis sicca in its milder forms depends on a knowledge that these mild forms exist and on the routine use of a test for lacrimal function whenever the possibility of the condition exists. The patients in group 1 seemed to obtain relief from irritation by the use of a substitute for tears. The authors have found the use of gelatin and Locke's solution, as proposed by Rucker, satisfactory, provided a preservative is added to prevent bacterial growth. Patients such as those in group 2 will often obtain enough relief when using this solution so that nothing further is necessary. Patients showing a more severe deficiency and more corneal lesions obtain only relative relief and are much more comfortable when the tear points are closed. Patients with moderate lacrimal deficiency were given subcutaneous injections of 0.5 mg of prostigmine hydrobromide. Of 13 patients so treated, 11 showed a definite increase in lacrimal secretion. Since most patients in groups 1 and 2 obtained relief from a substitute for tears and those with more severe manifestations from closing of the tear points, no attempt has been made to treat a series of patients for long periods with prostigmine. Amounts of vitamin A were added to the diet of a number of the patients. Since this supplementary treatment was usually begun along with other treatment, it was difficult to judge its effect. The patients of group 3 obtained only relative relief of symptoms by a substitute for tear closure of the tear points, however, always produced improvement.

**Heparin in Thrombosis of Retinal Vein**—Reports in the literature indicate that treatment with heparin gives excellent results in thrombosis of the central vein of the retina if instituted early. The 2 cases described by the authors are interesting because of the length of time during which the thrombosis existed before treatment (in 1 case five weeks and in the other three weeks) and because of the exceptionally good visual results obtained (vision of 6/6). These were cases of true occlusion of the central retinal vein and not of branch vein. The results obtained indicate that thrombosis of long standing

is also amenable to heparin treatment. The reason is difficult to understand. It may be that heparin prevents further increase in the thrombotic process, thus permitting greater canalization and resumption of the normal function of the vein.

## Archives of Otolaryngology, Chicago

38 1-100 (July) 1943

- Sarcoma of Tonsil. Impressions Made by 7 Cases. B. A. Whitcomb —p 1  
Preliminary Voice Training for Laryngectomy. J. W. McCall —p 10  
Mechanism of Phonation Demonstrated by Plimigraphy of Larynx. B. I. Griesman —p 17  
Treatment of Dysphagia from Hernia Through Esophageal Hiatus in Diaphragm. P. P. Vinson —p 27  
Acute and Chronic Mastoiditis. Clinical Analysis of Five Hundred and Twenty Six Consecutive Operations. C. E. Towson —p 32  
Office Noises and Their Effect on Audiometry. W. D. Currier —p 49  
Tonsils and Adenoids. J. D. Singleton —p 71

## Archives of Pathology, Chicago

36 127-236 (Aug) 1943

- Undescribed Type of Erythropoiesis Observed in Human Sternal Marrow. L. R. Limarzi and S. A. Levinson —p 127  
Carcinoma Which Simulates Sarcoma. Study of 110 Specimens from Various Sites. S. M. Brooks —p 144  
\*Conjunctival Exanthem in Spotted Typhus. A. P. Axtsin —p 158  
\*Spontaneous Rupture of Normal Spleen. O. A. Brines —p 163  
Morphology of Eastern and Western Strains of Virus of Equine Encephalomyelitis. D. G. Sharp, A. R. Taylor, Dorothy Beard and J. W. Beard —p 167  
Adenocarcinoma of Pyloric End of Stomach. Consideration of Its Histogenesis and Report of 2 Cases. D. A. Wood —p 177  
Note on So Called Undifferentiated and Embryonic Cells. P. Gruenwald —p 190  
Pigmented Papilloma of Skin. R. A. Fox —p 195  
Intimal Changes in Medial Degeneration of Aorta. A. Rottino and R. Poppiti —p 201  
Quantitative Study of Correlation Between Basophilic Degeneration of Myocardium and Atrophy of Thyroid Gland. C. E. Fisher and R. M. Mulligan —p 206  
Osteogenesis Imperfecta. Anatomic Study of Case. E. B. Ruth —p 211  
Pathology of Pancreatic Islets. G. Gomori —p 217

**Conjunctival Exanthem in Spotted Typhus**—Axtsin observed red points and spots in conjunctivas of persons dying of typhus. This sign received scant attention and is practically unknown to the majority of the physicians. It was found in 94 per cent of the cases of typhus investigated at the Moscow Clinical Institute for Infectious Diseases. In 95 per cent of these cases the cutaneous eruption was indistinct, in 12 per cent it was absent. The conjunctival spots remained the sole distinguishing sign on gross inspection. In 6 per cent of undoubted cases of typhus, gross inspection failed to reveal these spots. The conjunctivas in these cases appeared pale. Such cases belonged to a group in which death took place late in the disease and was caused by various complications, such as pneumonia or reactivated pulmonary tuberculosis. The red points and spots present various forms and dissimilarities as regards the intensity of their bright red or yellow color. They are seen on the conjunctiva of the lower lid, on the upper lid and occasionally on the sclera. In more than 600 cadavers conjunctival spots were encountered with fair constancy in only the following infectious diseases: (1) typhus, (2) septic endocarditis, particularly endocarditis lenta, and (3) meningococcal sepsis. Exceptionally, red spots were noted on the conjunctivas in pneumococcal sepsis complicated by purulent meningitis. Other infectious diseases only rarely present similar changes. The finding of these characteristic changes in the conjunctivas of cadavers justifies the suspicion of typhus in clinically obscure cases.

**Spontaneous Rupture of Normal Spleen**—Spontaneous rupture of a previously normal spleen is a rare lesion the exact incidence of which is difficult to determine. A certain amount of suspicion is always attached to the diagnosis because the spleen may not have been normal previously and because the elimination of the possibility of minor trauma is difficult. Brines suggests the following definition for the term: the spleen is found to be free from disease on careful pathologic examination and there is no history of injury other than movements or physiologic strains which are a part of the daily life of the average person. He lists 35 cases collected from the literature and a detailed history of a new case.

## Bulletin of Johns Hopkins Hospital, Baltimore

73 1-64 (July) 1943

- Howard Atwood Kelly, C. I. Burnham —p 1  
Attempt to Induce Formation of Fibroids with Estrogen in Castrated Female Rhesus Monkey. L. Vargas Jr —p 23  
Studies in Metabolism of Human Placenta. I. Oxygen Consumption in Relation to Ageing. H. W. Wang and L. M. Hellman —p 31  
Further Observations on Lowering of Blood Uric Acid by Uricase Injections. Ellis H. Oppenheimer and H. G. Kunkel —p 40

## Bulletin New York Academy of Medicine, New York

19 523-596 (Aug) 1943

- Oliver Wendell Holmes. Centenary Vindication of His Work on Puerperal Fever. B. P. Watson —p 525  
My Dr. Oliver Wendell Holmes. R. Fitz —p 540  
Obstetrics Yesterday and Tomorrow. A. F. Guttmacher —p 555  
Trend of Birth Rate Yesterday, Today and Tomorrow. L. I. Dublin —p 563  
Role of Artificial Insemination in Treatment of Human Sterility. A. F. Guttmacher —p 575

## Cancer Research, Baltimore

3 497-568 (Aug) 1943

- Comparative Histologic Study of Anterior Hypophysis and Ovaries of Two Strains of Rats One of Which Is Characterized by High Incidence of Mammary Fibroadenoma. J. M. Wolfe and A. W. Wright —p 497  
\*Cancer Family Manifesting Multiple Occurrences of Bilateral Carcinoma of Breast. D. A. Wood and H. H. Darling —p 509  
Sebaceous Glands and Experimental Skin Carcinogenesis in Mice. W. L. Simpson and W. Cramer —p 515  
Attempts to Induce Stomach Tumors. I. Effect of Cholesterol Heated to 300 C. A. H. M. Kirby —p 519  
Human Neoplasms in Tissue Culture. II. Observations on Cells Derived from Peritoneal and Pleural Effusions. D. R. Coman —p 526  
Nucleolar Vacuoles in Living Normal and Malignant Fibroblasts. W. H. Lewis —p 531  
Yolk Sac Cultivation of Tumors. A. Taylor, R. E. Hungate and D. R. Taylor —p 537  
Effect of Yolk Sac Cultivated Tumors on Hemoglobin Level in Embryonic Chick. D. R. Taylor, Marguerite McAfee and A. Taylor —p 542  
Growth of Alien Strain Tumors in Parabolic Mice. M. Harris —p 546  
Vitamin C and Tumor Growth. A. Brunschwig —p 550

**Cancer Family**—Wood and Darling present the record of a cancer family in which bilateral carcinoma of the breast had occurred in four generations. Attention was drawn to this family during a study of the third generation. These were 3 sisters, all of whom had breast cancer. One female sibling of the fourth generation developed a breast cancer at the age of 18 years. The predisposition to cancer of the breast seems to be transmitted in the maternal line of descent. Breast cancer occurred only in those women who had been nursed by their mothers. Mammary glandular tissue in all cases examined microscopically was hyperplastic and compatible with the changes induced by hyperestrinization. In view of the hyperplastic breast tissue and the rather singular nursing history, the operation of a factor somewhat similar to that demonstrated by Bittner in mice is suspected. A cancer family with 5 sisters afflicted with mammary carcinoma, in 3 of whom the disease was bilateral, was recently reported by Handley. In 2 of these patients there were changes described as "chronic mastitis," which in one was proliferative in type. When it is discovered that a patient is a member of a family such as the one just presented or that cited by Handley, the question of early recognition of the disease as well as possible prophylaxis becomes pertinent. The authors pose the following questions: Should a program of "wait and see" with periodic examinations be recommended? Should surgical excision of the breast be done? Should one rely on administration of antiestrogenic hormones or castration? Will it be possible to recognize in the future a syndrome indicative of hyperestrinization or other syndromes that might serve as danger signals. Should these women have babies? If so should they nurse them and if not, should they run the danger of breast carcinoma from stagnation?

## Delaware State Medical Journal, Wilmington

15 101-120 (June) 1943

- Primary Glaucoma. Its Etiology, Symptoms, Diagnosis. W. O. LaFollette —p 101  
Meningococcal Meningitis. W. H. Gordon —p 107

15 121-138 (July) 1943

- New Delaware Plan for Medical Care. H. V. Moore —p 121

**Florida Medical Association Journal, Jacksonville**

30 13-44 (July) 1943

- Management of Urethral Stricture P R Kundert and L M Orr —p 15  
 Tonsillectomy versus Tonsillotomy Report of 216 cases H H Whitney —p 18  
 Removal of Patella Report of Case F H Bowen —p 20  
 Retinal Hemorrhage in Case of Rattlesnake Bite J N McNamee —p 22  
 Administration of Small County Health Unit G A Dime —p 25

30 45-88 (Aug) 1943

- Renal Tuberculosis H Hausman —p 57  
 New Type of Bartonella Infection in Man? Preliminary Report T O Otto and P Rezik —p 62  
 Surgical Conditions Associated with Acute Epidemic Hepatitis M N Camp and H B Cupp —p 67  
 Medical Literature I G Metzger —p 69

**Georgia Medical Association Journal, Atlanta**

32 221-256 (July) 1943

- Problems Concerned in Decreasing Pain in Anorectal Surgery M C Pruitt —p 221  
 Frequent Association of Thyroid Lesions with Malignant Gravid D H Poir and H A Schuman —p 224  
 Toxic Gout T C Davison —p 226  
 Follow Up Studies of 661 Major Gynecologic Operations A Miller and R Torpin —p 230  
 Vaginal Approach to Pelvic Disease S Davis —p 237  
 Sudeck's Acute Bone Atrophy Report of Case I B Brown —p 242

**Hawaii Medical Journal, Honolulu**

2 191-228 (March-April) 1943

- Insects and Other Arthropods of Medical Interest in Hawaii C E Pemberton —p 191  
 Primary Atypical Pneumonia H J Irichtman —p 195  
 Primary Atypical Pneumonia in Hawaii A G Bower —p 198  
 Special Considerations in Repairs of Facial Injuries M Gurdin —p 199

**Journal of Allergy, St Louis**

14 355-436 (July) 1943

- Critical Evaluation of Skin Tests in Allergy Diagnosis L Tuft —p 355  
 Preliminary Report on Fractionation of Ragweed Pollen and Immunologic Studies with These Fractions M B Cohen and H J Friedmann, with technical assistance of Betty L Rubin —p 368  
 Treatment of Hay Fever with Gelatin Pollen Extracts W C Sprin A M Fuchs and Margaret B Strauss —p 376  
 Inhalation of Oxygen and 1:100 Epinephrine Hydrochloride Plus Five per Cent Glycerin for Relief of Asthmatic Attacks S D Lockey —p 382  
 \*Distribution of Allergic States in Selectees R W Hyde and L V Kingsley —p 386  
 Management of Pretreated (Ragweed) Pollen Patients During Active Season A Colmes —p 393  
 Pulmonary Pathology with Special Emphasis on Bronchial Asthma R W Lamson, E M Butt and M Stiller —p 396  
 U S P Gelatin Vehicle in Liquid Form for Retardation of Absorption with Special Reference to Epinephrine H A Abramson —p 414  
 Treatment of Bronchial Asthma by Inhalation Therapy with Vital Capacity Studies F H Westcott and R E Gillson —p 420

**Allergic States in Selectees**—A study of the relationship of allergic states to the socioeconomic background has been made at the Boston Recruiting and Induction Station. In 60,000 consecutive examinations of selectees 495 were disqualified for general military service because of severe allergic states. The total rejection rate was high in the semirural areas, was lowest in the one family residential districts and rose again steadily to its peak in the registrants from crowded tenements. The rejection rate for neurocirculatory asthenia, used as a control, showed no significant variation from one community to another, regardless of socioeconomic aspects. The prevalence of disqualifying allergic states was constant in many socioeconomic backgrounds, but there was a definitely increased prevalence of severe allergic states in semirural communities and a greatly decreased rate in crowded tenement districts. The low incidence of allergic states in the poor, overcrowded tenement areas tends to confirm the opinion of Beard, Bostock and Phoebus that the poor are less likely to have allergic conditions, but as this low rate appears only in the very poor of the slum tenement areas and not in poor semirural areas it suggests that the incidence of allergic states is not related to poverty per se. It does, however, seem logical to explain the variations in prevalence largely on the basis of exposure to air borne allergens, for a person living in a semirural region is in more direct contact

with more plant and animal emanations than the tenement dweller, surrounded by high buildings and pavements. Further more, the consumption of highly antigenic foods (milk, eggs, fish, meats, chocolate) is higher in rural and better class areas than in poor tenement areas. The hereditary nature of allergic states seems well established and, as people in rural communities are more closely inbred than those in dense urban communities, a greater prevalence of allergic states might be expected in rural areas.

**Journal of Clin Endocrinology, Springfield, Ill**

3 389-444 (July) 1943

- Testosterone Therapy of Male Eunuchoids IV Results from Methy Testosterone Linguets H Lissner and L E Curtis —p 389  
 Effect of Injections of Testosterone Propionate on Male Subject with Nephrotic Syndrome S H Bassett, E H Keutmann and C D Kochakian —p 400  
 Endocrine Treatment of Enuresis F W Schlutz and C E Anderson —p 405  
 Hyperparathyroidism Report and an Analysis of 13 Cases Occurring in Middle Western States R Lage and J A Greene —p 408  
 Hexestrol Clinical Study of New Synthetic Estrogen A J Karnaky —p 413  
 Lstrogon Pellet Therapy in Menopause R W Te Linde and H G Bennett Jr —p 417  
 Case of Myxedema with Macrocytic Anemia Successfully Treated with Thyroid and Testosterone S J Glass —p 421

**Journal of Immunology, Baltimore**

47 1-88 (July) 1943

- Observations on Spontaneous and Induced Refractoriness to Peptone Shock in Dogs C A Dragstedt —p 1  
 Chemical and Immunologic Studies of Pneumococcus VI Soluble Specific Substances of New Types and Subtypes Rachel Brown and L K Robinson —p 7  
 Large Scale Production of Tetanal Toxin on Peptone Free Medium J H Mueller and Pauline A Miller —p 15  
 Studies on Tetanal Toxin I Qualitative Differences Among Various Toxins Revealed by Bioassays in Different Species and by Different Routes of Injection U Friedemann and A Hollander —p 23  
 Id II Antitoxin Requirements of Tetanal Toxin in Direct and Indirect Intraventricular Tests U Friedemann and A Hollander —p 29  
 Genetic Control of Species Specific Antigens of Serum R W Cumler M R Irwin and L J Cole —p 35  
 Occurrence of Forssman Antigen in Trichinella Spiralis H M Rose —p 53  
 Salmonella Antigens of Coliform Bacteria A M Wheeler, C A Stuart, R Rustigian and E K Bormann —p 59  
 Protection in White Mice with Human Post Convalescent Serum Against Infection with Poliomyelitis Virus (Armstrong Strain) II S D Kramer —p 67  
 Experiments with Bacteriophage Supporting Lattice Hypothesis A D Hershey —p 77

**Journal of Pediatrics, St Louis**

22 637-764 (June) 1943

- Agglutinative Reaction for Hemophilus Pertussis I Persistence of Agglutinins After Vaccine J J Miller Jr, R J Silverberg T M Saito and J B Humber —p 637  
 \*Id II Its Relation to Clinical Immunity J J Miller Jr, R J Silverberg, T M Saito and J B Humber —p 644  
 Chemotherapy of Infantile Diarrhea Comparison of Sulfadiazine and Sulfapyrazine R B Tudor —p 652  
 New Approach to Quantitative Analysis of Children's Posture M Robinson, Verna L Leonard and Margaret Anderson —p 655  
 Simplifying Clinical Differential Diagnosis of Most Common Types of Congenital Heart Defects M M Malner and H Borow —p 664  
 Porencephaly A G De Sanctis M Green and V DeP Larkins —p 673  
 Treatment of Communicating Hydrocephalus M G Peterman —p 690  
 Glomerular Development in Kidney as Index of Fetal Maturity Edith L Potter and S T Thierstein —p 695  
 Safety of Large Doses of Vitamin D in Prevention and Treatment of Rickets in Infancy I J Wolf —p 707  
 Phenolphthalein Tolerance in Childhood Analysis of 4 Cases M Blatt F Steigmann and Josephine M Dymowicz —p 719  
 Circulation Time in Infants and Young Children Determined by Fluorescein Method C M Witzberger and H G Cohen —p 721  
 Premises Encephalitis Report of Case H H Clemens —p 731

**Agglutinative Reaction for Hemophilus Pertussis and Immunity**—Miller and his associates observed the persistence of agglutinins at a relatively constant level for six years after the administration of Hemophilus pertussis vaccine. The relationship between clinical immunity and the agglutinin titration children given H pertussis vaccines was studied over a period of four years. Periodic tests were made in a group of 4 children. Seventy-nine indoor exposures twenty to 100

were familial, occurred. Ten cases of pertussis (6 from familial exposures) resulted. Among the 69 persons who escaped, the last agglutinative titer prior to exposure varied from 0 to 1:2,560. Forty-six had titers of 1:320 or higher. Among the 10 persons who were attacked with pertussis the preexposure titers varied from 0 to 1:160. These observations suggest that, whereas immunity may exist in the absence of demonstrable agglutinins, susceptibility does not occur in the presence of agglutinins in high titer.

### Public Health Reports, Washington, D. C.

58 1001-1032 (July 2) 1943

- Effect of Lead Absorption on Blood Calcium W. V. Jenrette and L. T. Fairhall—p. 1001  
Infection in Monkeys with Strains of *Trypanosoma Cruzi* Isolated in the United States D. J. Davis—p. 1006  
*Salmonella Enteritidis*: Experimental Transmission by Rocky Mountain Wood Tick *Dermacentor Andersoni* Stiles R. R. Parker and E. A. Steinhilber—p. 1010  
Report on Fleas *Opisocrota Bruneri* (Baker) and *Thraupis Bichei* (Roths.) as Vectors of Plague F. M. Prince—p. 1013  
Tick *Ornithodoros Rudis* as Host to Rickettsiae of Spotted Fevers of Colombia, Brazil, and the United States G. E. Davis—p. 1016

58 1033-1076 (July 9) 1943

- Influenza and Pneumonia Mortality in Group of Ninety Cities in United States August 1935-March 1943 with Summary for August 1920-March 1943 Mary Cover—p. 1033

### Surgery, Gynecology and Obstetrics, Chicago

77 113-224 (Aug.) 1943

- \*Intravenous Human Plasma and Serum Therapy: Cause of Reactions with Particular Reference to Use of Concentrated Plasma and Serum J. M. Hill and F. E. Muirhead—p. 113  
Implantation of Hepatic Duct into Duodenum or Stomach L. R. Dragstedt, O. C. Julian, J. C. Allen and F. M. Owens Jr.—p. 126  
Hexestrol: Comparative Study of Estrogens and Methods of Administration J. G. Croft, S. A. Schloss and G. Lyford—p. 130  
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Study of Derangement of Semilunar Cartilages Based on 850 Cases W. R. MacAnis—p. 141  
Roentgen Pelvimetry: Commentary H. Thoms—p. 153  
\*Aortic Embolectomy G. Murray—p. 157  
Prevention of Gangrene Following Ligation of Major Arteries—Experimental Study Rose Spiegel, Mae Friedlander and S. Silbert—p. 162  
Use of Autotransfusion in Surgery of Serous Cavities R. A. Griswold and A. B. Ortner—p. 167  
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Insertion of Smith-Petersen Nail Without an Initial Skin Incision B. B. Larsen—p. 187  
Malignant Hemangioma L. T. Byars—p. 193  
Mechanism of Jaundice in Cancer of Pancreas Naomi Kaplan and A. Angrist—p. 199  
Wound Immunity J. K. Beriman, A. D. Houser and W. A. Kurtz—p. 205  
Surgical Management of Prolapse of Uterus and Vagina: Report of 730 Personal Operations L. E. Phaneuf—p. 209  
So-Called Aseptic or Chemical Meningitis: Report of 2 Cases H. Livingstone, V. Wellman, D. Clark and V. Lambros—p. 216

**Intravenous Human Plasma and Serum Therapy**—Hill and Muirhead have described and advocated the use of concentrated plasma and serum. The small package and the increased speed and simplicity of use of dried plasma packaged for administration in concentrated form have been held to be of particular significance for military use. The authors present a study of reactions based on extensive observations on the preparation and administration of concentrated plasma in order to clear up misconceptions concerning the safety of this type of therapy and to establish confidence in its use. The observations deal with plasma prepared as previously outlined by the authors. The salient features of the method are: (1) pyrogen free technic for preparation of all apparatus, tubing and solutions, (2) sterile technic throughout checked by bacteriologic control studies, (3) pooling of blood of all different types just prior to separation of plasma, (4) bulk desiccation of plasma from the frozen state by the adreic process and (5) sterile transference of dry plasma to a small final container. Reactions are classified according to causative factors, namely factors inherent in plasma or serum factors introduced during the preparation factors associated with faulty administration, including contraindications and peculiarities or idiosyncrasies of the recipient.

The authors stress that properly prepared concentrated plasma is safer than whole blood transfusions. Although plasma prepared by pooling after separation of erythrocytes carries little risk, greater safety can be obtained by pooling of blood of all different types prior to separation. The table listing the febrile and urticarial reactions in the course of 1,160 injections in 520 cases shows a total of 24, or slightly over 2 per cent.

**Aortic Embolectomy**—Murray believes that complete obstruction of the bifurcation of the aorta from acute embolism is amenable to operative intervention. The technical procedure of removing such an embolus is not difficult. If undertaken within twelve to twenty hours after the accident and successfully completed, the results are exceedingly gratifying and the prognosis is changed to one of optimism, provided the preexisting cardiovascular disease has not in itself jeopardized the chances of the patient. The author reports five successful aortic embolectomies. There were no technical difficulties and no accidents or disasters. Several methods of approach have been studied and tried, but the one used in these 5 cases, which has been entirely satisfactory, has been through an extraperitoneal abdominal approach. The appearance of shrunken extremities is changed from the pallor and cyanosis of impending gangrene to that of a normal rosy pink. The patient is returned to the ward, when continuous intravenous heparin is given in sufficient quantity to keep the blood clotting time at about fifteen minutes for the following three days. In spite of the fact that most of these patients eventually die of embolism, the patient can be completely relieved of symptoms and returned to the original state of health following the surgical treatment of the immediate episode.

**Autotransfusion in Surgery of Serous Cavities**—Griswold and Ortner think that all too often several pints of blood are thrown away from the body cavity of patients bleeding to death. It is their belief that this blood represents the most readily available, abundant, rapid and safe replacement therapy for these urgent cases. Large quantities of blood are often immediately accessible, the blood is compatible and needs no crossmatching and the danger of transmission of disease, such as syphilis or malaria, is absent as is the possibility of an allergic response. The authors give a brief history of autotransfusion in surgery of the serous cavities and analyze their own observations in one hundred consecutive autotransfusions. In twenty-two hemorrhage was due to ruptured ectopic gestation, and in the remaining seventy-eight penetrating and non-penetrating trauma to the thorax and abdomen was the etiologic agent. There were thirty deaths in this group or a mortality of 30 per cent. One fatal reaction occurred in the 100 cases. In this case there was a break in the technic of filtering the blood. In 2 other instances there were reactions from which the patient recovered giving a combined percentage of 3.0 for reactions. One patient had no reaction from the autogenous blood but had severe reactions on two occasions from blood obtained from the bank. Autotransfusion is a valuable adjunct in the treatment of internal hemorrhage. A simple suction apparatus is described which is more efficient in the collection of blood than mopping it from the body cavities. The technic particularly as regards filtration, must be rigid. Bile mixed with blood as the result of injury of the liver or biliary tree and bacterial contamination from hollow viscus perforation add danger to the procedure. This danger is not so great as might be thought and the need of blood is frequently far greater than the danger involved. Old blood because of hemolytic changes should not be used. Alkalinization of the urine may prevent reactions caused by partial hemolysis of the blood.

### Western J. Surg., Obst. & Gynecology, Portland, Ore.

51 257-304 (July) 1943

- Spontaneous and Induced Abortion: Modern Concepts of Their Significance Pathogenesis, Diagnosis and Treatment R. A. Rutherford—p. 257  
Pituitary Antidiuretic Hormone in Diabetes Insipidus: 8 Cases of Diabetes Insipidus 4 with Pregnancy J. E. Harding—p. 267  
Photographic Method for Recording Uterine Activity in Small Animals A. C. Kirchhoff and A. A. David—p. 277  
Abdominal Pregnancy: Case Report S. D. Hart—p. 289  
Fractures of Hip: Analysis of 114 Cases of Fracture About Hip J. J. D. B. Lucas and J. H. Varney—p. 293



## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted. Simple case reports and trials of new drugs are usually omitted.

## British Medical Journal, London

2 63-94 (July 17) 1943

- Fatal Case of Atypical Pneumonia with Encephalitis H Perrone and M Wright—p 63  
Failure of H 11 to Inhibit Growth of Tumors in Mice W E Gye R J Ludford and Hilda Harlow—p 65  
Observations on Use of H 11 in Carcinoma H A Kidd—p 67  
Cutaneous Hypersensitivity to Sulfonamides Report of 12 Cases R G Park—p 69  
Modern Treatment of Gonorrhea T F Osmond—p 72

2 95-126 (July 24) 1943

- Nutritional Iron Deficiency Anemia in Wartime Part II Hemoglobin Levels of 3,338 Persons from Birth to 55 Years of Age L S P Davidson, G M M Donaldson, S J Lindsay and J G McSorley—p 95  
Childhood Infection and Its Relation to Adolescent and Adult Pulmonary Tuberculosis Record of Work of Brompton Hospital Research Department During Last Fourteen Years A Margaret C Macpherson—p 98  
Peripheral Arterial Embolism H Aker—p 101  
Globin Zinc Insulin Some Experiments R D Lawrence—p 103  
Intracranial and Labial Diphtheria M Anderson—p 104  
Successful Treatment of Chronic Paratyphoid Carrier with Sulfaguanidine H Loewenthal and W I Corfield—p 105

**Globin Zinc Insulin**—Lawrence advances arguments why globin zinc insulin should not be introduced for sale at the present time. Its action is weak and, like protamine zinc insulin, it will have to be supplemented by soluble insulin in many cases. Clinicians do not know whether globin zinc insulin contains an excess of globin or what the result is of mixing globin zinc insulin with soluble insulin. The fact that protamine zinc insulin is cloudy and soluble insulin clear is a great safeguard against mistakes between delayed action and quick acting insulins, but the new globin zinc insulin is a water clear solution, which is a serious disadvantage. Mistakes between insulins are all too common at present, and the author fears they will be far more so if another depot insulin appears on the market, especially if indistinguishable from soluble except for its label.

**Faucial and Labial Diphtheria**—Anderson describes a case of faucial and labial diphtheria in which the formation of labial membrane followed a slight injury to the lip. It is suggested that slight trauma to tissue may readily facilitate the introduction of Klebs-Löffler bacilli.

## Archivos Arg de Enf del Ap. Digest, Buenos Aires

18 201-331 (Feb-March) 1943 Partial Index

- Calcified Aneurysm of Splenic Artery H A Mascheroni, C Reussi and L A Lafage—p 201  
Abdominal Purpura of Henoch L Ayerza, T Taborada and S Nino—p 211  
Diffuse Spasm of Esophagus C J Nuñez and A M Sosa—p 224  
Cancer of Stomach Caused by Degeneration of Ulcer of Small Curvature Early Treatment J C Bidart Malbrun and J Ferradas—p 238  
\*Coccidiosis in Human Subjects (Isospora Bigeminum) Clinico-epidemiologic and Parasitologic Study J Oviedo Bustos—p 246  
Inflammatory Tumor of Ampulla of Vater E S Garre and C F de Dominici—p 262  
Jejunal Diverticulum J M Oviedo Bustos and J L de Grucci—p 273

**Coccidiosis**—According to Oviedo Bustos, *Isospora hominis* and *Isospora bigeminum* are the two genera of coccidia which are parasitic for human subjects. *Isospora bigeminum* was encountered in the 2 cases described by him. While the majority of cases reported in the literature originated in the eastern Mediterranean and in Japan, China and India, cases also have been reported from several parts of Argentina. Excreta of animals are presumably the cause. The symptomatology of coccidiosis, which is chiefly of the gastrohepatic and rectocolonic type, is accompanied by allergic phenomena. There may be dyspepsia and hepatic colics, constipation or diarrhea, flatulence, rectal tenesmus, anal pruritus and spasticity of the colon. The allergic phenomena are a generalized pruritus, erythema, urticaria, edema of the eyelids, rhinitis, asthmatic bronchitis and eosinophilia. The treatment is antiparasitic. Emetine, acetar-

son, chinofon and gentian violet are recommended. According to the experiences of Becker, vitamin B<sub>1</sub> and B<sub>6</sub> should be added. The author's observations indicate that *Isospora bigeminum* is difficult to eradicate.

## Munchener medizinische Wochenschrift, Munich

89 323-344 (April 10) 1942 Partial Index

- Necessity of Plaster Cast in First Treatment of Gunshot Wounds of Extremities K Denecke—p 323  
Prevention of Cerebral Complications in Treatment of Syphilis F Bering—p 329  
Changes in Form of Pupils in Cerebral Traumas H Wigand—p 337  
\*Problem of Relapse in Gonorrhea Treated with Sulfathiazole H Lemeweber—p 334

**Relapse in Gonorrhea Treated with Sulfathiazole**—Lemeweber reports observations on 38 women with gonorrhea. The infection was not complicated in 29 cases, while in 7 there was involvement of Bartholin's glands, in 1 adnexitis and in 1 vulvovaginitis. All women were treated with sulfathiazole. On each of two successive days they were given 2 tablets five times. Smears were taken on the first, fourth and seventh days after treatment, and when these were negative a provocative test was done on the eighth day. If at this time the smears were negative the patients were discharged, if not, another two day sulfathiazole treatment was given. This was necessary in two of the complicated cases. The second course of sulfathiazole was successful. Follow-up tests were made over a period of many weeks. The average control period for the 38 cases was seventy-six days, the longest was one hundred and forty three days. The follow-up examinations revealed 100 per cent freedom from relapse. Thus it can be said that two days of intensive treatment with sulfathiazole effects cure of gonorrhea and that there need be no fear of relapse. Sulfathiazole treatment not only shortens the clinical treatment of gonorrhea but is also highly reliable.

## Wiener klinische Wochenschrift, Vienna

55 181-200 (March 6) 1942 Partial Index

- Population and Individual in the Alps W Hellpach—p 181  
\*Diagnosis and Treatment of Eclampsia A I Amreich—p 185  
\*Peroral Vitamin K Therapy, S Thaddea and G Frost—p 186  
Present Status of Pertussis Therapy O Chiari—p 189  
A Diagnostic in Otalgia S Gitscher—p 190

**Diagnosis and Treatment of Eclampsia**—Headache, dizziness, "flitting flies," swimming of objects before the eyes and pains in the gastric region are prodromal symptoms of eclampsia. Treatment in this early stage consists of rest in bed and restriction of sodium chloride and fluid (5 Gm of sodium chloride and 500 cc of water per day). From two to four suppositories of theophylline ethylenediamine per day should be introduced for their diuretic effect. Intravenous injection of from 100 to 150 cc of dextrose solution as a substitute for venesection is recommended, to be given two to three times within twenty-four hours. As to surgical intervention, conservatism is to be practiced. Good results were obtained with Engelmann's therapy, combining Stroganoff's treatment with venesection, by substituting 500 cc of Ringer's solution (isotonic solution of three chlorides) for 400 cc of letted blood. Lately eclampsia has been considered as the result of excessive production of estrogens, and combined injections of progesterone and vitamin C are recommended.

**Peroral Vitamin K Therapy**—Animal experiments and clinical experience demonstrated that peroral administration of high doses of vitamin K in the form of "Karan" tablets (2-methyl-naphthohydroquinone-[1,4]-di-butylate) are effective in disturbances due to lack of prothrombin. From one to 1.0 002 Gm tablets are sufficient to normalize the prothrombin level of adults with the tendency to bleed. A higher dose will be necessary in cases with disturbances of liver function. The therapy failed in hepatocellular icterus particularly in biliary cirrhosis. No untoward reactions were observed. There is less danger of overdosage than of underdosage. Vitamin K therapy is indicated as a preoperative or postoperative therapy to reduce the tendency to bleed in obstructive icterus, in the rare cases of biliary fistula, in cases of inoperable tumor of the biliary ducts, as a medicinal treatment of hemorrhagic states in disturbances of fat absorption (gastrocolic fistula sprue) and in the newborn with a physiologic lack of prothrombin.

## Book Notices

**A Handbook of Psychiatry** By P. M. Hechtstein MD LLB in Charge of Psychiatry and Legal Medicine for the District Attorney County of New York and S. M. Small BS MD Psychiatrist and Assistant Medical Director National Hospital for Speech Disorders New York Cloth Price \$3.50 1p 330 New York W. W. Norton & Company Inc 1943

This book is a valuable contribution because of the simplicity of its language and the clearness of its expression. It defines various terms in psychiatry with ease. It does not discuss any controversial issues but contains well proved facts. The book contains sixteen chapters on normal personality functioning, abnormal behavior, the mental examination, psychometric tests, feeblemindedness, psychopathic personality, psychoneuroses, war psychoneuroses, psychosomatic illnesses, mood disorders, schizophrenia, paranoia and paranoid reactions, delirium and allied conditions, organic brain disorders, general principles of psychiatric therapy and therapeutic aids. The contents are not detailed but they cover briefly the essentials of psychiatry. The authors have used case material from their court records in giving examples of the various diseases in psychiatry. There is a bibliography after each chapter. This book is recommended chiefly for the general practitioner, the nurse and the social worker. There is a definite need for such a book presenting such easy and fact finding reading.

**Hypnotism** By G. H. Estabrooks Cloth Price \$2.00 Pp 249 New York E. P. Dutton & Co. Inc 1943

There is certainly a need for a popular or semipopular book on hypnosis, but this current jumble of truth and speculation cannot be considered the answer from the physician's point of view. Although the author in his preface claims that the facts and rules of hypnosis are as scientific as those of chemistry, this is pure balderdash and the book cannot bear out his contention. Books on hypnosis have run the gamut from charlatan 5 cent books on how to hypnotize and conquer the world to the excellent scientific products of Bramwell and Clark Hull. Although Estabrooks is a professor of psychology at Calgate University, the material in this book does not bolster his position as an authority on the subject. He makes bald statements which are not currently believed such as 'cases of kleptomania or compulsive stealing fit into the picture of posthypnotic suggestion'. He cites examples from his own experience which have no reported counterparts elsewhere in the literature and hence are not verifiable. He speculates in extenso about Hitler's hypnotic ability and makes some bizarre suggestions about how hypnosis could be utilized in warfare, which if carried out, to this reviewer's mind, would probably be as dangerous as valuable. For instance, the author believes that a man could be given false information under hypnosis and give it out as sincere when captured by the enemy, thus misleading the latter a doubtful project. The chapters which are largely descriptive, such as those on the induction of hypnosis, the more common phenomena of hypnosis, also hypnotic suggestion, are interesting and not bad. However, his psychosomatic examples of the use of hypnosis in the removal of thoracic pain in tuberculosis or in rheumatic cases cited from another author, are misleading. The style is light and easy to read, at times it borders almost on the point of boudoir intimacy, but the physician might well be advised to reserve his reading on the subject until a more scientific book of the same general nature appears.

**Surgical Care: A Handbook of Pre and Post Operative Treatment** By R. W. Raven FRCS Major R. A. M. C. Assistant Surgeon Royal Cancer Hospital London Cloth Price \$3 Pp 271 with 80 illustrations Baltimore William Wood & Company 1942

'Surgical Care' is a rather ambitious title for this small volume. The book attempts to cover all the specialties of surgery and hardly does justice to many of them. The subtitle is not adhered to very rigidly, as there is relatively too much of the basic sciences. There is much good material of practical value in this book though many surgeons will not agree with some of the methods advocated. Much of this bears elaboration, and some of it is passed over too briefly. The context seems, in general, too elementary for the surgical house staff and in places too advanced for the nursing staff.

**Introduction to Organic and Biological Chemistry** By L. Earle Arnow, Ph.D. M.D. Director of Biochemical Research Medical Research Division Sharp & Dohme Inc. Clenolden Pa. and Henry C. Reltz Ph.D. Assistant Chemist in the Western Regional Research Laboratory United States Department of Agriculture Albany California Cloth Price \$4.25 Pp 736 with 91 illustrations St. Louis C. V. Mosby Company 1943

One of few combination textbooks on organic and biologic chemistry, this is designed by the authors for use in premedical, preclinical, home economics, agricultural, dietetics and physical education curriculums. It may be well adapted for all except premedical courses, being too brief for adequate preparation in either the organic or the biochemical phases. Of the three parts, part I is devoted to a review of chemical fundamentals. These include the elements, atomic theory, structure of the atom, valence, ionization (from the Arrhenius theory), acids, bases and salts (according to classic theories) and solutions. Unfortunately, no mention is made of newer concepts of ionization or of acids and bases. Part II, of approximately five hundred pages, is devoted to organic chemistry, covering adequately all the topics usually found in an elementary organic textbook, with illustrations and special emphasis on compounds of biologic and medicinal interest. Amino acids are presented as uncharged ions, making it difficult for the reader to appreciate fully the amphoteric properties of proteins. Part III, of about two hundred pages, covers the biochemical topics of enzymes, respiration, carbohydrate, fat, protein and mineral metabolism, hormones, vitamins and nutritional requirements. The division of the book into three distinct sections makes the inclusion of organic and biologic chemistry in one volume of less unique value than if an integrated treatment of the two fields had been attempted. At the end of each chapter, study questions and references to current literature, textbooks and reviews are given. In an appendix are extensive tables of the composition and caloric value of foods. At least one error requiring attention in future editions should be pointed out. The reference (p. 90) to methyl chloride in household refrigeration as "nontoxic to man, a valuable property in case of a leak in the refrigeration system," is a misstatement, for the compound is definitely toxic.

**The Examination of Waters and Water Supplies (Thresh, Beale & Suckling)** By Ernest Victor Suckling M.B. B.S. M.R.C.S. Consulting Bacteriologist and Analyst to Various Water Authorities Fifth edition Fabrikoid Price \$12 Pp 849 with 63 illustrations Philadelphia Blakiston Company 1943

The fourth edition of this standard textbook appeared in 1933 under the authorship of Thresh, Beale and Suckling. With the death of Dr. Thresh and the retirement of Dr. Beale, Dr. Suckling, a distinguished English bacteriologist, has assumed responsibility for the volume, long known to British and American workers in the water supply field. The fifth edition follows closely in form and content the subject matter and treatment presented in the fourth edition with only minor extensions in text, generally adequately designed to include new or to expand old data. For example, almost four pages have been added on the detection and estimation of fluorine, while the chapter on intestinal organisms used as indexes of pollution has been adjusted and expanded to give recognition to developments in British and American laboratory and field practice. In similar fashion the chapter on standards and standardization has been elaborated with more discussion of American practice. Unfortunately, the text was prepared before the U. S. Treasury Department standards were revised and released in 1943 since these modify materially the data and discussions now in the text. The volume pays somewhat of a penalty for the effort to supply so vast a coverage in the water supply field since the chapters have a scope beyond that indicated in the title. Part VIII covering the purification and treatment of water represents, for example, some one hundred and thirty-five pages or over a fifth of the total text. Although excellent in treatment, it suffers through the necessity for sharp compacting in space. Perhaps it deserves a separate volume. The volume unlike most American textbooks carries a great deal more backing up and historical material. Such a practice has real merit although again it gives some impression of diffuseness in those sections largely devoted to the exposition of the title. The book is a welcome revision of an old standby and should be available to all workers in this field.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON JOURNAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### GAUZE MASKS TO PREVENT CONTAGION

To the Editor—I am attempting to obtain the general consensus regarding the value of wearing masks in contagion. I should appreciate an opinion for or against the use of the standard six thickness gauze mask by attending physicians and the nursing staff. I should like this information particularly with reference to epidemic meningitis, tuberculosis, diphtheria and virus pneumonia.

C. G. Peterson, M.D., San Bernardino, Calif

ANSWER—The most that can be expected from masks is the enmeshing of the coarser droplets of saliva or nasopharyngeal secretions while breathing, coughing, talking and sneezing. They are not a barrier to dried minute particles of infectious material either bacterial or viral in nature which float about in the air, and they obviously do not keep infectious material from contact with the conjunctivas.

In a recent publication (*Science* 97:229 [March 12] 1943) Francis states that "the ordinary gauze mask is not only not beneficial but actually harmful." He recommends a new type of mask containing flannel filters. When properly fitted they filter infectious particles from the air and become even more efficient after laundering.

Efficient masks would no doubt aid in preventing the spread of the four diseases listed, but perhaps other measures at present under investigation such as ultraviolet irradiation of the air, the use of aerosol sprays or chemoprophylaxis may eventually prove to be even more effective.

[This query was submitted to a prominent internist, whose reply appears. Opinion on this subject, however, is greatly divided and some internists and pediatricians recommend and enforce the use of gauze masks for persons taking care of patients with communicable diseases. The question does not appear to have been settled.—Ed.]

### OSTEOCHONDRITIS DISSECANS OF KNEE

To the Editor—A patient has osteochondritis dissecans with secondary hypertrophic osteoarthritis which resulted from an injury to her left knee. She suffers considerable pain and is unable to use the knee. What treatment would you advise for this condition and would diathermy be of any benefit?

J. L. Snively, M.D., Sterling, Ill

ANSWER—Osteochondritis dissecans of the knee may occur at any age from puberty on, but osteoarthritis is usually seen in people of early middle age on.

If in the case mentioned there is a loose body, it should be removed and the area of origin—usually the internal condyle of the femur—smoothed down. This will relieve the patient of the discomfort—usually catching or locking of the joint—and the associated irritation of the joint lining caused by a wandering osteocartilaginous body.

The osteoarthritis is a separate condition and is best treated by restriction of excessive activities and heat locally to the joint by hot packs, baking or diathermy.

### PLASMOCHIN FOR MALARIA

To the Editor—In the authorized manual of therapy issued to army medical officers the following statement appears: "Its [plasmochin's] most striking action is on the gametocytes of *P. falciparum*, which it devitalizes and renders noninfectious. When the latter drug is administered as described above, the relapse rate appears to be substantially lowered." It is my understanding that gametocytes represent the end stage of the plasmodium in the human host and do not differentiate further or cause symptoms unless first undergoing sporogony in the *Anopheles* mosquito. If this concept is true, can a relapse occur in man from the presence of gametocytes alone and what would be the explanation thereof?

Captain, M. C., A. U. S.

ANSWER—Although there are some reports which indicate that plasmochin may reduce the relapse rate of malaria, those most familiar with the use of this drug doubt if it has the effect on relapses indicated in the authorized directive. It is probable that the directive will be altered soon and that the use of plasmochin will no longer be recommended.

The gametocytes originate from the asexual parasites and, although the sexual forms are noninfectious for man and produce no clinical symptoms, they are undoubtedly always accompanied by a stage of asexual parasite which can initiate the relapse.

### PARESTHESIAS AND POSSIBLE EFFECTS OF PROLONGED ETHER ADMINISTRATION ON ANESTHETIST

To the Editor—Are there any instances of ill effects to anesthetists who are regularly exposed to ether fumes over long periods of time? I have been giving anesthetics for some twenty years. Much of the time my breath carries the odor of ether hours after exposure. For the past five years or more I have experienced paresthesia in my feet. This has extended well up to my knees, and now my hands have a similar sensation. It seems to me that it is progressing and becoming more like a peripheral neuritis with some shooting pains. Is it reasonable to think that ether fumes could be the source of irritation? Outside of this annoyance, I feel very well for a 62 year old.

M. D., Kansas

ANSWER—There are no proved cases on record of ill effects to anesthetists from inhalation of ether vapor as a result of administering ether to patients by standard methods. It is not clear why an anesthetist's breath would carry the odor of ether for hours after exposure to the anesthetic agent unless through some individual technique of administration, the anesthetist inhaled undue amounts of ether from time to time. It is improbable that inhalation of ether fumes would cause paresthesia of the feet. Other causes for such disturbances should be sought. Not infrequently elderly persons complain of severe paresthesia, particularly burning, in the feet for which no good reason can be found. It is believed that in many of these cases the cause is senile degenerative changes in the sensory tracts of the central nervous system.

### SOLVENT FOR REMOVAL OF ADHESIVE TAPE

To the Editor—I have observed industrial medical departments using benzene for the removal of adhesive tape. It is obvious that this is a bad practice as it exposes the nurse who employs this technique to the inhalation of toxic concentrations of benzene vapors. A death from chronic benzene poisoning occurring in a switchboard operator who over a period of years had used benzene on a rag to clean her switchboard has previously come to my attention. I should appreciate an opinion from you as to the dangers of this procedure and as to the most satisfactory safe solvent which could be used as a substitute.

L. M. Petrie, M.D., Atlanta, Ga

ANSWER—Chronic benzene poisoning has been produced in workers exposed repeatedly to low concentrations of this substance and for this reason it is not believed that benzene is a satisfactory material for the removal of adhesive tape in dispensaries and hospitals. It is, of course, necessary to use a material which is a good solvent for the adhesive in the adhesive tape and at the same time a substance which is relatively nontoxic and which possesses a somewhat high flash point in order to obviate the possibility of readily taking fire.

A solvent which answers these requirements is Stoddard solvent or high flash naphtha. Stoddard solvent is a straight run petroleum naphtha and possesses a flash point above 100°F. Stoddard solvent is used to a great extent in the dry cleaning industry as a substitute for carbon tetrachloride because of its nontoxic properties and its high flash point.

### ESTROGENS FOR BOTH AMENORRHEA AND MENORRHAGIA

To the Editor—On page 716 of the July 3 issue of *The Journal* it is recommended that a patient with excessive vaginal bleeding be given oral estrogenic therapy. Some gynecologists have suggested using estrogens to produce bleeding in cases of amenorrhea or oligomenorrhea when the anatomy seemed normal and no pathologic condition was discernible. Disregarding the advisability of the latter procedure, at least it ought to be admitted that the two therapeutic uses of the drug are incompatible the one with the other because the same agent, estrogen, has been used to promote bleeding in one case and to stop it in the other. It would at first hand seem that this is unreasonable, that estrogen, if valuable in one case, would be contraindicated in the other. What is the basis for the use of estrogen in a case of bleeding as recommended in the answer cited? William J. O'Neal, M.D., Detroit

ANSWER—It is well known that thyroid medication at time checks profuse uterine bleeding and at other times induces menstruation in cases of amenorrhea. Likewise, estrogens can be used to overcome both amenorrhea and menorrhagia. The effect produced depends on the level of estrogen in the blood. At certain levels bleeding is induced, and at other levels bleeding is checked. There have been clinical reports proving that oral estrogens may successfully be used for the two diametrically opposite clinical manifestations. Palmer (*Am J Obst Gynec* 41:1018 [June] 1941) prescribed diethylstilbestrol for 31 women aged 12 to 55 who suffered from abnormal uterine bleeding and observed favorable results. Cuyler, Hamblen and Davis (*J Clin Endocrinol* 2:438 [July] 1942), checked prolonged or excessive uterine bleeding in 11 of 15 women by giving them diethylstilbestrol orally. The average time to producing hemostasis was 4.4 days and the daily dose varied from 2 to 6 mg. Karkaky (*Year Book of Obstetrics and Gynecology*, by J. P. Greenhill, 1942 p. 535) claims that 87 per cent of women with severe functional bleeding treated with diethylstilbestrol regular menses will return.

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## TROPICAL MYCOSES

COMDR LEE MCCARTHY, MC-V(S), USNR

Tropical diseases, and particularly those involving the skin which are due to the higher fungi, are going to occupy the attention of the medical profession both at home and abroad, in the civilian population as well as in the military or naval services more and more, the longer the war lasts. Rare mycotic infections which are unusual in this country will gradually be recognized as commonplace while exaggerated clinical manifestations of the commoner fungous diseases of the skin, already well known to us but aggravated by their origin in the tropics, are now being seen in large numbers in men returning from the South Pacific areas.

All physicians should be aware of the possibility of the occurrence of these conditions here at home and be able to recognize them and stamp them out before they can become endemic.

It has been definitely proved that many of the more serious systemic fungous diseases begin with nodules or ulcers on the skin. Also that if the skin lesions are recognized early and the proper diagnosis is made, treatment will in most instances prevent a general dissemination of the disease, which very frequently results in death.

Although there still exists a certain amount of confusion with regard to the classification of the parasites of the ascomycetes and the hyphomycetes group which cause these diseases, their morphology, cultural characteristics and occurrence in the lesions are so well understood that early diagnosis and the institution of early treatment should be within the scope of all physicians both at home and in the services.

Tropical mycoses are due mainly to the so-called higher fungi and may be divided into two classes.

First, the Ascomycetes (fungi that produce an ascus [sac] to hold spores) (a) *pie*dra (trichosporosis), (b) rhinosporidiosis (c) lymphangitis epizootica, (d) histoplasmosis.

Second, the Hyphomycetes (fungi imperfecti) (a) pityriasis versicolor (tinea versicolor), (b) erythrasma, (c) trichophyton infections of the glabrous skin, (d) epidermophyton infections of the glabrous skin, (e) epidermomycoses originating only in the tropics (1).

This paper is a symposium on Tropical Diseases of the Skin is published under the auspices of the Section on Dermatology and Syphilology.

This portion of the symposium is presented as a review of the latest monographs on fungous diseases arising in the tropics with certain conclusions reached after a year's experience with men returning from the tropics.

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endodermophytoses, (2) cladosporian dermatoses, (3) aleurosporian dermatoses, (4) two dermatoses probably due to trichophytons.

## THE ASCOMYCETES

*Piedra* (trichosporosis) — This is a fungous disease involving the exterior of the shaft of the hair, particularly of the scalp and beard. It consists in the formation of tiny dark or light brown stony, hard nodules, scarcely perceptible to the eye, but which can be definitely felt when the hair is drawn between the fingers (McCarthy<sup>1</sup>). It occurs in Europe, Asia and Japan as well as in South America (Colombia) and is thought to arise in persons who wash their hair and beard in stagnant river water and then apply a thick oily or mucilaginous substance as a hair dressing. After the hairs are soaked over night in 20 per cent potassium hydroxide solution, the nodes are seen to be made up of a large number of closely packed contoured spores.

The mycologic aspect of this disorder has been studied in detail by Bodin,<sup>2</sup> Vuillemin,<sup>3</sup> Schaechter,<sup>4</sup> Lombardo,<sup>5</sup> Lampe<sup>6</sup> and others. It is generally agreed that the parasite is a fungus and should be classified as a member of the ascomycetes group. *Trichosporum giganteum*, *Trichosporum beigelii*, *Trichosporum ovoides* and *Trichosporum ovale* have been commonly reported from the different regions in which the disease occurs. Chalmers<sup>7</sup> has reported a form of *pie*dra which he calls trichonocardiasis, which is due to a species of *Nocardia* (actinomyces). All these parasites grow slowly on Sabouraud's medium but better on carrots.

Trichosporosis must not be mistaken for trichorrhexis nodosa, a nonparasitic involvement of the hair shaft in which the hair is fractured transversely, resulting in a splitting of the ends into brushlike bundles of fibers. It should not be confused with monilethrix, which is nonparasitic and is congenital and hereditary and often the result of congenital syphilis. Trichosporosis differs from leptothrix by its regional distribution, color and type of parasites which are cocci or bacteria. Nits project off at an angle from the shaft, while in trichosporosis the shaft is more or less completely surrounded. In treatment the hair should be cleansed with benzine or ether or acetone. A 1 to 1,000 solution of mercuric bichloride or a 3 per cent sulfur and a 3 per cent salicylic acid ointment can be effectively applied. Shaving

1 McCarthy, Lee. Diseases of the Hair. St. Louis. C. V. Mosby Company. 1940. p. 309.

2 Bodin. La pratique dermatologique. Paris. Macon & Cie. 1904. vol. 2. p. 239.

3 Vuillemin. Un cas de *pie*dra nostra. Acad. d. c. Paris. June 6, 1901.

4 Schaechter. De la trichoporie (*pie*dra). The. e. d. N. 1901.

5 Lombardo. Sulla *pie*dra nostra. Giorn. ital. d. mal. ven. 1904. p. 308.

6 Lampe. P. H. J. *Piedra* in Batavia. Geneesk. tijdschr. v. Nederl. Indie. 50. 1519. 1940.

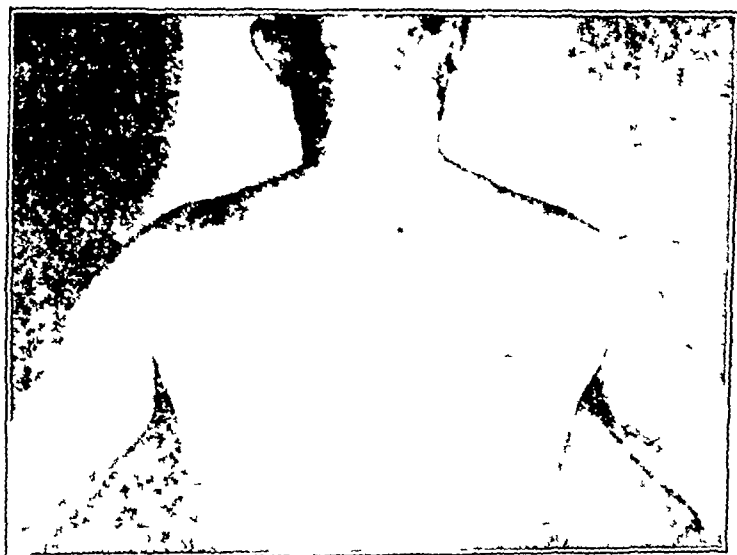
7 Chalmers. quoted by Sutt in Diagnosis and Prevention and Treatment of Tropical Diseases. ed. 6. Philadelphia. Blakiston Company. 1942. vol. 2. p. 1151.

of the part, with application of the bichloride solution, is a rapid, effective method when it is possible to use it.

**Rhinosporeidiosis**—This is a fungous disease chiefly of the mucous membranes of the nose with the production of polyps. Recent reports show that the eais lacrimal sac, uvula and the mucosa of the penis may be involved. The causative organism *Rhinosporeidium seebertii* was at first thought to be a coccidial parasite, which it closely resembles, but it is now known to be a true fungus and is found in large numbers within the soft, raspberry-like growths it causes. It has been reported from Cochinchina, South America and the United States.

The mode of transmission of the disease is not known, but a closely related disease due to *Rhizopus equi* has been reported in horses in these regions. Treatment consists in removal of the polyps with a wire snare from the nose and destruction with electrocoagulation of the tumors from other regions, combined with the use of antimony and potassium tartrate.

**Lymphangitis Epizootica**—According to Stitt<sup>8</sup> human beings working with horses suffering with this



Achromatic punctate type of tinea versicolor acquired in the tropics

fungous disease may develop nodules and ulcerations of the skin in areas rich in lymphatics. Cases have been reported from Asia (India, China and Japan), western Europe and northern Africa. Man appears to be only an accidental host, and no visceral or system involvement has been reported. The organism is a cryptococcus of the farciminosus or pschrophylus type and has been easily cultivated at 22 C and successfully inoculated in guinea pigs, rats and white mice by Nino.<sup>9</sup> Treatment consists in early incision and curettage of all the lesions combined with the use of arsenicals intravenously.

**Histoplasmosis**—Although the causative agent, *Histoplasma capsulatum*, usually produces a serious systemic disease with involvement of the deeper organs, the infection may begin on the skin as nodules and ulcers, particularly on the face. An early diagnosis, with excision and curettage of the lesions, combined with the use of fuadin, asphenamine or antimony and potassium tartrate, may prevent systemic involvement, which often has a fatal termination. The disease, when well

developed, resembles the clinical picture of kala-azar. It has been reported from South and Central America (Panama), North Africa and Asia, as well as in the United States. In cultures and in smear preparations the parasite resembles a cryptococcus, and Benham has suggested the name *Cryptococcus hominis* for the organism.

#### THE HYPHOMYCETES

The Hyphomycetes are less perfect fungi than the Ascomycetes in that they do not produce a sac at the end of a hypha to hold their spores but exist as a mass of ramifying, threadlike filaments (hyphae), which is called the mycelium. Reproduction and growth take place by the lateral, angular or terminal addition of new hyphae or by the division of a single hypha.

**Pityriasis Versicolor**—This is widespread and therefore the best known of the epidermomycoses. It occurs in temperate climates about as often as in the tropics, but in hot countries the eruption varies somewhat in color and in distribution. Instead of the typical cafe-au-lait colored scaly, greasy macules, one may find three atypical clinical expressions of the disease: (1) the red, or erythematous, form, (2) the circinate erythematous and squamous form and (3) the achromatic form. It is believed that these types are due to excessive sun, heat and humidity and really represent different degrees of the brown type, for the red and achromatic lesions become the usual brown type once the patient leaves the tropics. Again, the brown type may be found on the covered parts of the body, along with the red or achromatic types on the exposed portions. The same parasite, *Microsporum furfur*, can be obtained in all variants.

The achromia is an actual depigmentation rather than an impression gained by contrasting normal and abnormal skin areas. It is thought to be due to three factors: (1) the screening action of the scales, (2) the decoloring action of the sun and (3) the disturbance in pigment function of the skin due to the toxins produced by such large numbers of fungi.

Clinical variations of all the different types may be seen frequently in the tropics. The eruption may be limited to only the face or the scalp or to the backs of the hands. The lesions may be milium and punctate and remain so throughout the course of the disease with no tendency to coalesce until the entire trunk and the proximal halves of the extremities are completely covered. Circination, with the formation of small papules, has been reported.

The treatment of this mycosis consists in thorough removal of the scales by scrubbing with tincture of green soap followed by the application of 1 per cent solution of iodine crystals in alcohol or a 4 per cent solution of salicylic acid in alcohol or a 1 per cent chrysarobin ointment plus disinfection of the undergarments (underwear and nightclothes). Weeks of treatment are necessary, as the disease shows a definite tendency to relapse.

**Erythrasma**—This condition, which is due to *Microsporum minutissimum*, differs little in its tropical form from the type seen in temperate climates. The eruption is more inclined to involve several areas at one time, that is, the axillary regions, the mammary and rectal folds, the region of the umbilicus and the web spaces of the toes as well as the inguinal folds and other surfaces of the thighs. As the result of chronicity

<sup>8</sup> Stitt, E. R. *Diagnosis and Treatment of Tropical Diseases*, ed. 6, Philadelphia, Blakiston Company, 1942, vol. 3, p. 1158.  
<sup>9</sup> Nino, F. L., quoted by Stitt. *Diagnosis and Treatment of Tropical Diseases*, p. 1159.

the accompanying itching and scratching, the skin of the plaques may be thickened and lichenified and may be mistaken for neurodermatitis or the ordinary tinea cruris. The vesicles and pustules are not fungous in nature and are due to infection with cocci resulting from scratching.

The treatment of uncomplicated cases is the same as for any of the superficial mycoses. If eczematization and pustulation have taken place, these must be treated before the parasite is attacked. Disinfection of the clothing is important but is often neglected and accounts for many of the relapses.

*Trichophyton Infections of the Glabrous Skin*—These eruptions, seen in the tropics, are usually due to the frigid type such as *Tinea alba*, which produces generalized eruptions of small, dry, scaly lesions, or to the small spored (microid) type, such as *Trichophyton asteroides*, which produces large solitary, deep, pustular lesions (kerion) or acute pustular eruptions on the fingers and dorsum of the hands. This parasite, or some of its variants, such as *Trichophyton granulosum*, may produce virulent forms of sycosis barbae. All these parasites are of animal origin, belonging to the horse, dog or cat. *Trichophyton rosaceum* and *Trichophyton violaceum* are especially prevalent in the Far East and cause a type of dry, scaly and to a less extent pustular form of sycosis barbae very difficult to cure. Occasionally any of these parasites may be isolated from the usual eruption of tinea cruris, which is thought to be due to the epidermophytons as a rule.

After a year's experience with men returning from the tropics with ringworm infection of the skin, I have come to the conclusion that the large majority of the cases consist of the usual run seen in the United States but in a more exaggerated form. Three types of ringworm predominate. The commonest type is acromycosis (McCarthy<sup>10</sup>) often described as epidermophytosis, of the feet and hands. The eruption is extensive, covering the dorsum and sides of the feet and hands as well as the soles, palms and lateral surfaces of the digits. It is practically always pustular in character with strong tendencies to develop secondary lymphangitis and regional glandular enlargement. The eruption is very resistant to treatment and shows tendencies to recur when the patient returns to active duty. The following parasites have been cultured from this type: *Trichophyton purpureum* and its two variants, *Trichophyton plurizoniforme* and *Trichophyton lanorosum*. *Epidermophyton inguinale*, *Trichophyton interdigitale* and occasionally *Trichophyton asteroides*.

As a complication to acromycosis I have noted that there was also a ringworm infection of the superficial pustular type on the lower two thirds of the legs in many instances. These lesions often become secondarily infected and result in multiple ulcers varying in size from that of a split pea to that of a hazel nut. Sulfonamide ointments have no effect on these ulcers. After weeks they heal with the use of wet compresses of 1 to 8,000 potassium permanganate solution and 25 per cent cod liver oil ointment. Although the interdigital parasite was found in a large number of these lesions no secondary invaders could be demonstrated. Compresses with grammidin solution were of no benefit

and seemed to cause irritation in our cases. In many of the cases with superficial ulcers, healing did not take place, even after all signs of infection had disappeared, until the congestion of the skin was overcome. A piece of sponge rubber large enough to extend 1 inch in all directions beyond the margins of the ulcer was applied over the potassium permanganate compresses. The entire lower part of the leg, beginning over the dorsum of the foot, was then wrapped with an Ace bandage, which was left on for eight hours each day. At night the cod liver oil ointment was applied. The value of this combined method of treatment cannot be too strongly emphasized.

The second type, or tinea cruris (eczema marginatum) presented the same morphologic characteristics as we are accustomed to see at home, but the lesions were more extensive and more inflammatory as a general rule. The eruptions responded nicely to treatment but tended to relapse once the patient perspired or returned to duty. It was necessary to continue treatment for two months after all clinical signs of the disease had disappeared. *Trichophyton purpureum* and *Epidermophyton inguinale* were the only parasites cultured. Cultures were obtained in about one third of the cases of this type.

The third type was extensive tinea corporis, covering the trunk, front and back and the proximal third of the upper arms. The eruption consisted of complete or incomplete annular lesions separated by small areas of normal skin. They were only slightly inflammatory and were covered with very fine branlike scales but showed no vesicles or pustules. Itching was intense. The clinical picture did not suggest a tinea imbricata, and only *Trichophyton rubrum* or its two variants, *Trichophyton lanorosum* and *Trichophyton plurizoniforme*, were found in the scales in about one third of the cases. This type of eruption responded nicely to an ointment containing 3 per cent iodine and 3 per cent glycerin in petrolatum. A 5 per cent ammoniated mercury ointment or a 3 per cent chrysarobin ointment produced so much irritation that it was necessary to stop them entirely. Whitfield's ointment, unless used in full strength, was not effective and was too irritating when applied to extensive body surfaces.

*Tropical Epidermomycoses*—In the stricter sense of the word "tropical," this term has been used to describe a group of fungous diseases that are found only in the tropics and that involve the skin almost exclusively. They differ widely in their clinical manifestations, their etiologic agents and their geographic distribution. So far I have had no personal experiences with these rarer types of fungous diseases. Langeron<sup>11</sup> has divided them into four groups according to the type of parasite that causes them:

- 1 Endodermophytoses, which are produced by a group of endodermophytons (trichophytons) with faviforme cultures which attack only the skin and never the hair or deeper structures to form kerion or granulomatous lesions. Nor do they invade the blood stream. In this group are found tinea imbricata, chimeria and tinea intersecta.

- 2 The cladosporian dermatoses (hormodendron and chlosporium). Two types are recognized: (1) the achromatic type (parasitic achromia of Jeanselme) (2) the hyperchromic type (tinea nigra and keratomycosis nigricans palmaris).

10 McCarthy, Lee. *Histopathology of Skin Diseases*. St. Louis: C. V. Mosby Company, 1931, p. 472.

11 Langeron, M. *Nouvelle pratique dermatologique*. Paris: Masson & Cie, 1936, vol. 2, p. 335.



3 The dermatoses caused by parasites that produce aleurospores (*tinca albigena*, *khi-hueri*) This type may produce mycetoma as well as involve the skin

4 Two dermatoses probably due to trichophyta but insufficiently studied (tropical ringworm of Sabouraud and *tinca nigrocircinata*)

*Tinea Imbricata* (Tokelau) — This is a very pruriginous tropical skin disease that is characterized by the appearance of concentric circles or rings formed of scales which are attached on their periphery and are free at the center. The circles may assume a definite rosette-like pattern designated as cocards. At times the scales may be layered like the shingles on a roof. The fungus advances peripherally, leaving a smooth surface within the circle. A similar process again develops in the original central spot and forms a circle of scales within the older, or more peripheral, circle. The process is repeated until several rings of scales are formed, each originating from the central focus, the way concentric ripples form on water from the fall of a pebble, according to Stitt.<sup>12</sup> The circles are from one-eighth to one-half inch apart and the eruption may spread to involve the entire body with the exception of the axillae, groin, palms and soles. The nails have practically never been invaded.

The disease is due to a special type of fungus called *Endodermophyton concentricum* because it proliferates only within the skin never penetrating deeper into the tissues and never attacking the hair. There is an entire absence of inflammation, which separates it from all other types of tropical ringworm. *Endodermophyton indicum* has also been cultured from the scales. This parasite produces a reddish culture, while *Endodermophyton concentricum* (*Endodermophyton tropicale*) produces a grayish white culture. Recent researches on *Epidermophyton purpureum* (*Trichophyton rubrum*) have shown that production of pigment is most variable on different batches of the same medium and is really only a secondary characteristic. Most authorities feel that the two parasites are identical. McCarthy<sup>13</sup> was able to prove by inoculation of guinea pigs that *Trichophyton rubrum* was really an *endodermophyton*, as it never attacked the hair or the deeper structures. Two other species reported in this mycosis, *Endodermophyton tropicale* and *Endodermophyton mansonii*, are now recognized as being identical with *Endodermophyton concentricum*. Langeron<sup>14</sup> believes that *Trichophyton concentricum* is the proper designation of the one and only fungus that causes this disease.

Although parasitic mycelia were first demonstrated in the scales in 1879 by Manson<sup>15</sup> in China, the disease had been recognized clinically as early as 1686 in the Tokelau Islands. It is now widespread in all hot and humid parts of the islands of the South Pacific, the Malay Archipelago, southern China, southern India, Ceylon, Colombia, Brazil and Guatemala. No authentic case has been reported as originating in the United States. The disease is refractory to treatment. Manson<sup>15</sup> recommended an iodine liniment containing 12.5 per cent iodine, as he found that the 7 per cent tincture was not strong enough to be effective. Two to 5 per

cent chrysarobin ointment has been used by many authors. Castellani<sup>16</sup> prefers 60 to 120 grains (4 to 8 Gm) of resorcinol in 1 ounce (30 cc) of tincture of benzoin. These preparations will not be effective until the scales have been removed by thoroughly scrubbing the skin with hot water and tincture of green soap or sand soap. Sterilization of the clothing is most important, boiling or destroying them by burning is an absolute necessity.

*Chumbeira* — This is the name given to a fungous disease of the skin which is found in Brazil and which has often been confused with *tinea imbricata* or pinta. It was first reported by Fonseca<sup>17</sup> in 1924, who isolated and cultured a parasite from the scales and called it *Trichophyton roquettei*.

The lesions consist of large, achromatic, annular or circinate, very pruriginous patches that are covered with a thick layer of scales. Even the scales have a translucent or whitish color. The scales are thickest on the edges of the patch and are easily detached. Practically any part of the body surface, with the exception of the hair and nails, may be involved.

This type differs from the usual ringworm of the glabrous skin by its constant and pronounced depigmentation, the absence of erythema and vesicles, and the fact that the scales are much thicker on the borders than in the center of the lesions.

*Tinea Intersecta* — This type of fungous disease is characterized by the appearance on the skin of papules which dry out and split across the top. It is widespread through Ceylon and southern India and southern China. Mycelial threads are easily demonstrated in potassium preparations of the scales, which produce a reddish faviforme culture on Sabouraud's medium. The parasite is called *Endodermophyton castellani* and has been transmitted from man to man but not to laboratory animals.

The disease begins as tiny, slightly elevated, deeply pigmented papules separated from one another by a narrow zone of normal skin. They enlarge very slowly, become very hard, dry out and crack transversely. They may remain solitary or coalesce to form irregularly sized and shaped plaques. The splits in the papules deepen until the lower layers of skin are involved. In this fashion large, thick, brownish scales are desquamated, leaving behind round or oval areas of whitish, depigmented skin similar to the desquamated areas seen in *tinea imbricata*. Rosette-like patterns never develop in this disease. Itching is intense over the involved areas, which may include especially the arms, legs, chest and back. No visceral or systemic involvement has been reported.

The disease is evidently benign, for it is easily cured with tincture of iodine, full or half strength, a 5 per cent ammoniated mercury ointment or a 3 per cent chrysarobin ointment.

*Cladosporian Dermatophytes* (parasitic achromia or Jeanselme, *tinea flava*, hodi-potsy) — Although Castellani<sup>18</sup> classified this eruption as an atypical type of pityriasis versicolor involving only the face and neck that was due to one of the *Malassezia*, which he called

12 Stitt, *Diagnosis and Treatment of Tropical Diseases*, p. 1172.  
13 McCarthy, Lee, *Contribution à l'étude des epidermomycoses avec présentation des six parasites nouveaux*, *Ann. de dermat. et syph.* 6: 19, 1925.  
14 Langeron, *Nouvelle pratique dermatologique*, p. 339.  
15 Manson, Patrick, *China Imp. Customs M. Rep.* 16: 41, 1879.

16 Castellani, Aldo, *Tinea Imbricata*, *Brit. J. Dermat.* 25: 17, 1913.  
17 da Fonseca, O., *Sobre a etiologia do Chumbeira dermatite em indios do rio São Miguel*, *Sc. med.* 11: 615, 1924.  
18 Castellani, Aldo, *Tropical Forms of Pityriasis*, *B. N. J.* 2: 1271, 1905.

*Malassezia tropica*, the work of Jeanselme,<sup>19</sup> and more recently that of Fontoynt and Carougeau<sup>20</sup> have shown that this is a disease entity per se and is caused by a conidiospored hyphomycete of the genus *Hormodendron* (Cladosporiae). According to Langeron,<sup>21</sup> this parasite should be called *Hormodendron fontoynti*. Parasitic achromia is widely distributed and extremely common in all tropical countries. In Asia it has been found in the Indies, Ceylon, Malay Peninsula and Indo-China also in Africa, Madagascar and Nigeria. So far in South America it has been reported only from Brazil. This disease penetrates deeply into continents rather than remaining an insular coastwise disease, as is *tinea imbricata*.

The disease is characterized by the production, only on the glabrous skin of the face and neck, of scaly whitish plaques. The plaques, at first separated by areas of normally pigmented, healthy skin, gradually enlarge until large areas are involved. The eruption stops abruptly when the bearded or hairy portions of the face are reached. The lesions do not itch, and no papules or vesicles have ever been reported. The edges of the patches are not elevated, and no signs of inflammation are seen. The disease is very contagious, runs in families, and has periods of seasonal exacerbations. It almost dies out in the wintertime, only to flare up in the hot moist summertime.

The parasite appears as elongated straight or short curved mycelia, with single spores or spores in chains, when seen in potassium preparations. The culture begins as a white downy colony, which later becomes a deep greenish black.

The disease should not be confused with *tinea versicolor*, vitiligo, syphilitic leukoderma, macular leprosy or seborrheic dermatitis.

After removal of the scales by scrubbing with sand soap and water, the disease responds nicely to the usual antiparasitics mentioned in the previous paragraphs.

***Tinea Nigra*** (sometimes called  *pityriasis nigra*)—This is the second member of the group of mycotic skin diseases due to a member of the family of the Cladosporia. It has been reported in southern China, Ceylon, Burma and the southern part of India and is fairly widespread and commonly seen in all these regions. The eruption is characterized by the gradual development of dull black, slightly elevated and slightly scaly, nonpruriginous, various sized spots on any part of the body except the face.

Potassium preparations of the scales show pigmented elongated mycelial threads and oval or round spores. On the usual mediums a blackish faviforme culture, which grows slowly into the depth of the medium, is produced in about six weeks. The parasite is called *Cladosporium mansonii*. The disease responds readily to the usual antimycotic applications.

***Keratosis Nigricans Palmaris***—The third member of this group is *keratosis nigricans palmaris*, which has been reported only from several different points in Brazil. It is characterized by pinhead size, deep brown or black papules on the palms, the wrists, the palmar and lateral surfaces of the fingers and the

interdigital spaces of the hands. The papules gradually coalesce to form slightly raised plaques of irregular contour and with polycyclic borders. There is no itching, erythema or signs of inflammation. It is due to *Cladosporium werneckii*, which shows branched mycelia and oval spores in potassium preparations of the scales and grows easily on the usual mediums as a brown or deep green moist colony. The disease has been reproduced in the guinea pig and in man from these cultures (Sartory, Rietman and Meyer.<sup>22</sup>) The disease responds easily to treatment.

#### DERMATOMYCOSES CAUSED BY THE ALEURIOSPORE GROUP

The only member of the group well enough studied to be mentioned here is *tinea albigena*, otherwise known as *khi-huen*. The disease has been known scientifically since the later years of the last century and is widespread in southern Asia. It has been reported from southern India, Indo-China, Ceylon, New Guinea, Borneo, Sumatra, Java and Brazil.

The eruption is localized almost exclusively on the palms and soles. Three stages have been described by Nieuwenhuis<sup>23</sup> the vesicular, the chronic and that of depigmentation and atrophy. It begins as an itchy papule which is quickly transformed into a vesicle surrounded by a narrow zone of intensely acute inflammatory reaction. Repeated attacks of new blisters occur until large areas of the palms and soles are involved. The disease is undoubtedly spread by scratching, which tears off the top of the vesicle and disseminates its serous contents. Since there is a tendency to spontaneous recovery, the disease becomes chronic with the production of thick, fissured and very painful calluses at the site of the vesicle. The disease may be so extensive on the soles that certain individuals, and especially Europeans, are unable to walk or work. In the chronic stage, although itching is present, it is not nearly so severe as in the vesicular, or acute, stage. Gradually the disease penetrates deeper into the skin until the pigment function is completely destroyed. Permanent and complete depigmentation of these areas is the result. Langeron<sup>24</sup> mentions a fourth stage in which the eruption, after many years of chronicity, may spread to the wrists, forearms, backs of the hands and feet, and the ankles. The nails may also be involved.

The eruption is symmetrical and is due to a simultaneous contagion, rather than a trophic disturbance, as was originally thought.

The parasite is a hyphomycete with aleuriospores and belongs to the genus *Glenospora*. It is called *Glenospora albicans* and it grows very slowly on Sabouraud's medium as a rough surfaced colony, which has a white color at first and later a lighter brown.

The disease should be thought of because of its localization to the palms and soles. It shouldn't be confused with acromycosis, herpes circinata, tokelau pinta,  *pityriasis versicolor*, *keratosis palmaris et plantaris hereditaria*, arsenical keratoses or tylotic eczema. The different stages of the production of the fully developed disease, plus the permanent depigmentation and the laboratory studies, should make the diagnosis easy if the disease is kept in mind.

<sup>19</sup> Jeanselme E. Cours de dermatologie exotique. Paris. Masson & Cie. 1904. p. 239.

<sup>20</sup> Fontoynt M. and Carougeau L. Etude sur le hodi pots. Bull. Soc. path. exot. 15: 424. 1922.

<sup>21</sup> Langeron M. Nouvelle pratique dermatologique. p. 359.

<sup>22</sup> Sartory A. Rietman B. and Meyer J. Contribution a l'etude d'une epidermomycoze bresilienne palmaire noire. Compt. rend. Soc. de biol. 104: 878 (July 4) 1930.

<sup>23</sup> Nieuwenhuis A. W. Tinea albigena und die Zuchtung ihres Pilzes. Arch. f. Dermat. u. Syph. 89: 1. 1903.

<sup>24</sup> Langeron. Nouvelle pratique dermatologique. p. 17.

Nieuwenhuis<sup>25</sup> recommends that the treatment be begun early and be carried out vigorously and continuously in order to cure it before the chronic stage is reached. He uses wet compresses renewed at frequent intervals during the day and night for several days, of 10 per cent chrysarobin in equal parts of alcohol and ether. Tincture of iodine painted on in thick layers for fourteen days may also be used. In the chronic stage the horny masses must be removed before one applies this treatment.

#### TROPICAL DERMATOMYCOSIS PROBABLY DUE TO TRICHOPHYTONS

*Tropical Ringworm of Sabouraud*—This is the name given by Castellani to a skin disease found by Sabouraud<sup>26</sup> in patients coming back to France from Indo-China, Tonkin and Japan. Castellani<sup>27</sup> reported the same eruption in Ceylon and now the disease is believed to be widespread in the hot, humid portions of the Far East.

The eruption is intensely pruriginous and very chronic. It begins on the uncovered parts of the body and especially on the legs with the formation of erythematous round spots whose surfaces are covered with a very fine layer of scales. The spots enlarge peripherally, clear in the center and form complete or incomplete rings, resulting finally in large plaques with polycyclic borders. The centers of the plaques are brownish and smooth. The scaly borders may be slightly elevated or they may merge into the surrounding normal skin. At times vesicles and papules form on the borders of the lesions. Itching increases with the spread of the disease, and in long standing cases the borders of the plaques become distinctly lichenified.

Curved, banana shaped, mycelial filaments without the double contoured membranes seen in true trichophytosis are found in large numbers in potassium preparations of the scales. Between the mycelia occur oval or round spores of various sizes. The parasite has never been cultured and never transmitted from man to man or to laboratory animals.

It is almost mandatory that patients afflicted with this disease leave hot, moist climates before the disease will respond to treatment. The usual antimycotic preparations will then suffice.

Although not definitely proved, it is probable that this is a true dermatomycosis.

The second member of this group, *tinea nigrocinata*, was described by Castellani<sup>27</sup> in Ceylon. It is characterized by the formation, only on the neck or scrotum, of black annular lesions with elevated and often crusty borders. The lesions are all about the size of a large pea. The skin surrounding the lesions is pigmented a deep brown for a distance of 1 to 2 centimeters. Potassium preparations of the scales show mycelial elements and round spores both with double contoured membranes. No cultures or inoculations succeeded.

The disease is benign and may disappear spontaneously or after the application of mild forms of iodine, chrysarobin, ammoniated mercury or other medications.

The mycetomas, which are so prevalent in the tropics, will be discussed in another portion of this symposium.

## MEDICAL ENTOMOLOGY IN RELATION TO TROPICAL DERMATOSES

MAXIMILIAN E. OBERMAYER, MD  
LOS ANGELES

Diseases due to animal organisms, especially the arthropods, vary somewhat in geographic distribution and with climatic conditions, yet most of such dermatoses which commonly occur in the United States are also encountered in all other parts of the world and knowledge of the disorders seen at home will aid in the management of such dermatoses in the tropics. Consequently a brief outline of the important diagnostic and therapeutic points relating to these diseases appears indicated, particularly since most of the information derived from experience with arthropod borne disease in this war is in the hands of the military personnel and little of it has been published. Some recent data, published mainly by British investigators, and information obtained from the Army Medical Museum in Washington, D. C., and from private sources are incorporated in this article.

Of diseases caused by arthropods the following deserve attention:

### DISEASES BORNE BY MEMBERS OF THE CLASS ARACHNIDA

#### DISEASES CAUSED BY MITES AND TICKS

*Scabies*—Human Scabies. Routine knowledge of this important and ubiquitous disease will be taken for granted. Only some less generally known points which may be of service will be covered.

Infestation is occasioned by more or less intimate contact with an infested person. Sleeping with a person with the disease or in a bed recently occupied by such a person is the most common method of contracting the disease, but in a considerable proportion of cases the infestation is of venereal origin. However, so transitory a contact as a simple handshaking may suffice to transmit the disease. Scabies is so highly transmissible that it has been an important source of loss of man-days in all armies in all wars. Scabies should be considered in every case of pruritic eruption, especially if the hands and the genitalia are involved. Once the diagnosis is made, men who have been in daily contact with the patient should be examined.

To recover *Sarcoptes scabiei* from a lesion needs an experienced examiner. Under field conditions the presence of burrows or papulovesicles in their characteristic location and the history of nocturnal pruritus should suffice to make the diagnosis of scabies. The penile and scrotal lesions commonly are infiltrated papules, and the diagnosing of scabetic papules as lesions of early syphilis and vice versa, is a deplorable and unfortunately not uncommon error. On the other hand since scabies is frequently venereal in origin the simultaneous presence of the two diseases is not improbable.

Latest research in the treatment of soldiers has shown that of the many medicaments in common use for scabies only two, sulfur ointment and benzoin

This paper is a symposium on "Tropical Diseases of the Skin" published under the auspices of the Section on Dermatology, I. Mellanby, Kenneth Johnson, C. C. and Harkins, V. C. T. Treatment of Scabies Brit. M. J. 2, 1 (July 4) 1943.

25 Jeanselme. Cours de dermatologie exotique, p. 236

26 Castellani quoted by Langeron, p. 374

27 Castellani, quoted by Langeron, p. 375

zoate, are satisfactory Benzyl benzoate, the main ingredient in Peruvian balsam, was found to be fully effective in the form of a lotion or emulsion A 10 per cent sulfur ointment or a vanishing cream containing 10 per cent of sulfur applied three times in routine fashion is efficacious, while sulfur lather preparations are not Tests with preparations containing rotenone have been unsatisfactory, furthermore, derris root emulsions are notorious for causing dermatitis Investigations suggest that pyrethrum extracts are not particularly valuable for treating human scabies, and pyrethrum too is well known as an epidermal sensitizing agent

The case of ointment versus liquid preparations may be stated thus If the patient applies the medicament himself, the use of ointments, even though they are "messy," is safer, for it has been found<sup>1</sup> almost impossible for a patient to apply either liquid preparations or creams satisfactorily to himself

The classic method of treating scabies made mandatory a thorough scrubbing of the skin under a hot shower with liquid soap and a flesh brush, to remove the tops of all lesions While the long soak in a hot bath followed by scrubbing is a desirable feature if soldiers are treated in a hospital or sick bay, it is useful to know that treatment can be carried out successfully when such facilities are not available,<sup>1</sup> a point of great practical importance in desert warfare

Prescriptions 1, 2 and 3 are recommended for routine use I have used the ointment given in prescription 1 for years with satisfactory results<sup>2</sup> As an after-treatment the application of a simple antipruritic shake lotion is desirable The formula<sup>3</sup> given in prescription 4 is helpful Under no circumstances should the course of treatment be repeated unless the presence of a living organism is demonstrated since the dermatitis resulting from overtreatment (especially with sulfur) may occasion a greater loss of man-days than the infestation

The most frequent complication of scabies is pyogenic infection, especially under field conditions, it tends to

#### PRESCRIPTION 1—Sulfur-Peruvian Balsam Ointment

	Gm or Cc
R Precipitated sulfur	12 0
Peruvian balsam	12 0
Petrolatum	
Hydrous wool fat	aa q s ad 120 0

#### PRESCRIPTION 2—Benzyl Benzoate Lotion

R Soft soap	
Isopropyl (or ethyl) alcohol	
Benzyl benzoate	aa q s ad 120 cc

be more severe in seborrheic individuals and is best treated with a 5 per cent sulfadiazine or sulfathiazole cream

Scabies of Animals Organisms related to the acarus responsible for human scabies cause a similar disease in animals and birds which may be contracted by man

Scabies of the horse This disorder is of common occurrence in military stables Soldiers caring for

horses with scabies frequently contract the disease, which has a short incubation period, signs often appear on the day infestation occurs Differentiation from human scabies rests on the absence of burrows and the differences in location and appearance of the lesions The lesions, which are bright red, conical, follicular papules, usually capped by a hemorrhagic crust, appear on the flexor surfaces of the arms, the breast and the

#### PRESCRIPTION 3—Benzyl Benzoate Emulsion

	Gm or Cc
R Benzyl benzoate	200 0
Stearic acid	20 0
Triethanolamine	5 0
Water	q s ad 1 000 0

Melt the stearic acid with the benzyl benzoate on a water bath Mix the triethanolamine with half the quantity required of warm water and pour into the stearic acid benzyl benzoate mixture cooled to about 30 C shake to form an emulsion and add enough water to produce the required volume

#### PRESCRIPTION 4—Antipruritic Shake Lotion

	Gm or Cc
R Menthol	
Phenol	aa 0 5
Zinc oxide	
Talc	aa 20 0
Glycerin	15 0
Water	70 0

abdomen down to the belt line, the genitalia are almost never involved A peculiar feature is the appearance of an urticarial wheal when the lesions are scratched (factitial urticaria) The disorder runs a mild course and subsides spontaneously Ordinary antiscabietic treatment may be used if necessary

Scabies of the dog This disease is frequently encountered in tropical and subtropical countries In human beings it is characterized by the appearance of red macules and papules, occasionally capped by minute vesicles, urticarial reactions are common The location of the eruption depends on the point of contact, the neck and the upper part of the chest are most frequently involved, but the cheeks, postauricular region and scalp are also common sites The disorder responds promptly to antiscabietic therapy

Scabies of the cat This disease, most common in countries in which neglected cats abound, is caused by a smaller parasite which is not strictly an acarus On human patients the lesions, which are similar to those of strophulus, appear as small papules capped by a minute vesicle Antiscabietic treatment is not required, the application of an antipruritic shake lotion is usually sufficient

Rat Mite Dermatitis—The disease is caused by *Lyponyssus bacoti*, which is of significance because it is a carrier for the virus of endemic typhus fever The lesions consist of wheals, papules and vesicles, which may become infected as a result of scratching In adults the eruption is usually limited to the ankles, but it may appear in small patches elsewhere Buildings infested with the mites must be gone over by an exterminator squad

Food Mite Dermatitis—Other mites closely related to acarid and predominantly of the *Tyroglyphus* variety, are present in such materials as cheese meal, copra, dried fruit and linseed oil Persons such as pickers

<sup>2</sup> Becker S W and Obermayer M E Modern Dermatology and Syphilology Philadelphia I B Lippincott Company 1940  
<sup>3</sup> Pillsbury D M Sulzberger M B and Livingood C S Manual of Dermatology Philadelphia W B Saunders Company 1942

or dock workers, who come in contact with infested material may show a pruritic eruption which is known variously as "grocers' itch" or "copra itch." The lesions, small, pointed erythematous papules which itch intensely, develop on the parts of the body which come in contact with the material, the extensor surfaces of the hands and forearms are chiefly involved. The application of an antipruritic shake lotion is therapeutically sufficient.

*Acrodermatitis Urticarioides*.—Grain itch is caused by a macroscopic, grayish yellow mite, *Pediculoides ventricosus* which lives on the larvae, caterpillars and chrysalis of various organisms noxious to grain, the eruption occurs among men who sleep on infested straw or straw mattresses. The extent of the eruption depends on the number of organisms and the sensitivity of the patient. In mild infestations it is limited to the regions in most intimate contact with the infested material, in the more severe forms of the disease the entire trunk, the neck and even the face may be involved. The lesions are small bright red papules often capped by a vesicle which becomes a pustule. The larger lesions are somewhat urticarial. All the papules may appear hemorrhagic, but they pale out completely on glass pressure. Diagnosis is sometimes difficult because the eruption may resemble varicella, and it may be accompanied by such mild constitutional symptoms as fever and slight albuminuria. However, the characteristic umbilication of the varicella vesicles is absent and the pruritus is intense. The history of contact with straw is suggestive, especially if the troops have been billeted about farms. Treatment consists in application of an antipruritic shake lotion. Infested straw ticks should be burned.

*Wood Tick "Bites"*.—Ticks (*Ixodes*) are readily visible organisms which penetrate the epidermis by means of a lancet shaped under lip until the head is more or less embedded in the skin. The penetration of the tick is usually unnoticed by the patient, a circle of erythematous reaction appears only if the patient is hypersensitive. Ticks are parasites of cattle, dogs, rabbits and man. In temperate climates there is a seasonal prevalence in May, June and July. Men should be examined carefully for ticks because of the role of the parasites in spreading Rocky Mountain spotted fever, tularemia and exanthematous fever of the Mediterranean. São Paulo typhus and Central African relapsing fever. Soldiers should be instructed not to remove ticks with the bare fingers for if an attempt is made to remove the organism by force the lower jaw is left in the wound and may cause a prolonged purulent discharge unless removed surgically. It is better to suffocate the tick by the application of a material such as liquid petrolatum, glycerin or kerosene. With such treatment the head is spontaneously retracted in several minutes or hours and the tick falls off.

*Trombidiosis*.—Jigger bites (*trombidiosis*) are produced by larvae (*Leptus autumnalis*, harvest mites, redbugs) of several members of the *Trombidia* family which live on flowers, grasses, shrubs and grain (buckwheat) and on the ground near such vegetation. The larvae live independently and feed on various animals (mice, snakes and man). The organisms, which are active from spring to fall, produce lesions at the point of contact, they commonly attack the skin below a tight constriction, such as a garter or a belt. The initial

erythematous macule is followed by an intensely pruritic papule surrounded by an erythematous halo, which may be hemorrhagic, the larva may sometimes be seen in the center of the papule as a point of brick red color. The lesions may be of other types, e. g. minute hemorrhagic puncta, urticarial wheals or lesions resembling lichen urticatus. The bite itself is usually not noticed, the patient's attention is aroused by the intense itching which is especially evident at night when the patient has become warm in bed. The larva falls off in forty-eight hours or less and is consequently gone when the patient seeks medical attention. The lesions persist for an uncommonly long time. The secondary infection which usually ensues is often extremely persistent and the response to treatment is less satisfactory than with other forms of secondary pyogenic infections. Occasionally there is initiated a chain of generalized skin sensitization with eczematous "id" lesions which require weeks or months to heal.

Trombidiosis is of military importance because partial disabilities from scratch infection may assume large proportions among troops in warm climates. In addition, in the Far East trombiculae present another and more serious danger, for the organisms transmit the Tsutsugamushi group of Rickettsial diseases namely the Japanese River fevers which are identical with Malayan scrub typhus.

#### PRESCRIPTION 5—Compound for Trombidiosis

	Gm or Cc
R Benzocaine	2.0
Flexible collodion	15.0
(Bottle with rod in stopper)	

Vigorous measures for the prevention of jigger bites should be taken in regions where there is thick, tall grass, especially during the late summer months. Prophylaxis consists in the application of 5 per cent sulfur in talcum as a dusting powder. A warning about the possibility of sulfur dermatitis should be given especially in the case of men with dry or poorly pigmented skins.

Thrice daily applications of a 2 per cent rotenone solution (such a preparation is available from the Abbott Laboratories) have been used for treatment. This therapy has the disadvantage that dermatitis frequently ensues, especially when the solution is applied to the genitalia. Application of an antipruritic shake lotion will allay the itching. Twice daily application of the preparation given in prescription 5, recommended by R. L. Sutton Jr., has proved effective.

It is essential to recognize secondary pyogenic infections early and to treat them by local applications of a 5 per cent sulfathiazole or sulfadiazine ointment. It is also important to protect the sites of the lesions from contact with rough woollen clothing, so that development of contact dermatitis may be prevented once the complication has developed the man should be sent to a hospital, because field conditions do not allow the limitation of activity necessary to overcome the cutaneous irritation.

#### SPIDER "BITES"

The most important poisonous spider—and the only one found in the United States—is the tarantula *Latreutes mactans*, known as the black widow. The spider is commonly found on refuse heaps in buildings.

stables. Pain in the region of the bite and intense regional swelling may be followed by such grave constitutional symptoms as spastic cramps of the extremities, rigidity of the abdomen with nausea and vomiting, headache, ringing in the ears, dizziness, pain throughout the body, a rise in blood pressure of 30 or 40 mm and a state of anxiety. Generalized toxic erythemas are not uncommon. The bites may be inflicted on any part of the body but frequently occur on the genitalia or buttocks through exposure in an outdoor privy.

Treatment, according to Frawley and Ginsberg, should consist in bed rest, a soap solution enema, increase in the intake of fluids, intravenous administration of 20 cc of a 10 per cent solution of magnesium sulfate (to combat hypertension and spasticity of the muscles), hypodermic administration of morphine (to control pain) and peroral sedation. Tincture of iodine should be applied immediately to the wound, followed by wet dressings with potassium permanganate (1:8,000).

#### DISEASES BORNE BY MEMBERS OF THE CLASS INSECTA

##### DISEASES CAUSED BY LICE AND BUGS

Insects are of much greater importance in military medicine than in civil practice. Insects spread many epidemic diseases, and their "bites" may cause disability of formidable duration if adequate measures for the prevention of secondary eczematization and pyogenic infection are not instituted immediately after the "bite" is inflicted.

In general an insect "bite" appears as a central punctum in an initial macule, wheal or papule, the degree of inflammatory reaction varies with individual hypersensitivity. Insect "bites" often appear as asymmetrical groups and it is best to consider them as a diagnostic possibility in every pruritic papular and urticarial eruption.

**Pediculosis**—It appears certain that lice, the agents of pediculosis, leave a febrile patient and try to find other hosts, a point of epidemiologic importance. It is also known that small lice may be distributed in the open air by wind and may be blown on to the outer garments of those engaged in dealing with infested persons. It has been shown that head lice may be acquired from the upholstered backs of seats and chairs, from brushes and combs and by passage from hat to hat (e. g. in schools or mess rooms). Similarly, the body louse may spread when groups huddle together for warmth.

The military significance of pediculosis is illustrated by the statistics showing that during World War I (in 1917) the casualty clearing stations of the British Second Army admitted more than 10,000 men for inflammatory disorders of the skin, caused mostly by lice.

**1 Pediculosis Corporis** *Pediculosis corporis* is the most important of the three forms of this infestation because the body louse, its agent, transmits epidemic typhus, trench fever and recurrent febrile spirochetoses. The body louse is better called the clothing louse, since it inhabits the clothing and only feeds on the skin, its eggs are laid about the seams of clothing, where they should be searched for. In most instances the patient presents only excoriations usually

linear, on portions of the body where the clothing is in intimate contact, especially the shoulders and about the waist and buttocks. The incidence of infestation increases sharply in men who have little opportunity to bathe, especially if quarters are crowded. The spread of diseases by the clothing louse is aided by the European custom of popping lice between the thumbnails and the American and Australian habit of crushing them with the teeth. Since the spirochete of the recurrent febrile spirochetoses is transmitted by inoculation incident to rupturing of a louse and cannot be transmitted by the louse's "bite," these customs should be discouraged.

Treatment consists in autoclaving of the clothing for fifteen minutes and thorough scrubbing of infested men with soap and brush. Secondary pyogenic infection or scratch dermatitis must be treated.

**2 Pediculosis Capitis** The only important complication of this otherwise harmless infestation is the secondary pyogenic infection which is produced by scratching, usually on the nape of the neck or the occipital and temporal regions, and is often accompanied by enlargement of the posterior cervical nodes.

The older methods of treatment by applications of equal parts of kerosene and olive oil, acetic tincture of

##### PRESCRIPTION 6—Compound for *Pediculosis*

R. Lauryl thiocyanate	25%
(du Pont technical grade, distilling above 236 C)	
Paraffin oil (B. P. 325 C)	75%

##### PRESCRIPTION 7—Compound for *Pediculosis*

R. Lethane 384 special	50%
(Rohm and Haas, Philadelphia)	
Refined paraffin	50%

larkspur, N. F. VI, or 1:500 mercury bichloride solution are gradually being replaced by other methods. I use cuprex (a proprietary copper compound) solution. Busvine and Buxton<sup>4</sup> reported great success from the use of a 1 per cent rotenone emulsion or the compounds given in prescriptions 6 and 7. They recommended applying the compound once, with spoon or pipet, to four areas of the scalp on each side and allowing it to remain for ten days before shampooing, 8 cc of the material per patient is sufficient. Patients' caps and helmets, of course, must be sterilized. The use of vinegar to soften the gelatinous coating that attaches the nits to the hair should be discouraged, contrary to popular belief, it has been shown that the substance is not dissolved after soaking in a 10 per cent acetic acid solution for several days.<sup>4</sup> If many men are infested it is advisable to clip the scalp routinely.

**3 Pediculosis Pubis** Infestation with the crab louse would be insignificant except for the discomfort produced by the itching were it not for the disabilities which result from irritating methods of treatment. Neither the old blue ointment nor rotenone preparations should be used, and shaving of the pubic hair, which causes considerable discomfort during the early stage of regrowth, is unnecessary. The best method of treat-

<sup>4</sup> Buxton, P. A. *The Louse*. Baltimore: Williams & Wilkins Co., 1940.



ment consists in application of 1 to 2 ounces of cuprex. The solution is rubbed into the involved regions and ten minutes later rubbed in again, it is allowed to act for one hour, and the region is then carefully washed with soap and water. Pediculi on the eyelashes may be removed by contact with an applicator saturated with cuprex for one minute. If cuprex is not available, mercury bichloride 1:500 in 70 per cent alcohol may be applied twice daily, but it should be remembered that the skin is occasionally sensitive to mercury and that eczema may result. Failures often result from not paying sufficient attention to the perianal hairs.

#### BEDBUG "BITES"

*Cimex lectularius* is of epidemiologic significance as the transmitter of the recurrent febrile spirochetoses. Hence the remarks on the danger of inoculation by rupture of lice apply to rupture of bedbugs as well.

The lesions produced by *Cimex* are usually firm, conical papules. However, if hypersensitivity is pronounced, large, sometimes hemorrhagic, bullae may form. The grouping of lesions in pairs and triplicates, fairly close together, is a characteristic feature.

Treatment consists in extermination of the insects. The only method which gives absolutely certain results is fumigation with hydrocyanic acid. Mercury bichloride solution 1:500 kills the eggs when poured into cracks and crevices of furniture, floors and walls, and fumigation with sulfur will kill the parasites. A good general insecticide, cheap and harmless, which may be used for spraying floors and walls, is made by dissolving three parts (by weight) of soft soap in fifteen parts of water and slowly adding kerosene while stirring constantly until no more will emulsify.<sup>4</sup> This concentrated emulsion can be stored in bottles, it is diluted 1:20 for use.

#### DISEASES CAUSED BY FLEAS

*Flea "Bites"*—Fleas are chiefly important intermediary hosts for the agents of such serious diseases as bubonic plague, exanthematous and murine typhus and various bacteria, tropical protozoa and worms. The flea jumps on and off the host and does not confine itself to one host. In addition to human fleas, many varieties of animal fleas attack man when hungry, those of most interest to man are the fleas of dogs, cats, rats and squirrels. Confusion arises from the frequent erroneous designation of these fleas, in sandy regions, as "sand fleas," a term which is correct only for the penetrating, strictly tropical sand flea (*chigoe*). Animal fleas infest buildings or even the sand itself in sandy areas and attack human beings.

A flea puncture results in the formation of an erythematous macule or wheal with a central hemorrhagic punctum (*purpura pulcosa*). Giant urticaria may result if the patient is hypersensitive. Some persons are immune.

Treatment consists in the application of an anti-pruritic shake lotion.

*Chigoe*—Chigoe infestation, or dermatophylia, is a cutaneous disorder produced by the sandflea, or chigoe, which is encountered chiefly in Central America, the West Indies, the northern part of South America, Africa and India. It is principally a disease of the tropics but occasionally occurs in the temperate zone. Chigoe infestation is known under various native designations, of which nigua and chigoe itch are the most common. In the United States trombidiosis, or jigger

bites, is frequently confused with dermatophylia, although the two disorders are caused by entirely different organisms and run different clinical courses.

The minute insect which is responsible for dermatophylia belongs to the family Sarcopsyllidae and is named *Sarcopsylla* (*Pulex*, *Tunga*, *Dermatophilus*) penetrans, it is the most completely parasitic of the species of fleas. In appearance it resembles *Pulex irritans*, the common flea, except that its proboscis is longer. Sand fleas live in dry, sandy soil and feed on the blood of various animals. After impregnation, the female attaches itself to the skin of man and that of many animals, especially swine, rats and mice, and pierces it obliquely, so that all except the last two segments of its body become embedded. Sucking blood for several days increases the size of the insect to several millimeters. If left undisturbed, it remains on the host and lays a large number of eggs, which hatch in eight days and after three weeks become mature adults.

The cutaneous lesion produced by the sand flea is at first a shallow burrow, at the opening of which the posterior part of the insect is visible as a brownish red dot. Later there develops a pruritic papule, several millimeters in diameter, which suppurates. Abscesses and ulcers, accompanied by lymphangitis, may be formed, such ulcers are resistant to treatment. Secondary infection, gangrenous or tetanic, may necessitate amputation. Lesions as a rule are located on the feet, at the corner of or beneath the free margin of the toe nails or on the ankles, however, since soldiers often sleep on the ground sites other than the feet (e.g. the anogenital region) are often affected.

Treatment depends on the stage of the disorder. If suppuration has not yet taken place, the affected part should be thoroughly cleansed with soap and water and the insect skilfully extracted by means of a blunt, heated needle. Great care should be taken not to rupture the flea while attempting to extract it, because if part of it or some of its eggs remain in the burrow, subsequent suppuration is inevitable. If suppuration has occurred or if the attempt to remove the insect is only partially successful, the cavity should be subjected to forceful cleansing and cauterization with pure phenol followed by the immediate application of alcohol. The wound should be dressed with a 5 per cent sulfathiazole or sulfadiazine cream.

Infestation can be prevented by putting up camp away from chigoe infested localities. The neighborhood of native villages should be avoided, and the ground should be swept or fired. Walking barefoot should be discouraged when the disorder is prevalent.

#### DISEASES CAUSED BY OTHER INSECTS

Other insects which attack human beings are gnats, mosquitoes, bees, wasps and flies. The resulting lesions are macular, papular, hemorrhagic or urticarial. If the patient is hypersensitive, the reaction may be so extensive as to simulate angioneurotic edema, and severe constitutional symptoms may even be present. The larva of the bot fly produces painful inflammatory nodules, and the "bite" from the black fly causes the formation of a pruritic nodule often with the accompanying swelling of the regional lymph nodes and regional pain and stiffness. The reaction is often delayed for twelve to twenty-four hours and persists for days.

YAWS, CUTANEOUS LEISHMANIASIS  
AND PINTAHOWARD FOX, MD  
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Of the three diseases described in this communication yaws and cutaneous leishmaniasis are prevalent in many parts of both hemispheres. Pinta is largely confined to the American tropics. Few members of our armed forces are liable to contract either yaws or pinta as these diseases are due to lack of personal hygiene and are not usually acquired through insect vectors. However, our medical officers in certain tropical regions will doubtless have to render medical aid to native populations and will then see many cases of these diseases.

Cutaneous leishmaniasis is however contracted both by personal contact and by the bite of one of several species of *Phlebotomus* or occasionally of other insects. It is therefore probable that some of our armed forces will be infected by this disease.

Yaws and pinta are confined almost exclusively to the tropics, whereas cutaneous leishmaniasis is seen in both tropical and semitropical regions.

## YAWS

Yaws is the term used in British and American colonies for the disease known as *frambesia tropica*. In French speaking colonies the term *pian* is used. Yaws is an infectious disease caused by *Treponema pertenue*, an organism which is morphologically identical with the spirochete of syphilis. Its discovery by Castellani followed shortly after that of *Treponema pallidum*. The disease is confined almost entirely to the Negro race. The geographic distribution is widespread in parts of equatorial Africa, many islands of the Pacific including the Philippines, the Malay States, Burma and Thailand. In the western hemisphere it is extremely prevalent in Haiti, Santo Domingo and Jamaica as well as in some equatorial areas of South America.

Yaws resembles syphilis in some respects but shows enough differences for it to be regarded as a separate, though closely allied, disease. Infection with yaws is almost invariably extragenital, the initial lesion often occurring on the leg. The disease is probably acquired most often through personal contact, just as impetigo contagiosa is carried from one child to another. Ideal conditions for this method of transmission of yaws exist among native races in tropical regions who sleep together in crowded huts and wear little or no clothing. There is no doubt that yaws may also be transmitted by flies. In Jamaica Kumm and Turner noted swarms of hippelates flies on lesions of yaws and were able to find 300 spirochetes in the diverticulum of a single fly. It is thought that the infection is simply due to regurgitation by the flies when they alight on an abraded surface.

Yaws is acquired most often in childhood. Transmission through the placenta is however unknown. Yaws

is never congenital and fails to show any stigmas such as saddle nose, Hutchinson's teeth or interstitial keratitis which would correspond with those of congenital syphilis. In India, Powell observed 17 pregnant women in the florid stage of secondary yaws and found that all gave birth to babies who remained free from yaws.

Another feature which differentiates yaws from syphilis is the complete absence of lesions of the mucous membranes in the early (secondary) stage. There are no vaginal mucous patches, which accounts for the absence of venereal infection. However, in the late or tertiary stage destructive ulcerating gummas may be seen in the mucous membranes.

The cutaneous manifestations of secondary yaws show some striking differences from those of syphilis. The initial lesion, or "mother yaw" which is often absent, is of the same type as the common frambesiform eruption except for its much greater size. The typical secondary eruption appears about six weeks to three months after infection and consists of small papules, some of which disappear without further change, whereas others coalesce, soften and form rather typical amber colored crusts. This does not resemble any manifestation of syphilis but may be mistaken for impetigo. The eruption may be generalized and profuse or show a tendency to be localized about the mouth and in the anogenital region. At times the lesions form circles, which are spoken of as "ringworm yaws," though this does not resemble the annular papular syphilitid with its delicate raised border and hyperpigmented center, which is so characteristic of the Negro race. The eruption lasts from one to two years or even longer at times and disappears spontaneously without leaving any permanent trace.

Whereas the macular eruption (roseola) is the commonest one in syphilis, it is nearly always absent in yaws. This is not due to the difficulty in detecting it on the dark skin as those who have had experience with syphilis in Negroes will testify.

A peculiar eruption of yaws occurs on the soles and at times on the palms and is spoken of as "crab yaws" in the West Indies. This term is used to describe the difficulty in walking (like a crab) especially when the lesions are secondarily infected with pyogenic cocci. This manifestation consists of hyperkeratoses which are usually bilateral and which occur frequently toward the end of the secondary period. That it is an undoubted manifestation of yaws is proved by the presence of spirochetes beneath the scales and by the response to anti-syphilitic treatment.

An infrequent eruption of yaws consists of pinhead size papules in groups. This has been called a "keratoid" eruption on account of its supposed similarity to keratosis pilaris. In my opinion it has a closer resemblance to lichen scrofulosorum.

Yaws again differs from syphilis by the complete absence of iritis or iridocyclitis. This is rather striking as syphilitic iritis is decidedly more common in the Negro than in the white race. There is also an absence in yaws of alopecia either of the diffuse or so-called "moth eaten" type. The statement frequently made that itching constitutes a feature of differential diagnosis between syphilis and yaws is unwarranted in my opinion. It is agreed by all that the cutaneous lesions of syphilis are essentially nonpruritic and I think the same is true of yaws.

The late destructive or tertiary manifestations of yaws are clinically indistinguishable from those of syphilis.

This paper is a symposium on Tropical Diseases of the Skin as published under the auspices of the Section on Dermatology and Syphilology.

Excellent articles on pinta have recently been published by V. Pardo Castello and Ismael Ferrer (*Arch. Derm. & Syph.* 45: 843 [May] 1942) and by Herman Beeraman (*Am. J. M. Sc.* 205: 611 [April] 1943).

Full descriptions with bibliographies of the three diseases described may be found in *Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases*, 6 Philadelphia: Malinkston Company, 1943, edited by Col. Richard P. Strong. Also chapters by Howard Fox in *Clinical Tropical Medicine*, edited by Z. Bercovit, New York: Paul B. Hoeber, Inc., to be published.

and consist of gummas of the skin and mucous membranes and osteoperiostitis of some of the long bones, synovitis and tenosynovitis, often producing severe mutilation in neglected cases. The tendency of secondary manifestations of syphilis to be followed by a long period of latency is not the rule in yaws, as in this disease the late changes may follow soon after or even before the secondary lesions have disappeared.

Yaws is a milder infection than syphilis as is shown by its comparatively infrequent involvement of the central nervous and cardiovascular systems. The majority of investigators have failed to find abnormalities in the spinal fluid in yaws, and the majority also consider tabes and paresis to be nonexistent or at least extremely rare in yaws. Similar opinions are expressed about lesions of the cardiovascular system. Although Choisser found 10 cases of aneurysm in a series of over 700 necropsies in Haitian Negroes, there was no positive proof that they had not been caused by syphilis. The chief evidence was based on the fact that these lesions were found in natives who had lived in rural districts where yaws rather than syphilis was extremely prevalent. The prognosis as to life in yaws is good, Manson-Bahr stating that "judging from the statistics collected by Nicholls, the mortality must be very small indeed."

The clinical diagnosis of yaws is usually easy in the secondary stage (frambesiform eruption), though in the late stage it becomes difficult or impossible. Spirochetes can be demonstrated with great ease in the frambesiform lesions after removal of the crusts. The organisms have also been found in the lymphatic glands, spleen and bone marrow. They have, however, never been demonstrated in the blood, though successful inoculations have been made in monkeys from the blood of persons suffering from yaws. Differences between syphilis and yaws have been noted in bones on roentgenographic examination, yaws showing a high incidence of osteoporosis.

Animal experiments with monkeys and rabbits have added to our knowledge of yaws. It has often been possible to establish the diagnosis of yaws by inoculation of monkeys, in which a typical frambesiform eruption has been produced. According to Pearce and Brown, a differential diagnosis between syphilis and yaws can usually be made by intratesticular inoculation of rabbits. Inoculation with *Treponema pallidum* usually produces a hard lump, with frequent dissemination to the lymphatic glands, bones and viscera. On the other hand, inoculation with *Treponema pertenue* produces a local reaction, spoken of as a granular orchitis.

Animal experimentations have also added to our knowledge of immunity in yaws. There is eventually complete cross immunity between syphilis and yaws, though there are differences in the immune state in the two diseases. Thus Schobl states that syphilis produces an immunity to itself quicker than it does to yaws and much quicker than yaws does to itself. Before the period of cross immunity is established it is possible for man and susceptible animals to acquire both diseases.

Serologic reactions with either complement fixation or flocculation tests are of no value in differential diagnosis, as syphilis and yaws respond similarly. Both diseases give close to 100 per cent positive reactions in the secondary stages with a gradual lessening of such reactions in the later stages.

Yaws responds unusually well to arsphenamine (or allied drugs) and to bismuth compounds, though mer-

cury does not act satisfactorily in the secondary stage, a feature which is considered diagnostic by Castellani. In the early stages the disease may be permanently cured by three successive injections of neoarsphenamine, though much more treatment is required in the late stage. Oral administration of acetarsone has been used with success, but, as Strong says, the expense of a complete course may equal that of three injections of neoarsphenamine. Bismuth has been widely used on account of its low cost for mass treatment of native populations.

There are three unusual diseases which in many cases are considered to be sequelae of yaws. They are gangosa, goundou and juxta-articular nodes. Gangosa is a severe destructive nasopharyngitis, a typical case being usually described as presenting a funnel shaped opening with the upper lip as its lower border. The nasal septum and surrounding soft parts, the palate and even the eyes may be destroyed. It is thought to be a sequela of yaws, because it occurs in areas where yaws is endemic. Gangosa is seen in parts of equatorial Africa, in Guam, in the Fiji Islands and in the island of Dominica in the West Indies. The disease occurs in untreated persons and is practically incurable.

Goundou is an exostosis beginning in the nasal process of the superior maxillary bone, which forms a hard painless tumor, projecting downward and outward. It may attain the size of an apple and interfere with vision or destroy the eyes. The disease was first observed in Africa by McAllister, who spoke of the affected natives as "horned men." Goundou is thought by many to be a sequela of yaws because it often follows the frambesiform eruption and because heavy inoculations with *Treponema pertenue* fail to produce ordinary lesions of yaws. Some doubt the relationship to yaws and consider the disease to be osteitis deformans or other type of disease of the bone. The treatment is surgical.

Juxta-articular nodes consist of painless, hard enlargements occurring usually in the neighborhood of the larger joints, especially the elbows and knees. Similar lesions occur as late manifestations of syphilis. Spirochetes have been demonstrated both in the nodes supposedly due to yaws and in those due to syphilis. The course of the disease is exceedingly chronic but it responds slowly to antisyphilitic treatment. If desired the lesions can be surgically removed.

#### CUTANEOUS LEISHMANIASIS

There are two types of cutaneous leishmaniasis which differ sufficiently to warrant their being considered as separate diseases. They are oriental sore, a purely cutaneous disease of the Old World, and mucocutaneous leishmaniasis, seen only in the Western Hemisphere. These two forms of the disease which involve the skin are caused by protozoa which are morphologically similar to each other and to the organism which causes kala-azar. They are round or oval bodies with a large kinetoc nucleus and a small rodlike nucleus, and in cutaneous lesions they are found chiefly in endothelial cells and large mononuclear leukocytes. They can be demonstrated microscopically in scrapings from the edge of an ulcer or the under surface of a biopsy specimen stained by Wright's method. They can also be cultivated and are flagellated obligatory aerobes. However, in the so-called relapsing cases of oriental sore it is difficult or impossible to demonstrate the organisms.

1 *Oriental Sore*—Known also as Aleppo boil, Biskra button and Delhi sore, oriental sore is confined to the Eastern Hemisphere and has a wide geographic distribution. It is endemic on the Mediterranean coast of Africa and in Syria, Palestine, Armenia and the southern and eastern parts of Asia, including Iraq, Iran and parts of India and China. In Europe it occurs chiefly in Greece, Italy, Sicily, Cyprus and Crete.

The disease is transmitted both by the bite of several species of phlebotomus and at times by the common house and stable fly and also by personal contact. Both of these methods of transmission have been repeatedly proved. Dogs, especially those with lesions about the nose, may act as reservoirs of the parasites.

The incubation period varies from weeks to months or even a year or more at times. The disease begins as a tiny papule which enlarges to form a plaque of 2 or 3 or even 6 or 8 centimeters in diameter. The lesions usually soften and discharge a sticky material which dries and forms crusts, beneath which is an ulceration with a pink, edematous areola. At times the lesions do not break down and ulcerate. Eventually the crusts fall and are apt to be followed by scars which may be rather deforming. The lesions are situated often on the uncovered parts (face and extremities), rarely on the trunk, and never on the palms, soles or hairy scalp. They may be single or multiple. In rare cases there may be 100 or more lesions. The name Aleppo boil is a misnomer, as the disease has no resemblance to a furuncle.

The course of the disease is self limited and usually disappears within a year, as the Turkish name *habel-seneh*, or "button of one year," would indicate. The disease causes no constitutional and only slight subjective symptoms. It leaves no sequelae except scars and is usually followed by permanent immunity. Occasionally the disease lasts for years, and it may recur. In both chronic and recurring types a tuberculoid structure is found on microscopic examination. The histologic structure of the ordinary type is that of a granuloma without any characteristic features.

A positive diagnosis can be made with certainty only by finding the causative organisms in smear preparations or by culture. In cases such as the relapsing (tuberculoid) type it is usually impossible to demonstrate the organisms either by direct microscopic examination or by culture. Here intracutaneous tests by cultures of killed organisms may be of great assistance. Such tests are positive in a large proportion of cases. The clinical diagnosis may be difficult in endemic regions, but other diseases must be considered, including ecthyma, syphilis, tuberculosis, blastomycosis and tropical and other ulcers. A feature which aids in differentiating blastomycosis is the failure of the latter disease to respond to treatment by antimony and potassium tartrate.

In the treatment of oriental sore, innumerable remedies have been tried. When the lesions are extremely numerous it is advisable to use intravenous injections of antimony and potassium tartrate. For the ordinary case with one or two lesions, freezing with solid carbon dioxide is recommended. X-ray therapy gives good results, but this entails expensive apparatus as well as skill in its use. The so-called *grenz rays* have recently been used in Palestine with success in the treatment of the relapsing type, which has hitherto been resistant to all therapy. Prophylactic treatment con-

sists in personal hygiene and proper care of abrasions. To afford protection against the bites of the sandflies it is advisable to sleep under a net containing forty-five holes to the square inch and to use insect repellents by day. In endemic areas, infected persons should be treated and lesions should be covered by protective dressings.

#### AMERICAN LEISHMANIASIS

The mucocutaneous type (American leishmaniasis) is found in the Yucatan peninsula, in parts of Central America, especially Guatemala, and in every country of South America except Chile. The greatest number of cases is found in Brazil, followed in frequency by Peru, Bolivia and Paraguay.

The disease is seen chiefly in men as the result of their occupation as foresters, workers on tea plantations or collectors of chicle for chewing gum. American leishmaniasis occurs in moist tropical regions with luxuriant vegetation. One type of the disease, however, occurs on the slopes of the Andes at altitudes varying from 3,000 to 8,000 feet.

American leishmaniasis has more than the usual number of local names, no less than twenty-three different designations being given it in South America. In Peru alone there are six local names, one of which, "espundia," has been improperly used in textbooks for a disease that occurs in all the Americas. No one ever employs this local name in Brazil, where the greatest incidence of the disease is found.

The most striking clinical difference from oriental sore is the presence of lesions of the nose and throat in 15 or 20 per cent of the cases. These lesions are sometimes responsible for severe mutilations of the nose and upper lip as well as of the pharynx. The lesions of the nose and throat are usually preceded by one to fifteen years by cutaneous ulcers, which are extremely sluggish and may last for years. They do not show the tendency to spontaneous healing of oriental sore. It is also questionable whether a permanent immunity follows healing in the American type of the disease. It is probable that some species of *Phlebotomus* serves as the vector. There is, however, no known animal reservoir corresponding to the dog, which is often infected with oriental sore.

Laboratory investigations suggest that *Leishmania tropica* and *Leishmania braziliensis* are different species and the causative organisms of oriental sore and American leishmaniasis respectively. Noguchi found that cultures of these organisms as well as of *Leishmania donovani* (kala-azar) agglutinated only cultures of their respective organisms and concluded that there were three separate species of *Leishmania*. His work was confirmed by Klügler but not by others. However, Geiman has lately observed cultural differences when using the chorioallantoic membrane of the chick embryo. Cultures of *Leishmania tropica* were produced in twenty-six passages, whereas *Leishmania braziliensis* lived only to the second passage. It has also been suggested that certain organisms growing in symbiosis with *Leishmania* may be responsible for the clinical differences in the two types of the disease. Seidelin found a gram positive diplococcus which in 2 cases at least was the only other associated organism and in 1 case the skin was unbroken.

The treatment of American leishmaniasis is less satisfactory than that of oriental sore. The cutaneous lesions yield to antimony and potassium tartrate and this

remedy may cure the lesions of the mucous membranes. It may fail to cure the latter lesions, and better results have been obtained in Brazil by using a French arsenical preparation known as "Épaiseno."

#### PINTA

The term *pinta* is derived from the Spanish word *pinta*, meaning a spot, and like many other tropical diseases, it has numerous local names. In Mexico it is called *mal del pinto* and in Colombia *carate*. These two countries show the greatest incidence of the disease, a careful survey in the southern half of the republic of Mexico having shown over 270,000 cases. The disease is also seen to a less extent in Venezuela, in Peru, in Ecuador, in some of the islands of the West Indies and in Central America.

*Pinta* is an infectious disease caused by a spirochete which is morphologically identical with the organisms causing syphilis and yaws. It has no relationship to fungi, as was erroneously stated in textbooks for forty years.

The first clue as to the true nature of the disease was the discovery by Menk in 1927 that 75 per cent of cases gave a positive Wassermann reaction. With improved technique this was later found by the Mexican commission to be close to 100 per cent in the pigmentary stage of the disease. The causative organism was discovered in August 1938 by Grau Triana and Armenteros working in the laboratory of Saenz in Havana. In the following year Leon y Blanco proved that the disease could be inoculated in man and that it frequently showed primary and secondary lesions of nondescript character which lasted for months or years. He also proved that the disease was inoculable in persons suffering from latent syphilis.

Previous to the past four years it was thought that the manifestations of *pinta* were confined solely to pigmentary changes in the skin. The most characteristic change in color in the pigmentary or late stage is a leaden or slaty blue which occurs in patches or freckles, especially on the exposed parts of the body. Favorite sites include bony prominences such as the forehead, nose, malar region, knuckles, knees and ankles. The eruption often shows a tendency to symmetry, though in rare instances it may involve only one side of the body (*hemipinto*). Blue patches may also affect the mucous membranes of the mouth. Eventually the blue color tends to disappear and may be followed at first by partially depigmented areas and later by completely depigmented ones simulating ordinary vitiligo.

Red *pinta* is the somewhat misleading term used for a rare type of eruption. It consists simply of a generalized, mild flushing of the skin similar to the appearance of a person after taking a hot bath. This type is associated with the ordinary blue pigmentation and depigmentation.

As *pinta* affects the dark races almost exclusively (Indians, Negroes and those of mixed blood), it is obvious that the vitiligo-like areas may be extremely disfiguring. This usually constitutes the only ill effect of the disease, as it apparently does not cause subjective symptoms and does not affect the general health.

There is no known vector of *pinta*, and it is most probable that the disease is transferred from one person to another by contact.

The course of the disease when untreated is extremely chronic, lasting often for decades. The early lesions

respond well to antisyphilitic treatment and the same is true of the blue areas in the late (dyschromic) stage. However, when the stage of complete depigmentation (vitiligo) is reached the change in the skin is permanent. *Pinta* leaves no sequelae except permanent depigmentation in untreated cases. It is not a serious disease except for the cosmetic defect, which at times is most disfiguring.

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### TROPICAL LYMPHANGITIS AND ABSCESES

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During the period 1926-1928 I conducted an investigation in British Guiana, under theegis of the Tropical Diseases Committee of the Royal Society of London and the London School of Hygiene and Tropical Medicine, into the bacterial complications of filariasis. Studies were made of the frequency and sites of occurrence, distribution by age, race and sex, clinical manifestations and bacteriology of all cases of lymphangitis, abscess and elephantiasis admitted to the inpatient and outpatient departments of the Public Hospital, Georgetown, between June 1927 and September 1928, of the serologic relationship between strains of the beta hemolytic streptococcus isolated from cases of lymphangitis with abscess in British Guiana and the commonest strain of the same organism isolated from the throat in cases of scarlet fever in New York City, of the relationship between the cutaneous response to inoculations of toxin prepared from the British Guiana and New York streptococcus strains and the presence of *Microfilaria bancrofti* in the peripheral blood, of the relationship between the nature of the organism found in abscesses and the presence of *Microfilaria bancrofti* in the peripheral blood of the same individual, and of the relative distribution of *Microfilaria bancrofti* among the different races and age groups of Georgetown. The choice of British Guiana for the work was a fortunate one in that the population is chiefly composed of three races, among whom it has long been known that the manifestations of filariasis differ considerably in degree and in frequency of occurrence. The racial groups include East Indians, Negroes and Portuguese and Mixed, the latter term denoting individuals having both Negro and Portuguese blood. The results of the investigation were published as No. 3 of the Memoir Series of the London School of Hygiene and Tropical Medicine.<sup>1</sup> As the memoir is the only report yet published in which an attempt has been made to clarify the relation between the clinical entities of lymphangitis, abscess and elephantiasis on the one hand and the disease agents *Wuchereria bancrofti* and the beta hemolytic streptococcus on the other, much of the data of the present paper have necessarily been derived from it.

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<sup>1</sup> Grace, A. W., and Grace, F. B. *Researches in Filariasis*. G. 1. 1926-1928, on the Bacterial Complications of Filariasis and the Serologic Relationship of the Beta Hemolytic Streptococcus to the Disease. No. 3 of the Memoir Series of the London School of Hygiene and Tropical Medicine, London, 1931.



## TROPICAL LYMPHANGITIS

The geographic distribution of tropical lymphangitis has not yet been accurately determined. In view of its undoubted close association with *Wuchereria bancrofti*, its presence should be suspected in areas where the parasite is endemic, namely in almost every tropical and subtropical country. The term "tropical lymphangitis" is restricted in this paper, and should always be restricted to those cases which arise without any detectable break in the skin of the segment of the body of which the lymphangitic area forms a part. Such lymphangitis is rare in temperate latitudes in which the inflammatory condition is almost invariably the sequel of trauma or much less frequently of dermatophytosis. The precipitating causes of tropical lymphangitis (hereafter referred to as lymphangitis), as construed by its sufferers, are manifold and include a sprain, a wrench or getting the feet unusually wet or cold, the great majority of attacks, however, arise without any apparent cause. Lymphangitis is generally of sudden onset and affects the lower limb in about four fifths of all attacks, the other structures affected, in descending order of frequency, are the upper limbs, the breast and the scrotum. The distribution of attacks in the lower limbs is along the line of the great and small saphenous veins, where three areas are particularly involved, namely the middle of the inner part of the thigh, the upper inner portion of the leg and, least frequently, the middle of the calf. In the upper limbs the disease is usually found along the inner aspect, the upper portion of the upper arm being rather more frequently attacked than the corresponding site of the forearm. In the breast and scrotum the upper outer quadrant and the most dependent part, respectively, are the common sites of involvement. Lymphangitis is very largely a disease of young people. First attacks occur in almost 80 per cent of cases before the age of 30 and most frequently in the age group 10 to 19. If one also includes recurrences, only about 60 per cent of cases are found under the age of 30 years and the maximum number of attacks appear in the 20-29 age group. Both extremes of life may be attacked, the youngest patient was 18 months old and the oldest 74 years. There is sometimes a striking difference in the relative frequency with which lymphangitis occurs among different races living under approximately the same conditions, this applies particularly to the Portuguese and Mixed on the one hand, who suffer heavily, and the East Indians on the other in whom the disease is uncommon. Women are more frequently affected than men in the ratio of about 3 to 2.

The attack of lymphangitis is invariably of sudden onset and is ushered in with severe, deep-seated pain localized to a small area. In the recurrences, which are common, the pain usually begins in the same site as that originally affected. Within a few hours erythema has developed over the painful area and, together with the pain begins to spread the latter throughout the whole of the segment of limb or organ involved and the erythema in streaks along the lymphatics toward the adjacent nodes. The temperature now begins to rise, reaching a peak of 102-103 F in about six hours by which time the attack is at its height and the patient is prostrated. At this point the affected part is intensely painful, erythematous, tense and edematous, and lymphangitis is well defined. The satellite nodes are enlarged and tender but there is little erythema of the overlying

skin. At the end of twenty-four hours the temperature begins to fall, the signs and symptoms to abate and within the next two days the acute attack has passed off. Pain, however, remains in the part for another three or four days, after which the latter presents the same appearance as it did before the attack. It is impossible to predict when lymphangitis will recur, for there is no time relation between successive attacks. The period of remission may be measured in days, weeks, months or years or there may be only one attack in all. The description just given fits the common type of attack. Milder cases are found in which the involved area is no larger than the palm of the hand and the patient is so little inconvenienced that he can carry on his regular work, in others, however, the entire trunk and limbs may be intensely painful and erythematous and the constitutional symptoms of such severity as to endanger the life of the patient. Such severe attacks may last as long as seven or eight weeks. Lymphangitis is not associated either with desquamation of the skin, or vesicle or bulla formation, or with softening and fluctuation of the satellite nodes. In about 10 per cent of cases of lymphangitis, nodules appear in the center of the involved area. They are very hard, exquisitely tender, freely movable on the deeper tissues, and measure approximately 2 by 2 by 0.5 cm. They are attached to the overlying skin, which is erythematous and edematous but not elevated, and are wholly within the subcutaneous tissue. Over four fifths of the nodules subside without softening and disappear completely within a week, the remainder develop into an abscess which contains the beta hemolytic streptococcus in pure culture. In about 20 per cent of hospitalized cases of lymphangitis an abscess appears in the affected area. It requires about eleven days, with limits of three and twenty-one days, after the onset of an attack for such an abscess to be ready for evacuation, by that time the acuteness of the attack has subsided considerably. The exact proportion of persons who develop abscess in association with lymphangitis is not known, as the milder cases, which constitute the majority, not only are not seen in the hospital but are often successfully treated with home remedies.

Attacks of lymphangitis in limbs and organs which are elephantoid closely resemble in most aspects those in nonelephantoid tissues. There are, however, three differences. First, the elephantoid structure reacts as a whole with pain, erythema and edema, the localized areas of involvement so common in nonelephantoid tissues do not occur. Second the hard subcutaneous nodules are found only about one fourth as frequently in lymphangitic attacks in elephantoid as in nonelephantoid tissue. Third, the elephantoid limb is slightly more prone to the development of abscesses following an attack of lymphangitis than is its nonelephantoid counterpart.

Lymphangitis is one, but in British Guiana the least common, of the predisposing causes of elephantiasis, which most frequently arises about two years after the appearance of an abscess in the part which subsequently becomes elephantoid. There is indirect evidence to show that such abscesses are due to the beta hemolytic streptococcus, which is also by far the commonest organism producing infections of elephantoid structures, outnumbering its nearest rival the hemolytic streptococcus by 4 to 1.



ORGANISMS ASSOCIATED WITH LYMPHANGITIS IN  
LELPHANTOID AND NONLELPHANTOID TISSUE

Material for this study is best obtained during an attack of lymphangitis by culture of blood, of material aspirated from nodes and subcutaneous tissues and of pus from abscesses. I found positive blood cultures in approximately 10 per cent and Rose<sup>2</sup> found positive node punctures in almost 90 per cent of persons hospitalized with acute lymphangitis. The sole organism found in the cultures was the beta hemolytic streptococcus which was also present in pure culture in 25 of 27 abscesses which followed acute lymphangitis. There are no statistics on the frequency of recovery of bacteria by aspiration of inflamed subcutaneous tissues.

The close association of the beta hemolytic streptococcus and lymphangitis and the rarity of such lesions in temperate climates raises the question of the existence of a type of the organism peculiar to lymphangitis or to British Guiana. An answer to this query was sought by studying the fermentation reactions, morphology, serologic reactions, virulence and skin reaction to toxins of the British Guiana beta hemolytic streptococci in comparison with those of beta hemolytic streptococcus strains commonly found in New York. The results of the study were as follows:

**Fermentation Reactions.**—Of 68 British Guiana strains, 61 fell into the pyogenes, 5 into the subacidus and one each into the anginosus and equi groups.

**Morphology.**—Sixty-one British Guiana strains, when streaked on 5 per cent horse blood veal agar and examined microscopically, fell into three morphologic types, I, IIa and IIb, which could be readily identified by tint, periphery and granularity of the colony. Type I constituted 14.8 per cent and was light in color, had a noncrenated periphery and was free, or almost free, from granularity. Seventy-two and one-tenth per cent fell into type IIa and were dark with a finely crenated periphery and well defined granularity. Thirteen and one-tenth per cent belonged to type IIb and were much darker and much more coarsely granular than those of type IIa, the periphery was only roughly circular owing to the coarseness of the crenations. All of the type IIb strains belonged to the subacidus group. No mucoid strains were observed.

**Serologic Relations.**—The criterion of identity of strains was reciprocal absorption of agglutinins. A stable homogeneous suspension of organisms for agglutination tests was made by repeated subcultures in phosphate glucose broth. Six British Guiana pyogenes strains isolated from abscesses in as many individuals during an attack of lymphangitis were studied serologically. Only one dissociated into fine and coarse variants during subculture, it is the fine variant which is considered here. Five of the six strains were identical but there was no reciprocal absorption between them and a common scarlet fever strain from New York. Eight British Guiana subacidus strains, all belonging to type IIb, were serologically identical with one another and different from subacidus strains obtained from London and New York.

**Virulence.**—There was practically no increase in the virulence, originally low, of strains of type I and type IIa after passage through mice. The virulence of the very coarse type IIb strain was so low that 10 cc. of a twenty-four hour broth culture failed to kill mice.

**Skin Reaction to Toxins.**—Toxin prepared from three British Guiana strains was employed in almost three hundred tests in conjunction with that derived from a scarlet fever strain, there was a high degree of correlation between the results obtained with all the strains.

**Neutralization of Toxin by Antiserum.**—Toxin prepared from a British Guiana strain associated with lymphangitis was not neutralized by antistreptococcus serum derived from a scarlet fever strain. No toxin demonstrable by intradermal tests on Dick positive children was produced by the very coarse type IIb strains.

It would appear, then, that the hemolytic streptococcus of British Guiana has the following chief characteristics. The texture of the colony is principally granular, a common agglutinogen was found among a number of strains obtained from cases of lymphangitis, there was absence of serologic relation with a common scarlet fever strain, a serologically unique subacidus group exists, virulence for mice is low, there is no production of toxin by strains of very coarse colony texture, toxin produced by nongranular strains is not neutralized by antiserum derived from scarlet fever streptococci, approximately 90 per cent fall into the pyogenes group, and a toxin similar in its intradermal effect to that derived from a common scarlet fever strain is produced. It is evident, then, that there is some degree of difference between the beta hemolytic streptococcus of British Guiana and that of temperate climates.

## ABSCESSSES

The frequency and site of occurrence of abscesses varies considerably in different tropical countries. Thus the annual incidence of abscesses per unit of population is over eight times, and the proportion of lower limb abscesses over four times, as high in British Guiana as in Jamaica.<sup>3</sup> It is most likely that this difference is related to the less common use of footwear and the lower standard of living in British Guiana, where approximately 350 abscesses are opened annually in the Public Hospital in Georgetown, a city of 53,000 inhabitants. In over three fourths of the cases there is no visible lesion to account for the development of the abscess. Staphylococci are responsible for 53 per cent and the beta hemolytic streptococcus for 33 per cent, and about 12 per cent are bacteriologically sterile. These ratios apply not only to the population of the colony as a whole but also, with only slight divergence, to each of the three races in British Guiana, namely the Negro, the East Indian and the Portuguese and Mixed. Infections occur in the lower limbs twice as frequently as in the upper limbs and four times as often as in the chest wall and abdominal wall. While all ages are subject to the development of abscesses, the maximum incidence is found in the third decade. The proportion of infections due to the staphylococcus is highest in the first decade and declines with increasing years, whereas the reverse is true for the streptococcus. Males are affected more frequently than females in the ratio of five to three. As has been pointed out, the staphylococcus is not rarely responsible for attacks of lymphangitis. Not only infections with the beta hemolytic streptococcus, however, in endemic filarial countries are associated with lymphangitis—in fact, only about one fifth are associated. It is impossible, therefore, to predict the nature

3 Grace A. W., Grace F. B. and Warren S. The Incidence of Filaria Bancrofti and the Beta Hemolytic Streptococcus in Tropical Countries. *Am. J. Trop. Med.* 12: 433 (Nov.) 1943.

2 Rose, F. G., quoted in reference 1.

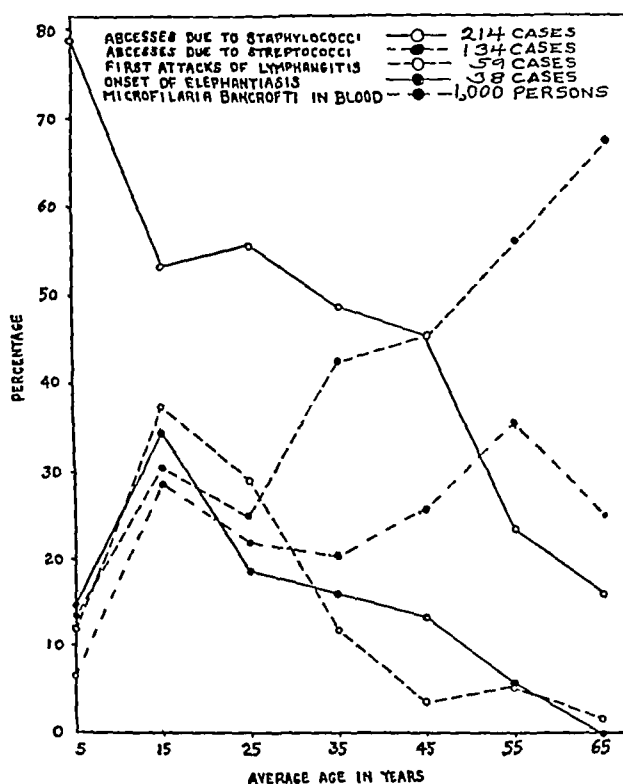
of the organism in an abscess unassociated with lymphangitis, a rough guide is sometimes obtained from its location, the staphylococcus being predominant in infections above the shoulder and the streptococcus in the scrotum. Abscesses occur in the subcutaneous tissues and in the muscles, both superficial, as in the recti abdominis, and deep, as in the inner aspect of the quadriceps femoris. An intramuscular abscess may contain either the staphylococcus or the streptococcus. The staphylococcus has a tendency to produce multiple abscesses, often at widely separated sites which are prone to recur. Specimens of pus from staphylococcal and streptococcal abscesses are, in most instances, identical in appearance. Deep, long standing, intramuscular streptococcal abscesses, however, contain pus which is characteristic in that it is very fluid and of a dirty brown tint, probably from altered blood. Such abscesses are usually the result of an attack of lymphangitis, occurring three weeks to a month previously, in an elephantoid leg. The patient is often unaware of the existence of the abscess, which may contain as much as a pint of pus.

#### THE RELATION OF WUCHERERIA BANCROFTI TO LYMPHANGITIS

It was concluded in the Memoir<sup>1</sup> that "it is possible that lymphangitis and elephantiasis do not occur in a race or age group or country to any extent in the absence of *Filaria bancrofti*, and that the exciting cause of practically all the attacks is the beta hemolytic streptococcus, which may itself be of a particular type." It will be noted from the chart not only that the incidence of beta hemolytic streptococcus abscesses, the percentage of individuals showing *Microfilaria bancrofti* in the blood and the incidence of lymphangitis and elephantiasis are all low in the first decade of life but also that they all rise rapidly in the next decade. It is impossible to avoid the conclusion that there is a relation between these entities.

Sufficient evidence has been advanced in this paper to show the connection between lymphangitis and the beta hemolytic streptococcus. What part does *Wuchereria bancrofti* play in the picture? It seems certain that it does not of itself produce lymphangitis.<sup>4</sup> Any theory of the causation of lymphangitis, however, which omits the worm as a factor must perforce, ascribe the condition to the beta hemolytic streptococcus alone. As that organism is widely distributed in temperate climates, where tropical lymphangitis is a rarity, it would be necessary to prove, in support of this theory, that the beta hemolytic streptococcus of lymphangitis is of a vastly different character from that of temperate climates. The differences between the organisms from tropical and temperate latitudes have already been stated and are, in my opinion, insufficient to warrant the designation of the beta hemolytic streptococcus as the sole factor in the production of lymphangitis. I believe that the sequence of events leading to an attack of lymphangitis is as follows. There is some degree of obstruction to the flow of lymph owing to the presence of the adult worm in the lymph nodes and channels. The existence of lymph stasis renders the tissues more susceptible to infection by the beta hemolytic streptococcus. Once infection has occurred the tissues of the affected

area become hypersensitive to the beta hemolytic streptococcus and its products and attacks of lymphangitis may be occasioned by organismal or toxic stimuli of intensity too low to be appreciated by tissues previously uninvolved. Evidence in support of this hypothesis is twofold and indirect. First, Drinker<sup>5</sup> has shown that the lymphedematous leg of a dog is not only susceptible to spontaneous infection with hemolytic streptococci but could be infected very readily by injection of hemolytic streptococci. Second, the East Indian has the lowest microfilarial rate and also the lowest incidence of lymphangitis and elephantiasis of the three chief races in British Guiana, that the infrequent occurrence of these clinical entities is not due to a relative insusceptibility to the beta hemolytic streptococcus is shown by the fact that streptococcal abscesses occur just as commonly in the East Indian as in the Negro and in the Portuguese and Mixed



Incidence at different ages of abscesses due to staphylococci abscesses due to beta hemolytic streptococci first attacks of lymphangitis onset of elephantiasis and *Microfilaria bancrofti* in blood

By what means does the presence of *Wuchereria bancrofti* render the tissues more susceptible to infection with the beta hemolytic streptococcus? An unsuccessful attempt was made to answer this question by subjecting 52 individuals, whose night blood had previously been examined, to skin tests with scarlet fever and British Guiana streptococcus strains, and also by studying the night blood of 300 persons with abscesses the bacterial nature of each of which was known. No relation was found between the presence of microfilaria in the blood and either a positive reaction to streptococcus toxin or the existence of the staphylococcus or streptococcus in abscesses.

<sup>4</sup> Croll quoted in reference 1

<sup>5</sup> Drinker C K and Yaffe J H. Lymphatic Lymph and Lymphoid Tissue. Cambridge Harvard University Press 1941

## TREATMENT AND PROPHYLAXIS

Prior to the introduction of the sulfonamide drugs, treatment of lymphangitis consisted in rest, local application of heat and acetylsalicylic acid. Vaccines prepared from local strains of the beta hemolytic streptococcus were felt to be of value in reducing the frequency of recurrences. At present the most efficacious remedy is either sulfathiazole or sulfadiazine in doses of 1.5 Gm. three times daily for one week. Abscesses should be incised and drained. No means exist for destroying or removing the adult worms or microfilariae. As *Wuchereria bancrofti* is transmitted by the bite of the female *Culex fatigans*, antimosquito measures will help to reduce the incidence of the disease.

## LEPROSY

## EPIDEMIOLOGY AND NATURAL HISTORY

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It may be said without risk of serious contradiction that less is known of the essential factors in the pathogenesis and transmission of leprosy than of the other great infectious diseases of mankind. This defect in our knowledge stands out more prominently when one remembers that leprosy has held the attention of countless persons over centuries of time and has been recognized by layman and physician alike as one of the major scourges of the human race. It is a noteworthy historical fact, in this connection, that leprosy was among the first, if not the first disease the cause of which was ascribed to a bacterial organism. Hansen first reported the finding of a bacillus as the possible causative agent of leprosy in 1874. It was not until 1882 that Koch announced the identity of the bacillus of tuberculosis.

The faltering progress of our knowledge is to be attributed in part at least to the remoteness of the great endemic foci of leprosy from the centers of scientific investigation and to the barriers raised against its study by the unique emotional qualities which have characterized the attitude of man toward those afflicted with the disease. Persecution and social ostracization have been the fate of the leprous person. The almshouse and the asylum have been his refuge rather than the hospital from which he could look forward to rehabilitation through an objective approach to the solution of his problems. Even today there are rumors of the massacre of its victims.

But, in spite of these accidents of geography and human behavior, many serious attempts have been made to understand the nature of the infection. Most of these, however, have ended in failure. There is yet no certainty that the Hansen bacillus has ever been cultivated on artificial mediums nor has the disease in progressive form been established in laboratory animals. Direct transmission to human subjects by inoculation of infectious material has also failed. Without these achievements, scientific inquiry is handicapped and the position of *Mycobacterium leprae* as the cause of the disease remains unsettled.

Furthermore, there is a lack of understanding of the natural history of leprosy, without which there can be no sound judgment of the effects of therapeutic measures. Interpretation of the manifestations of infection is confused and complicated too frequently by our engrossment in the naming of the types of disease and the forms of lesion—a practice which too often tends to obscure rather than enlighten our understanding. An almost total absence of any accurate quantitative knowledge of the incidence of infection, and of the rate at which it attacks various groups in the population prevents a scientific evaluation of the effects of regulatory control.

But, regardless of the many shortcomings in our knowledge and the absence of a rational plan of prevention, leprosy has been on the decline as an important force of morbidity in Europe and the British Isles since the thirteenth century, when it reached its zenith in that part of the world.<sup>1</sup> In Asia it would seem that the rate of infection now remains stationary, but this is only an impression.

It has been predicted that the disease will disappear through the application of sound principles of public health technique. This undoubtedly oversimplifies the explanation of the gradual decline of the infection. But, as Muir<sup>2</sup> has stated, "Whatever the actual causes which control the spread of leprosy, it seems clear that it belongs to a certain stage of human social development." It is not found among nomadic and aboriginal peoples until they forsake their tribal customs and merge with and adopt the life and practices of more civilized people. But as their state of civilization advances with its attending improvements in personal hygiene, nutrition and sanitation the decline of the disease becomes apparent.

Leprosy, then, may be taken as a good example of the effect of social and economic forces in the production of disease. This aspect of the problem requires more careful consideration in the epidemiologic study of the infection. To give it such might aid in shedding light on the reasons for the localization of the disease in certain communities and assist in explaining on grounds other than heredity the apparently higher rate of attack among certain racial elements, frequently foreign born. As another has written, leprosy is a "disease of the crowded house, room and bed."<sup>3</sup> It may well be that the observations of Jonathan Hutchinson<sup>3</sup> who attributed the disease to the consumption of tainted fish, have in them the essence of truth. It is not so much the eating of spoiled fish but the necessity of so doing that should claim our attention.

## LEPROSY IN THE UNITED STATES

Today leprosy as a serious problem of public health is limited chiefly to the tropics and subtropics. The great foci of disease are in central Africa, in India and in parts of China, with smaller endemic areas in Central and South America and in Mexico. As a problem in this country leprosy is only of minor significance. There are but few endemic centers in which it seems the infection can be transmitted. These are confined to three of the states bordering the Gulf of Mexico, namely, Louisiana, Texas and Florida. Other localities with

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1. Newman, George. On the History of the Decline of Leprosy as an Endemic Disease in the British Isles. The New Sydenham Society, 1895.

2. Muir, Ernest. The Epidemiology and Control of Leprosy. Soc. Trop. Med. & Hyg. 31: 377, 1934.

3. Hutchinson, Jonathan. On Leprosy and Fish. A Collection of Facts and Explanations. London: Archibald & Co., 1858.

New York City, in which the leprosy are always to be found, are not areas of infectivity "With a single exception," in the words of McCoy<sup>4</sup> of the Public Health Service, "I have been unable to find any record that any one has ever been infected with leprosy in New York City, although in the aggregate over a period of a few decades literally hundreds of lepers have been domiciled there for varying periods of time."

The oldest focus of infectivity in Texas is in Galveston. This was made the subject of an epidemiologic report by Boyd and Fox<sup>5</sup> in 1920. No important conclusions were drawn from this investigation, but it is of interest to note in view of the attempts to relate the human infection to the murine type of leprosy, that from an examination of some 23,000 rats for the plague in this locality only 7 leprosy rats were identified by the detection of acid fast bacilli in smears from their tissues.

#### MURINE LEPROSY

In 1903 Stefansky,<sup>6</sup> working in Odessa, observed a leprosy-like disease in rats. Almost at the same time, and independently, Dean<sup>7</sup> in England described the same disease. In certain anatomic manifestations, and in the presence of acid fast bacteria, the disease of the rat resembles human leprosy. The organism of murine leprosy *Mycobacterium leprae murium*, has been regarded by some<sup>8</sup> as perhaps identical with the organism of human leprosy, *Mycobacterium leprae*. But there is no convincing evidence to support this assumption. It may possibly be, however, that studies of this organism in the future will shed light on the relationship of the acid fast mycobacterium to human leprosy and help elucidate some of the problems related to the disease.

In this connection I wish to refer to a study of the epidemiology of leprosy in Australia by Cook,<sup>9</sup> who reported that the disease showed a distribution like that of the rat flea *Xenopsylla cheopis*. He raised the question of an insect vector with the rat serving as the reservoir of infection, the assumption being that the organisms of murine and human leprosy were identical.

#### TRANSMISSION OF INFECTION

The communicability of leprosy has been acknowledged since Biblical times. However, this view was discredited temporarily by Danielssen and Boeck when they introduced the concept of hereditary transmission. In Norway the focus of the disease failed to disappear, as had similar foci in other parts of Europe. These observers saw that the disease tended to be confined to certain families. Their remarkable publication on leprosy, "Om Spedalskhed" remains one of the classic landmarks in the history of the disease.<sup>10</sup> The part hereditary influences may have in affecting the susceptibility of the individual to leprosy still holds the attention of some investigators.<sup>11</sup>

I mention this departure from the accepted theory of transmission to direct attention to the familial nature of the disease and the problem of household contact. I have already referred to the need of quantitative data on the rate of transmission of infection as a necessary prelude to the scientific study of the results of control and call attention here to the important work of Doull,<sup>12</sup> who studied the attack rates of leprosy within the family group. Thus he did in retrospect, using material from the Philippine Islands, by applying the principles of the life table to the measurement of the risk of attack.

#### HOUSEHOLD ATTACK RATES

For all ages, Doull found the annual risk of contracting leprosy was about five times as high among those having household exposure as among the group who were not subjected to this risk. The attack rates for those exposed were better demonstrated by cumulating the rates to the age of 20 years. Assuming that there was no selective mortality among the leprosy, it was found that 170 per thousand of family contacts could be expected to show evidence of the disease. For those not in household risk, the comparable figure was 30 per thousand.

Evidence showing the higher susceptibility of those in early life was also obtained from this study. The ratio of the attack rate for the age group 10 to 14 years to the rate for the group 20 to 29 years was 5.1 to 1 and, for the nonexposed, 2.8 to 1.

The results of Doull's analysis support the commonly accepted view of the infectivity of the disease on close and prolonged contact. Further application of the same statistical technique to the measurement of infectivity under varying circumstances is desirable.

#### DISTRIBUTION OF LEPROSY IN CHINA

The wide distribution of leprosy throughout the world has raised questions as to the geographic influences on the transmission of infection. Rogers,<sup>13</sup> from a study of the disease, especially in India, reached the conclusion that the only factor of this nature common to the scattered endemic foci was a state of high atmospheric humidity.

The vagaries of the geographic distribution of leprosy are well illustrated by a study of the location of endemic areas in China. Over a period of twenty years, while a member of the staff of the Peiping Union Medical College, I was interested in this aspect of the disease. Unfortunately the data on the subject are now beyond my reach, but it may be stated that during all that time, with a single exception, no case of leprosy was observed which had been contracted definitely in Hopei province, of which Peiping is the capital. The only patient who had resided continuously in Hopei came from a small village in the southern part of the province near the Shantung border. In Shantung there is a large endemic focus of leprosy.

While the number of leprosy patients seen annually in the hospital in Peiping was not large, it must have been true that the city had harbored the disease for many years, perhaps centuries, a time sufficient to have allowed the establishment of an endemic focus had the environmental conditions been congenial to the transmission of the disease.

12 Doull James A. The Importance of Field Studies of Leprosy with Special Reference to the Risk of Household Exposure. *Am J Hyg* 29: 27, 1939.

13 Rogers Leonard. The Geographical Distribution of Leprosy in China. *The Epidemiology of Leprosy*. Ann. Trop. Med. 15: 1, 1934.

4 McCoy George W. Discussion. Leprosy in the United States in Moulton F. R. Tuberculosis and Leprosy, the Mycobacterial Diseases. Lancaster Pa. Amer. Assoc. for Advance. of Sc. 1938 p. 110.

5 Boyd M. T. and Fox W. F. An Epidemiological Study of an Endemic Focus of Leprosy. *Public Health Reports* 35: 3007 (Dec. 17) 1920.

6 Stefansky W. K. Eine lepraähnliche Erkrankung der Haut und der Lymphdrüsen bei Wanderratten. *Centralbl. f. Bakt. Orig.* 33: 481, 1903.

7 Dean George A. Disease of the Rat Caused by an Acid Fast Bacillus. *Centralbl. f. Bakt. Orig.* 31: 222, 1903.

8 Walker E. L. and Sweeney Marion A. The Identity of Human Leprosy and Rat Leprosy. *J. Prev. Med.* 3: 325, 1929.

9 Cook Cecil. The Epidemiology of Leprosy in Australia. Canberra Australia Dept. of Health Pub. No. 38, 1927.

10 Danielssen D. C. and Boeck W. Om Spedalskhed. Christiania 1847.

11 Avecek W. Floyd and Hawkins J. W. Regional Racial and Familial Predispositions in Leprosy in the United States. *Public Health Reports* 56: 1124 (June 27) 1941.

Peiping lies in the great North China plain. For the greater part of the year, except in early and middle summer when the rains come, the climate is very dry and the skies are cloudless. The winters are cold and the summers hot. The city is situated approximately at 40 degrees north latitude. Following this parallel to the west there is apparently no leprosy in the adjacent province of Shansi, but proceeding to the extreme western part of the country toward the highlands in the province of Kansu the disease is endemic. There are large areas of infectivity in the Yangtze valley, especially in the region of the city of Hankow and in the southern province of Kwangtung.

Before the onset of hostilities in 1937, and prior to the subsequent migration of great masses of the population there existed in China favorable conditions for the epidemiologic study of leprosy. The unique place of the family in the social organization with the close association of its members including not infrequently two and three generations under the same roof, the widely scattered endemic areas embracing extremes of climate and topography and the accompanying ethnologic and demographic variations in China's population offer rich opportunities for investigation. As it is, the only record of the pattern of distribution in the country is a general survey made through the medium of questionnaires by Fowler<sup>14</sup> which should be read by those interested in the subject.

#### NATURAL HISTORY OF LEPROSY

There is little need at this time to enter into a description of the clinical phenomena of leprosy. However, it is pertinent to the discussion to emphasize the need for a clearer and fuller understanding of the natural history of the disease. Too frequently we are influenced by the formalized and static picture given in the books. Leprosy is a disease of great chronicity and as such it is subject to a wide variety of changing clinical sequences. To divide the disease into carefully defined categories, as for example nodular and anesthetic, is to miss the point of its evolution.

For the most part, if one will only observe the patient long enough and carefully enough there will be found periods of acute reaction alternating with periods when the infection is quiescent. The change in tempo is sometimes critical and profound. Periods of inactivity may persist for months or even years, when some force, usually not identifiable, appears to precipitate a relapse and further the progress of the disease.

Relapses are characterized by signs of acute reaction. There is evidence of redissemination of the infective agent. The cutaneous lesions may be exanthematous in form and distribution. Some may remain after the eruption as a whole has subsided to establish new foci of chronic inflammation. Areas of anesthesia may increase in size, and new disturbances in sensibility are usually to be detected at the site of fresh inflammatory lesions. The phenomenon of dissociation of the elements of sensation under such circumstances is noteworthy. The sense of temperature is lost first, followed as a rule by the loss, in succession, of the perception of pain and touch. Last of all, and rarely, is the loss of the sense of pressure. Nerve trunks may thicken and lymph nodes enlarge. Areas of skin, sometimes involving the entire face or a buttock, may acquire a swollen erysipelatous appearance.

#### ERUPTIVE LESIONS

As in syphilis, a great variety of eruptive lesions, both acute and chronic, may be found. The individual pattern of their form and distribution may vary considerably from patient to patient. This depends, no doubt, on the allergic capacity of the skin under varying circumstances. Chronic granulomatous lesions, not unlike those of tuberculosis in plaques and configurations, may develop.<sup>15</sup> In these the histologic picture is that of typical tubercle formation. In fact the most typical tubercles of the skin are found not in tuberculosis but in leprosy.

Acid fast bacilli may, or may not, be found in the granulomatous lesions. Their absence in such cases need not cause surprise. Failure to find them by staining methods does not mean their absence in the tissue. In tuberculosis of the skin one almost never is able to demonstrate in fixed tissue specimens by staining methods the presence of acid fast bacilli. But almost always in such cases tuberculosis can be produced in susceptible animals by inoculation with portions of the material found to be free of organisms by microscopic examination.

The ease with which acid fast organisms can be demonstrated depends on the stage of inflammation when the search is made and on the method of examination. Fixed tissue preparations of skin and lymph node are best for this purpose.<sup>16</sup> Very early and late in the course of the dermatitis the organisms are difficult, if not impossible, to find. In the latent case careful searching of many sections may not reveal a single acid fast form. Yet in a month's time they may be found in profusion should the patient develop an acute relapse.

#### TREATMENT

The value of the derivatives of hydnocarpus oil in the treatment of leprosy is difficult to define. Failure to take into account the rhythmic course of the infection, with its periods of alternating activity and latency, has led not infrequently to erroneous judgment of the efficacy of the drugs. From the experience in Peiping I am left wholly unconvinced that they serve any useful purpose. At times, when during the course of their administration acute relapse ensued, it was only reasonable to suspect that the hydnocarpace were in some way responsible. These reactions would occur occasionally even when small and carefully regulated doses of the drug were given. Whether because of the drug, I do not know.

For the present, it seems to me, a regulated way of living, with rest and nutritious food, and protection from injury, outside an endemic focus of infectivity, offers the patient the best chance of recovery.

No inflexible regulations for the quarantine of persons afflicted with leprosy need be set. In those places where the disease shows itself to be endemically infective, segregation may be practiced if it does not punish the patient. To punish him is to defeat in the end the purpose of quarantine. The leprosy person does not as a rule require asylum nor an almshouse, but does need hospitalization with the purpose always in mind of returning him to a life of usefulness and of respect.

<sup>15</sup> Wade, H. W. Tubercloid Changes in Leprosy. *Int. J. Leprosy* 2: 7, 1937.  
Tubercloid Leprosy in South Africa, *Internat. J. Leprosy* 2: 7, 1937.  
<sup>16</sup> Hu, C. K., and Mu, J. W. Demonstration of Bacillus Leprae by Means of Cartharides Plaster and Carbon Dioxide. *J. of China* 16: 177, 1930.

<sup>14</sup> Fowler, Henry. A Survey of Leprosy in China, *China Med. J.* 39: 584, 1925.

## ABSTRACT OF DISCUSSION

ON PAPERS OF DRS MCCARTHY, OBERMAYER, FOX,  
GRACE AND FRAZIER

DR GEORGE M LEWIS, New York A year's experience examining men who have returned from the tropics has convinced McCarthy that the bulk of the superficial fungous infections to which the troops are subject are the same as seen in the United States, but in an exaggerated form. Secondary bacterial pyogenic superinfection is a more common complication than in civilian dermatologic practice in the United States. This may be due chiefly to factors inherent in a tropical climate and may be influenced by conditions of combat service. The tendency to latency and consequent neglect of *Trichophyton* gypseum infections and resistance to treatment of *Trichophyton purpureum* infections, both of which are of common occurrence in the United States, suggest that the infection may not always be newly acquired in the tropics. From what is known and from what McCarthy says, the treatment of all known fungous infections and the institution of prophylaxis is desirable. To be an effective prophylactic, a remedy may be easily usable, readily available, relatively nonirritating and yet mildly fungicidal. Talc reinforced by 0.5 per cent salicylic acid and the same concentration of thymol fulfils these conditions and also tends to counteract perspiration. When applied under and between the toes once or twice daily, the danger of acquiring a new infection is greatly lessened. The same remedy may be useful in treating mild fungous infections of the feet. All evidence points to the effect being due to a simple screening of the sun's rays by the lesions (Lewis, G M, and Hopper, Mary E. *Pseudoachromia of Tinea Versicolor*, *Arch Dermat & Syph* 34 850 [Nov] 1936). When peeling of the skin occurs there is then manifest a contrast between the unchanged skin under the patch of tinea versicolor and the surrounding sun tanned skin. Treatment with 10 per cent solution of sodium thiosulfate continued for one to two weeks before exposure to the sun's rays will prevent the development of these apparently depigmented areas. Two statements of McCarthy regarding *T. purpureum* (rubrum) are at variance with my experience. If a suitable medium (using dextrose) is inoculated with *T. purpureum*, a red-purple pigment is invariably produced in the substrate (Lewis, G M and Hopper, Mary E. *Pigment Production by Fungi* 1 Nutritive Requirements, *ibid* 44 453 [Sept] 1941). Because of this constant and primary characteristic, the laboratory recognition of the fungus is facilitated. At least 5 instances of follicular infection to *T. purpureum* have been recorded. The fungus may be considered an ectothrix, *Trichophyton* and not an *Endodermophyton*, as McCarthy states.

DR LEE MCCARTHY, Washington, D C I wish to thank Dr Lewis for his painstaking discussion of my portion of the symposium. I agree with him that the problem of the control of mycotic infections at the end of the war will have to be largely in the hands of the general medical practitioner and it is with this end in view that the present symposium was prepared.

COL J E ASH, M C, U S Army Little of the material and data that have come to the Army Medical Museum from our theaters of operation are as yet available for publication, but several years experience in the tropics furnish some items that might be added to Dr Obermayer's list. I should like to emphasize the possibilities that can arise from chigoe bites. Indolent refractory ulcerations that may be 8 to 10 cm in diameter, and at times gangrene especially of the toes may result. It is also necessary to stress the frequency and persistence of the nonspecific ulcers of the skin that may result from insect bites and from scratching, as well as from incidental trivial trauma. These lesions are usually pyogenic but they may be granulomatous. They are particularly common in children. A not too serious but very painful and fairly common lesion seen in some of our foreign possessions is produced by the larva of *Dermatobia viverrina*. A favorite site for the female of the species to lay her eggs is on the exposed limbs but the head and neck may be involved. It is a spectacular boil like lesion with a fairly large opening through which the larva protrudes and retracts its attenuated caudal end. The

larva is a flask shaped affair and cannot be extracted intact through the skin orifice. Surgical excision of the whole lesion is the treatment of preference. It is fairly common in Central and South America. Mention should also be made of *Larva migrans* (bot fly). Two of the *Arachnidae* might be added to the list: scorpion and tarantula. They give very painful bites which can lead to constitutional symptoms. The centipede—not the small soft thousand legger of the temperate zones but the formidable armored *Scolopendra* that may reach the length of 12 inches—can make a surprisingly large gash by a sweeping motion with its two vicious anterior claws. Serious local necrotic lesions and alarming general symptoms may result from the poison that he injects into the wound. Finally, the series of "stinging caterpillars" are something of a problem in Japan. There are several species: *Parasa hilarata*, *Miresa morata*, *Nygma* sp and others. The slightest contact with these larvae causes extensive, intense irritation and there are severe constitutional symptoms that may last for several days. The reaction is much more severe than that from our own brown tail moth. The museum is indebted to Dr R G Mills for the information and material on this subject that he deposited here some years ago.

DR M E OBERMAYER, Los Angeles Creeping eruption (*larva migrans*) should be included in a consideration of diseases of entomologic interest. However, since the disorder is more frequently caused by nematode larvae than by the migrant larvae of flies and since diseases caused by vermes do not form a part of this paper, creeping eruption was not included.

DR MORRIS MOORE, St Louis The importance of tropical diseases in our present crisis cannot be overemphasized in view of the various widespread theaters of war. Dr Fox has thoroughly covered, in a short space, the important features of yaws, cutaneous leishmaniasis and pinta. There remain, therefore, only incidental remarks which I would like to extract from my own acquaintance with these diseases and inject them into a discussion of the paper. Yaws, or frambesia, may be confused with several diseases. The frambesia form, usually considered to be the secondary stage, following the incubation period, may simulate a form of paracoccidioidal granuloma caused by *Paracoccidioides brasiliensis*. The type which localizes at the junction of the skin and mucous membranes and which resembles syphilitic condylomas may mimic the buccal mucosa type of paracoccidioidal granuloma caused by *Paracoccidioides cerebriformis*. Gangosa may be mistaken for tertiary syphilis. Mutilating leprosy must also be ruled out as well as American cutaneous leishmaniasis. Various workers have observed that the well advanced form of yaws closely resembles syphilis. However, as Stitt points out, in yaws the chief diagnostic point histologically is the pronounced involvement of the epidermis and slight change in the corium. Cutaneous leishmaniasis, an important tropical disease, may be transferred to the temperate zone. Dwork (K G *Arch Dermat & Syph* 45 676 [April] 1942) surveyed the literature of the United States and Canada and listed 24 cases in addition to 4 that he reported. All cases were of Near Eastern origin. The mucocutaneous type (American leishmaniasis), generally considered to be a New World disease, may occur in the Old World. Panja (G J *Indian M A* 7 2 [March] 1938) published the report of a case showing nodular lesions on the tongue. He also cites Napier and Das Gupta, who reported cases in which there were lesions on the mucous membranes of the hard palate, cheek and lips. In South America cutaneous leishmaniasis may easily be confused with paracoccidioidal granuloma, both the cutaneous and the localized buccal mucosa type. Occasionally the two diseases may be found in the same patient and this presents a problem in diagnosis. In addition to the diseases mentioned by Dr Fox, one should consider leprosy, rhinoscleroma and neoplasms. In examining sections of lesions histoplasmosis should be considered. In both diseases there is a proliferation of endothelial phagocytes which engulf the parasites. Leishmania and Histoplasma bear a striking resemblance and may easily be confused. Murza and the Bassos (Visión de Estudios de Patología Regional Argentina Univ de Buenos Aires 1942 Pub No 63) found in the first stage of Chagas disease parasites which were leishmaniform in appearance. Pinta mal de pinto or carato a la



World disease has recently been brought up to date by Pardo-Castello and Ferrer (*Arch Dermat & Syph* 45 843 [May] 1942). The disease manifests itself first as a papule (initial lesion), which becomes an oval or rounded patch. Other papules or macules form and merge to go into a second or disseminate stage. The disseminate form shows large plaques, termed pintids by Leon y Blanco, which may be syphilitic, lichenoid psoriasisiform, trichophytoid or eczematoid in appearance. The lesions show pigmentary changes of pink red, purple, slate color or brown. After a course of several months the disease progresses into the late chronic stage, presenting areas of hyperpigmentation and achromia. Finally there develop vitiligo. Aortic and cerebrospinal changes have been noted. The spirochete of pinta can be demonstrated among the epidermal cells, especially in the stratum malpighii. Pinta is known to occur in Peru in endemic foci.

DR HOWARD LOX, New York. Dr Moore is correct in saying that yaws may be confused with a form of paracoccidiodid granuloma (South American blastomycosis). In this case help could be obtained by the serologic reaction which in the early (secondary) stage of yaws gives close to 100 per cent positive reactions. Gangosa as Dr Moore says, may be mistaken for tertiary syphilis. In my opinion gangosa is not a separate disease but merely a destructive sequel of another disease, which is usually yaws. It is possible, however, that the same destructive changes called gangosa may occasionally represent a terminal stage of syphilis. I agree entirely that the tertiary destructive form of yaws 'closely resembles yaws'. In fact it cannot be differentiated clinically. The purely cutaneous type of leishmaniasis (oriental sore) is a disease of the Old World. As far as I am aware, no autochthonous cases have appeared in the Western Hemisphere. The mucocutaneous type (American leishmaniasis) is confined almost entirely to the Americas, especially South America. It is true, as Dr Moore has said, that the mucocutaneous type may be confused with South American blastomycosis. If the differentiation cannot be made by finding the respective organisms or by intradermal test, the therapeutic test with antimony and potassium tartrate may settle the diagnosis, as blastomycosis is not affected by this drug. With regard to the color changes in the dyschromic stage of pinta, on rare occasions a pinkish color may be present. This does not merit the appellation of redness, as a bright red such as scarlet or crimson is never seen in this disease. The dyschromic or pigmentary stage may appear a few months after infection with pinta, but such changes are more apt to appear after many months or even years later. Dr Moore states that pinta is known to occur in Peru in endemic form. The disease is also endemic in many countries of Central and South America, as well as the West Indies.

DR GEORGE CHEEVER SHATTUCK, Boston. Dr Grace says that the term tropical lymphangitis should always be restricted to "cases which arise without any detectable break in the skin of the segment of the body of which the lymphangitic area forms a part". In this presentation of his observations on inflammatory processes in the tropics, Dr Grace has restricted his remarks to the category of cases thus defined. He says that cases belonging to this category are rare in temperate latitudes. I question whether in connection with lymphangitis associated with elephantiasis the differentiation of Dr Grace is useful. Is it a fact that lymphangitis in nontropical cases of elephantiasis can usually be traced to an infection which has gained access to the body by way of a locally related lesion? I do not know the answer. His observation that abscesses are more than four times as common in British Guiana, where bancroftian filariasis is very common, as in Jamaica, where it is infrequent, points to a relationship between abscess and the filaria. This view is strengthened by the fact that fragments of an adult *Filaria bancrofti* have been found in a few instances in abscesses by Manson-Bahr and others. Dr Grace's data suggest also that the beta-hemolytic streptococcus is of importance in the great majority of such abscesses. Perhaps the presence of the filaria in the tissues lowers local resistance to infection and prepares the way for the streptococcus. This was the opinion of John Anderson, who studied filariasis in British Guiana in 1921 (Filariasis in British Guiana. Clinical,

Pathological and Therapeutic Investigations, Research Memoir Series, London School of Tropical Medicine, vol 5, memoir 7). We do not know accurately the geographic distribution of lymphangitis in the tropics in general. Neither do we know much about the local incidence of lymphangitis in the wider sense or of abscess. Such information is needed before sweeping correlations and comparisons can be made. Another interesting fact emphasized by Dr Grace is that, of the three principal races in British Guiana, the East Indian has the lowest microfilarial rate and also the lowest incidence of lymphangitis and elephantiasis. That the East Indian is not less susceptible to infection with the beta-hemolytic streptococcus is shown by the fact that streptococcal abscesses are as common among them as among the Negroes, the Portuguese or the mixed elements of the population. Has the East Indian a high resistance to *Filaria bancrofti*?

DR ARTHUR W. GRACE, Brooklyn. The papers in the symposium have dealt with the common dermatologic entities of the tropics which are caused by fungi, protozoa, bacteria and tiny animal parasites. In our knowledge of these diseases there are wide gaps, some of which may well be bridged by the employment of the greater and better facilities for speedy aerial transport that peace will bring. These will enable specimens of pathologic tissue in fixative, virus containing material in refrigerant and chilled bacterial cultures from most parts of the tropics to be studied in the larger centers of medical research in the temperate zones within a short period of their collection. Not all of the advances in our knowledge of cutaneous diseases in the tropics are dependent on the study of morbid material in a distant laboratory. Much valuable information can be gained by careful clinical, climatologic and epidemiologic observation on the spot. An excellent example of this type of research is found in the reports of Loewenthal on the cutaneous diseases peculiar to, prevalent among or absent from native races in East Africa. It is not always easy, however, to translate data obtained by observation of one race to another, particularly when there is a lack of exact coincidence of the cutaneous histology in the two races. Such difficulty does not arise in Australia, where there is virtually no colored element at large and where comparison is possible between the inhabitants of a city in the tropics and one populated with the same stock in the temperate zone 2,000 miles to the south. Opportunity to study the course of tropical disease, free from local complicating factors, is now being afforded in the United States. An example of this kind is filariasis, in which inguinal adenopathy and scrotal and inguinal edema are not infrequently followed, in endemic filarial countries, by elephantiasis of the lower limbs or scrotum. The precipitating cause of the elephantiasis is generally believed to be the hemolytic streptococcus normally resident on the skin in such endemic areas. The higher degree of personal hygiene exercised by the inhabitants of the United States, the use of footwear and the probable lower streptococcus population of the skin in this country should therefore render much less likely the development of elephantiasis in persons who have left the endemic zone shortly after the acquisition of inguinal and scrotal manifestations of filariasis.

DR FRED WISE, New York. Dr Frazier's broad experience with leprosy over a period of many years is reflected in this contribution, dealing chiefly with the epidemiology and natural history of the disease. I shall limit my discussion to the occasional difficulty of diagnosing atypical and incipient cases and the phenomena relating to tuberculoid leprosy. Within the past three years 2 patients have come under my observation in whom the diagnosis of leprosy was entertained by myself as well as by a large group of my colleagues in New York. Both patients presented cutaneous lesions which were indistinguishable from those of leprosy. Bacteriologic, histologic and neurologic investigations, however, failed to confirm and, at the same time, failed to negate the diagnosis of leprosy. In cases in which laboratory investigations result in negative findings, the most careful neurologic examination must be done in an attempt to discover evidences of loss of sensation to heat, existence of hyperesthesia or anesthesia, analgesia and other disturbances of the nervous system. It should be borne in mind that diverse nerve changes may be present for months or years before the telltale cutaneous lesions

manifest themselves. Thus, some cases require protracted observation and investigation before the correct diagnosis can be determined. Such instances are fortunately uncommon in this country. Dr. Frazier aptly said that "The most typical tubercles of the skin are encountered not in tuberculosis but in leprosy." If the diagnosis of certain forms of eruption should be based wholly on the histologic structure of a single lesion which happened to be of tuberculoid character, it can be readily seen that the unskilled physician's interpretation would lead to grave difficulties. Many years ago, Josef Jadassohn of Breslau established the fact that in certain cases macular lesions devoid of specific histologic structure would later undergo a transformation to a definite tuberculoid architecture. Comprehensive studies of this phenomenon have been published by Wade, Pineda, Saenz and Palomino in recent years. Wade demonstrated tuberculoid alterations also in nerves, testes and lymph nodes. Many lesions of this character, when they occur on the skin, cannot be distinguished from sarcoid, and as in cutaneous tuberculids, bacilli are either quite scarce, or none can be detected in the tissues. The immunobiologic phenomena pertaining to infection with *Mycobacterium leprae* are analogous to those of infection with tuberculosis, in accord with the Jadassohn-Lewandowsky law. A specific skin sensitization to the respective micro organisms occurs in both diseases.

## GASTROINTESTINAL DISTURBANCES IN THE COMBAT AREA

### II. PRELIMINARY OBSERVATIONS ON FUNCTIONAL DISORDERS OF THE DIGESTIVE TRACT

CAPTAIN ALEXANDER RUSH

MEDICAL CORPS, ARMY OF THE UNITED STATES

During a twelve month period beginning March 28, 1942 200 patients were admitted to a large hospital in the South Pacific because of "dyspepsia." Fifty-three per cent of these patients presented symptoms that were subsequently judged to be due to functional disturbances of the digestive tract. Though no organic basis for their distress could be demonstrated, these patients were found to be no less disabled than those suffering from peptic ulcer. Functional disorders constitute a major problem wherever there are large bodies of troops in the field. It is therefore considered important to record our experiences in the observation, treatment and disposition of these patients.

#### DEFINITION AND TYPES

Under the heading of functional gastrointestinal disease are included all those conditions in which the predominating symptoms are due to a disturbed function of the digestive tract but in which no positive objective evidence of organic disease can be demonstrated. This large group of functional disorders is subdivided into four general types based on the outstanding symptoms. Thus those patients who presented the typical syndrome of transient abdominal cramps coming on after eating and made worse by the taking of certain coarse foods are considered as belonging to a subgroup whose symptoms were due to an irritable or spastic colon. This subgroup comprises 80 per cent of the patients with functional disturbances. The next largest subgroup which accounts for 10 per cent of the total number of patients with functional disturbances, includes those whose predominating symptoms were nausea and vomiting. There is a third subgroup with symptoms similar to those of peptic ulcer who comprise 7 per cent. Finally there is a subgroup 2 per cent of the total which represents those suffering from symptoms of aerophagia.

#### PROBLEMS OF DIAGNOSIS

In civilian practice the diagnosis of a functional disorder at best is fraught with many hazards. In military practice these hazards are intensified not only because of the characteristic lack of positive objective findings but because of a conscious or an unconscious desire on the part of many soldiers to escape from an unpleasant or dangerous situation. For therapeutic as well as diagnostic reasons every effort was made to rule out organic lesions. Since a gastroscopic examination was not possible, the percentage figure for patients with functional disorders may include some whose primary digestive disturbances could have been secondary to chronic gastritis.

#### CLINICAL HISTORY

In general, a careful history, as in all cases of disease of the digestive tract, proved to be of paramount importance in reaching a correct diagnosis of functional disorders. All of the patients were found to be in a state of either acute or chronic emotional ferment. This characteristic emotional unrest was frequently found to spring from intense feelings of resentment toward a temporary local situation or from persistent feelings of anxiety or fear. These feelings often were present beneath an outward appearance of calm. When specific symptoms were considered, every sort of combination was encountered. Except in 2 per cent of patients presenting the ulcer syndrome, the most striking characteristic of functional disturbances was the food-pain relationship. This contrasted sharply with the usual pain-food-ease picture that typified ulcer in the absence of obstruction. The patient with functional disturbances complained that cramplike pains occurred shortly after meals but that they disappeared spontaneously within an hour or so or were promptly relieved by vomiting or a bowel movement. The patients with ulcer, on the other hand, commonly experienced a more or less steady pain which came on before meals and was relieved promptly by the taking of food. While this history of a food-pain relationship was helpful as a clue, it was by no means pathognomonic.

#### EXAMINATIONS

*Physical Examination*—The findings on physical examination were seldom striking. A tender and palpable sigmoid colon was encountered in approximately one third of these patients. There were no other physical findings that appeared to be at all characteristic of functional disease of the gastrointestinal tract.

*Examination of Stools*—With regard to color, consistency and frequency the stools presented little that could be called diagnostic. Particular attention was paid for a time to the presence of mucus, which was found in the stools of 25 per cent of these patients. This compares with 23 per cent in patients with peptic ulcer, indicating that the presence of mucus in the stools is of little importance in the differential diagnosis.

*X-Ray Examination*—An x-ray examination of the upper gastrointestinal tract was made in 80 per cent of our patients considered to have functional disorders. Only in 2 patients who were chronic air swallows were any findings of note demonstrated by x-ray. No significant abnormalities in emptying times were observed. Barium sulfate enemas were performed in but a small number of instances and revealed nothing remarkable. This high percentage of x-ray examinations with negative results might seem at first glance to indicate a tremendous waste of time and talent. How-

ver, in the group with functional disorders x-ray examination has proved to be of value in ruling out more serious organic lesions and to have some therapeutic advantage from a psychologic point of view

#### ARMY GENERAL CLASSIFICATION TESTS

The army general classification tests are designed to classify all soldiers in terms of their ability to learn their duties in the service. They are a measure of the general level of a man's abilities rather than his ability in a special field. Arrivals at recruiting centers who are able to read and write English are sorted by means of the general classification tests into five broad classes with respect to their ability to learn the duties of a soldier.<sup>1</sup> The following five classes have been called army grades:

Army Grade I Very rapid learners, about 7 per cent of the men in the Army

Army Grade II Rapid learners, about 24 per cent

Army Grade III Average learners, about 38 per cent

Army Grade IV Slow learners, about 24 per cent

Army Grade V Very slow learners, about 7 per cent

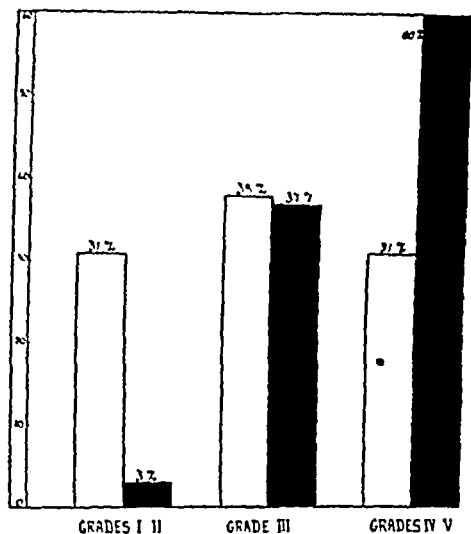


Chart 1—Soldiers with functional digestive disease

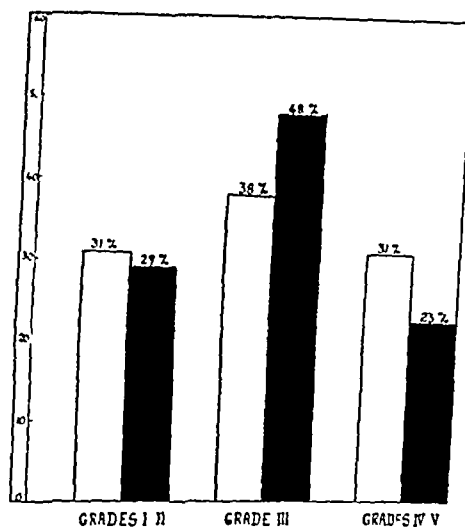


Chart 2—Soldiers with peptic ulcer

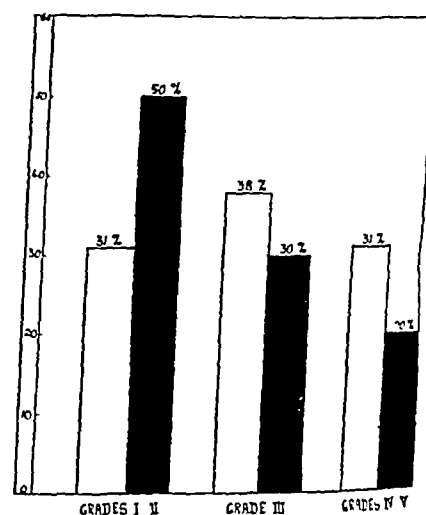


Chart 3—Highly trained enlisted medical men

Distribution of patients with functional gastrointestinal disturbances (chart 1) and patients with ulcer (chart 2) compared with highly trained enlisted medical men (chart 3), in the army general classification grades. In each chart a comparison is made between the normally anticipated distribution (white columns) and the distribution obtained for the subjects under consideration (black columns).

Those who make high scores are usually those who do best in the various army training courses and excel in their daily duties in the service. Those who make low scores are inclined to be less alert and are likely to encounter difficulty in adapting themselves to new situations.

#### Comparison of Army General Classification Scores

Percentage in Each Grade in Health and Disease

	Anticipated	713,000 Selectees	Hospital Personnel	Ulcer	Functional Disease
Group I	7	8	7	0	0
Group II	24	29	43	29	3
Group III	38	30	30	48	37
Group IV	24	21	12	23	32
Group V	7	12	7	0	28

The army grades on the general classification tests were computed in percentage for our patients with ulcer and the patients with functional disorders of the digestive tract. The charts graphically illustrate the findings, while the table gives a breakdown of the percentage in

each grade for four different groups of soldiers compared with the anticipated figures. The greater number of patients with functional digestive disturbances are found in grades IV and V, while the occurrence of purely functional disorders in grades I and II is extremely rare. These findings bear out in a most striking manner the clinical impression that digestive disturbances of the functional type are seldom seen among bright, alert, well integrated persons. Conversely, functional disorders of the digestive tract are more commonly seen in poorly integrated persons who have difficulty in learning and in adapting themselves to the conditions of the service. Thus from a medical point of view the selectee who on the basis of his army general classification test gives indication of being a poor risk has been so proved while under the stress and strain of field conditions in the combat area.

#### RESPONSE TO THERAPY

On dietary measures and the limited use of antispasmodic drugs 58 per cent of the patients with functional disorders showed no improvement. Of those

who showed good improvement 90 per cent had experienced symptoms for no longer than twelve months. A nonlaxative, low residue diet was uniformly prescribed. During the first two months tincture of bella donna 15 minims (1 cc) and phenobarbital 0.032 Gm four times a day were employed. The results were not impressive. A period followed during which these drugs were not available. While no detailed record was kept, the clinical impression was gained that the lack of these drugs made very little difference in the course of the symptoms. Recently these drugs were reinstated in treatment in accordance with the suggestion of a psychiatrist, Major John M. Cotton, M. C. Bella donna was administered in gradually increased doses to the limit of tolerance. Fifteen minims of the tincture four times a day twenty minutes before meals and at bedtime served as the initial dosage. This was raised to 16 minims on the second day, and on each subsequent day a single drop was added to each dose until relief or toxic symptoms such as blurred vision, tachycardia or excessive drying of the mouth occurred. It is too early to make any positive statements as to the value of this regimen but it can be said that the early results have been promising in overcoming the attacks of postprandial abdominal cramps.

<sup>1</sup> Personal Classification Tests, War Department, Technical Manual 12 260, Washington, D. C., Government Printing Office, 1942

## DISPOSITION

The disposition of patients suffering from functional digestive disturbances in the field is a problem. These patients as far as physical and laboratory findings reveal have no organic lesions. In this respect they appear as healthy as the next soldier. Nevertheless they experience definite symptoms that in many instances seriously interfere with the satisfactory performance of their duties. Their ill appearances to the contrary notwithstanding are not imaginary but real. An opinion as to this type of patient's fitness for duty based on purely objective findings is obviously unsatisfactory. For this reason whenever possible further information as to the patient's military qualifications under simulated or actual combat conditions were sought from commanding officers and battalion surgeons. Information obtained in this manner was frequently found to be of inestimable value to us in reaching a decision as to the proper disposition of the soldier.

In this connection three possible courses presented themselves: (1) return to duty, (2) transfer to a labor battalion or (3) transfer to a general hospital in the zone of the interior for reclassification. After careful hospital study and education it was found possible to return to duty 88 per cent of those patients who had been admitted for the first time in contrast to 56 per cent of those with more than one such admission. The patients whom we thus returned to duty frequently were accompanied by a letter to the commanding officer explaining the findings and the nature of the disease. It was suggested that if the soldier failed to adapt himself satisfactorily and if his symptoms persisted with sufficient intensity to interfere with his efficiency he be returned to the hospital with information concerning his general fitness as a soldier.

It was learned that to keep such a soldier in his unit was detrimental to the morale of his outfit and not in the best interests of the service. An illustrative incident was reported to us of a soldier who eventually entered active combat although suffering from a functional disturbance. Under the tremendous emotional strain of being under fire his hitherto relatively mild symptoms became acute and he collapsed in a foxhole, being unable to proceed farther. He was found by two litter bearers and was placed on a stretcher. While he was being transported to a field dressing station one of the litter bearers was killed and the other seriously wounded. This seems an inordinately heavy price to pay for the health of a soldier who previously had given definite evidence of emotional instability sufficient to render him unfit for combat duty. This incident not only cost the life of a valuable litter bearer but may have prevented the evacuation of a wounded soldier in serious need of surgical care. Again this is but a single occurrence but it serves to illustrate the point that persons suffering from repeated attacks of a functional digestive disorder are more likely to be a liability than an asset under fire and for that reason should be placed from the beginning in a situation where their abilities have a greater chance of success.

During the early months the sending of such patients to a labor battalion or service company seemed a promising solution. This course was adopted with the hope that a little 'discipline' would make 'men' out of these persons. This practice we soon discovered to be disastrous. Instead of the soldier being improved he usually was returned to the hospital with his symptoms more deeply entrenched.

Recommendation for a transfer to a general hospital in the zone of the interior was made with regard to 22 per cent of the patients suffering from functional gastrointestinal disturbances by a disposition board in our hospital. When a patient of this type was readmitted because of persistent symptoms regardless of all therapy and all efforts of his command to place him satisfactorily, he was brought promptly before a board of medical officers. The majority of patients so presented, after a careful study of the man and the situation, were recommended for transfer to the zone of the interior as unfit for combat duty. How many more of our patients were similarly recommended by disposition boards in other hospitals it is not possible to say. Our figure is lower than that for soldiers who obtained certificates of disability discharge from the Lawson General Hospital as reported by Chamberlin. It is not clear just how to account for this disparity other than that patients admitted to army general hospitals are selected in that they have been referred from other units because of serious physical defects. In contrast, the forward hospitals draw their patients directly from the troops in the field.

## CONCLUSIONS

1 Patients with functional disorders of the gastrointestinal tract constitute 53 per cent of the group admitted to a large hospital in the forward area because of dyspepsia.

2 The characteristic complaint of these patients is distress induced by the taking of food.

3 The scores of the army general classification tests give striking confirmation to the clinical impression that the majority of these patients are incapable of adapting themselves to field service and are poor risks in the combat area.

4 For the most part the response of these patients to therapeutic measures in the field is transient and poor.

5 Patients who are shown to be poor learners and who persistently fail to make any satisfactory improvement should be returned promptly to the zone of the interior for reclassification.

2 Chamberlin, Donald T. Peptic Ulcer and Irritable Colon in the Army. *Am J Digest Dis* 9: 245-248 (Aug.) 1942.

**Surgical Conquest of Goiter**—The surgical conquest of goiter is due in large degree to Theodore Kocher who in 1872, at the age of 31, became director of the surgical clinic at Bern, Switzerland. The high incidence of goiter at Bern gave him an unusual opportunity to study the disease. Lister's method, had just been adopted by Kocher's Swiss German and Austrian colleagues, and the specter of infection in operative wounds banished. Kocher who was a master technician as well as a keen thinker devised new methods for obtaining satisfactory surgical exposure of the thyroid for controlling hemorrhage and for avoiding damage to the nerves of the larynx. In 1883 he reported his first ten years work, a total of 101 goiter extirpations with a mortality of 12.8 per cent. In this famous paper he not only described the essential features of the modern technique for removing thyroid adenomas but he identified a new clinical condition which he called *cachexia strumipriva*. All but two of a series of 18 patients in whom he had removed the entire thyroid developed a syndrome characterized by lethargy, puffiness of the face and dryness of the skin. Kocher rightly concluded that this was due to a lack of thyroid secretion—Hargraves C. D. and Lloyd Warrham J. P. A Hundred Years of Medicine. New York: Sheridan House Inc. 1943.

## Clinical Notes, Suggestions and New Instruments

### BICORNATE UTERUS WITH PREGNANCY IN EACH HORN

MAJOR ALEXANDER BRAZE, MEDICAL CORPS  
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During the embryologic development of the female the two müllerian ducts fuse from below upward to form the vaginal tract and the uterus. The numerous anomalies of the female genital system that have been reported in the literature can be ascribed in the great majority of cases to lack of fusion at any location throughout the extent of the two canals and in the remainder to the rudimentary development of one duct.

In various animals the müllerian ducts normally do not fuse and consequently two tubular uteri are present. In the human being in the event of incomplete development of one duct, the rudimentary side appears as an appendage to an apparently normal uterus. Since Mauriceau and Vassal reported the first case in 1669 over 100 cases of varying degree and extent have been described in the literature.

Usually menstruation occurs from the two uteri simultaneously, however it may come from one horn at a time. Pregnancy may occur in one or both horns. Muller has recorded cases of menstruation from the empty horn during the pregnancy. In one instance twins were found in one horn. It is conceivable that should each horn contain an ovum, superfetation might occur. Several such cases have been reported in the literature.

In the ordinary course of events pregnancy in one horn is undisturbed the uninvolved or nonpregnant horn growing and forming a decidua membrane typical of that found in an ectopic pregnancy. In some cases this decidua may be expelled without disturbing the pregnancy of the other horn. In other instances the course will resemble that of an abortion for which the usual treatment is instituted. Being forewarned as to the presence of an anomalous development of the uterine tract, the surgeon proceeds with extreme caution during the curettage.

The sparsity of reports which have been recorded indicate that it is unusual for gestation in a bicornate uterus to continue uneventfully to term. Should this occur, the following complications are quite frequently encountered:

1 Weak pains may occur associated with atony in the third stage with resultant postpartum hemorrhage.

2 Dystocia may be produced by prolapse of the nonpregnant horn under the other with incarceration in the pelvis or by the nonpregnant cervix being forced downward to the vulva with the head.

A review of the literature has revealed a definite lack of adequate reports on pregnancies in each horn of a bilateral uterus and in no instance successful termination of such pregnancy with viable children.

In 1925 Rowlett<sup>1</sup> of Florida described a case of a double uterus with pregnancy of each horn. The condition had been

discovered during a laparotomy two years previously. Despite this knowledge the patient went into labor after five months' gestation miscarrying male fetuses weighing 3 pounds 4 ounces (1,420 Gm) and 2 pounds 3 ounces (990 Gm). The question of superfetation was raised.

In 1933 Wong<sup>2</sup> of the Peiping Union Medical College in Peiping, China, reported in considerable detail a pregnancy



Fig. 2—Appearance after intrauterine injection of iodized oil six weeks post partum.

in one horn of a double uterus. At six months there occurred all the signs and symptoms of a miscarriage ending in expulsion of a decidua cast of the nonpregnant horn. Convalescence was uneventful, and three and one-half months later the patient was delivered of a normal girl baby. The puerperium progressed normally. A special examination forty days post partum attempted to prove by hysterosalpingographic studies the presence of a bicornate uterus. After repeated attempts Wong and his associates were able to demonstrate only the right uterine cavity and its tube. One week later the test was repeated and both cavities were demonstrated. There was only one cervical canal, and the opening into the left uterine cavity was just within the external os and so was passed by the cannula on previous tests.

In 1934 Barrett<sup>3</sup> of the Vanderbilt University Hospital in Tennessee reported a bicornate uterus with a pregnancy in each horn. Both infants were born prematurely and died shortly after delivery. The patient had had six previous pregnancies of which three aborted and two miscarried (one of twins). One pregnancy went to term, producing a girl who was 5 years old at the time of the reported pregnancy.

In 1939 Johnston<sup>4</sup> of Akron, Ohio, reported a case of a dead fetus in one cornu and a normal pregnancy in the other. The condition was discovered during a laparotomy in which the cornu with the dead fetus was mistaken for a fibroid and removed. The remaining pregnancy continued uneventfully to term, and the delivery of a full term normal infant was accomplished with low forceps.

- 1 Rowlett, W. M. Report of Case of Double Uterus with Pregnancy in Each J. Florida M. A. 12:5 (Jul.) 1925.
- 2 Wong, Amos, I. H. Pregnancy in a Double Uterus. J. Am. M. A. 47:61-63, 1933.
- 3 Barrett, Arthur B. Bicornate Uterus with Pregnancy in Each Horn. J. Obst. & Gynec. 28:612 (Oct.) 1934.
- 4 Johnston, W. M. Bicornate Uterus. Am. J. S. 11:11 (1939).

The case which I present is of particular interest since it represents the only recorded case in the literature of pregnancy in each horn of a bicornate uterus which proceeded uneventfully to term with consequent delivery of two normal viable children.

#### REPORT OF CASE

On Jan 20, 1941 at 8 a m Dr J S Lundholm referred to me Mrs R T, white, aged 24, who was in active labor. Her menstrual history was normal (last menstrual period April 8, 1940) although her menses had been extremely profuse. One year previously she had had a delivery in the home. The membranes had ruptured spontaneously prior to the onset of labor, which continued with severe dystocia for twelve days, resulting in the delivery of a female child which lived for only a few hours. The dystocia was undoubtedly produced by the incarceration in the pelvis of the nonpregnant horn.

Examination revealed an extremely broad abdomen containing two sets of fetal heart tones 140 per minute on the right and 135 on the left. Both fetal heads were palpable and the diagnosis of twins was readily made. There appeared to be a depression between the two fetuses, a fact which aroused a suspicion of the presence of a bicornate uterus. Inspection of the introitus revealed a third degree cystocele and rectocele. According to the roentgenologist's report, a flat posteroanterior film of the abdomen showed the presence of twins. The two fetal heads were floating above the pelvic inlet. Both heads

examination there were apparent two widely separated uterine bodies with no definite palpable point of fusion.

Hysterosalpingographic studies were undertaken on March 6, 1941, approximately six weeks post partum. Fifteen cc of iodized poppyseed oil was injected through the cannula, which was inserted so that the tip rested just within the external

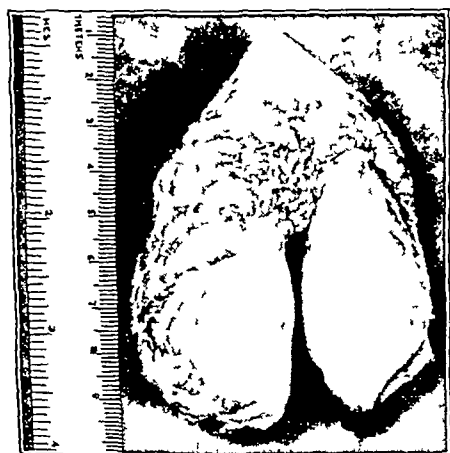


Fig 3—Posterior view of surgical specimen



Fig 4—Anterior view of surgical specimen

cervical os. The roentgenologist reported that a flat film of the pelvis made after an intrauterine injection of iodized oil showed a bicornate type of uterus filled with a radiopaque material. The cannula extended into the right uterine horn for a distance of 15 cm. The horns of the uterus were about 3 inches in length. This increase in the size of the uterus was probably due to subinvolution. The fallopian tubes contained some radiopaque material but were not abnormal (fig 2).

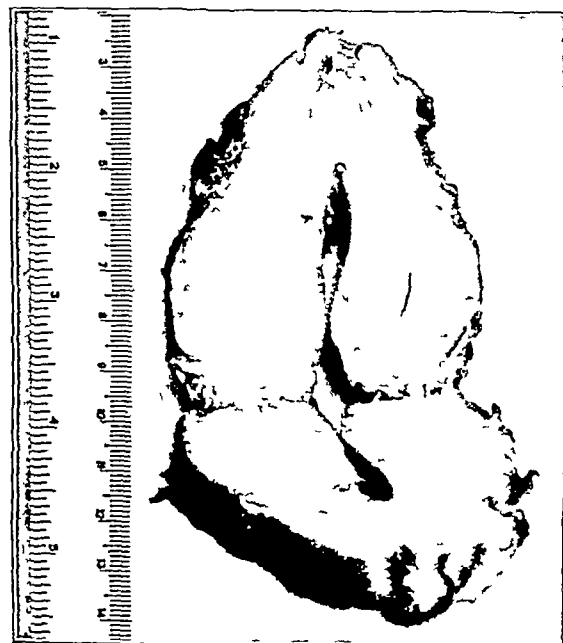


Fig 5—Sagittal section of surgical specimen

were presenting one on each side of the pelvis. The fetal spines were directed laterally and the small parts were directed toward the maternal spine. There were no developmental anomalies of the fetuses or of the maternal pelvis. Both of the fetal heads appeared to be attempting to enter the pelvis. There was evidence of pressure on both heads which is not unusual during labor, but the pressure on one of the heads appeared to be due to the other head pushing against it (fig 1).

At 10 a m there occurred a relatively simple spontaneous delivery of a viable 5 pound 12½ ounce (2620 Gm) boy. The placenta was delivered intact at 10 12 a m from the right horn, but, despite firm contraction of this horn profuse hemorrhage continued. At 10 19 a m a living 6 pound 9 ounce (2860 Gm) girl was delivered by manual pressure over the left fundus and its placenta followed intact at 10 25 a m. The left horn remained atonic but with continued gentle massage and the administration of pitocin and ergotamine tartrate (gynergen) eventually contracted nicely. Two firm masses were palpable in the suprapubic region. There were no lacerations. Profuse hemorrhage again occurred at 1 p m but responded well to treatment.

The blood count of the mother revealed a hypochromic anemia of pregnancy (hemoglobin 38 per cent and red blood corpuscles 2910000). She was given a transfusion of 550 cc of whole citrated blood. The puerperium was otherwise uneventful.

On the seventh postpartum day a vaginal examination was performed under aseptic technique. Specular examination revealed a single cervix and no vaginal septum. The third degree cystocele and rectocele were of course still present. On bimanual

The mother and twins were dismissed from the hospital in excellent physical condition in two weeks. The twins are still alive at the time this paper is being written and are progressing normally.

Approximately three months following her dismissal from the hospital the patient was readmitted with severe lower



abdominal cramping. Pelvic examination revealed a firm tender mass in the left fornix which could not be displaced upward. A diagnosis was made of prolapse of the left horn of the uterus with incarceration in the pelvis. Since the patient had two healthy children and her financial status did not warrant prolonged conservative treatment, surgery was instituted after a preliminary blood transfusion. An anterior and posterior colporrhaphy was first performed to repair the pelvic floor and then the abdomen was opened by means of a midline suprapubic incision. The incarcerated fundus was relieved with some difficulty. The uterus then presented itself as two widely divergent horns each with its own tube and ovary and with no visible site of fusion. The body of the uterus was then removed in toto the process revealing the site of fusion to be just above the internal cervical os. The pathologist reported that the specimen was a uterus weighing 85 Gm. The uterus had two bodies and one cervix. The bodies were entirely separate except at the point of union with the cervix. They were cylindrical and measured 35 and 30 cm in diameter. The uterine canals were not enlarged and were lined with velvety smooth pink endometrium. The muscle walls averaged about 1.5 cm in thickness. The cervix presented no important changes. In order to save the specimen, no sections were made. They were considered unnecessary. The diagnosis was uterus bicornis unicollis (figs. 3, 4 and 5).

The patient made an uneventful recovery and has had no further difficulty.

#### THE USE OF BIODYNE OINTMENT FOR BURNS

JOHN WINSLOW HIRSHFELD, M.D., MATTHEW A. PILLING, M.D., AND  
MARK F. MAUS, M.D., DETROIT

Bio-Dyne ointment has been publicly advocated for the treatment of burns.<sup>1</sup> In recent articles in the lay press it has been claimed that burns so treated heal painlessly and with remarkable rapidity. It has been stated that the ointment contains substances which stimulate epithelial proliferation. These public claims have resulted in inquiries by many patients and often in the demand that Bio-Dyne be used by physicians. If Bio-Dyne ointment has these properties, it represents a truly remarkable advance in burn treatment. Since, however, we were unable to find in the medical literature any experimental or clinical support for these claims, we decided to study the effect of Bio-Dyne ointment on fresh wounds of experimental animals and man.

In order to test the epithelial growth stimulating effect of Bio-Dyne as compared with petrolatum, these ointments were applied to fresh wounds made by removing the epidermis with the Padgett dermatome. These wounds of uniform depth must reepithelize themselves primarily from the epithelium of hair follicles and the sebaceous and sweat glands of the dermis. They are ideal for testing a substance designed to stimulate epithelial growth. Two such wounds were made on each of 8 dogs, on 8 domestic pigs, and during the course of skin grafts on several human beings. Hence it was possible to treat a control wound with petrolatum impregnated gauze and the other wound with Bio-Dyne ointment. Specimens were removed for microscopic examination before application and at intervals after the application of Bio-Dyne ointment or petrolatum. Each time the dressing was disturbed for removal of a specimen a fresh supply of Bio-Dyne ointment or petrolatum was put on the wound. The specimens were fixed in solution of formaldehyde and stained with hematoxylin and eosin. Specimens were taken from dogs and pigs at intervals from 6 to 192 hours. We were able to persuade only 2 patients to submit to excision of tissue for examination, and therefore human material is limited to 2 microscopic observations, one at 4 and one at 5 days. However, the clinical course of several additional patients could be observed.

Examination of the wounds of man and animals revealed no evidence that Bio-Dyne accelerated the healing process.

From the Department of Surgery and the Surgical Service of Receiving Hospital, and the Department of Pathology of Wayne University College of Medicine.  
1 New York Herald Tribune July 18, 1943. Time Magazine 40 94 (Oct. 5) 1942. Reader's Digest 42 75 (Jan.) 1943.

The wounds treated with Bio-Dyne and those treated with petrolatum gauze healed in the same time. The dressings were more painful in the wounds treated with Bio-Dyne because the Bio-Dyne ointment seemed to dry or to be absorbed, leaving the gauze dry, stiff and adherent to the wound. The gauze impregnated with petrolatum remained greasy and was easily removed.

Examination of the prepared slides confirmed the clinical impression that Bio-Dyne failed to promote epithelization more rapidly than petrolatum gauze. In view of the lack of evidence that Bio-Dyne accelerates epithelial growth, we are not convinced that Bio-Dyne ointment has any advantages over petrolatum gauze for the treatment of burns.

### Special Article

#### THE ABATEMENT OF NOISE

CAREY P. McCORD, M.D.

AND

JOHN D. GOODELL

DETROIT

It is a commonplace fact that the nation's present circumstances of living and working have greatly multiplied both the quantity and the continuity of noise. At the same time justification for noise seems better established so that indignation, however warranted, meets some disfavor. If the period of national stress may so accentuate the ill effects of noise that a disturbed people will demand and secure relief both for the duration of the conflict and thereafter, at least one constructive end will have been attained.

When expanded industrial plants operate on three shifts instead of the customary one day-shift, their contribution to the noise and the ill effects of noise throughout the community may be enormously increased. Automobile traffic may be as heavy at midnight as at 5 in the afternoon. Increased numbers of streetcars, replacing unfueled automobiles and operating continuously, may make both days and nights unendurable. Recreation through noisy sports at 2 o'clock in the morning may seem reasonable to those workers whose tasks were completed at midnight, but not so for those other workers then seeking sleep with duties beginning at 7. In turn, each group disturbs some other. Organized night trucking, planned to avoid daylight road congestion, perpetuates the din of the day throughout the night.

The acceptance of noise as an inescapable necessity possibly reflects unintelligent complacency. A proper understanding of the established ill effects of noise and the practicability of noise control would appear to warrant sponsorship of noise abatement as a second war measure. The purpose of this report is to assert that much current noise is needless, that effort against noise is a widely neglected but legitimate portion of over-all warfare, that methods of noise control are practical and no longer technically mysterious, and that behind some of the more publicized evils of the day such as wilful absenteeism, may be found the inordinant disturbances from noise.

This publication represents a report of the American Medical Association's Committee to Study Air Conditioning conditions of the Detroit area. Chairman, Dr. Walter M. Simpson, Detroit. Members: Dr. P. McCord, Detroit; Dr. Walter M. Simpson, Detroit; Dr. Prof. Constantin P. Yaglou, Boston; and Dr. Alan J. Lurie, New York, together with Mr. John D. Goode, Detroit.

A PREFATORY STATEMENT OF NOISE ABATEMENT  
PRINCIPLES

Every successful suppression of noise results from the application of one or more of a large number of somewhat unrelated principles. None may be described in detail, but some of the fundamental laws are explained sufficiently to provide background for the specific examples in the tabulation which follows and the suggestions appearing in various sections of this report.

**Fundamentals**—1 Frequencies which produce auditory impressions are propagated by means of pressure waves. When a vibrating body strikes a series of rapid physical blows against the air, wood, metal or whatever substance with which it comes in contact, this impact is either cushioned or transmitted in direct proportion to the mass per unit of volume of the material which receives the blow.

2 Just as an electrical circuit presents an impedance to the flow of current so the cross section of an acoustic conductor presents an impedance to sound energy. The most efficient transfer of energy between two mediums occurs when the impedances are matched.

3 Every object which can be set into vibration so as to generate audible energy has a natural period of oscillation. This means that if it is stroked, struck or plucked it will always generate a sound wave containing the same fundamental frequency.

4 When a sound wave is generated in the open air, it continues to travel until the energy is dissipated. When a sound wave is generated within a room, it is reflected from the walls, ceiling, floor and furnishings, the energy finally being dissipated during countless journeys between reflecting surfaces. A human being in the room receives an auditory impression of the sound on each reflected journey past his ear. The intelligence is conveyed by the original impulse, the rest is a confusing jumble. Listening to speech under reverberant conditions is like trying to watch motion pictures in a room constructed entirely of mirrors.

Related to reverberation, but not identical, is the "focusing effect" of certain structures. By focusing effect is meant the tendency for large amounts of reflected sound to arrive at the listening point from directions other than that of the source in such a manner that reinforcement takes place.

Acoustic treatment of ceilings and walls has relatively little value in reducing low frequency reverberation.

We have conducted a series of experiments in connection with the elimination of noise, particularly with respect to low frequencies. If two sound waves of equal intensity and frequency coincide in such a manner that the compressions of one correspond to the rarefactions of the other, they are said to be in opposite phase and the result approaches silence. This curious effect where two sounds are subtractive may be used to advantage in noise reduction.

The experiment performed is presented graphically in the accompanying illustration. The sound source in the center radiates a wave of specific low frequency. The highly directional microphone (B) is placed a short distance away facing the sound source. The output from the microphone is fed through an amplifier to the four loudspeakers, which are housed in directional baffles faced away from the sound source. The amplifier is designed with electrical filters to eliminate all frequencies except those which the system is designed to cancel. The elements of the system are so arranged that the sound wave from the speakers occurs, 180

## Tabulated Principles and Examples of Their Application

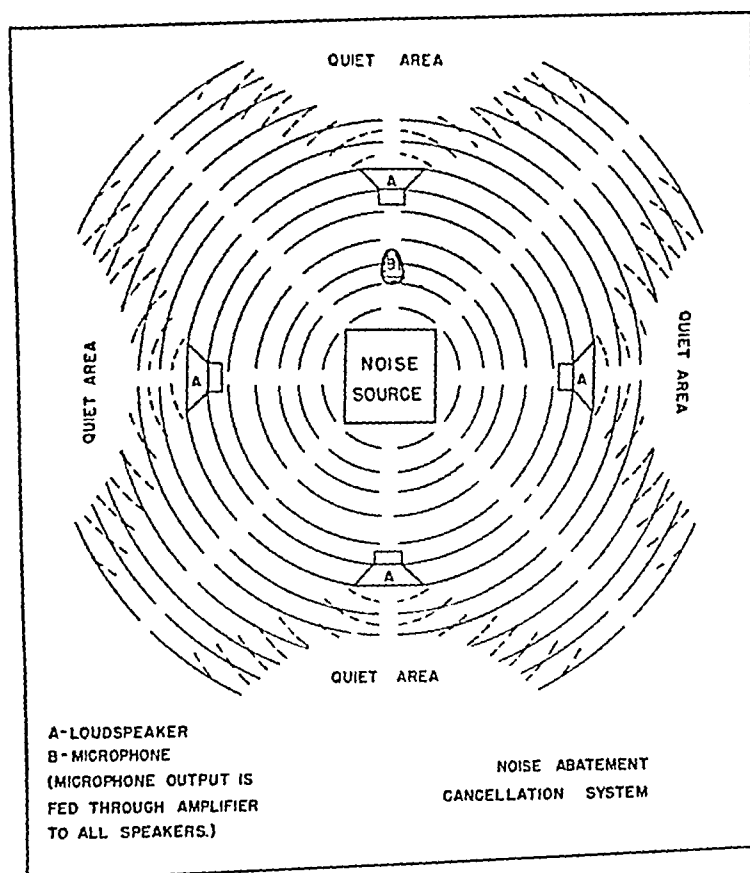
PRINCIPLE	APPLICATION
1 When a physically small object such as a piano string is set into vibration it presents a relatively tiny surface to the air. If it is in firm contact with a large acoustic conductor such as the sounding board of a piano the transfer of energy is more efficient and results in effective physical amplification. Acoustic isolation of small vibrating bodies from all conductors and sounding board surfaces is desirable in minimizing noise.	1 An example of this principle concerns the sound output of a watch resting on a tabletop. The tabletop will function as a sounding board producing sufficient amplification to make the sound output disturbing to sleep. The same watch suspended from its chain might be almost inaudible. Another demonstration of this may be made with an ordinary dinner fork. If one holds the fork in the air and plucks the tines the sound will be puny. The instant one touches the handle of the fork to the table the sound is increased amazingly.
2 The deliberate mismatch of impedances for purposes of minimizing noise transmission may be applied to the construction of walls. Associated with this approach is the desirability of using non elastic materials for constructions that may function as undesirable transmitters.	2 Walls should be built of materials with high density and mass the impedance of which is great compared with that of air. Proper installations of insulating materials in wall suspensions and between partitions the impedance of which differs greatly from that of the walls are also valuable. Plywood is an example of unsatisfactory wall material because of high elasticity and low mass. Concrete may be desirable because of opposite characteristics. Certain fibrous materials may be useful in spite of their low mass and density because of their low elasticity.
3 Sound conditioning and air conditioning are closely related projects. With the elimination of the necessity for open windows to provide ventilation it becomes possible to isolate the interior of a structure from almost all exterior noise.	3 Noise reduction is a direct result of air conditioning in public conveyances as well as in structures. An obvious example of this appears in modern streamlined trains where air conditioning has brought about greatly increased insulation against noise. This unquestionably is a factor in the decreased fatigue of passengers on these improved trains.
4 The experimental results of many investigators have shown that injury may result from bone conducted sound. Protection from injury by acoustic energy transmitted through the floor may be obtained through rubber soled shoes insulated platforms for workers and isolation of energy sources by means of cushioning supports.	4 In this connection it is important that the isolating material be adequately loaded. In other words it is possible to use such a large mat of rubber under a working platform that the weight it carries will only slightly compress it. In this case the rubber mat may be so springy as actually to increase the vibration energy transmitted to the worker.
5 In some cases relatively quiet operations or devices may be substituted for those causing noise.	5 Welding may be used instead of riveting e.g. in shipbuilding or trical vehicle manufacture. Light signals are often a practical substitute for telephone bells and other noisy devices intended to attract attention.
6 Under certain conditions a small percentage of reverberant noise may serve as an isolating medium. In an absolutely quiet room the continuity of a worker's thought is disrupted by the overheard irrelevant intelligence in nearby conversation. In a slightly reverberant large office such sounds are blended in the general noise level and the distraction is decreased.	6 It is not always desirable to partition large offices. When several people are working in proximity a low general noise level serves to mask the intelligibility of nearby conversation.
7 Percussive sounds particularly intermittent ones of high frequency are a source of pronounced irritation. In many cases the elimination of a few such seriously annoying sounds will satisfactorily reduce the fatigue of workers.	7 In order to avoid the intermittent rattle of loose parts on machines friction of an uncoiled surface against another regular maintenance work on machinery and the damping of unnecessarily vibrating parts are indicated.
8 Under circumstances in which the original sound wave is generated at high intensity (80 decibels or more) the prime effect should be directed toward reducing the intensity of the sound at its source.	8 Reduction of audio energy sources may be accomplished by the application of several principles mentioned elsewhere.
9 In a reverberant room the decay of a sound wave is low and succeeding impulses may occur while reflections of the original impulse continue. In this case a sound level is established which may greatly exceed the level which would be attained without reflection.	9 The installation of acoustic material on the walls (or elsewhere) will reduce reflection of sound waves. The increased use of carpets wall hangings and drapes will serve this same purpose but a larger amount is required to obtain the same result.

degrees out of phase with the wave from the sound source and produces cancellation. It is believed that this method of noise elimination may be applicable to certain previously difficult problems particularly under outdoors or nonreverberant conditions.

#### NOISE ABATEMENT IN INDUSTRY

It may not be shown that all industries are disturbingly noisy but in a recent prewar publication 467 occupational pursuits out of a total of 7 000 were listed as clearly contributing undesirable noise output. This figure fails to indicate the total probable exposure, since many noise free operations are customarily carried out in proximity to noisy ones. As a rule the architecture of manufacturing plants is such as to accentuate reverberation.

Chiefly from industrial experience it is now accepted as established that noise produces significant deafness



Subtractive effect of sound waves in opposite phase

both on a functional and on an organic basis, that noise causes or contributes to pathologic fatigue and that noise under some circumstances lowers the work output. Less certainly established, but probable, are the indications that noise unduly contributes to absenteeism, increases work spoilage and generally hampers the worker, and especially the new worker in job adjustment. It is known that in a few trades all, or nearly all, old-time workers suffer varying degrees of deafness. It is deplorably true that heavy forge operators are so nearly universally impaired as to hearing that partial deafness is recognized as some proof of experience in the trade.

One typical noise problem, together with its remedies, is here presented as generally illustrative, but particularly illustrative of the fact that steps other than wall and ceiling treatment may be required in many situations. This example is slightly disguised for military reasons. In a certain plant engaged in the manufacture of steel balls (each weighing about three-fourths of an ounce), with a weekly output to be reckoned in

millions, it became necessary to carry out visual and automatic inspection for defects and size. In the visual inspection process the balls were scooped up from sheet metal baskets and dropped onto metal tables. After inspection the balls were tossed by the score or more of inspectors into various metal containers depending on the nature of the defect. Nearby, the size inspection was carried out by several automatic machines. In all instances the balls poured from large hoppers into smaller ones, thence traveling through chutes to sizing rolls, the various sizes falling on other metal chutes and ultimately dropping into a series of metal boxes. The total output of noise was horrendous. The area of greatest annoyance was not immediately in this workroom but in adjacent offices separated only by thin partitions.

To abate this noise to reasonable comfort proved to be comparatively simple, using easily available materials and methods that might be carried out by average plant personnel and facilities. The following steps proved adequate:

All portable sheet metal containers were changed to wood.  
All table surfaces were covered with plywood.

All chutes were lined with leather.

Vibration of the metal hoppers during the refilling process was decreased by refilling when half empty. This increased the inertial mass and damped the vibration tendency.

The under side of all other sheet metal surfaces over which the steel balls traveled was damped by a thick undercoating of quick drying mineralized paste.

All piping throughout the department was insulated.

Lastly, and by this time not altogether necessary, a double wall partition was erected as a protective barrier for adjacent offices. This wall was so constructed as to be "floated" rather than being built integrally into the general structure.

Through almost endless variations, noise problems arise in industry. For most of these situations there exist little used, but no less practical and simple remedies. It is fallacious to claim that workers become injured to noise. They may become injured on the basis of deafness, but any psychologic adjustment of noise that may appear to take place must be reacquired on a day by day basis. Heretofore, compensation for injury in industry has largely excluded such disorders as occupational diseases. Whatever merits reside in broadened compensation provisions that characterize some new laws, it must be reckoned that increased impetus will be given thereby to the better control of injurious noise in industry.

#### NOISE ABATEMENT THROUGH ARCHITECTURAL FEATURES

Present and prospective needs inescapably require a wider application of architectural noise prevention. Every structure designed for the housing of the activities of human beings will represent architectural imperfection in the absence of appropriate noise control features. Apart from a somewhat restricted field of noise treatment, the building trend distressingly favors more, rather than less, noise. High costs both of material and of labor make some flimsy construction of small residences almost inevitable. As street noise increases, obviously there is need for greater insulation. To accomplish noise privacy it becomes necessary to provide two structural features: (1) a design of structure so as to prevent the transmission of sound from exteriors and between rooms, (2) sufficient absorption within rooms that the reverberation will not be excessive. Contrary to some popular

pseudo architectural concepts, these are two distinct matters requiring individual solutions

Walls should be constructed of materials of high density and mass. Walls of this nature will function as excellent conductors of sound but, because of their extremely high impedance and low natural frequency, will be very difficult to set into vibration and hence will not become secondary noise sources. In order that a wall may transmit a sound to the air in an adjacent room, it must function not only as a conductor but as a projector or radiator. Hence, what would appear to be a fallacy in the use of highly conductive materials to provide sound insulation between rooms is actually desirable.

Many people believe that heat insulation and sound insulation entail identical solutions. This is not entirely true, although most porous materials provide good heat insulation and also have desirable sound absorptive qualities. Measurements of the insulation provided by porous materials indicate that they have relatively little value by themselves unless they are extremely thick. These materials are most effective in sound insulation when they are supported in an air space between two rigid partitions. Properly installed they will contribute considerably to the over-all insulation provided by a wall.

#### MISCELLANEOUS ITEMS

Utter silence, apart from certain laboratories, motion picture studios and a few other places is never the objective of noise abatement. Human adjustments are such that total sound absence is disturbing, and any break in the silence is then startling and at times terrifying. A low background of 20 to 30 decibels of sound is comforting rather than annoying.

In industry the satisfactory operation of many machines is determined by the ears of the operator. Conscious effort in the detection of these telltale sounds constitutes the chief complaint of many workers against ambient noise. The situation is akin to that in medicine when auscultation is made impossible or difficult by surrounding noise.

Music during work may be advantageous under some circumstances and anathematous under others. In work, every job may lead to rhythmic muscular motions—every job having its own variations. The varying tempos of music may wholly upset job rhythms, reduce production and indirectly cause accidents.

Good types of ear defenders, properly fitted, may reduce loudness of ambient noises as much as 80 per cent at certain levels without interfering with the opportunity for ordinary conversation. While the molded fitting of an ear defender is highly desirable, the taking of ear canal impressions followed by the casting of individual stoppers for each ear of all individuals introduces many practical difficulties.

During exposure to injurious noise levels the larger part of the hearing loss occurs during the first hour, with only slight elevation during subsequent periods. On the other hand recovery time is definitely prolonged if the exposure time has been extensive. Roughly, the apparent recovery time is proportional to the square of exposure time but cumulative effects repeatedly have been demonstrated.

While sounds that are not loud may be the source of some physiologic damage and annoyance probably only loud sounds cause organic damage to the ear.

Older persons are more likely to incur auditory apparatus damage from noise since their hearing organs possess lower recuperative powers.

Wide variations exist in different people in sensitivity to noise. Relative tolerance to noise is an acceptable concept.

In the average factory with mechanical operations, the noise level is approximately 90 decibels, or 10,000,000,000 times the least perceptible sound and 100,000 times the sound of ordinary conversation.

Holes in walls, such as for the previous passage of pipes, permit the passage of much unwanted sound. Even a key hole may transmit sound energy sufficient to warrant suppression. Under these circumstances a constriction of the sound stream takes place so that more energy passes through than might be expected. Any open air passage of any size may be of importance in reducing the transmission of noise between rooms.

Fluctuation in noisiness is experienced unpleasantly. A continuous noise from 70 to 75 decibels is endurable, an occasional increase from 40 to 70 decibels may be much more annoying.

On a psychologic basis, much discomfort arises from noise expectation. If one shoe is dropped on the floor above and the interval pending the fall of the second shoe is excessive, the tension produced by the observer's expectancy constitutes a minor example of this type of disturbance.

High frequency sounds produce greater acoustic trauma than those of low frequency, but in the long run low frequency sounds may offer greater problems because they are less easily abated. It is pointed out that trauma which is actually caused by an abrupt change in barometric pressure may be mistakenly attributed to the low frequency sound e. g. in drop forge operations where a large hammer displaces a considerable cubic quantity of air so suddenly as to create a destructive pulse of increased barometric pressure.

In the operation of large guns, it has been shown that the effects of shock and deafness result from the primary pulse of air pressure rather than from the sound modulation of the air. The effects are closely related to the duration of the compression pulse, which is usually much shorter than the rarefaction. In comparative tests made with rifles and mortars it was found that the compression pulse from the mortar was of much higher pressure but that the malleffects were minor because of the relatively short duration of the explosion pulse from the mortar.

It is believed that, where explosive shells are intended to produce shock in personnel not subjected to direct hits the fact that extreme explosive pressures of short duration often do not produce serious trauma while relatively low pressures of longer duration have great effect should be an important designing consideration.

Ear defenders are valuable in protecting the ear from dangerous noises associated with gun fire but may not provide protection against explosion shock.

#### LEGISLATIVE ASPECTS OF NOISE ABATEMENT AND NOISE PREVENTION

The control of noise by municipal or higher authority never has been wholly effective. Effectiveness will never be attained until there comes a time when both the public and

responsible officials have acquired better concepts of the significance of noise and the measures through which noise may be eliminated or reduced to inoffensive levels. The vague outlawing of the barking of dogs or the shrieking of newsboys becomes unimpressive in the face of tolerated streetcar systems that may be a thousand times more annoying, or the licensing for operation of loud speakers on trucks which rove the streets day and night shouting the dubious values of possibly questionable products or causes. Legal measures as commonly written are frequently so loosely phrased as to permit numerous interpretations and hamper enforcement. Customarily, only on complaint of disturbed citizens is consideration given to obviously disturbing noises.

Education of the public as a whole and in special groups along with necessary legislation appears to be the key to noise amelioration. Many law abiding citizens who under no circumstances would contemplate the sending up of a rocket flare on a public street or turning a flood light on an apartment house to attract the attention of a friend will unhesitatingly blanket a house and an entire block with resounding noise from a badly designed automobile horn. It seems necessary to carry out educative programs as a supplement to legislative acts for the general public, for the makers or purveyors of noisy devices and particularly for architects and builders of various structures such as homes, hotels, office buildings and streetways.

In a previous sentence the term "badly designed" was deliberately used. In the design of automobile horns there appears to have been overlooked the fact that many accidents are unnecessarily caused by fright or confusion from the alarming intensity of the automobile horn. In recent years some horns have been redesigned to play a tune, which unduly prolongs the sound.

It is possible so to train a dog that on hearing a specific sound he will immediately wag his tail or lift a foot or perform some other reflex indication of awareness. It should not be more difficult to educate the public to respond to simple, nonirritating sounds as a warning of vehicular danger. It is obvious that a human being educated to the dangerous significance of a specific sound will react to protect himself more intelligently and more expeditely than in the midst of fright from nearby shrieking noises. It is understood that the Sparks-Withington Company has studied this problem with a view toward designing an improved automobile horn.

Designers of modern railroad locomotives have demonstrated the advantages of the mellow horn now used on diesel locomotives over the shrill steam whistle. It is actually easier to locate the direction of approach from this low pitched tone, and the countryside and cityside are spared the affront that formerly echoed from all directions.

Most legislation has failed to include provisions in building standards for protection against noise. In some measure sound abating materials are relatively cheap, but failure to specify their use or the method of application has made many buildings hideous as to abode or work because of noise disturbances. The monetary value of acoustic insulation from street noises is well recognized in some hotels where it is found

that the public will pay increased rates for rooms on higher floors or for spaces that have been properly treated acoustically.

The continued use of noisy streetcars lends affront no longer to be tolerated as a necessary evil, except under the immediate conditions imposed by war. In many cities, busses or other streetcar substitutes have measurably reduced this annoyance. Distinct advantages are to be found in the "PCC car," a quiet type of streetcar developed several years ago, the construction of which is open to all car builders throughout the country. It is believed that PCC car construction has been hampered sharply by war circumstances, although large numbers are already in use in many sections of the country. It is noteworthy that in the presence of a quiet streetcar the noise of the trolley wheel, previously unnoticed, becomes annoying, and in some instances led to the substitution of trolley shoes. This is a good example of the oft encountered experience that with the elimination of a principal noise there rise other irritating noises previously masked.

At this time a number of cities, large and small, under the aegis of the National Noise Abatement Council or otherwise are carrying out noise control programs. The patterns of these programs are similar emphasizing publicity and education. In some instances achievements are sought on an intercity competitive basis. In addition to immediate accomplishments such campaigns will contribute to the groundwork required for more directly constructive measures.

Noise curbing activities in New York City may be referred to as an outstanding rather than representative example. In that city in one recent year 225,143 persons were issued warnings under the provisions of the Noise Abatement Code and 32,282 others were given court summons. Some of the bans included in the New York provisions are

To sound any horn or signal device on any automobile, motor cycle, bus, streetcar or other vehicle while stationary, except as a danger signal when an approaching vehicle is apparently out of control, or, if in motion, only as a danger signal after or as brakes are being applied.

To blow any steam whistle except to give notice of train to begin or stop work, or as a warning signal.

To operate any radio, phonograph or any musical instrument in such a manner or with such volume as to annoy or disturb the quiet, comfort or repose of persons in any dwelling, hotel or other type of residence.

To erect, demolish or alter or repair any building other than between the hours of 7 a. m. and 6 p. m., except in case of urgent necessity.

To use mechanical loud speakers or amplifiers on trucks, etc.

Measures of this character may be found in many cities, but it is not believed that equal activity in enforcement always prevails. The need for these curbing procedures is most clearly indicated during war-time, but they should be considered as long range projects.

#### EPITOME

Patient endurance of excessive and perpetuated man-made noises is no longer a virtue. Injury, measurable and immeasurable, from noise such as noise which attends human life is real and not a matter for fiction. Relief from noise is procurable.

10 Peterboro Street

## Council on Pharmacy and Chemistry

### REPORT OF THE COUNCIL

#### Anti-Trichomonas Vaginitis Agents

THE COUNCIL ON PHARMACY AND CHEMISTRY FREQUENTLY GIVES CONSIDERATION TO CLAIMS ADVANCED ON BEHALF OF PRODUCTS PROPOSED FOR THE TREATMENT OF TRICHOMONAS VAGINITIS. BECAUSE OF MUCH CONFUSION WHICH EXISTS ON THIS PROBLEM THE COUNCIL DECIDED THAT A STATUS REPORT SHOULD BE PREPARED. SUCH A REPORT MIGHT PRESENT AMONG OTHER THINGS A REVIEW OF THE CLASSES OF COMPOUNDS NOW IN COMMON USE AND THE TYPE OF EVIDENCE NECESSARY TO EVALUATE AN AGENT OR PROPOSED TREATMENT. OBVIOUSLY, MANY FACTORS MAY AFFECT SUCH A REPORT. INVESTIGATORS MAY BE INFLUENCED BY THEIR OWN IDEAS AND OPINIONS. MANY PATIENTS WITH TRICHOMONAS VAGINITIS ARE NOT DISTURBED BY THE PARASITISM AND MANY OTHERS IMPROVE OR EXPERIENCE SPONTANEOUS CURES IN A MATTER OF MONTHS. TOO OFTEN THERE ARE NO CONTROL STUDIES IN CASES WHICH FAIL TO IMPROVE SPONTANEOUSLY, FREQUENTLY BECAUSE THE PATIENT IS INSISTENT THAT SOMETHING BE DONE AT ONCE.

FURTHER DIFFICULTIES IN OFFERING CRITERIA FOR CURE OR FOR THE EVALUATION OF A DRUG ARE CONCERNED WITH THE EXISTING UNCERTAINTY OF THE ACTUAL ORIGIN OF THE DISEASE AND THE PROBABLE MULTIPLE AND VARIED CHANCES FOR REINFESTATION. WHILE SOME PATIENTS IMPROVE WITH ANY TYPE OF SIMPLE TREATMENT AND OTHERS BECOME ASYMPTOMATIC SPONTANEOUSLY, STILL OTHERS, ESPECIALLY SOME OF THE RECALCITRANT ONES, IMPROVE WHEN THE NUMBER OF AND THOROUGHNESS OF APPLICATION OF TREATMENTS ARE DECREASED.

A REVIEW OF MANY REPORTS IN MEDICAL LITERATURE REVEALS A COMMON FAILING: METHODS OF TREATMENT ARE DESCRIBED BUT WITH VERY INCOMPLETE DATA ON NUMBER OF PATIENTS, NUMBER OF CURES (COMPLETE), RECURRENTS, NUMBER AND LENGTH OF TREATMENT. IN RELATIVELY FEW CASES ARE COMPARISONS OF DIFFERENT METHODS MADE OR CONTROLS EMPLOYED. THE NUMBER OF PAPERS THAT DO NOT REPORT ANY FAILURES IS SURPRISING. YET REGARDLESS OF THESE FACTS MANY CLAIMS ARE MADE FOR THE THERAPEUTIC EFFICACY OF INNUMERABLE AGENTS. TO EMPHASIZE THE INADEQUACIES THAT MAY EXIST THE DIFFICULTY OF SETTING UP SATISFACTORY EVALUATION CRITERIA WITH OUR PRESENT KNOWLEDGE AND TO SETTLE SOME OF THE UNCERTAINTY WHICH IS APPARENT IN MANY LETTERS OF INQUIRY ARRIVING AT HEADQUARTERS, THE COUNCIL ON PHARMACY AND CHEMISTRY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT AND AT THE SAME TIME EXPRESSES ITS APPRECIATION OF ASSISTANCE IN PREPARING THE REPORT FROM DR. GEORGE V. S. SMITH, PROFESSOR OF GYNECOLOGY AT HARVARD UNIVERSITY.

AUSTIN E. SMITH, M.D., Secretary

#### THE STATUS OF TREATMENT OF VAGINITIS ASSOCIATED WITH TRICHOMONAS VAGINALIS

Hesseltine<sup>1</sup> has pointed out that investigators in the United States have made the major contributions of the past two decades to the subject of vaginal trichomoniasis. This evaluation of the status of treatment, therefore, is based practically entirely on the American literature, namely articles from the start of 1930 through 1942 and textbooks by American gynecologists, although foreign articles appearing during the same period have also been consulted.

##### PATHOGENICITY OF TRICHOMONAS VAGINALIS

Trussell and Plass<sup>2</sup> were the first to induce the disease with a bacteria free culture of the organism. Five of 9 uninfected women who were successfully inoculated developed the clinical picture of *Trichomonas vaginalis* vaginitis. The positive inoculations could not be related to the bacterial flora or the degree of acidity present in the vaginas of these women. Wolters and Hesseltine<sup>1</sup> confirmed this accomplishment, though they could not obtain so high a percentage of positive implantations. The fact that inoculations were not uniformly successful and that clinical manifestations of infection did not ensue in every patient harboring the implanted protozoa indicates that unknown conditions influence the pathogenicity of the flagellates. In keeping with this deduction is the absence of symptoms in 47 to 87 per cent of patients with vaginal trichomoniasis.<sup>3</sup> The situation as regards the pathogenicity of *T. vaginalis* is summarized by Trussell and Plass: "*T. vaginalis* can produce abnormal discharge and vaginal irritation in women. These results should not be interpreted to mean that the altered bacterial flora commonly associated with the protozoa in clinical trichomonas vaginitis does not influence the extent of the

reaction, for such organisms might logically be assumed to aggravate the inflammatory process. Furthermore, it is reasonable to assume that certain vaginitides are bacterial in origin with the protozoan parasites of secondary importance." Thus in any given case of vaginitis in which the flagellates are present one may not yet be certain whether or not *T. vaginalis* is the basic pathogenic factor.

##### SOURCE OF INFECTION WITH *T. VAGINALIS*

The exact origin of contamination in most cases is unknown.<sup>4</sup> That the mouth and rectum may be sources of infection and recurrence is accepted by a number of authors, and Karnaky<sup>5</sup> believed that *Trichomonas buccalis* and *Trichomonas intestinalis* changed to *T. vaginalis* when transplanted to the vagina. Bland and Rakoff<sup>6</sup> concluded that the rectum and the mouth were "improbable sources of vaginal infestation," and later attempts<sup>7</sup> to infect human vaginas with *T. intestinalis* (*Trichomonas hominis*) supported their conclusion. Only 2 cases of apparent *T. vaginalis* proctitis have been reported.<sup>8</sup> If *T. vaginalis* invades the rectum and thereby makes the feces a possible vector, one would expect more comment on rectal symptoms in the literature.

The lower urinary tract is considered to be one source of recurrence<sup>9</sup> and the male can infrequently be the cause of infection or reinfection.<sup>1</sup> The glands of Skene and Bartholin may also harbor the parasites and be foci of recurrence.<sup>10</sup>

Despite the gaps in knowledge there is general agreement that vaginitis associated with *T. vaginalis* is a clinical entity.

Hesseltine,<sup>11</sup> in a 1938 report on the status of therapy, urged that, before any new procedures or preparations should be recommended, adequate and satisfactory controls should be established as regards both the disease itself and also the vehicles of the various medicaments. Since then five more substances have been added to the list of recommended agents. It is easy to understand why no significant control observations have been made. If patients are sufficiently bothered they want something done, if their symptoms are not disturbing they are not likely to be cooperative in undergoing repeated investigative manipulations. To have scientific data on the course of the disease, both mild and severe, in a series of untreated cases would indeed be most desirable.

That *T. vaginalis* vaginitis as a clinical entity may, through the working of unknown factors, be limited sooner or later in the great majority of patients is suggested by the large percentage harboring the organism without symptoms (v s.), by the easy curability of a large percentage of those with symptoms (v i.) and by the paucity in the literature of information concerning failures and recurrences after a three to twenty-four month period of follow-up after treatment. A disturbing amount of persistence or recurrence after two years seemingly would have excited more detailed study and comment than indicated by the following. Kahn's<sup>12</sup> 47 patients had had symptoms six months to four years despite various treatments. Allen, Jensen and Wood<sup>13</sup> stated that 20 per cent of their patients had

4. Curtis A. H. *Obstetrics and Gynecology*. Philadelphia: W. B. Saunders Company, 1933, vol. III, p. 428. De Lee J. B. and Greenhill J. P. *Year Book of Obstetrics and Gynecology*, 1940, p. 467. Davis<sup>22</sup> Allen, Jensen and Wood.<sup>13</sup>

5. Karnaky, K. J. A New and Improved Method of Treatment for Trichomonas Vaginalis and Other Pathological Conditions of the Vagina. *M. Rec. & Annals*, May 1936. Trichomonas Vaginalis and Monilia Albicans as Causes of Leukorrhea.<sup>23</sup>

6. Bland P. B. and Rakoff A. E. The Incidence of Trichomonads in the Vagina, Mouth and Rectum. Evidence that Vaginal Trichomonads Do Not Originate in the Mouth or Intestine. *J. A. M. A.* 108: 2013 (June 12), 1937.

7. Kessel J. F. and Gafford J. A. Jr. Observations on the Pathology of Trichomonas Vaginitis and on Vaginal Implants with Trichomonas Vaginalis and Trichomonas Intestinalis. *Am. J. Obst. & Gynec.* 39: 1005 (June) 1940. Feo L. G. Rakoff A. E. and Stabler R. M. Inoculations of Intestinal and Vaginal Trichomonads into the Human Vagina. *ibid.* 42: 276 (Sept.) 1941.

8. Peter on<sup>24</sup> Zener.<sup>21</sup>  
9. Hesseltine<sup>1</sup> Allen, Jensen and Wood.<sup>13</sup>  
10. Shelanski H. H. and Sayitz S. P. Bartholinitis and Skeneitis Due to Trichomonas Vaginalis. *Am. J. Obst. & Gynec.* 37: 294 (Feb.) 1939.

11. Hesseltine H. C. Vaginal Trichomoniasis Therapy. *Am. J. Obst. & Gynec.* 37: 1085 (June) 1937.

12. Kahn I. W. Treatment of Trichomonas Vaginalis Vaginitis with Sodium Perborate and Quinine. *Am. J. Obst. & Gynec.* 25: 511 (Oct.) 1933.

13. Allen E. D., Jensen L. B. and Wood J. H. Clinical and Bacteriologic Observations in Trichomonas Vaginitis. *Am. J. Obst. & Gynec.* 30: 565 (Oct.) 1935.

1. Hesseltine H. C. Vaginal and Vaginal Mycosis and Trichomoniasis. *Am. J. Obst. & Gynec.* 40: 641 (Oct.) 1940.

2. Trussell R. F. and Plass E. D. The Pathogenicity and Physiology of a Pure Culture of Trichomonas Vaginalis. *Am. J. Obst. & Gynec.* 10: 883 (Nov.) 1940.

3. Cornell E. L., Goodman L. J. and Matthies M. M. The Culture Incidence and Treatment of Trichomonas Vaginalis. *Am. J. Obst. & Gynec.* 22: 360 (Sept.) 1931. Angelucci<sup>25</sup> Peterson.<sup>2</sup>



variable recurrent periods of infection, some of them extending over a period of years. Mintz<sup>14</sup> wrote that the duration of the disease varied from one week to twelve years. One of Drabkin's<sup>15</sup> patients had been under treatment three and one-half years. The disease "may exist from months and even years without a change in its course."<sup>16</sup>

#### IS VAGINAL TRICHOMONIASIS POTENTIALLY DANGEROUS?

Bland, Goldstein and Wenrich<sup>17</sup> quoted evidence from the German literature and presented their own that *T. vaginalis* increases puerperal morbidity, the criterion being a fever of 100.4 F or higher. According to Mintz,<sup>14</sup> the organism "has been proved to be the causative factor in a few cases of puerperal morbidity." Szendi<sup>18</sup> on the other hand, stated that the protozoan plays no role in the production of puerperal morbidity, and Moench<sup>19</sup> sketched the course of a patient with the "worst infection with this protozoan" he had ever seen. The puerperium was normal and no organisms were demonstrable three months later. She had received no treatment.

Five of Ruble's<sup>20</sup> patients had mild pelvic inflammation while being treated, and operation showed "that type of inflammatory reaction of the pelvis which one would expect to find following gonorrheal salpingitis." Pelvic cellulitis secondary to trichomonas vaginitis is more common than generally supposed.<sup>21</sup>

According to Hees,<sup>21</sup> *T. vaginalis* has been found by culture and smear in the endometrium, chronically inflamed tubes, ovarian cysts, the peritoneum, the blood stream of patients and the viscera of the fetus and pelvic abscesses caused by the flagellate are not rare.

Karnaky<sup>22</sup> discussed the presence of the organism before and after operation but made no mention of surgical morbidity, from which it may be inferred that he had none for which he held the parasite responsible. Textbooks by well known gynecologists do not lay any emphasis on possible grave complications from the flagellate. If *T. vaginalis* had serious potentialities as regards pelvic inflammation it seems that by now the evidence would be more definite than indicated by the foregoing available information.

#### TREATMENT

Opinion is practically unanimous that there is no specific or ideal therapy, that some patients are more difficult to cure than others and that treatment should be continued through the period of menstruation and as long as deemed necessary in pregnancy. Davis<sup>23</sup> "results with all methods of treatment suggest that one may expect about 20 per cent of failures if results are judged on the basis of permanent absence of the flagellates from the vaginal secretion." According to Curtis,<sup>24</sup> "it is estimated that 85 per cent of patients obtain a clinical cure, in reality an arrest of their infection, irrespective of the treatment employed."

In the literature reviewed, the length of treatment varied from two weeks to one year, the criterion of cure was freedom from symptoms and the parasite for periods varying from two to twenty-four months after cessation of therapy and ninety substances, including vehicles, used in therapy were named, as well as acid producing bacteria, streptococcus bouillon filtrates, autogenous bacterial preparations and heat. Most methods

employed two or more up to seven, substances, not including soap and water, in combination or sequence. In the following review of reports the figures in parentheses represent the number of patients treated. Local treatment with one substance, sodium chloride (56),<sup>25</sup> quinine sulfate (39),<sup>26</sup> sodium bicarbonate (27),<sup>27</sup> picric acid (35)<sup>28</sup> and iodine (29),<sup>29</sup> was carried out in five series of cases and the results were approximately similar, viz 80 to 85 per cent of three to eight month cure, except with iodine, which gave 53 per cent.

Local treatment with the substances sodium 3-N-methanalsulfoxylic acid-amino-4-hydroxy phenylarsonic acid (Aldar one) in kaolin (100),<sup>30</sup> iodochlorhydroxy-quinoline (Vioform) in glycerin (15),<sup>31</sup> p-carbamino phenyl arsonic acid (Carbarone) with sodium bicarbonate (210)<sup>32</sup> and Vioform with magnesium trisilicate (140)<sup>33</sup> yielded 91 to 98 per cent of two to nine month cures.

Treatments with multiple substances involved the local use of the following various ways: picric acid, and acetylaminohydroxyphenyl arsonic acid (acetarsone) in kaolin (150),<sup>34</sup> Vioform in glycerin and lactic acid (500),<sup>35</sup> Vioform in ointment and sodium chloride (106),<sup>36</sup> sodium perborate and quinine sulfate (alone or in starch or zinc oxide) (47),<sup>37</sup> cocoa butter with oxyquinoline sulfate, picric acid and menthol, lactic acid and potassium permanganate (275),<sup>38</sup> lactic acid, lactic, citric acid and sodium bicarbonate (35),<sup>39</sup> Carbarone, sodium bicarbonate, glycerogelatin base, vinegar or lactic acid (21),<sup>40</sup> acetarsone, dextrose, boric acid, starch, sodium bicarbonate, tartaric acid and sodium perborate (39),<sup>41</sup> di-iodohydroxy quinoline (Diodoquin) with dextrose, lactose and boric acid alone (100),<sup>42</sup> with vinegar (4,400)<sup>43</sup> or with lactic acid (27),<sup>44</sup> hydrogen peroxide, and silver picrate in kaolin and in boroglycerin (20),<sup>45</sup> (15),<sup>46</sup> silver picrate in kaolin and in boroglycerin and gelatin (695),<sup>47</sup> (1,646),<sup>48</sup> silver picrate in kaolin and in cocoa butter (100),<sup>49</sup> (25),<sup>50</sup> skim milk, *Lactobacillus bulgaricus*, dextrose, lactose, liquid petrolatum starch and vinegar (50),<sup>51</sup> and a condensation product of m-cresol sulfonic acid and formaldehyde, called negatol in powder and suppository form, and vinegar (87).<sup>52</sup> The percentage of two to twenty-four month cures by these medicaments and the manner of their application ranged from 88 to 100 in all but 2<sup>40</sup> of the series of cases.

Known and unknown variables that must be operative in vaginitis include the many conceivable ways for the vagina to

- 14 Mintz, M. E. *Trichomonas Infection*, M. Rec. 153 365 (May 21) 1941.
- 15 Drabkin, Charles. p-Carbamino Phenyl Arsonic Acid in the Treatment of *Trichomonas vaginalis* Vaginitis, Am. J. Obst. & Gynec. 33 846 (May) 1937.
- 16 Adair, F. L. *Obstetrics and Gynecology*, Philadelphia, Lea & Febiger 1940 vol. II, p. 491.
- 17 Bland, P. B., Goldstein Leopold, and Wenrich D. H. *Vaginal Trichomoniasis in the Pregnant Woman. A Clinical and Morphologic Study*, J. A. M. A. 96 157 (Jan. 17) 1931.
- 18 Szendi, B. *Morphologic and Biologic Changes Caused by Trichomonas vaginalis in the Vagina of Pregnant Women*, Arch. f. Gynak. 162 479, 1937.
- 19 Moench, G. L. *Some Aspects of the Trichomonas vaginalis Problem*, M. Rec. 150 83 (Aug. 2) 1939.
- 20 Ruble, W. Kent. *Trichomonas vaginalis. A Simplified Treatment and an Explanation for the Frequency of Recurrences*, Northwest Med. 33 14 (Jan.) 1934.
- 21 Hees, E. *Ascending Trichomonas vaginalis Infection*, Gynec. et obst. 34 191, 1936.
- 22 Karnaky, K. J. *Trichomonas vaginalis and Monilia Albicans as Causes of Leukorrhea*, South. M. J. 28 795 (Sept.) 1935.
- 23 Davis, C. H. *Gynecology and Obstetrics*, Hagerstown, Md., W. F. Prior Company 1932, vol. III, chapter 7, pp. 27-32.
- 24 Curtis, A. H. *A Textbook of Gynecology*, ed. 4, Philadelphia, W. B. Saunders Company, 1942, p. 550.

- 25 Rosenthal Lazar Schwartz, L. S. and Kaldor Joseph. *Treatment of Trichomonas vaginalis with Concentrated Salt Solution*, J. A. M. A. 105 105 (July 13) 1935.
- 26 Angelucci, Helen M. *Trichomonas vaginalis Vaginitis*, Am. J. Obst. & Gynec. 31 1020 (June) 1936.
- 27 Blumick, George, and Robinson Milton. *The Treatment of Trichomoniasis with Aqueous Solutions of Iodine*, M. Rec. 155 133 (June) 1942.
- 28 One of 10 controls treated with kaolin alone was cured. P. B. and Rakoff, A. E. *Investigation of New Potentially Active Treatment of Trichomonas vaginalis*, Am. J. Obst. & Gynec. 32 103 (Nov.) 1936.
- 29 Sunderlin, J. H. *Trichomonas vaginalis Vaginitis*, Tr. S. M. J. S. 1673 (July) 1936.
- 30 Peterson, Paul. *Trichomonas vaginalis Vaginitis*, Am. J. Obst. & Gynec. 35 1004 (June) 1938.
- 31 Zener, F. B. *Trichomonas vaginalis Vaginitis*, Am. J. Surg. 416 (May) 1939.
- 32 Perez, M. I., Arenas, N., and Blanchard O. *Treatment of Trichomal Vaginitis*, Semana med. 1 1532 (June) 1940.
- 33 Zener, F. B. *New Treatment for Trichomonas vaginalis*, Preliminary Report Northwest Med. 36 7 (Jan.) 1937.
- 34 Elden, C. A. *Evaluation of a Particular Mode of Therapy of Trichomonas vaginalis*, Am. J. Obst. & Gynec. 43 1034 (June) 1941.
- 35 Meigs, J. V. *Treatment of Trichomonas vaginalis with Acetic Acid*, Tampon New England J. Med. 226 562 (April 2) 1942.
- 36 Owen, J. D. *Treatment of Trichomonas vaginalis*, Wisconsin M. J. 40 17 (Jan.) 1941.
- 37 Karnaky, K. J. *Treatment of Trichomonas vaginalis*, Surg. 48 216 (April) 1940.
- 38 Winther, Nora. *Treatment of Trichomonas vaginalis*, Picrate Minnesota Med. 19 731 (Nov.) 1936.
- 39 Funnell, H. G. *Infection with Trichomonas vaginalis Treated with Silver Picrate*, M. J. Australia 2 284 (Aug. 29) 1935.
- 40 Corbit, J. D. Jr., McElroy, Robert and Clark, J. H. *Silver Picrate in the Treatment of Vaginitis*, A. F. C. Y. 11 117 (Nov. 22) 1931.
- 41 Buxton, Russell von L. and Shelanski, H. A. *Trichomonas vaginalis Vaginitis*, Am. J. Obst. & Gynec. 33 812 (May) 1937.
- 42 Golub, L. J. and Shelanski, H. A. *Silver Picrate in the Treatment of Vaginal Trichomoniasis*, J. Ark. & Clin. Med. 22 11 (Jan.) 1937.
- 43 Brady, Leo and Reid, R. D. *The Treatment of Trichomonas vaginalis with the Iodoquinoline*, Am. Surg. 115 115 (Oct.) 1942.
- 44 Filler, William, Drezner Nathan and Adams, F. H. *Treatment of Trichomonas vaginalis Vaginitis with Negatol*, Obst. & Gynec. 42 1057 (June) 1942.
- 45 Meigs, J. V. *Filler, Drezner and Adams*.

become contaminated with many different organisms as well as Trichomonas vaginalis the condition of the cervix and vestibular glands the metabolic status of the pelvic organs and of the patient and the mental reactions of patients to the pelvic situation. These and variations in the technique of treatment and in the giving and carrying out of instructions (lack of cooperation is mentioned a number of times in the literature) all affect the outcome and some of these variables must have accounted for the following inconsistencies. Results of treatment with rectarsone and stovarsol (equal parts of Iodol and sodium bicarbonate with 12.5 per cent of rectarsone) have been disappointing.<sup>23</sup> Out of the welter of myriad treatments we have found that the simple placement of about 10 cc of dry stovarsol powder in the vault of the vagina every day for six treatments is infinitely superior.<sup>24</sup> Control methods were used, and it was found that apparently sodium bicarbonate by altering the pH of the vaginal secretion seemed to work as well as stovarsol so it was concluded that the latter was not necessary.<sup>25</sup> Hand and Raloff<sup>26</sup> and Meigs<sup>27</sup> had less than average good results whereas Perez Arenas and Blanchard<sup>28</sup> had a high percentage of satisfactory results with rectarsone, there being considerable variation in technique and the use of other substances.

In this connection a number of writers emphasize the importance of general health measures. De Lee<sup>29</sup> had 3 patients cured for five years after medication with thyroid extract orally and Moench<sup>30</sup> had a patient whose recalcitrant Trichomonas vaginalis vaginitis disappeared following operation for toxic goiter.

Consideration of the foregoing adds weight to the likelihood that vaginitis like other local infections may be a limited process cure being hastened by attention to details of local and general treatment the choice of remedies and techniques of application being matters of individual preference.

#### TOXICITY OF MATERIALS USED IN TREATMENT

Gellhorn<sup>31</sup> observed no local or systemic toxic effects from the vaginal insufflation of stovarsol. One case of drug rash was reported by Campbell<sup>32</sup> following the vaginal application of tablets of stovarsol and Zener<sup>33</sup> stated that Dr G. C. Schaeffer had had 3 cases of intolerance to a preparation of acetarsone boric acid and glycolized carbohydrates. No reactions were encountered by Peterson<sup>34</sup> in 210 patients or by Drabkin<sup>35</sup> in 21 patients using carbarsone locally. Zener<sup>36</sup> warned that silver picrate is dangerous in an alkaline medium and reported 2 cases of moderately intense local reaction therefrom as did Buxton and Shelanski.<sup>37</sup> Kahn<sup>38</sup> attributed two minor complications to quinine sulfate. Angelucci<sup>39</sup> had no trouble with quinine sulfate, but 2 of her patients reacted to picric acid. Oxyquinoline sulfate produced no toxic reactions in Mintz's<sup>40</sup> series. Capsules containing 10 Gm of sodium perborate occasionally caused chemical burns in the vagina,<sup>41</sup> as did iodine in 2 instances.<sup>42</sup> It appears that the drugs covered in this review as administered were harmless in the vast majority of instances, for of 8989 patients treated only 1 experienced a drug rash and only 13 had local effects attributed to medication.

#### EVALUATION

The most significant aspect of the status of therapy of Trichomonas vaginalis vaginitis is that such good results ensue from so many substances and variations in the methods of their use and that a small percentage of failures persists in spite of similar treatment. To elucidate these failures is the chief problem. In the absence of control data, the best test of a therapy as Hesseltine<sup>43</sup> stated, would be in this small group, but perhaps these patients need something more than local treatment. Furthermore, are these cases failures of treatment to sterilize foci of organisms that cause recurrence or is the persistence of the disease due to repeated contamination? The

question cannot be answered, since both sources of contamination and foci of recurrence are obscure in nearly every patient. It is thus impossible to define complete cures except in terms of years of follow up examinations and, until more knowledge is required no one therapeutic measure can be clearly proved superior. The status of treatment then remains a matter of personal experience with and preference for one or more of a large number of preparations.

In view of the fact that Trichomonas vaginalis cannot be proved pathogenic in every case of vaginitis in which it is found that unknown local and general factors are operative and that the disease is not likely to be fraught with serious possibilities and may even disappear without treatment, the present aim should be not for new medications but for further information, especially concerning failures. In the meanwhile thoroughness and persistence with the simplest and least messy procedures and a general health program appear to be the therapeutic objectives.

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN I. SMITH, M.D., Secretary

#### TETANUS ANTITOXIN (See New and Nonofficial Remedies 1943, p 526)

The following dosage form has been accepted

PITMAN-MOORE COMPANY, INDIANAPOLIS

Tetanus Antitoxin, Pepsin Digestion Refined Vials containing 1,500 units and syringes containing 1,500 units and 10,000 units respectively. The antitoxin differs from tetanus antitoxin-U S P chiefly in the method of refinement, which is based essentially on a controlled method of selective digestion of the proteins of the immune horse blood with pepsin.

#### THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1943, p 590)

The following dosage form has been accepted

THE WARREN-TEED PRODUCTS COMPANY, COLUMBUS, OHIO  
Tablets Thiamine Hydrochloride 10 mg

#### DIETHYLSTILBESTROL (See New and Nonofficial Remedies 1943, p 403)

The following additional dosage forms have been accepted

THE UPJOHN COMPANY, KALAMAZOO, MICH

Perles Diethylstilbestrol (in oil) 0.25 mg

JOHN WILEY AND BROTHER, INC., PHILADELPHIA

Tablets Diethylstilbestrol 0.25 mg

#### EPHEDRINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1943, p 255)

The following dosage form has been accepted

PITMAN-MOORE COMPANY, INDIANAPOLIS

Capsules Ephedrine Hydrochloride 24 mg (¾ gram)

#### PENTOBARBITAL SODIUM (See New and Nonofficial Remedies, 1943, p 495)

The following dosage form has been accepted

AMERICAN PHARMACEUTICAL COMPANY, NEW YORK

Capsules Pentobarbital Sodium 0.1 Gm

#### THEOPHYLLINE ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1943, p 356)

The following dosage forms have been accepted

AMERICAN PHARMACEUTICAL COMPANY, NEW YORK

Tablets Aminophylline 0.1 Gm and 0.195 Gm

THE LAKESIDE LABORATORIES, INC., MILWAUKEE

Tablets Aminophyllin 0.2 Gm enteric coated

#### POSTERIOR PITUITARY INJECTION (See New and Nonofficial Remedies 1943, p 424)

The following dosage form has been accepted

THE WARREN-TEED PRODUCTS COMPANY, COLUMBUS, OHIO

Posterior Pituitary Injection 10 cc rubber capped vials

46. Cook W. R. Essentials of Gynecology Philadelphia Montreal and London G. B. Lippincott Company 1943 p 263

47. Adair T. J. Discussion on Allen Jensen and Wood<sup>12</sup> Am J Obst & Gynec 30 737 (Oct) 1935

48. De Lee J. B. Discussion on Allen Jensen and Wood<sup>12</sup> Am J Obst & Gynec 30 737 (Oct) 1935

49. Gellhorn George. The Treatment of Trichomonas Vaginitis with Acetarsone (Stovarsol) J A M A 100 1765 (June 3) 1933

50. Campbell C. G. H. Arsenical Intolerance and the Treatment of Trichomonas Vaginitis Infection Lancet 2 688 (Sept 18) 1937

51. Smith E. C. Sodium Perborate Therapy in Trichomonas Vaginitis New Orleans M & S J 94 37 (July) 1941

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SATURDAY, OCTOBER 23, 1943

## DOES MEDICAL EDUCATION NEED TO BE REVOLUTIONIZED?

### THE WAGNER-MURRAY-DINGELL BILL II

Is the rate of progress in medical education in America so slow and the stage which it has attained so inferior and the hope of further progress so hopeless as to call for a revolution? Those who have observed this progress and present attainments say emphatically "No." At the beginning of this century the American Medical Association first collected and published statistics on the medical school situation in this country.<sup>1</sup> In 1904 it created a permanent Council on Medical Education and began a series of annual conferences. In 1909, at the time of the fifth annual conference, only 17 schools required two or more years of college work for admission. Many medical schools were private enterprises depending on tuition for support. A large number made the payment of such tuition almost the only standards of admission, and often of graduation. In 1906 there were 162 medical colleges in the United States, many of them little more than "diploma mills."

The Council on Medical Education and Hospitals was without legal power, nor was it connected with any political or governmental agency. It achieved its results by advising and cooperating with medical schools, following thorough, impartial examination of curriculums, equipment, faculty and other requisites or essentials for teaching. Yet by 1943 the number of schools had been reduced to 76, whose standards of admission and whose quality of education were such as to place them among the foremost medical educational institutions in the world. This is still a larger number of medical schools than exists in any other two nations combined, they are graduating as many physicians as did the much larger number of inferior schools existing at the beginning of the century.

Medical education is the necessary ingredient for quality in medical practice. Only through improved

medical education comes the possibility of better and better service to the public, carrying with it reduction in morbidity and mortality and extension of the life period.

There has been progress in medical education in other countries. In no other country, however, and certainly in none with compulsory sickness insurance, has the rate of advance been so rapid or the standards reached so high as in the United States. At the beginning of the century the superiority of European medical schools caused American physicians to flock to them to complete their education. Today the tide has been reversed. Physicians throughout the world seek American medical schools as the climax of their educational career. This period during which America outstripped the former world leaders in medical education was those years in which the physicians of the lagging nations were being forced into systems of compulsory sickness insurance.

Compulsory sickness insurance in Germany put "panel doctors," or "kassenaerzte," in a class apart from private practitioners. Even the advocates of sickness insurance will scarcely claim that the titles applied to insurance physicians carry any certification of professional superiority. In other countries insurance practitioners do not have opportunities or inducements such as have led to extensive postgraduate work among general practitioners in America.

The Wagner-Murray-Dingell Bill in section 1111 proposes an entirely new method, revolutionary in almost every point, for the support and control of American medical education. The Surgeon General of the United States Public Health Service is to make "grants-in-aid" to such institutions as he thinks "show promise of making valuable contributions to the education or training of persons useful to or needed in the furnishing of medical, hospital, disability, rehabilitation, and related benefits provided under this Act or to human knowledge with respect to the cause, prevention, mitigation, or methods of diagnosis and treatment of disease and disability." Will the Surgeon General, whoever he may be, utilize the voluntary machinery set up by the medical profession and the medical schools to determine which institutions "show promise"? This bill would destroy the voluntary organization now so effectively performing this task.

Bureaucratic control of medical education will inevitably destroy the standards of excellence that now characterize the medical schools of America. Such a revolution in control could not well avoid disrupting the methods of selecting students which is essential to the preservation of the high personal qualifications and ethical integrity of the medical profession. Only a miracle could avoid temporary or permanent deterioration, if not complete destruction, of educational standards.

<sup>1</sup> Final Report of the Commission on Medical Education, 1932, pp 10-11

## TOXIC FACTORS IN SHOCK

Until recently a substance had not been isolated from animal tissues which could be held responsible for the shock syndrome. The search for the hypothetical toxic factors in tissue has been renewed in an effort to understand the mechanisms which underlie the production of symptoms in traumatic injuries.

In 1941 Bywaters and his colleagues<sup>1</sup> reported myohemoglobin in the urine of injured patients. These workers suggested that this pigment may be only an indicator of muscle damage and other substances released from muscle at the same time may be responsible for the structural and functional changes in the "crush kidney."

Green,<sup>2</sup> who studied the experimental shock produced by "hind-limb ischemia" concluded that a shock producing factor is released from asphyxiated muscle. In the first attempts to obtain from normal or asphyxiated muscles an extract which on intramuscular injection would reproduce the syndrome produced by "hind-limb ischemia" the possibility developed that the hypothetical shock factor is labile and rapidly destroyed in the dying muscle. A crude saline extract obtained from muscle immediately after its removal proved to be consistently more toxic than any previously used. The factors which produce a shocklike state after intramuscular, intraperitoneal or subcutaneous injection were provisionally called muscle shock factors.

Different species of animals treated with the muscle extracts showed the cardinal features of profound depression of all vital activities with retention of consciousness almost until death, low blood volume, variable hemoconcentration, irregular fall in blood pressure, lowering of temperature, depression of renal function with anuria, nitrogen retention, albuminuria, microscopic hematuria and granular cylindruria. The administration of myohemoglobin acts synergistically with the muscle shock factors, particularly in the production of renal damage. Necropsy reveals evidences only of generalized increase in capillary permeability. The whole syndrome is remarkably similar to that seen in shock after "hind-limb ischemia." Additional similarity is shown in the development of some degree of tolerance to repeated injections of muscle shock factors as well as to the effects of repeated "hind-limb ischemia."

The experiments provide definite evidence that toxic shock producing factors were present in both normal and asphyxiated muscles. Apparently ischemia acts only by releasing normal muscle constituents into the general circulation, where they act as shock producing factors. The isolation of these factors was the next logical step. Chemical fractionation by Bielschowsky and Green<sup>3</sup> of saline extract of acetone dried muscle

yielded a substance which analysis showed to be pure barium adenosine triphosphate. Preliminary tests with the sodium salt of this compound indicated that it possessed the full depressor and lethal potencies of the "muscle shock factors." Whether salts of adenosine triphosphate and myohemoglobin are the only toxic factors released from injured muscle is not known. It seems, however, that adenosine triphosphate alone may be responsible for the production of all the clinical features of shock. The mode of action of the substance is not understood. It seems unlikely, however, that the known metabolic actions of this compound are responsible for its shock producing properties. Acid hydrolysis of adenosine triphosphate destroying its adenosine radical did not diminish its shock producing properties. The most probable hypothesis would be that the chemical acts through the pyrophosphate part of the molecule.

Obviously these results are important in the understanding of traumatic shock in man, however, confirmation of the original work and further experimental and clinical studies are necessary before all features of traumatic shock can be explained by this mechanism.

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*Current Comment*

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## DECLINE IN MATERNAL MORTALITY

Maternal mortality in the United States has decreased in the last decade by more than two thirds. The decline, according to the Statistical Bulletin of the Metropolitan Life Insurance Company for August has been from between 6 and 7 deaths per thousand live births a year to less than 2 per thousand, despite the sharply increased birth rate and the shortage of doctors and nurses. The improvement appears to be continuous, and further reduction is to be expected. The high maternal mortality prior to 1930 was due principally to inadequate care during pregnancy, confinement and the postpartum period. The gratifying results in the reduction of the loss of life of mothers and babies were accomplished primarily by the concerted effort of the medical profession and hospital managements. The medical schools have placed greater emphasis on obstetrics and have extended their postgraduate studies in this field. The hospitals have contributed much by improving their service and particularly by segregating the obstetric wards from the other services. The federal and state operated maternity and child hygiene bureaus were instrumental in arousing the interest of communities to safeguard the lives of mothers and babies. They have provided large numbers of public health nurses to render service in the homes of pregnant women and to educate them regarding approved practices of antepartum care and confinement. Various local maternity associations and many private agencies contributed much along the same lines. The sulfonamide drugs have reduced by more than a half the mortality caused by the dreaded puerperal sepsis. The mortality from this cause prior

1 Bywaters F G L, Delory G E, Rimington Claude and Smiles John. Myohemoglobin in the Urine of Air Raid Casualties with Crush Injury. *Biochem J* 35: 1164 (Nov.) 1941.

2 Green H N. Shock Producing Factor(s) From Striated Muscle. I. Isolation and Biological Properties. *Lancet* 2: 147 (Aug. 7) 1943.

3 Bielschowsky Marian and Green H N. II. Fractionation Chemical Properties and Effective Doses. *Lancet* 2: 153 (Aug. 7) 1943.

to 1935 could not be reduced to less than 24 per thousand live births. Currently the mortality rate from this cause is reported to be less than 1 per thousand. Further progress in the reduction of the loss of life of mothers and babies, it is pointed out, can be accomplished by concentrated efforts in those areas where maternal deaths are still too frequent, namely the South and Southwest. The high maternal death rate in these areas is contributed largely by the deaths among Negro women, less than half of whom are attended in their confinement by a physician.

### INTERRELATIONSHIP OF ASCORBIC ACID AND THIAMINE

Four years ago Sure<sup>1</sup> demonstrated that rats are able to synthesize adequate amounts of ascorbic acid. The ascorbic acid content of their tissues is maintained at a normal level in spite of complete lack of ascorbic acid in the diet. This synthesis was apparently dependent on an adequate intake of certain other vitamins, prominent among them being thiamine and riboflavin. As much as 75 per cent reduction in the normal tissue concentration of ascorbic acid results from an inadequate intake of thiamine in this animal species. Dogs also normally synthesize their own vitamin C, though the relation of this synthesis to other vitamins has not yet been determined with dogs. In the course of studies of shock, Govier and his associates<sup>2</sup> of the Department of Pharmacology, Vanderbilt University School of Medicine, placed two groups of dogs on thiamine deficient diets. One group was given the thiamine deficiency diet suggested by Goodsell<sup>3</sup>. This contains casein, sucrose, cottonseed oil, agar and cod liver oil, with autoclaved brewers' yeast to supply the other B complex vitamins. The second group of dogs was fed the thiamine deficiency diet suggested by Schaefer<sup>4</sup>. Instead of autoclaved brewers' yeast, the dogs on this diet were given adequate amounts of riboflavin, nicotinic acid, pantothenic acid, pyridoxine and choline by stomach tube. Many of the animals on each diet developed necrotic erosions of the buccal tissues. These began around the teeth and often became so severe as to extend almost entirely around the lower jaw. On the assumption that these necroses were only indirectly due to inadequate intake of thiamine, all dogs on the deficiency diets were given 10 mg of ascorbic acid twice weekly by stomach tube. There was a prompt healing of the oral lesions in all animals thus treated. Buccal lesions did not appear in new groups of dogs placed on thiamine deficiency diets plus ascorbic acid. The fact that ascorbic acid will prevent or cure certain secondary manifestations of thiamine deficiency in dogs is a striking extension of the known facts of vitamin interrelationships to a second animal species with suggestive bearing on problems of human nutrition.

1 Sure, Burnett, Theis, R. M., and Harrison, R. T. Vitamin Interrelationships, *J Biol Chem* **129**: 245 (July) 1939.

2 Govier, William M., and Greig, Margaret E. Prevention of Oral Lesions in B<sub>1</sub> Avitaminotic Dogs, *Science* **98**: 216 (Sept 3) 1943.

3 Goodsell, Julia, E. Weight Changes in the Cortex and the Medulla of the Adrenal Gland of the Dog in Acute Vitamin B<sub>1</sub> Deficiency, *Am J Physiol* **134**: 119 (Aug) 1941.

4 Schaefer, A. E., McKibben, J. M., and Elvehjem, C. A. Nicotinic Acid Deficiency Studies in Dogs, *J Biol Chem* **144**: 679 (Aug) 1942.

### SMALLPOX VACCINATION A REMINDER

Recently a death from tetanus followed smallpox vaccination. A careful investigation of the manufacturing records of the lot of vaccine involved and subsequent laboratory tests on this lot have failed to give any evidence that the vaccine was at fault. However, an investigation of the circumstances surrounding the vaccination and subsequent management of the case revealed that two commercially made adhesive gauze bandages containing sulfathiazole had been applied over the site of vaccination and left in place. The first symptoms of tetanus appeared on the sixteenth day following vaccination, and death rapidly ensued. This history has its counterpart in each of the 116 cases of tetanus complicating vaccination investigated by Armstrong<sup>1</sup> in that a dressing was attached to the arm over the vaccination. Celluloid shields and bunion pads, fortunately, have almost disappeared as vaccination dressings. It remains for the physician to renounce all dressings attached to the vaccinated arm to rid a beneficent preventive procedure of this infrequent and preventable complication. The principles of good practice in smallpox vaccination have been clearly stated by Leake<sup>2</sup>. These embody the use of a properly refrigerated, potent vaccine, a small area of superficial insertion of the virus just below the deltoid muscle, the avoidance of fixed dressings and careful observation of the progress of the lesion in order to determine the immunity status of the patient. In days when ready made bandages are in every medicine cabinet there is a tendency to apply dressings to all abrasions. Admire as such practice may be for some types of lesions, it is to be severely condemned when the fixed dressing is applied to a vaccination site. Dressings of this character tend to retain heat and moisture, thus favoring the rupture of the vesicle and the formation and retention of pus and necrotic material, ideal for anaerobic growth. Experience has shown that without such a circumstance the tetanus organism will not multiply in a vaccination wound. There is no objection to pinning a suitable dressing to the under side of a loosely fitting sleeve over the vaccinated area, particularly if the clothing is soiled.

### HEALTH OF ARMED FORCES

Elsewhere in this issue (page 487) appears a detailed report released by the Office of War Information concerning the health of the armed forces of the United States. Every physician should take the time to read this report carefully so that he may participate in the pride and the glory of this magnificent record of accomplishment. Epidemic disease has been kept under control, the great menaces of previous wars have been prevented, the treatment of the wounded has been superb. And at the same time the civilian population of the United States, depleted by almost one third of the active physicians of the country, has had the low sickness and death rates in the history of the nation.

1 Armstrong, Charles. The Role of the Vaccine in the Production of Postvaccinal Tetanus. *Pub Health* **1**: 11 (Aug 2) 1929.

2 Leake, J. P. Questions and Answers Concerning Smallpox Vaccination. Reprint 1137 from *Public Health Reports* 1931.

# MEDICINE AND THE WAR

In this section of *The Journal* each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

## HEALTH OF THE ARMED SERVICES

The following release is a slight condensation of a report prepared by the Office of War Information

There have been flareups of diseases in the last eighteen months, but only cerebrospinal meningitis reached epidemic proportions and its death toll was low

The situation in units overseas is occasionally even better. In those diseases for which vaccines have been developed, it is excellent. However malaria and dysenteries present serious problems in land combat conditions and the Navy reported some trouble with infectious jaundice and with filariasis a parasitic inflammation of the glands which can produce elephantiasis

Although specific problems vary what is true of the two major branches of the armed service is in general true also of the Marine Corps the Coast Guard and of the women's services the Wacs the WAVes and the Spars

Here are some highlights of service health

1. Disease incidence was reported in 1942 lower than the preceding year and continues good in 1943. An average of a little more than 3 per cent of the Army personnel in this country was off duty because of sickness or nonbattle injuries at any given time during 1942. Abroad the rate was slightly lower, even including battle casualties. The Navy's corresponding "noneffective" rate stood at approximately 2 per cent in 1942, also a record low

2. The Army and Navy make a good report on incidence of venereal diseases among the men. Despite a policy of accepting inductees with uncomplicated cases because of the high percentage of cures possible with new treatments, the Army in the continental United States this year up to August 1 reported an average of some 40 treated annually per thousand men, and the Navy an average 33 men per thousand. If those infected before induction are eliminated from the calculation, the Army's figures stand at an all time low of 25 treated per thousand men the average for 1943 up to August 1. In this class of diseases there is a wide divergence between the major branches and the women's services. Fewer than one in ten thousand women in the uniformed services has been admitted to treatment for venereal diseases. Thanks to new types of treatments, the disability rate for these ailments is low. Of some 1,100 Wacs released for disability in a ten month period only one was discharged because of syphilis and only one because of gonorrhea

3. Cerebrospinal fever (meningococcic meningitis), which threatened to reach epidemic proportions in the early months of 1943, was controlled promptly in service posts through the use of sulfonamides to treat those infected and also in preventive dosages for those who might have had contact with the stricken man. As a consequence the peak rate of the disease lasted only a brief while and the epidemic fell off quickly. The whole pattern of the epidemic reflected the greater controls possible in military establishments as opposed to the civilian community as a whole. Deaths which in previous epidemics ran from 30 to 40 per cent of those contracting the disease were held to three to five deaths out of every hundred cases

4. The armed forces use preventive vaccines against seven key diseases: typhoid, smallpox, tetanus, typhus, yellow fever, cholera and plague. In this war there have been no cases of yellow fever in either the Army or the Navy and only a scattering of reports among the other diseases including 1 Navy case of plague. Deaths among this group of diseases were negligible. The Army reported about 60 cases of typhoid but very few deaths in 1942, the Navy 8 cases and one death in 1942

5. Dysenteries and diarrhea, including food poisoning is the Army's second greatest disease threat in number of cases among overseas troops. The Army reports about 7 cases per thousand men in continental United States for 1942. In combat zones abroad admissions to treatment averaged about 30 men per thousand annually in 1942 and about 50 in 1943, a good record in contrast to other wars. The higher rate for 1943 was due mainly to the larger concentrations of troops in areas where these diseases have a high incidence. The sulfonamides help effect prompt cures of these ailments also

6. Malaria is a leading disease enemy overseas in land operations in malarious areas. Rates of infection in particular theaters are held secret for security reasons, but strong preventive action is being taken and the Army and Navy believe our record is superior to that of enemy forces. There are adequate supplies of essential drugs

### CEREBROSPINAL MENINGITIS

In the Army camps the epidemic of cerebrospinal meningitis reached its highest rate in March 1943 when its potential was about 3 per thousand men annually. It then fell off to a low level. Currently the rate is about one tenth that of March in the entire army in continental United States. The Navy's rate for the week ended August 28 was 0.01 per thousand (1 in 100,000). The calculation used by the armed services "per thousand men per year" states the number of men per thousand who in the course of a year may be expected to be hospitalized for a given sickness if the incidence rate continues at the level noted for any special segment of a year

In civilian records both the rise and the fall of the cerebrospinal meningitis epidemic is much more gradual. It struck a high level in January of this year, rose to a crest in the week of April 17 and held close to that point for a month. In contrast to the sharp reduction of the number of cases in military establishments, the civilian epidemic decreased very slowly. In July and August, when the disease apparently was under control in armed camps, cerebrospinal meningitis was still running at five to eight times the five year median among civilians

These contrasting records are interpreted as an indication that the prompt control methods instituted by the Army were effective. Recovery from cerebrospinal meningitis has become reasonably certain, it is stated except in those cases which are classed as "fulminating" that is in which the course of the disease is so rapid, or diagnosis so delayed that sulfonamide drugs do not have time to take effect

### VACCINES

Another sharp contrast between civilian and service health is shown overseas by rates of infection and mortality in those diseases for which the Army and the Navy have been provided with preventive vaccines. Incidence of these ailments among service personnel is so low that rates of infection are negligible. Inoculations used in both the Army and the Navy include typhoid, smallpox, tetanus, yellow fever, typhus, cholera and plague. Some are given to all personnel others only when there is danger of infection. In these diseases the Army reports only a few scattered cases during 1942: no yellow fever, no cholera, some 50 cases of typhus but almost no deaths, almost no smallpox or plague practically no cases of tetanus among inoculated men. Only a few scattered deaths were reported from this entire group of diseases in the Army. The Navy reports for 1942 show 19 cases of typhus and 1 of plague with no deaths, 8 cases of typhoid with one death, no cases of any of the other diseases against which vaccines are employed



## TYPHUS

Before the war's end, American soldiers undoubtedly will be fighting in areas where from 1917 to 1922 an estimated 10 million cases of typhus were reported, which resulted in approximately five million deaths. This epidemic area extends from Iran and Egypt northward through the Balkans into Poland. The global endemic area of this disease is even greater than that covered by malaria, which so far is the major disease threat in this war.

Typhus was not a problem to American soldiers in the last war because they did not fight in districts where typhus is found. This time American soldiers already have seen action in areas of infection, and the record is excellent.

Every member of our armed forces who goes into typhus zones receives three injections of typhus vaccine. Stimulating inoculations are given at intervals. This was the preparation of our soldiers who went into Egypt and North Africa.

While our forces were quartered in Egypt, there was a serious typhus epidemic among the civilian population, with an officially reported total of 32,000 cases in the first six months of 1943. There were 500 cases a week in Cairo alone during the peak of the epidemic. The death rate, as is usual with typhus, was about 30 per cent. The United States Army reported less than a score of cases and almost no deaths from typhus in the entire Middle East command during the first six months of 1943.

The vaccine used for our forces is stated to be the most effective in the world. The Germans are known to have a typhus vaccine, but it has been proved that German soldiers, on the North African front at least, are not effectively immunized, nor are the Germans believed to have the vaccine in general use as yet. Other protective measures against typhus used by the armed forces include portable live steam equipment for delousing and disinfecting clothing, which, carried in two trucks, can be shifted to various areas, fumigation delousing equipment, consisting of a synthetic rubber bag or a fumigation chamber and chemical capsules, louse repellent powders, which, applied at weekly intervals to clothing, seem to prove effective in preventing infestation of the troops. It was emphasized that typhus, unless checked, could constitute a threat to the home front also. Strenuous effort in the last war prevented importation of the louse borne strain of typhus, which is unknown in this country, although there is a weaker type of which the transmitting agent is the rat flea. To fight the disease at home and abroad, the United States of America Typhus Commission was created by an executive order of the President, Dec. 24, 1942.

Members of the commission made field examinations of soldiers to determine the effectiveness of the new control methods. They also acquired sixty-nine distinct strains of typhus from various sources and four thousand serums from typhus victims, the greatest collection ever brought together at one time. The strains came from Russia, Serbia, Syria, Palestine, Iraq, Iran, Egypt and North Africa. These samples, packed in solidified carbon dioxide and flown back from Cairo to the United States, are to be used to test the effectiveness of the present vaccine and many other studies.

According to a member of the commission, the low incidence of typhus in the United States armies under epidemic conditions is presumptive evidence of the effectiveness of our vaccine. By testing it against the various strains of the diseases a definite proof can be obtained. Should the inoculation prove good only against certain strains, means can be sought to widen its efficacy. The present vaccine was developed from a strain taken in Prague in 1928. Study of the serums and strains may also make possible positive identification and diagnosis of the disease in individuals by laboratory tests.

## MALARIA

Malaria constitutes a major health menace of the Army and Navy in foreign land operations in malarious areas. At home the rate is at a low level. The Army reports a rate of infection of about 0.6 men per thousand annually for this disease in 1942, or 6 men in 10,000 infected in the course of a year, and only a slightly higher rate thus far in 1943. This record is particularly good because it includes men in the continental United States who had contracted the disease in foreign areas.

It was stated on behalf of the Army that, in foreign areas, our position is better than that of other armies operating in the same theaters, and that, considering the severity of infectious conditions, our record is good. It was stressed that malaria is preventable through educating individual soldiers and officers to use constant precautions and to take full advantage of the accomplishments of science and sanitation in combating the mosquitoes which transmit the germs.

The Army's malaria rate for overseas units in 1942 was about 30 men out of a thousand, and so far in 1943 the equivalent rate is about 80. The rise this year is attributed to increased war activity in malarial areas. The number of cases of the disease in any definite locality cannot be published, according to the Army, because the enemy could use such figures to estimate the number of soldiers stationed in that area. The same explanation of security applies to specific information about many of the safeguards used by our troops in the campaign against malaria. It is stated that the Japanese failed to make adequate preparations against the fever and, as a consequence, their troops are suffering much more acutely than our own.

Security reasons explain also the lack of locality information in the Navy's statistical picture. North African bases, 17.45 per thousand, outlying and "confidential" bases, 86.03, fleet marine forces (landing forces), 155.53 (this figure would include such troops as those who landed in Guadalcanal, where the malarial situation seems to have been as severe as in any other area), naval training stations 0.04, forces ashore, 15.00, forces afloat, 8.40, entire navy, 13.59.

The fight against malaria is primarily directed at destroying, or repelling, the mosquitoes which transmit the germ. The same repellents and larvicides work for all, but elimination of the mosquito vectors—those species which transmit the germs from human carriers to infect other human beings—from any given area is a much more complicated task. There are many varieties of mosquito vectors, with different breeding habits, and scarcely any two areas have the same pest to fight. For instance there is one mosquito along the Malay shores, and 20 miles inland an entirely different one. Some areas have more than one vector, one of which breeds in the shade, another in the sun. Thus, elimination of the shaded areas in which one bred would only provide large breeding areas for the other. Some breed in stagnant water, some in pools beside running water, some in brackish water. The vector in each case must be identified before its breeding areas can be attacked. The complexity of this work can be seen from the statement of Army epidemiologists that the variety in the Solomons differs from that in India, and that in turn from the vector in Burma while China has still another. Even Italy and Albania, although separated only by a narrow body of water, have different varieties of mosquito. One fact limits the danger of infection: almost all of the more numerous vectors of malaria are night feeders. In thick jungles, where there is a perpetual twilight, the mosquitoes fly throughout daylight hours also. Exclusion of such areas, however, danger of infection is generally limited to periods of night combat because of protection afforded in barracks, camps and bivouacs.

There has been made available to troops, through collaboration of the U. S. Department of Agriculture, the Army and the United States Public Health Service, a repellent which, even under strenuous combat conditions, is effective for four hours. In bivouac its strength lasts up to six hours. This repellent, designated as Formula 612, is colorless and odorless, nonirritating and does not damage clothing, and a 2 ounce bottle contains enough for one man's use for a month. It is not an essential oil, like citronella, but a synthetic organic compound. Furthermore, a "foolproof" mosquito bar has been developed for camp use, and, in barracks, the much publicized "health bomb" can be depended on to destroy all insect life in a space of 150,000 cu. feet. The Army previously withheld details on the contents of the "bomb" lest the enemy profit, but this prohibition is ignored by certain publications. The contents are a refrigerating chemical known as "freon," which boils at 40 degrees, combined with pyrethrum and sesame oil.

The devices which have proved so effective in home areas, where the malarial rate now is almost nil, are difficult to use

in tropical or combat areas. In this country the breeding places of our particular mosquito vector, *Anopheles quadrimaculatus*, are destroyed by drainage of low lands and by the use of oil and larvicides. Present larvicides must be used at intervals of five to seven days but one is being tested which can be dusted from airplanes and which is expected to prove effective up to thirty days.

The difficulty of protecting troops against this disease lies primarily in the fact that each man must take care of himself. The devices for eliminating or foiling the mosquito vector are provided but under combat conditions men sometimes fail to use them. Consequently suppressors are administered to all troops at regular intervals. These drugs serve to keep the disease in a dormant phase. During rest periods, suppressant drugs are suspended in order to discover and treat such cases of malaria as may have been contracted. However if proper precautions are taken, suppressant drugs are not necessary. It was stated on behalf of the Surgeon General's Office. A trip by a medical commission to the highly infectious Central Africa area was cited. The medical commission used the devices made available to all the men took no drugs and returned with an absolutely clean bill of health, no malaria.

#### RECORDS ON DEATH

Previous to the last war, disease regularly killed two and three times the number of men who died of combat wounds. In the last war, in spite of the influenza pandemic which distorted the statistics, somewhat less than one half of all deaths were from disease or approximately the same number as were killed in action or died of combat wounds, nonbattle injuries accounting for about 4 per cent of all deaths.

**Disease Incidence.**—In 1942 this is reported lower in the Army than in the two preceding years and continues good in 1943. The Navy's report is largely parallel.

The Army's 'noneffective' rate showed that in 1942 an average of only 3 per cent of the men were incapacitated for duty at any given time in continental United States while in the overseas area the rate was even lower. The Navy's 'noneffective rate' stood at 2 per cent in 1942, the last year for which figures are available.

In continental United States, disease admissions to Army hospitals for 1942 were approximately 20 per cent below 1941. In respiratory diseases 1942 showed a drop of more than a fourth under 1941. During 1943 the record in both admissions from all causes and respiratory diseases is not as good as 1942 for the same period but still is better than 1941.

The Navy reports on various communicable diseases show large decreases from the levels of the last war. Lobar pneumonia killed 107 of every thousand patients in the last war but only 8 out of every thousand in 1942. Two diseases usually thought of as afflicting only children were a severe problem in the last war. Measles infected 31 out of every thousand enlisted men in 1917, 14 out of every thousand in 1918. In 1942 the rate was down to 4 per thousand. Mumps which disabled many men in the last war dropped from 40 in 1917 to 7 in 1942, a reduction of about 82 per cent. Scarlet fever is about 75 per cent as prevalent as in the last war, its death rate dropped from 272 to zero. The diphtheria death rate fell from 957 to 0.20, measles from 2283 to zero.

Venereal diseases, thanks to new treatments and more widespread education, present a vastly different aspect from that of the last war, when the Navy admissions for all venereal diseases ran 89 per thousand men in 1917 and 70.20 in 1918. In 1942 this figure had been more than sliced in half, and the rate was 33 per thousand.

The Army's rate of infection was even higher in the last war, running at over 9 per cent in 1918, over 90 men a year out of every thousand. The annual rate for 1940 in the continental United States was less than half that, approximately 40 men per thousand, and it has continued at that low level to date. The armed forces now accept inductees with uncomplicated cases of venereal diseases because of the high percentage of cures. If this group of infected inductees is eliminated from the overall figure the current figures drop to an unprecedented low rate of about 25 men out of a thousand, that is only 2.5 per cent of the personnel become infected with venereal disease, in the course of a year.

**Dysenteries (including diarrheas).**—These cause a large number of hospital admissions in the Army on overseas duty. There have been sporadic outbreaks at home, but through sanitary controls the rate has been held to approximately 7 per thousand men in 1942 and although the rate has gone up the record is still good so far in 1943. At the present time, dysenteries are chiefly formidable in that they incapacitate men for active duty. The sulfonamides once more do common service here—this time it is sulfaguanidine—effecting cures of even the more severe bacillary dysenteries in five to seven days.

Overseas where under combat conditions sanitary controls are more difficult the rate is higher, running about 30 men per thousand contracting the ailment in 1942. There has since been a further increase due once more to increased war activity in regions where these diseases are prevalent, and the rate thus far in 1943 has been about 50. This figure means that, out of every thousand men in overseas service during a year, 50 will be hospitalized for dysenteries if the average rate for the year thus far continues to operate.

The Navy reports a rate of 16.44 men per thousand admitted to treatment during 1942 for a group of ten selected gastroenteric disturbances including food poisoning, food infections and the dysenteries. The nine year median of these ailments is 16.30 men per thousand so that the war rate for this group is consistent with the peacetime average.

The chief work of preventing gastrointestinal infections devolves on sanitation. Water is carefully inspected and treated. Sometimes it is boiled, often filtered and chlorinated. Messes are carefully supervised, and the sanitary measures employed there are checked constantly by the medical departments. Food handlers are inspected regularly. Ashore fly control is important and inspection of animal foods under the veterinary section and of fresh vegetables by the medical division are strictly enforced. Storage of food and refrigeration also are a matter of regulations.

Despite those strenuous efforts there have been outbreaks of food poisoning and dysenteries. Laboratory tests on the causes of 169 outbreaks traced 28 of them chiefly to the Flexner dysentery bacilli and to staphylococci. At least one outbreak was attributed to 'fruity housekeeping'. In this connection it was pointed out that the methods of dishwashing used in homes would be totally inadequate in camps. Dish towels are forbidden both because of possible contamination through the cloth and because 'wiping' can cover up inadequate washing. The length of time dishes must be washed and the temperature of the water are a matter of army regulations. All dishes must be washed "not less than forty seconds in water of 140 degrees". This must be followed by 'immersion for thirty to sixty seconds' in water of the germ killing temperature of 180 degrees. Where thermometers are not available boiling water must be used where heating facilities are scanty, a chlorination process is required to make sure of disinfecting the dishes.

Garbage cans must be kept covered, must be cleansed daily and may not be emptied from one container to another. Instead cans are loaded on trucks, hauled to the compost and emptied there, cleansed and then returned. It is forbidden to whitewash the cans, because they might thus give a deceptive appearance of cleanliness and so might not receive a thorough scrubbing. The compost heaps are ditched and treated with oil to prevent attraction and breeding of insects. This does not affect the value of the compost fertilizer. 'It is not unusual' it was stated, "to see such composts completely free of flies."

#### OTHER DISEASES

In the last war the influenza pandemic was responsible for in the neighborhood of 800,000 admissions to hospitals and for perhaps 25,000 deaths in addition to many deaths ascribed to pneumonia but brought on as a result of influenza infection. With other respiratory diseases it caused about one third of the total admissions for disease in 1918, and roughly 80 per cent of disease deaths.

In general conditions have been better in this war. An outbreak of mild influenza started in December 1941 and carried over into early 1942 and produced relatively high admission rates. Subsequently the curve has shown only the expected seasonal variations. Practically no deaths occurred as a result of this outbreak.

One form of pneumonia, designated by the Army as "primary typical pneumonia," appeared during the last year. In March 1942 the Surgeon General called attention to the disease and so designated it. In the first month there were over 100 cases reported and the frequency increased to a peak in April 1943 of about 3,500 cases. Since then there has been some decline. Mortality is low, but the disease contributes heavily to keeping men off active duty, since lesions, demonstrable by x-ray, persist for several weeks. In the Navy, cases of atypical pneumonia ran 15 per thousand during the first six months of 1943.

**Measles**—Epidemic during the last war, measles has been relatively unimportant this time to either Army or Navy. In March 1941 measles reached a peak rate of almost 60 per thousand annually in the Army in the continental United States. In March, peak month in 1943, it was about 30. During the last war it was the sixth greatest cause of admissions to hospitals on account of disease, the seventh in loss of time and fourth among the diseases as cause of death. By far the larger number of deaths from measles was caused by complications, of which the most important was streptococcal bronchopneumonia.

**Mumps**—In the last war mumps was fourth in numerical frequency among diseases in the Army. It was third as a cause of loss of time in the Army, first cause in the Navy, and in 1918 showed the exceptionally high rate of roughly 70 per thousand annually in the Army, 35 per thousand in the Navy. It has caused but little trouble in this war. The Navy reports an incidence of 7 cases per thousand.

**Tuberculosis**—This disease was a costly factor in the last war. The rate for the Army was 9 men per thousand in admissions to hospitals. It caused 6 discharges for disability annually per thousand men in the Army. The death rate was about 0.7 per thousand. It was first among all reasons for dismissal from the Army, causing almost 15 per cent of the disability discharges. It was felt that tuberculosis often was present before men were admitted into the armed forces and that gas injury, rarely was an actual cause. In this war all inductees received chest x-ray examination in their preliminary examination. This is considered the best method of detecting incipient or early tuberculosis, and many men have been brought under treatment as a result of this process.

**Veneral Diseases**—These ranked second as a cause of admission to hospitals during the last war and second in loss of time. They present a much more hopeful picture now. Because new methods of treatment indicate a high percentage of cure, the Army now is accepting men who have uncomplicated cases of venereal diseases. Sulfonamides are used for gonorrhea, and cures run about 80 per cent in the period of ten days. Syphilis often yields to new technics within a maximum of six weeks. The Army lays stress also on improved prophylactic facilities and extensive instruction of the men in the hazards of the disease. There are periodic and surprise inspections. Recreational facilities are provided within the camps, and civilian authorities have cooperated in providing healthful entertainment in the cities.

**Filaria**—This tropical disease, a parasitic ailment transmitted by mosquitoes, causes some concern among naval forces. Its endemic areas cover a large part of the tropical zone of the world. The larvae of the parasitic worm are injected through the bite of the mosquito, and the life cycle of the microfilariae in the human system results in lesions and glandular swellings. Elephantiasis, or gross deformation through enlargement of certain parts of the body, has been traced to one variety of this parasite. The disease is of slow development, and the Navy and the Army are alert to avert infection of the personnel. Reports show fewer than seven cases per hundred thousand men in the Navy.

#### WOMEN'S AUXILIARIES

With the exception of the Wacs, the women's services keep no separate records, and their care and standards of health are incorporated in the reports of the parent services. It is stated, however, that their health problems are much the same as for the men save for venereal diseases, in which their record is much better.

The Army has prepared a statement of the causes of discharge for those Wacs released for disability. It shows that about

25 per cent were released because of ailments or defects peculiar to women and about 45 per cent for neuropsychiatric disorders. In explanation of the latter statement it is said that many of those discharged for neuropsychiatric disorders would probably not be considered as abnormal in civilian life.

Of other individual defects, arthritis caused 4 per cent of all discharges, foot defects 4 per cent and organic heart disease 2 per cent. Discharges for venereal diseases are negligible. The total number discharged for medical reasons from August 1942 to May 1943, the period covered by the report, was about 1,100.

#### COAST GUARD

At the present time the Coast Guard has available 1,447 beds in various infirmaries throughout the service. This number of beds is entirely independent from the facilities of either the Marine Hospitals of the Public Health Service, which currently are supplying 1,536 beds for coast guardsmen or naval hospitals. Naval hospitals admit Coast Guard patients when necessary.

The Coast Guard is operating eighteen mobile dental clinics for personnel serving at isolated stations within the continental limits of the United States. These mobile stations are equipped to operate with or without commercial electric current.

The average number of coast guardsmen ill of communicable disease admitted per week has been 500. Owing to lack of clerical help, the Coast Guard is unable to provide accurate statistics or to compute the annual rate per thousand for such conditions. At present 143 dental officers and 294 medical officers of the Public Health Service are serving full time with the Coast Guard.

#### DENTAL CARE

The Army has a Dental Corps of 13,000 officers, wishes to commission another 800 civilian dentists and will commission another thousand from dental schools. Those in the service now have a record of 4 million cases admitted to treatment during 1942 and more than 12½ million sittings. They installed more than seven and a half million fillings and, during the month of March 1943, extracted 582,546 teeth. In the same month they installed 456,783 dentures, and it was stated that more than half the patients treated had not been accustomed to visit dentists regularly.

Dental infection in the United States is placed at 16 per thousand men, overseas as less, 13 per thousand. Dentists have been provided with portable equipment, collapsible chair, foot powered drills and portable sterilizers for use close to combat areas. Records show that there are, under these conditions, about 250 sittings per thousand men.

The Navy has 4,000 dental officers, at least 1 assigned to every ship of cruiser class, or larger, and to every tender, hospital ship and transport. In a recent month the corps installed 50,000 fillings and restorations. Naval dentists have the same training routine as the doctors, since they may have to double for medical officers in the exigencies of combat. Their training school is at Bethesda, Md., and they may volunteer for special services such as paratroops, marine or submarine work. Those who specialize in maxillofacial surgery are sent to the Mayo Clinic for study. This work of restoring facial structure damaged in battle may include plastic surgery also and has an important place in service plans for rehabilitation of servicemen after and during the war.

#### HOSPITAL FACILITIES

The Army maintains about eighty general hospitals in the United States. These generally contain a thousand beds or more each. Backing up these large institutions, the department maintains hospitals of from 25 up to 1,000 or more beds, some six hundred posts, camps and stations around the country. The number of beds available in the United States for the personnel totaled about 350,000 in September with more hospitals building. In addition to these there are more than 100 established abroad. The Navy has hospital ships and 100 hospital units which comprise 1,000 beds. The Army has 100 hospitals, field hospital units, evacuation hospital units, and stations organized right up to the front line in the continental United States. The Navy maintains 100 hospitals and seven convalescent hospitals with a total of 25,000 beds, in addition to dispensaries at port and rear.

## ARMY

### REHABILITATION OF THE BLIND AND HARD OF HEARING IN ARMY HOSPITALS

The War Department, Washington, D. C., recently released Circular Letter No. 16213, dealing with the rehabilitation of the blind and hard of hearing in army hospitals, which is as follows:

#### STATEMENT OF POLICY

(a) Deafness and blindness are deprivations of an essential means of orientation of the normal person. The particular emotional problems of the newly blinded and deafened and their need for assistance in learning how to live without sight and hearing create a need for specialized rehabilitation.

(b) It has been established that it is essential to make an early contact with the handicapped soldier by trained personnel who can encourage him and help him to look forward hopefully to the future. Oftentimes the onset of blindness or deafness is coincident with convalescence from severe medical illness or complicating wounds which will confine a patient in the hospital for a long period of time. Early treatment which restores some of the patient's confidence and optimism will do much to shorten the rehabilitation period. It is for this reason that the program is to be started in an Army hospital instead of waiting until after the patient's discharge. It is the intention of the Medical Department to make available during the period of Army hospitalization or rehabilitation service to all who lose their eyesight or their hearing, either here or abroad. The Army does not intend to take over the entire rehabilitation program; that is the province of the Veterans' Administration for pensionable disabilities or in cases not eligible for veterans' benefits of the State Vocational Rehabilitation Services.

(c) The method of admission to a rehabilitation service of a soldier with blindness or with defective hearing to a degree which precludes the return of the patient to duty is described in a memorandum of the Adjutant General W40 14-43, 28 May 1943. This memorandum states that patients received from overseas who require specialized treatment for blindness will be classified by general hospitals receiving them and reported to the Surgeon General for transfer to the Valley Forge General Hospital, Phoenixville, Pa., or the Letterman General Hospital at San Francisco. The same procedure governs the care of the deaf who may be transferred to DeShon General Hospital, Butler, Pa., Hoff General Hospital, Santa Barbara, Calif., or Borden General Hospital at Chickasha, Okla. Patients requiring such treatment whose disability was incurred in continental United States should also be reported with a view to transfer to specialized hospitals when their physical condition does not preclude travel. The special personnel and equipment needed for rehabilitation work is not available for general use elsewhere.

#### THE REHABILITATION PROGRAM FOR THE BLIND

(a) It is intended that contact be made with the blind soldier at the earliest possible time by a blind worker before the psychologic aspects of the deprivation of sight may make any deep inroads on the personality. The possibility of a happy life may be best presented by one familiar with the hardships of that experience.

1 *Blind Consultant*—A blind man well adjusted to his handicap and capable of imparting that philosophy of life so essential in securing proper psychologic support has been appointed to serve in this capacity. It is intended that the consultant travel to station or general hospitals where blinded casualties are detained in advance of their being sent to the special hospital center for the blind. He is available for this service and will be advised by the Surgeon General of cases of blindness in other than special hospitals in order that he may visit them. The consultant may be expected to assist the medical staff to institute a program of rehabilitation and to arrange for local agencies to participate on a voluntary basis.

The necessity for prompt notification of the Surgeon General's Office of blinded casualties in the manner outlined in paragraph b in the statement of policy is evident.

(b) The Medical Department has placed in the hospitals designated for the care of the blind well qualified specialists in diseases of the eye and in those related conditions requiring maxillofacial and plastic surgery. Every blinded patient should have the benefit of a psychiatric consultation and an evaluation of special problems that may exist.

(c) *Education for Social Living*—1 *Ward Care and Activities*—All personnel who are to handle blinded patients should be instructed in the proper approach to the problems of the blind. Retraining in self care is essential. Avoid excesses of sympathy and doing too much for the patient. Protect him from well intentioned untrained people who want to "do something helpful." Teach the patient to help himself. Encourage the patient to participate fully in daily physical, educational, recreational and social activities.

2 *Instruction in Special Techniques*—Trained instructors of the blind should conduct individual lessons in braille reading and writing, in typing and handwriting, and in the use of other techniques and devices used by the blind. Braille can often be introduced to the patient through learning to play cards marked with symbols. Plunging a newly blinded person too suddenly into braille training is often discouraging. The occupational therapist may teach motor coordination which assists in the mastery of the environment. Ability to use one's hands and to accomplish the ordinary tasks, the development of skills, does much to give the person confidence that he is on his way once again to becoming a healthy person. The Red Cross recreational worker may encourage the patient to participate in both indoor and outdoor recreational activities and to continue normal social relationships.

(d) *The Attitude of the Family*—The social worker should assist in the very important problem of preparing the family for the reception of the blind patient in the home. An emotionally upset and oversympathetic family may, through its pity, destroy much of the self confidence and self reliance that the patient will learn unless they are prepared to meet the situation wisely. The social worker should discuss the problem with the family before they visit the patient the first time. Through their agencies the Red Cross can reach into the home and bring the interpretations necessary in every case before the patient leaves on furlough or is discharged. The social worker will also make certain that the patient is given every encouragement to continue his retraining under the direction of the Veterans' Administration and will help the patient to understand the programs and pensions available for his continued care.

(e) *Further Care of the Blind*—1 Usually it will be possible to transfer the blinded casualty to the hospital center which has facilities and special personnel for retraining.

2 The Veterans' Administration is charged with the responsibility for rehabilitation of blindness, acquired in line of duty, and for vocational training necessary to restore the patient to a position in society where he may be reasonably self reliant if this is at all possible. Encourage every patient who is to be discharged to file an application for training with the Veterans' Administration facility located nearest his place of residence before making any other plans for after care.

#### THE REHABILITATION PROGRAM FOR THE DEAF

(a) *The Initial Trauma of Deafness*—It has been said that deafness offers a more severe handicap than blindness. Its disturbing effect on the personality has long been recognized. The individual feels alone, seclusive and sensitive and is very likely to feel talked about. Oftentimes he becomes preoccupied and self centered. The importance of an early contact with a hard of hearing person cannot be overemphasized, as the destructive effects on the personality can be offset by an intelligent optimism as opportunities for retraining and lip reading are made clear.

(b) *Medical Aid*—The three centers named for the care of those with impaired hearing have been staffed with experts in diseases of the ear. Special equipment for the testing of hearing and speech reception are made available in those insti-

tutions During the period of reconstructive operations and during the period of complications, speech training and lip reading are given in order that the patient may be well on the road to self sufficiency by the time he is ready to leave the hospital

(c) *Hearing Aid Policy*—Hearing aids will be furnished by the Medical Department to military personnel suffering from hearing defects, incurred in line of duty, that preclude the performance of military duty, when examination shows that such aids will materially improve the hearing of the individuals concerned and when extended hospitalization is necessary before discharge can be accomplished or it is desired to retain the individual on a duty status. The hospitals designated for the reception of patients with impaired hearing have the equipment necessary to fit hearing aids most expeditiously to the particular requirements of the individual.

(d) *Education for Social Living*—1 *Ward Care and Activities*. All personnel who are to handle patients with impaired hearing should be specially instructed in the procedures necessary to serve best the hard of hearing. This includes supportive care to build a feeling of security, the efforts to bring the patient into normal contacts with others and the constant awareness of the small helpful acts that help to compensate for loss of hearing. A full daily program of activities that leaves little time for self pity should be arranged.

2 *Instruction in Special Techniques*. A trained instructor in lip reading should conduct individual lessons. A speech teacher may also be useful to protect against the deterioration of speech. Every effort should be made to insure proper speech habits. Occupational therapy, diversional activities, entertainment and recreational facilities should be fully utilized in order that the patient may be kept in social contact with others.

3 *The Attitude of the Family*. As was suggested in the program for the blind, the social worker must also prepare the family for the reception of the deaf patient. The family also needs to know how to help the patient continue his training in lip reading. In all instances where the patient does not elect or is ineligible to continue rehabilitation under the provisions of the Veterans' Administration, the social worker should make certain that the patient is familiar with pension plans, state vocational rehabilitation services and the opportunities for continuation of training in his own community.

(e) *Transfer to the Special Center*—In most instances it will be desirable to transfer the patient with impaired hearing to one of the three designated centers where equipment and special personnel are available. Wherever this is not possible, hospitals should take steps to secure the cooperation of local agencies for the hard of hearing within the area to provide on a voluntary basis such service until it is possible to place the patient under the care of the rehabilitation service of the designated hospital.

### MAJOR CHARLES R YANCEY AWARDED SILVER STAR MEDAL

According to an announcement printed in the Nashville (Tenn.) *Banner* of September 22, Major Charles R. Yancey, former Nashville physician now attached to the U. S. Army Medical Corps in the South Pacific, has been awarded the Silver Star Medal "for conspicuous gallantry and intrepidity in action against the enemy on Guadalcanal, British Solomon Islands, during the night of Oct. 13, 1942." The citation, issued before he received his promotion, further stated that "Captain Yancey, a medical officer, was attached to a unit which was being subjected to the enemy's naval bombardment for the first time. Captain Yancey's cool judgment and personal example were responsible for keeping under control a large group of men, who through inexperience might otherwise have exposed themselves to injury. He calmly treated the wounded during the height of the bombardment. His professional skill and personal example saved many lives which might otherwise have been lost."

Major Yancey graduated from Vanderbilt University School of Medicine in 1937 and at the time of his enlistment, some two years ago, was resident surgeon at St. Thomas and Protestant hospitals in Nashville.

### LIEUT. COL. SIMON WARMENHOVEN RECEIVES DISTINGUISHED SERVICE CROSS

According to the War Department, Washington, D. C., Lieut. Col. Simon Warmenhoven, M. C., U. S. Army, was recently awarded the Distinguished Service Cross for "extraordinary heroism in action near Soputa, New Guinea, on Nov. 26, 1942. While serving as surgeon of an infantry regiment, Lieutenant Colonel Warmenhoven volunteered to accompany a group of officers on an inspection tour of the troops in the forward areas. While this party was passing through territory held by Allied troops the enemy opened fire on an Australian position with machine guns and mortars. A mortar shell exploded in the midst of a group and wounded several soldiers. With complete disregard for his own safety Lieutenant Colonel Warmenhoven went through fire lanes which were covered by enemy machine guns to the allied position and gave medical treatment to the wounded men while mortar shells were still falling in the vicinity. He remained in this exposed front line position until all the wounded had received medical aid and were evacuated. Lieutenant Colonel Warmenhoven's heroism was an inspiration to the men who witnessed it."

Lieutenant Colonel Warmenhoven graduated from Marquette University School of Medicine, Milwaukee, in 1939.

### BRAIN OPERATIONS PERFORMED WITH OUT DELICATE INSTRUMENTS

Capt. Joseph R. Strauss, formerly of Bridgeport, Conn., according to the *Chicago Daily News*, October 12, is reported to have performed two delicate brain operations within a month, without the usual surgical instruments and without even proper sterilization of equipment, on an American quartermaster corporal and an Australian infantryman. After Japanese bombers struck the base at Tsili Tsili some time ago the Australian infantryman was found unconscious with brain tissue extruding from his right temple. He was in absolute medical shock. After giving him 250 cc. of blood plasma Captain Strauss and his assistant cared for 18 other wounded men and then gave the Australian two more plasma injections. An operating table was then erected made from a stretcher covered by a brown army blanket and held up by four pronged sticks. Light came from three pulsating bulbs suspended from jungle branches and fed by a portable electric generator. Only an intravenous anesthetic was used. Captain Strauss is reported to have stated "We didn't have enough clamps, and it was cut and tie and cut and tie. We cleaned out the wound as best we could, removing dirt and shrapnel particles, and after packing the wound with sulfa we sewed it up. We put him to bed in a tent. Three of my boys stayed with him all night. They held him when he grew restless. The patient showed no temperature after three days and was sent back from the dressing station to a hospital, where he is now recovered and has all of his reflexes." Details of the other operation were not given in the item. Captain Strauss graduated from Cornell University Medical College in 1935.

### ARMY PERSONALS

Major Gen. Norman T. Kirk, Surgeon General of the Army, gave an address on "Current Plans and Policies of the Medical Department" at the Army Medical Center, September 20, before officers of the Medical Department residing in the District of Columbia and vicinity. This was the first fall meeting and officers of the Navy and U. S. Public Health Service also were invited. More than six hundred officers attended the meeting. Col. Raymond L. Scott, M. C., also addressed the group on "Experiences with an Evacuation Hospital in the African Theater."

Col. Carroll D. Buck, formerly commanding officer at Fitzsimons General Hospital, Denver, was recently announced to be in charge of the Denver Medical Depot. Announcement made by the War Department and published in the *Denver Post*. Colonel Buck, who left Denver in 1939, has been in charge of the Medical Depot at a Pacific Coast port of embarkation.



## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

### INTERNSHIPS AND RESIDENCIES

The following letters are being sent out by the Procurement and Assignment Service for Physicians, Dentists and Veterinarians to the deans of medical schools and to hospital superintendents. When the new intern resident program takes effect on Jan 1 1944 a reshuffling of interns and residents among hospitals in the country will become necessary. At the request of the Procurement and Assignment Service and of the War Participation Committee of the American Medical Association THE JOURNAL will devote space to a record of the needs of hospitals for interns and residents and of the needs of interns and residents for places so as to enable the most rapid action possible regarding the filling of vacancies. The letters follow.

#### To Deans of Medical Schools —

When the new intern resident program begins Jan 1, 1944, some senior students will be unable to take internships in hospitals where they already have been accepted since the quotas of interns for some hospitals will be lowered.

This means that they will have to seek internships elsewhere. There will appear in THE JOURNAL of the AMERICAN MEDICAL ASSOCIATION weekly lists of hospitals with internship vacancies.

Will you call this to the attention of those seniors whose internships have been revoked so that they may make immediate application to hospitals with vacancies?

It would be helpful also if you and your intern committee would assist these men in selecting and finding new internships. It is unfortunate that this situation exists, but the transition to the nine months internship program necessitates carrying out this procedure.

#### To Hospital Superintendents Accredited for Internships and Residencies —

When the new intern resident program goes into effect on Jan 1 1944 the quotas which have been established by the Procurement and Assignment Service will result in changes in the numbers of interns and residents which each hospital may retain.

Certain hospitals will be authorized more interns and residents than have been appointed. Others will have to release interns who have already signed contracts.

It is suggested that hospitals needing interns and residents to fill quotas assigned to them should submit their needs to THE JOURNAL of the AMERICAN MEDICAL ASSOCIATION for publication in the next issue. Interns and residents not now assigned to duty or relieved of assignments will then be able to communicate with the hospitals listed in THE JOURNAL who need their services.

This procedure will expedite the employment of interns and residents up to the limit of quotas assigned.

## MISCELLANEOUS

### FOOD RATIONING IN WARTIME

#### Recommendations of the National Research Council

In THE JOURNAL, October 16 (p 442), the recommendations of the Subcommittee on Medical Food Requirements of the National Research Council regarding extra rations for sick persons were published. Attention is called to the following additional recommendation of the subcommittee.

#### BURNS AND GASTROINTESTINAL LESIONS

Recognizing that hypoproteinemia is a frequent consequence of obstructive gastrointestinal lesions, high intestinal fistulas and severe burns and that correction of the protein deficiency may be a critical factor in promoting the recovery of patients with these conditions, the subcommittee makes the following recommendation.

Patients who have undergone operations on their stomach, intestine or colon for ulcers or cancer, those with high intestinal fistulas and those convalescing from severe burns should be allowed, per week, meat, including fish and poultry 64 ounces, milk, 7 quarts, and seven eggs. Certification in these cases should be renewed at sixty day intervals.

#### CORRECTION

In the previously published recommendation on Evaporated Milk and Frozen Foods for Hospitals, the following correction should be made. Amendment 116 of Ration Board No 5 should read Section 116 of General Ration Order No 5.

### BRITISH HOSPITAL SHIP NEW FOUNDLAND BOMBED NEAR SALERNO

Three nurses of the Michael Reese Hospital Unit, Chicago, were awarded the Purple Heart for injuries received when the British hospital ship *New Foundland* was bombed off the Salerno beaches, September 13, according to an item in the *Chicago Daily News*, October 6. Miss Gertrude Mills of Chicago was slightly injured when fire aboard the ship caused the crew to lose control of the davits and her boat fell into the water, and two sisters from Oakland, Ill., Madonna and Agnes Nolan, who were sleeping in the same cabin when the bomb struck, had eardrum injury. Six British nurses and seventeen other persons were killed by the direct hit. Follow-

ing the bombing the ship was abandoned, and the nurses were immediately transported to Bizerte where they were refitted with clothes and equipment and prepared for another shot at Italy. Their final trip to the Salerno beachhead was made aboard an infantry landing craft which rolled and pitched throughout the two day trip. Helen Wharton of Iowa City, chief nurse of the group who managed it through its ordeal, stated. All we had to eat was K-ration and nobody ate very much of that. Fifty per cent of us were hanging on to the rails at one time or another. It was pretty bad.

### SERVICE MEN ABROAD ADVISED NOT TO BRING PARROTS BACK TO THE UNITED STATES

In a recent release from the Department of the Interior, Washington, D C, Secretary of the Interior Harold L. Ickes advised that service men abroad refrain from bringing back to the United States parrots and other members of the family which may be infected with psittacosis. Birds of the parrot family include, besides parrots themselves, Amazons, Mexican double heads, African grays, cockatoos, macaws, parakeets, lovebirds, lorries, lorikeets and similar birds. Maryland, New York, Connecticut, Florida and the cities of Baltimore and Pittsburgh prohibit the importation of all species of parrots under any circumstances, they cannot be brought in even for scientific purposes. Parakeets or lovebirds may not be imported into California, Maine, Minnesota and Oregon, in addition to the other states listed. According to Talbot Denmead, in charge of the Importations and Permits Section, Fish and Wildlife Service, Chicago, it is necessary to have a federal permit for the importation of any wild bird or animal.

### PRISONERS OF THE JAPANESE

According to the Cortland (N Y) *Democrat*, word had been received that Dr and Mrs Frederick Scovel and their five children will be among the prisoners of war to be exchanged with the Japanese when the exchange ship *Gripsholm* makes the next trip. Dr Scovel graduated from Cornell University Medical College New York, in 1929 and for many years has been engaged in medical missionary work in China.



# ORGANIZATION SECTION

## OFFICIAL NOTES

### AMERICAN MEDICAL ASSOCIATION BOARD OF TRUSTEES, MEETING OF SEPT 16-17, 1943

A two day meeting of the Board was held, preceded by a full day meeting of the Executive Committee. Some of the matters acted on are reported here, others will be discussed at later meetings.

#### RADIO BROADCASTING

The Board authorized the resumption of the Association's broadcast "Doctors at War" on November 1, to continue for twenty-six weeks.

#### APPOINTMENT TO COUNCIL ON PHARMACY AND CHEMISTRY

Dr Eugene M Landis was elected to succeed Dr William C Rose (resigned) on the Council on Pharmacy and Chemistry.

#### COMMITTEE ON STUDENT HEALTH

The resignation of Dr A V Bock from the Committee on Student Health, because of being heavily burdened with work, was accepted.

#### COMMITTEE AND COUNCIL REPORTS

A report from the Council on Medical Service and Public Relations was received and placed on file as was also one from the Central Committee for Wartime Graduate Medical Meetings. The Board authorized the publication of a report of the Committee on Postwar Medical Services.

#### ENLARGEMENT OF ADVISORY COMMITTEE OF COOPERATIVE MEDICAL ADVERTISING BUREAU

Dr Stanley B Weld, Hartford, Conn and Dr E M Shanklin, Hammond, Ind, were elected to the Advisory Committee of the Cooperative Medical Advertising Bureau.

#### APPOINTMENT OF REPRESENTATIVES

Dr Victor Johnson, Secretary of the Council on Medical Education and Hospitals, was appointed to represent the American Medical Association on the Special Committee on Accrediting of the National League of Nursing Education.

Dr Morris Fishbein was appointed to serve as representative of the American Medical Association on the Joint Committee on Indexing and Abstracting of the American Library Association.

Dr Alton Ochsner, New Orleans, has been selected to represent the American Medical Association at the Primer Congreso Mexicano de Cancer Segunda Medica de Occidente to be held in Guadalajara, Jalisco, Mexico, the first week in November.

#### LEGISLATION

The Bureau of Legal Medicine and Legislation was instructed to call attention in its bulletin to bill H R 2985, which provides for the garnishment of wages and salaries of civil employees of the United States.

#### SCIENTIFIC EXHIBITS

An appropriation was made for scientific exhibits for the first quarter of the current year.

Drs Ludwig Hektoen and Urban Maes were elected to succeed themselves on the Committee on Scientific Exhibits for a period of three years.

#### 1944 SESSION OF ASSOCIATION

The week of May 21 was selected for the next annual session of the Association, provided it is deemed propitious to hold a meeting next year.

### ANNUAL CONFERENCE OF SECRETARIES AND EDITORS OF CONSTITUENT STATE MEDICAL ASSOCIATIONS

The Annual Conference of Secretaries and Editors of Constituent State Medical Associations will be held at the offices of the American Medical Association at 535 North Dearborn Street, Chicago, on Nov 19 and 20, 1943. The first session of the conference will be convened at 10 a m Friday, November 19, and an afternoon session will be held on that day. On Friday evening a program designed to be of particular interest to the editors of the constituent state medical association journals will be presented at the Palmer House. The concluding session of the conference will be held at the offices of the Association on the morning of Saturday, November 20.

It is expected that this conference will be attended by all the secretaries and editors of the constituent state medical associations, by other officers of the constituent state medical associations and by officers of component county medical societies who may wish to attend. Members of the Association will be cordially welcome.

It is important that railroad and hotel accommodations be reserved immediately.

## MEDICAL LEGISLATION

### MEDICAL BILLS IN CONGRESS

**Changes in Status**—A public hearing has been scheduled by the House Committee on the Judiciary on H R 786, the Tolson bill to permit chiropractors to treat the beneficiaries of the United States Employees' Compensation Act. The hearing will be before subcommittee No 2 of the Committee on the Judiciary, Nov 3, 1943, at 10 30 a m. Representative Weaver of North Carolina is chairman of the subcommittee and the other members are Representative Byrne of New York, Representative Cravens of Arkansas, Representative Reed of Illinois, Representative Towle of New Jersey and Representative Jennings of Tennessee.

H R 2976 has been reported to the House of Representatives with the recommendation that it pass, providing that during the present war and for six months thereafter the salaries of dent and all other members of the Navy Nurse Corps shall be determined under existing law to relative rank shall have and shall be designated by the rank which corresponds to the relative rank heretofore provided by law for such superintendent members.

**Bills Introduced**—H R 3427, introduced by Representative Marrs, Minnesota provides dispensary treatment and hospitalization in Army and Navy hospitals for retired members of the Army, Navy, Marine Corps and Coast Guard.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SUBMITTING TO THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS OF REAL INTEREST, SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, AND PUBLIC HEALTH.)

### CALIFORNIA

**Memorial Fund for Dr. Wolfsohn**—A memorial fund has been set up at the Stanford University School of Medicine to honor Dr. Julian M. Wolfsohn, clinical professor of medicine (neuropsychiatry) at Stanford who died July 1. The fund will be used by the school of medicine especially for neurology and psychiatry and will honor Dr. Wolfsohn, who had been a member of the staff since 1915. The fund was contributed by friends of the late physician.

**Chiropractor and Osteopath Sentenced for "Careless Tonsillectomy"**—A chiropractor and an osteopath were sentenced to two years in prison on August 17 for conspiracy to violate the medical practice act according to the Los Angeles Daily News. Their retrial on manslaughter charges was ordered by the court following the deaths of 2 children from what was described as careless tonsillectomy. Harry Navarre is the chiropractor and Leslie R. Nunn the osteopath; it is reported.

**Hamilton Anderson Released by Japanese**—Dr. Hamilton H. Anderson, professor and head of the department of pharmacology at Peking Union Medical College, Peking, is one of a group of persons announced by the state department is repatriated by the Japanese. The newspaper report October 14, indicated that Dr. Anderson was aboard a Japanese liner en route to Portuguese India. Prior to his joining the Peking Union Faculty, Dr. Anderson had been in charge of graduate education in the Council on Medical Education and Hospitals of the American Medical Association. Before joining the Association he had served as assistant clinical professor of pharmacology at the University of California Medical School, San Francisco.

### CONNECTICUT

**Vesalius Celebration**—On October 30 the Yale Medical Library will present the following program to observe the 400th anniversary celebration of the publication *De Humani Corporis Fabrica*, by Vesalius.

Ernst A. Cassirer, Ph.D., New Haven: The Philosophical Character of the Science of the Renaissance.

Dr. Edward C. Streeter, Stonington: Vesalius at the University of Paris.

Carl P. Rollins, M.A., New Haven: Oporinus and the Fabricator.

Dr. Arturo Castiglioni, Baltimore: The Attraction of Puteus on Vesalius and the Defense by Cuneus.

During October the library has on display a Vesalian exhibit drawn from the collection bequeathed to Yale by the late Dr. Harvey Cushing. At the time of his death he was engaged on the compilation of a definitive bibliobibliography of Vesalius which is now in press and is being published under the auspices of the Historical Library by Mr. Henry Schuman, New York.

**Psychologist Named Research Director for Public Welfare Council**—Karl F. Heiser, Ph.D., director of the psychology laboratory at Norwich State Hospital, Norwich, has been appointed research director for the state public welfare council. One of Dr. Heiser's first activities will be to assist in the study of Connecticut's aged infirm and chronically ill. A committee of the Connecticut State Medical Society will participate in the study, which according to newspaper reports, is to start sometime during October. The report stated that this problem was given some attention about three years ago by a special state commission headed by Dr. Creighton Barker, New Haven executive secretary of the state society. The commission reported at that time that there was "no statistical evidence available that will permit any reasonably accurate statement of the costs to the state of those people who are 60 years of age or more who have, through state funds received hospital and medical care because of chronic illness." One of the aims of the new study is to determine whether there is a need for a separate state institution to take care of such cases. Dr. Heiser has been granted leave of absence from his state hospital position to carry on the study.

### ILLINOIS

**Grant for Poliomyelitis Study**—The National Foundation for Infantile Paralysis has granted \$10,325 to the Illinois Committee on Infantile Paralysis to study the persistence of the virus of poliomyelitis in stools of convalescent and healthy carriers for investigation of the port of entry and exit of poliomyelitis in acute cases and for the correlation of neuropatho-

logic and clinical findings in cases of poliomyelitis during an acute outbreak. Dr. Edward A. Piszczek, Chicago, director of health of Cook County, is chairman of the Illinois Committee on Infantile Paralysis.

**Conrad Sommer Heads New Mental Hygiene Section**—Dr. Conrad S. Sommer, chief medical officer in the department of public welfare, has been named deputy director of the mental hygiene service, a newly created position. The new post is one of three created by the department of public welfare in a reorganization to coordinate activities. Dr. Sommer, in his new capacity of deputy director of the mental hygiene section will supervise the twelve mental hospitals, the Neuropsychiatric Institute, the division of veteran service and the bureau of home economics and nutrition. Wallace W. Clark, formerly superintendent of the division of public assistance and recently assistant regional director of the federal office of community work services for the states of Wisconsin, Indiana and Illinois, has been named deputy director in charge of the section of social services covering all nonmental institutions operated by the department and also the division of child welfare, the division of services for the physically handicapped, the division of visitation of adult blind, the Institute for Juvenile Research, the division of delinquency prevention and the division of rehabilitation of women and girls.

### CHICAGO

**Koessler Fellowship Awarded**—Maurice R. Hilleman, B.S., has received the Jessie Horton Koessler Fellowship, carrying a stipend of \$500 according to an announcement from the Institute of Medicine of Chicago. The 1943-1944 fellowship will enable Mr. Hilleman to work with Dr. Francis B. Gordon in the Ricketts Laboratory in the University of Chicago on the immunologic relations on the psittacosis like viruses.

**The D. J. Davis Lectureship on Medical History**—On October 15 Jens Christian Bry, librarian, John Crerar Library, gave the first address under a new lectureship established by friends and colleagues of Dr. David J. Davis who retired this year as dean of the University of Illinois College of Medicine. The lecture fund was formally presented to the university on this occasion and will be known as the D. J. Davis Lectureship on Medical History. The title of the first lecture was "A Prelude to Medical History."

**Personal**—Everett W. Jones has been named vice president of the Modern Hospital Publishing Company effective November 1. Mr. Jones, who is head hospital consultant in the governmental division of the War Production Board and director on leave of Albany Hospital, Albany, N. Y., will for the present in his new position concentrate on problems involving the Hospital Yearbook and Latin American publications. —Raymond M. Hilliard, LL.B., executive secretary of the Illinois Aid Commission announced that his title is now public aid director.

**Regional Meeting of College of Physicians**—On October 16 the American College of Physicians sponsored a regional meeting at the Drake Hotel, Chicago, in conjunction with the postgraduate course in endocrinology, October 11-16 and the wartime graduate medical meeting at the United States Naval Hospital Great Lakes, Ill., October 15. The session was for the states of Illinois, Indiana, Iowa, Michigan and Wisconsin. Among the speakers were:

Lieut. Col. Ford K. Hick, M.C.A.U.S.: The Application of Graphic Training Aids to Medicine.  
Dr. Robert M. Moore, Indianapolis: Effort Syndrome in Soldiers.  
Capt. James E. McFarling, M.R.C.: Personal Experiences in New Caledonia with Special Reference to Malaria.  
Lieut. Col. Frank Bennette Adams, M.C.A.U.S.: Some Clinical Observations on Meningococcal Infection.  
Brig. Gen. David N. W. Grant, M.C.U.S. Army: Aviation Medicine.  
Dr. Andrew C. Ivy, Bethesda, Md.: Recent Observations of Practical Significance on Gastric Secretion.  
Dr. Fuller Albright, Boston: Classification of Hypoparathyroidism.  
Dr. Ovid O. Meyer, Madison, Wis.: Some Aspects of the Diagnosis and Therapy of Hypochromic Anemias.

### INDIANA

**State Medical Election**—Dr. Neslen K. Forster, Hammond, was chosen president-elect of the Indiana State Medical Association at its meeting in Indianapolis in September. Dr. Jacob T. Oliphant, Farmersburg, will take office as president of the association on Jan. 1, 1944. Dr. Carl H. McCaskey, Indianapolis, is now president of the association.

**Division of Tuberculosis Control Created**—The Indiana State Board of Health has established a tuberculosis control division to coordinate the work in the state against tuberculosis. Dr. Holland Thompson, Montgomery, Ala., director of tuberculosis control for the state of Alabama, has been named director of the new division. At present all tuberculosis control activities of the state board of health are administered by the communicable disease division.

**Academy of Medicine Formed**—Articles of incorporation have been issued for the Evansville Academy of Medicine, Inc., which has been organized by local physicians who are members of the Vanderburgh County Medical Society, according to the *Evansville Courier*, September 28. Dr. Stanton L. Bryan, Charles C. Suttel and Robert R. Acre have been named the incorporators. First members of the board of directors will be Drs. Keith T. Meyer, William M. Cockrum, William Lawrence Daves, Henry J. Faul, Daniel Tweedall, Pierce MacKenzie and James Y. Welborn. The academy plans to purchase a suitable building which will house an auditorium for lecture purposes, kitchen and other facilities. There will also be offices for the academy officers and directors and a permanent secretary in addition to headquarters for the county medical society and the Evansville and district dental societies.

## IOWA

**New Director of Tuberculosis Control**—Dr. Leon H. Flancher, epidemiologist, division of preventable diseases (tuberculosis control), Minnesota Department of Health, has been appointed director of the division of tuberculosis control of the Iowa State Department of Health. Dr. Flancher graduated at the Milwaukee Medical College in 1910.

## MAINE

**State Society Votes to Hold 1944 Meeting**—On August 1 the council of the Maine Medical Association voted to resume the scientific session of the association in 1944. The meeting was omitted in 1943, although a meeting of the house of delegates convened. The vote of the council was taken after a return from questionnaires sent to all members of the association showed 58 per cent in favor of a return to the former custom.

## MICHIGAN

**State Medical Election**—Dr. Andrew S. Brunk, Detroit, was chosen president-elect of the Michigan State Medical Society at its meeting in Detroit in September and Dr. Claude R. Keyport, Grayling, was installed as president. The society voted to reject the plan set up by the Children's Bureau for the care of wives and infants of enlisted men on the ground that the plan "is a clearcut case of government subsidy of the services of a doctor," newspapers reported.

**Appointments for Proposed Medical Science Center**—The plan to develop a \$50,000,000 medical center at Wayne University College of Medicine, Detroit, now takes shape with the announcement of definite appointments for the program. The board of trustees of the Wayne University College Hospital was incorporated on August 17. Members of the board include Mr. Alex J. Groesbeck, Mr. B. Edwin Hutchinson and Dr. A. William Lescobier chosen by the board of education of Detroit, and Mr. Wendell W. Anderson, Mr. Frederick I. Gartner and Dr. J. Milton Robb chosen by the Wayne County Board of Education. Dr. Edgar H. Norris as dean of the college of medicine is the seventh member. Dr. Frank F. Tallman, Lansing, director of mental hygiene of the Michigan State Hospital Commission, has been assigned by the commission to the Wayne Medical Science Center as adviser and consultant to the board and in the development of its Industrial Health Institute and psychiatric units. The industrial institute will not be for physicians alone. It will help anybody who deals with people, it was announced, concerning itself with plant morale, human relationships within the plant, pointing the way to relate the man harmoniously with his job. One of the first units to be built by the state near Detroit will be a 2,500 bed mental hospital to serve Wayne County. The center will maintain a neuropsychiatric and a percommitment clinic in its medical hospital. The initial handling of patients will be in the outpatient department, where an attempt will be made to cure without hospitalization. George F. Pierrot, director of the United Service Organizations in Metropolitan Detroit for the past seventeen months, has been appointed executive secretary of the finance committee for the proposed medical science center. Newspapers recently reported that an appropriation of \$10,000 to initiate plans for the development of the center at Wayne University had been approved by the ways and means committee of the county board of supervisors. The selection of a site by the committee on buildings and grounds is now under consideration and will probably be decided by November 1. The plan includes a \$2,000,000 hospital and other center units, which will be operated by the Wayne University College of Medicine. Complete details have not been announced for the progress of the center, but it is hoped that this development will expand available facilities for the treatment of indigent and mental patients as well as establish a center for the study and prevention of industrial accidents and occupational diseases.

## NEW HAMPSHIRE

**The Mayo Lecture**—The first W. J. and C. H. Mayo Memorial Lecture will be delivered at Dartmouth Medical School, Hanover, November 4, instead of November 5, according to an announcement from the university. The talk will be presented by Capt. Winchell M. Craig (MC), U. S. Naval Reserve, chief surgeon, Naval Hospital, Naval Medical Center, Bethesda, Md., on "Warriors Against Disease" (*THE JOURNAL*, October 9, p. 365).

## NEW YORK

**Personal**—Dr. George D. Winchell, coroner of Wayne County for more than twenty years, was honored by the Wayne County Medical Association recently in recognition of his completion of fifty years in the practice of medicine.—Dr. William E. Mosher Jr., Cortland, has resigned as health commissioner of Cortland County to enter the armed services.—In August the *Albany Times-Union* named Dr. Edward F. Urba, Kinderhook, as its "hero of the month." According to the state medical journal Dr. Urba, despite the lack of proper surgical equipment, amputated the leg of an engineer trapped in a swaying locomotive during a derailment at Chatham. The presentation of a \$25 war bond is the method used by the *Times-Union* of "honoring unsung heroes on the home front."

## New York City

**Postgraduate Talks**—Dr. Harvey B. Matthews, Brooklyn, will discuss "Causes and Management of Prolonged Labor" before the Suffolk County Medical Society, October 27. The talk is a part of the graduate instruction provided by the Medical Society of the State of New York in cooperation with the state health department. On October 21 the two groups sponsored a symposium on "Meningococcic Meningitis" before the Madison County Medical Society. Speakers were Drs. John Howard Ferguson and Abraham Clement Silverman, Syracuse.

**Dr. Brill Named 1943 Salmon Lecturer**—Dr. Abraham A. Brill, formerly lecturer in psychoanalysis and abnormal psychology at New York University and now lecturer in psychoanalysis and psychosexuality, Columbia University, will deliver the Salmon Lectures for 1943 at the New York Academy of Medicine, November 5, 12 and 19. Dr. Brill will speak on "The Psychoanalytic Contribution to Psychiatry." Individual topics will be "The Psychiatric Scene of 1900," "The Origin and Development of Interpretative Psychiatry" and "Freud's Specific Contributions to Knowledge of Psychosis."

**Rehabilitation Clinic Opened at Lenox Hospital**—On October 7 Lenox Hill Hospital opened a rehabilitation clinic to provide needed psychiatric help for men rejected at induction or discharged from the armed forces on psychiatric grounds. The clinic is similar to one established at New York Hospital and is under the direction of Dr. Thomas K. Davis with Dr. Johan H. W. van Ophuysen, attending psychiatrist, in charge. Work is being done by the neuropsychiatric staff assisted by a group of volunteer psychiatric social workers and secretaries, sessions beginning at 7:30 each Thursday evening. According to an announcement, although the therapeutic aspect will be stressed, clinical and statistical research will not be neglected as this appears to hold promise of the possible solution of post-war problems.

## OHIO

**Memorial for Physician**—Members of the Gallia County Medical Society are sponsoring a fund for the beautification of the Gallipolis City Park as a memorial to the late Dr. George G. Kineon, medical director and superintendent of the Ohio Hospital for Epileptics. Dr. Kineon was president of the park planning commission.

**Personal**—Dr. Jay McLean, formerly with the Memorial Hospital for the Treatment of Cancer and Allied Disease, New York, has been appointed associate professor of surgical research at the Ohio State University College of Medicine, Columbus, where he will continue his work on heparin.—Dr. Edward J. McCormick has resigned as president of the Toledo Board of Health. Dr. McCormick recently moved from Toledo to the Village of Ottawa Hills, thus making him ineligible to continue on the board.

**Mass Chest X-Ray Examinations**—What is being planned to be "the greatest mass chest x-ray examination for tuberculosis ever attempted among industrial workers in the United States" is being undertaken in Cleveland under the supervision of Dr. Joseph B. Stocklen, tuberculosis controller of Cuyahoga County, and local health commissioners and with the cooperation of the Anti-Tuberculosis League and the Cleveland Academy of Medicine. The state medical board announces. The survey crew, working with a portable

speed fluorographic unit lent by the U. S. Public Health Service expects to visit every major war plant in Greater Cleveland. Support for the survey has been pledged by local labor organizations. X-ray examination of the chest will be given free on a voluntary basis to every plant worker. The reports will be confidential and will be given only to the worker or, on his request to his private physician. Company physicians will not have access to these reports, according to the state journal.

### PENNSYLVANIA

**Physician Celebrates Ninety-Fifth Birthday**—Dr. Joseph H. Shull, physician and attorney of Stroudsburg, observed his ninety-fifth birthday on August 17. Newspapers report that Dr. Shull was elected to the state senate in 1886, serving until 1890. In 1904 he went to Congress for a term. He is still in active practice.

**State Medical Election**—Dr. William Bates, Philadelphia, was chosen president-elect of the Medical Society of the State of Pennsylvania at its meeting in Philadelphia in October. Dr. Augustus S. Keck, Altoona, was installed as president. Dr. Walter F. Donaldson, Pittsburgh, was selected secretary and Dr. Henry G. Munson, Philadelphia, assistant secretary.

### Philadelphia

**Annual Postgraduate Institute**—The Philadelphia County Medical Society announces that it will hold its ninth annual Postgraduate Institute May 25, 1944. The theme of the institute will be "Modern Diagnosis and Treatment."

**The Mutter Lecture**—Dr. Virgil H. Moon, professor of pathology, Jefferson Medical College of Philadelphia, will deliver the Thomas Dent Mutter Lecture of the College of Physicians of Philadelphia December 1. His subject will be "The Dynamics of Shock as Related to Clinical Problems." The college cooperates with the Philadelphia County Medical Society in this annual series of lectures. On November 10, Brig. Gen. Fred W. Rankin, M. R. C., will lecture in this cooperative series on "Peptic Ulcer in the Army."

### SOUTH CAROLINA

**Changes in Health Officers**—Dr. Benton M. Montgomery has been named director of the Clarendon County Health Department succeeding Dr. Edward Alex. Heise who is now in charge of the Sumter County and City health departments. Dr. Montgomery is also director of the Williamsburg County Health Department, according to the state medical journal.

### TEXAS

**University News**—The University of Texas Chapter of Phi Beta Pi Fraternity has given funds to the University of Texas Medical Branch, Galveston, to establish an annual lectureship. The medical school announces the publication of *Texas Reports on Biology and Medicine*, a quarterly scientific periodical available without charge to the libraries of medical institutions throughout the world.

**Personal**—Mr. Lawrence R. Payne, superintendent of the Hillcrest Memorial Hospital, Waco, has been named administrator of Baylor University Hospital, Dallas, effective October 15. Mr. Payne, before taking over his Waco position, had served six years as assistant superintendent of the Baylor Hospital. Dr. Tilman E. Dodd, Bryan, has resigned as health officer of the Bryan Brazos County Health Unit. Dr. John Schreiber, San Augustine, has been named health officer of Nolan County.

### UTAH

**Personal**—Dr. Rodger J. B. Hibbard, formerly clinician and pathologist at the Arkansas Tuberculosis Sanatorium, State Sanatorium, has been chosen superintendent of the Utah State Tuberculosis Sanatorium, Ogden, effective October 5, succeeding Dr. Edward J. Nagoda, resigned.

**Public Health Election**—E. H. Bramhall, B.S., director of the division of laboratories of the state board of health, was chosen president-elect of the Utah Public Health Association at its annual convention, September 25, in Salt Lake City, and Dr. Hyrum L. Marshall, professor of physical welfare at the University of Utah School of Medicine, was inducted into the presidency.

**Hospital News**—Ground was broken for a five-story addition to St. Mark's Hospital, Salt Lake City, September 8. The new wing will increase the number of beds by 75 and will also supply additional operating theaters and service rooms

for the entire hospital, which at present has a capacity of 225 beds. The new addition is expected to cost about \$400,000, \$100,000 of which will be paid by the hospital, the federal government providing the remainder.

### WASHINGTON

**Personal**—Dr. Cecil R. Larcher, Vancouver, health officer of the Clark County Health Unit, has been named director of health of Tacoma. Dr. Claire W. Twinn, acting superintendent of the Traskville State Sanatorium, Middleboro, Mass., has been appointed medical director of the King County Tuberculosis Hospital.

**Spokane Medical Society Named in Affidavit**—On September 11 an affidavit was filed in the superior court in Spokane charging members of the Spokane County Medical Association with agreeing not to testify against a fellow member or to cooperate in the preparation of a malpractice suit against a member. According to the Spokane *Spokesman*, the affidavit alleged that Dr. Clyde W. Countryman and all members of the Spokane Medical Association have agreed not to testify against a fellow member. The affidavit is on behalf of Earl J. Odion and is based on the death of Mrs. Helen Odion in childbirth. The action followed a defense motion for dismissal on the ground that the plaintiff failed to file a bill of particulars for a year it was stated. The suit asked damages of more than \$50,000.

### WEST VIRGINIA

**State Society Plans 1944 Meeting**—The West Virginia State Medical Association announces that its seventy-seventh annual meeting will be held at the Hotel Windsor, Wheeling, May 15-16, 1944.

**Symposium on Obstetrics**—The Kanawha Medical Society was host to the sixth councilor district at a symposium on obstetrics in Daniel Boone Hotel, Charleston, October 12. Dr. Harry Hudnall Ware, Jr., professor of obstetrics at the Medical College of Virginia, Richmond, was the principal speaker on "Management of Breech Presentations" and "Ectopic Pregnancy."

**Resolution Stipulates Granting of Temporary Licenses to Practice**—On September 30 the council of the West Virginia State Medical Association adopted a resolution recommending to the public health council that it grant temporary permits from one meeting to its next succeeding meeting to such graduates from unrecognized schools as may be necessary to supply areas in which there might exist an acute shortage of doctors, such permits to be issued on the following conditions:

That actual local need be demonstrated to the complete satisfaction of the public health council.

That such graduates of an unrecognized school be given a permit to practice only as an assistant to some individual licensed physician who shall be his sponsor and who shall be responsible for all professional acts of such a graduate.

That he demonstrate to the satisfaction of the public health council his knowledge of all branches of medicine and surgery and proficiency in the use of the English language.

That such applicant for a temporary permit to practice agrees to follow and abide by such restrictions and regulations as the public health council sees proper to impose.

That in no case whatever shall such license to practice be granted or renewed for a period in excess of six months after the cessation of hostilities.

The resolution reflected the cognizance of the society that there is an insufficient number of physicians in certain communities in the state especially in industrial areas to provide the civilian population with adequate or necessary medical service. Indicating that it does not desire to have the standards for medical licensure set by the public health council lowered for permanent licensure in any manner whatever, the resolution and its recommendations stipulate the basis for utilizing graduates of schools not recognized by West Virginia standards for permanent licensure.

### WISCONSIN

**Clinic Against Whooping Cough Proposed**—Dr. Thaddeus D. Smith, Neenah, post surgeon, was appointed as chairman of a committee to organize a clinic for immunization against whooping cough at a meeting of the Veterans of Foreign Wars, Nicolet Post 2126, Neenah, September 27.

**Personal**—On September 17 Acting Governor Goodland appointed Dr. Erwin R. Schmidt, Madison, to the Soldiers' Rehabilitation Board to succeed Col. William S. Middleton, M. C. A. U. S., who is on leave of absence as dean of the University of Wisconsin Medical School, Madison. Dr. Schmidt is chief surgeon at the State of Wisconsin General Hospital.

## GENERAL

**Prizes on Endocrinology**—Elizabeth L. Brown, class of 1943 New York Medical College, Flower and Fifth Avenue Hospitals, recently was presented with first prize in the Schering Award Competition for 1942 for her work on "Endocrines and the Nervous System." First prize consists of one full year's tuition. Second prize, consisting of one-half year's tuition, went to Eugene B. Brody, class of 1944, Harvard Medical School, Boston, for his paper on "Hormone Factors in Personality." Third prize of \$100 was given to Roslyn Wiener, class of 1945, University of Michigan Medical School, Ann Arbor, for work entitled "Role of Hormones in Pregnancy and Parturition." The awards were established in 1941 by the Schering Corporation for the best original papers on endocrinology.

**Hospital Service Society Sued by Government**—On September 17 the government filed a civil suit in district court in Washington, D. C. to declare the charter of the National Hospital Service Society, Inc., forfeited because of alleged violations of the charter terms, according to the *Washington Star*. Under the terms, it was stated, the society was to operate as a "fraternal beneficial association" for the sole benefit of its members. The government has charged the corporation has violated the charter through operating for profit and not for the sole benefit of its members, it was stated. The government also alleged the society has been governed by other than a representative form of government, contrary to the charter. It was also stated that the government had asked the court to appoint a receiver and liquidate the affairs of the corporation, in the interest of some five thousand policyholders, nearly all of whom are in the district, it was stated. The suit claims further that the society operated in Washington without a permit from the superintendent of insurance after May 1, 1940. Filed with the suit is an affidavit to show that the society was unsuccessful in court action to force the superintendent of insurance to issue it a permit after the 1940 date. The society was incorporated in Washington in August 1935, according to the suit.

**Accommodations for Cardiac Patients**—There are 111 institutions in the United States which accept convalescent cardiac patients, according to an announcement of a survey made by the heart division of the New York Tuberculosis and Health Association. In making the announcement Dr. J. Burns Amberson, president of the New York Tuberculosis and Health Association, said that this is the first national list of such cardiac institutions compiled and that it is considered preliminary since it is believed that there are other institutions accepting cardiac patients which the survey was unable to discover. Of the 111 known institutions, 16 are located in New York State, 2 being in New York City. Illinois stands second with 14, Pennsylvania has 12 cardiac convalescent services, while New Jersey and Massachusetts each have 9. In all there are thirty states and the District of Columbia which have 1 or more institutions for the care of cardiac patients. As a result of the survey the American Heart Association has published a directory listing each of the 111 institutions with their admission requirements, bed capacity, facilities, medical supervision, rates and staff. It lists cardiac convalescent homes for children and adults, general convalescent homes which accept cardiac patients, private schools and camps accepting cardiac patients, facilities for foster home care for cardiac children, and general convalescent homes accepting cardiac children.

**The Father of American Pharmacy**—The fifth painting in the "Pioneers of American Medicine" series, entitled "The Father of American Pharmacy," will be unveiled during National Pharmacy Week at a meeting in Philadelphia, November 5. The painting depicts William Procter Jr. (1817-1872) studying a formula for the standardization of drugs while at work with an assistant in his laboratory. Ivor Griffith Ph.D., president of the American Pharmaceutical Association and president of the Philadelphia College of Pharmacy and Science, will be the principal speaker at the unveiling. Ensign Melba Grafius of the Waves, stationed at Annapolis, Md., will unveil the painting. She is the fifth youngest woman graduate pharmacist in Pennsylvania, having received her degree in June 1942. The series of "Pioneers of American Medicine" is being executed by Dean Cornwell and financed by John Wyeth and Brother. Other paintings in the series which are lent to medical schools and medical societies, are "The Dawn of Abdominal Surgery," a tribute to Dr. Ephraim McDowell, depicting the world's first successful ovariectomy, "Beaumont and St. Martin" honoring Dr. William Beaumont, who pioneered in the study of the stomach's digestive functions, "Osler at Old Blockley," in honor of Sir William Osler, pioneer teacher of clinical medicine, and "Conquerors of Yellow Fever," a tribute to Drs. Walter Reed and Carlos Finlay, whose work made possible

construction of the Panama Canal, vital wartime lifeline. Procter graduated at the Philadelphia College of Pharmacy in 1837. He later served as professor there. He edited the *American Journal of Pharmacy* and founded the American Pharmaceutical Association. His chief contribution was the standardization of drugs.

**United States and American Republics Exchange Medical Knowledge**—Dr. Eugene P. Campbell of the health and sanitation division of the Institute of Inter-American Affairs, Washington, D. C., reports that medical men from the United States are enthusiastic about the training they are receiving in the republics to the south. Dr. Campbell is director of the United States missions assisting Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua in health and sanitation programs. The training program was established by the Association of American Medical Colleges, with the financial support of the John and Mary R. Markle Foundation in New York. When the physicians arrive in Central America they report to the heads of the respective medical missions from the United States. The visiting physicians work on tropical disease cases in hospitals for three weeks. At the end of this period they go out with a field party for a week or ten days, learning more about malaria, dysentery and other tropical diseases. "This program has given our doctors experience they would not obtain elsewhere," said Dr. Campbell. "It has given them something concrete. Many doctors in the United States have had little experience with tropical medicine, and this is a handicap to the Army." Dr. Campbell said that President Tiburcio Carias Andino of Honduras has been especially interested in the program. The exchange of physicians and technicians among the Americas is an important phase of the program of inter-American cooperation which resulted from the conference of American Foreign Ministers at Rio de Janeiro in January 1942. United States physicians who have finished or are receiving training in Central America are:

Dr. Carroll C. L. Birch, assistant professor of medicine, University of Illinois School of Medicine, Chicago, assigned to Golfito, Costa Rica.  
Dr. Robert C. Lowe, assistant professor of medicine, Louisiana State University School of Medicine, New Orleans, to Quepos, Costa Rica.  
Dr. Walter A. Stryker, instructor of pathology, University of Michigan Medical School, Ann Arbor, to Quepos.  
Dr. Elberton J. Tiffany, assistant professor of bacteriology, Long Island College of Medicine, Brooklyn, to Tela, Honduras.  
Dr. George T. Harrell Jr., associate professor of preventive medicine, Bowman Gray School of Medicine, Wake Forest College, Winston-Salem, N. C., to Tela.  
Dr. Roswell D. Johnson, instructor of pediatrics, Yale University School of Medicine, New Haven, Conn., to Tiquisate, Guatemala.  
Dr. Robert A. Hettig, instructor of internal medicine, University of Michigan Medical School, to Tiquisate.  
Dr. Lemuel W. Diggs, associate professor of medicine, University of Tennessee College of Medicine, Memphis, to Quirigua, Guatemala.  
Dr. Thomas H. McGivach, associate professor of medicine, New York Medical College, Flower and Fifth Avenue Hospitals, New York, to Tela.  
Dr. William McK. German, assistant professor of pathology, University of Cincinnati College of Medicine, to Tela.  
Dr. Floyd J. Florio, associate professor of public health, University of Colorado School of Medicine, Denver, to Quepos.  
Dr. Harry F. Dowling, clinical professor of medicine, George Washington University School of Medicine, Washington, D. C., to Quepos.  
Dr. Mario Molinari, professor of bacteriology and immunology, Pennsylvania State University School of Medicine, Washington, to Golfito.  
Dr. Russell J. Blattner, assistant professor of pediatrics, Washington University School of Medicine, St. Louis, to Tiquisate.  
Dr. A. M. Ellis, demonstrator in preventive medicine, University of Toronto Faculty of Medicine, Ontario, to Tiquisate.  
Dr. Wesley W. Spink, clinical associate professor of internal medicine, University of Minnesota Medical School, Minneapolis, to Quirigua.  
Dr. Thomas P. Almy, instructor of medicine, Cornell University Medical College, New York, to Tela.  
Dr. Carlton J. Casey, instructor of medicine, University of Virginia Department of Medicine, Charlottesville, to Tela.  
Dr. Arthur L. Titum, professor of pharmacology, University of Wisconsin Medical School, Madison, to Tiquisate.  
Dr. Leslie C. Saunders, Ph.D., professor of parasitology, University of Saskatchewan School of Medical Sciences, Saskatoon, to Tiquisate.  
Dr. Omar J. Fareed Jr., instructor in medicine, University of Chicago School of Medicine, to Quirigua.  
Dr. Morris Tager, assistant professor of bacteriology, Yale University School of Medicine, to Quepos.  
Dr. Paul A. Lembeck, instructor in medicine, University of Rochester School of Medicine and Dentistry, Rochester, N. Y., to Quirigua.  
Dr. William W. Frye, associate professor of preventive medicine, public health, Vanderbilt University School of Medicine, Nashville, to Golfito.  
Dr. Raymond W. Wilhelm, assistant professor of zoology, University of Missouri, Columbia, to Tiquisate.  
Dr. Howard B. Shavin, assistant professor of medicine, University of Rochester School of Medicine and Dentistry, to Tiquisate.  
Dr. Robert M. Shaw, professor of bacteriology, University of Alberta Faculty of Medicine, Edmonton, to Quirigua.  
Dr. John W. Scott, associate professor of clinical medicine, University of Alberta Faculty of Medicine, to Tela.  
Dr. Donald B. McMullen, D.Sc., assistant professor of medicine, University of Oklahoma School of Medicine, Oklahoma City, to Tela.  
Dr. Francis C. Lawler, professor of medicine, University of North Dakota, Grand Forks, to Golfito.  
Dr. Henry F. Wilson Jr., associate professor of medicine, University College of Medicine, Chicago, to Tiquisate.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Sept 3 1943

#### Psychiatric Battle Casualties

The *Army Medical Department Bulletin* deals with the early recognition and treatment of psychiatric battle casualties. There is no fundamental difference between psychiatric cases arising during a battle and those occurring in civil life but the former are often more sudden and dramatic. Premontory symptoms may have been entirely lacking or under the stress of battle may have been unobserved until the breakdown occurs. They are apt to be displayed in a more vivid and spectacular form. Rapid decisions may have to be made by the medical officer in a forward area on which may depend the morale of a whole unit. Experience in the present war has shown the importance of early treatment. The incidence of psychiatric casualties depends to some extent on the nature of the action, it is likely to be higher during unsuccessful purely defensive or unduly prolonged actions. A recent analysis of all casualties evacuated from the Libyan battle area showed that 2 per cent were psychiatric and another 8 per cent were cases of physical exhaustion exhibiting transient neurotic features. The largest proportion of the psychiatric syndromes (60 or 70 per cent) were acute anxiety reactions. Hysterical reactions came next and other forms of psychosis or neurosis were of less numerical importance. It should be remembered that while the precipitating factor is the actual battle stress more complex underlying causes may be present. These may lie in the individual or his environment—either in an unstable personality or in faulty morale or discipline.

The development of symptoms may be sudden and dramatic but closer investigation will often reveal a series of changes which may have been developing over days, weeks or even months. One of the earliest and most typical symptoms is a change in temperament. The quiet retiring individual becomes garrulous and vivacious or the good humored and sociable man becomes morose and sullen. Increased indulgence in alcohol or tobacco is common. Emotional instability is often manifest—sudden outbursts of weeping without apparent cause or sudden aggressiveness or even violence. Disciplinary offenses may occur in a person of previously exemplary character. There is often deterioration in the standard of work and efficiency. The individual may be irritable and jumpy, unduly startled by a sudden noise. Headache and a wide variety of psychosomatic symptoms may be in evidence.

In prophylaxis, full knowledge of the men in his unit by the medical officer is important, early recognition of the premonitory symptoms may help him to avert a breakdown. Unfortunately he is often confronted with a fully developed case from another unit. Prophylaxis takes three forms. 1 Administrative. Training and discipline are of course the responsibility of the combatant officer, but the medical officer may by his advice contribute much of value to the morale of the individual and of the unit. 2 Psychologic. Listening followed by frank discussion with the individual and simple psychotherapy—explanation, reassurance and suggestion—may avert an impending breakdown. 3 Psychic. Rest, adequate food and sedatives are important.

It is important to avoid indiscriminate evacuation of personnel to the rear. If a patient can be treated in a forward area the prognosis as a rule is better. But delay in evacuating men for whom specialized treatment in a base area is necessary may prove disastrous to the patient and harmful to the unit. The physically exhausted should be evacuated to a rest camp or casualty clearing station. Treatment on simple lines should

ensure return to duty in a few days. In simple terror states the great majority respond to firm handling, with a sedative and restorative hot drinks. If response is delayed, probably the condition is more serious, such as hysteria or a developing anxiety state, and evacuation for more specialized treatment is generally necessary. The main aim is to provide adequate mental and physical rest for the acute neurosis; this is at least as important as for a serious physical wound.

#### A British Surgeon's Impression of Russian War Surgery

The visit to Russia of a party of British and American surgeons under the auspices of the Medical Research Council has been described in a previous letter to *THE JOURNAL*. One of the members, the orthopedic traumatic surgeon Mr. Watson-Jones, has given his impressions of Russian war surgery in the *British Medical Journal*. The number of women doctors, women surgeons and nurses who work in the front line was remarkable. Not only do nurses attend to the wounded, but in the intervals of battle they build hospitals. They are obviously skilled in the use of the saw, the plane and the spirit level. The closed plaster technique is used for all major wounds, compound fractures and joint injuries. Professor Yudin claims that in the surgery of war this was first practiced over ninety years ago by the Russian surgeon Prokofoff. Yudin teaches that after wound excision no tube or drain should be used and no gauze pad or other foreign body should be inserted. An unpadding plaster cast is applied directly over the wound. A difference from our methods practiced in Russia was of interest. A large excision of all injured and contused tissues is recommended no matter how many hours or days have elapsed since wounding and independently of the presence and degree of infection. In England it is believed that free excision is indicated only during the first twelve or possibly twenty-four hours and that after that time wide dissection is liable to disseminate infection, we think that the correct treatment in late cases is incision and drainage rather than excision and drainage. Watson-Jones is still unconvinced of the superiority of the Russian method but thinks that further study is necessary.

The visitors did not approve of all they saw. They disagreed on the treatment of frostbite, they were unconvinced of the merits of muds, balsams and wood distillates. They thought that British rehabilitation was better. On the other hand, much of the Russian work was better than ours. Their specialization was excellent, their training of medical students more thorough, their organization of surgical services superb. Each of us could learn from the other.

## Marriages

WILLIAM C LONG JR, Lock Haven, Pa., to Miss Geraldine E Chamberlain of High Bridge, N J, July 15

LUTHER H CONE, Chanute, Kan., to Miss Pamela Van Waeland of Sidney, Australia, June 9

CLAY R MILLER, Pensacola, Fla., to Miss Bernmetta Helen Loggins in Nashville, Tenn. in June

CLEMENT A SONFS to Mrs Carroll Browning Martin both of Des Moines, Iowa, September 10

PAUL F MANESS to Miss Anne Barrow, both of Jackson, N C., at Pensacola, Fla., July 28

PAUL J STRASSBURGER, New York, to Miss Dora Schurman in Cortland N Y, August 7

ROBERT PETTIBONE GILBERT Chicago to Miss Anne Henerge of Oak Park Ill., June 5

WILLIAM HOUSTON PRICE to Miss Helen Callahan both of Los Angeles, June 19

HENRY D FREEMAN to Miss Rose Specter, both of Philadelphia April 18

LOUIS A GUOCO to Miss Agatha Memoli both of Brooklyn, June 26

RECEIVED



## Deaths

**Leo Buerger** \* New York, Columbia University College of Physicians and Surgeons, New York, 1901, professor of urologic surgery at the New York Polyclinic Medical School and Hospital in 1917, formerly professor of surgery (urology) at the College of Medical Evangelists, Loma Linda and Los Angeles, member of the American Urological Association and the American Association of Pathologists and Bacteriologists, fellow of the American College of Surgeons, voluntary assistant at the Breslau Surgical Clinic in Germany, 1905-1906, for many years on the staff of Mount Sinai Hospital, attending surgeon to the Beth David and Bronx hospitals, consultant in the genitourinary department, Israel Zion Hospital, Brooklyn, and attending urologist to the Wyckoff Heights Hospital, Brooklyn, discovered Buerger's disease (thromboangitis obliterans) in 1908 and in the same year assisted in the development of the Brown-Buerger cystoscope, devised an operating cystoscope in 1910, the cystourethroscope and other urologic instruments, author of "Circulatory Disturbances of the Extremities", aged 64, died, October 6

**Henry Gray Barbour** \* New Haven, Conn., Johns Hopkins University School of Medicine, Baltimore, 1910, assistant professor of pharmacology at Yale University School of Medicine from 1912 to 1921, associate professor of pharmacology and toxicology from 1931 to 1937 and since 1937 research associate professor, professor of pharmacology at McGill University Faculty of Medicine, Montreal, Que., Canada, from 1921 to 1923 and professor of physiology and pharmacology at the University of Louisville (Ky.) School of Medicine from 1923 to 1931, an Associate Fellow of the American Medical Association, member of the Central Society for Clinical Research, American Physiological Society, Society of Pharmacology and Experimental Therapeutics, American Society of Biological Chemists and the Society of Experimental Biology and Medicine, conducted gas investigations for the United States government during World I, author of "Experimental Pharmacology and Toxicology", aged 57, died, September 23, of acute pulmonary edema and hypertensive heart disease

**William Henry Lohman** \* Brooklyn, Columbia University College of Physicians and Surgeons, New York, 1904, professor of clinical medicine at the Long Island College of Medicine, where he had been instructor of physical diagnosis from 1908 to 1911, specialist certified by the American Board of Internal Medicine, fellow of the American College of Physicians, lieutenant in the medical corps of the U S Navy from 1917 to 1919, chief of the medical service, Camp Hospital number 15, American Expeditionary Forces, 1917-1918, chief of the medical service, Navy Base Hospital number 1 at Brest, France, 1918-1919, recently helped to organize Army General Hospital number 79 attending physician at the Brooklyn Thoracic Hospital from 1908 to 1910 and physician in chief from 1911 to 1916, attending physician since 1925 at the Brooklyn Hospital, assistant attending physician at St John's Hospital from 1920 to 1930 and consulting physician since 1930, medical inspector, department of health of New York City, from 1907 to 1911, aged 62, died, August 8

**Max Joseph Exner** \* Newark, N. J., University Medical College of Kansas City, Mo., 1906, an Associate Fellow of the American Medical Association, epidemiologist and director of venereal disease for the city department of health, physical director for Carleton College, Northfield, Minn., from 1892 to 1898, the Y M C A., in Troy, N. Y., 1898-1899, in Kansas City, Mo., from 1899 to 1908 and in China from 1908 to 1911, director of sex education for the International Committee of the Y M C A., from 1911 to 1920, consultant and for many years director of the educational division of the American Social Hygiene Association, during World War I in charge of social hygiene education for the U S Army, cooperating with the war department commission on training camp activities, author of "Rational Sex Life for Men" and "Sexual Side of Marriage", aged 72, died in the Presbyterian Hospital, October 8

**Julian Mast Wolfsohn** \* San Francisco, John Hopkins University School of Medicine, Baltimore, 1911, clinical professor of medicine (neuropsychiatry), Stanford University School of Medicine, specialist certified by the American Board of Psychiatry and Neurology, Inc., member of the American Neurological Association and the American Psychiatric Association,

fellow of the American College of Physicians, served during World War I, chief medical director of the Alexander Sanitarium, Belmont, consultant in neuropsychiatry at the Children's Hospital, Mount Zion Hospital, San Francisco Hospital and the Veterans Administration Facility, member of the psychiatric board of the United States Penitentiary Hospital, Alcatraz, aged 60, died in Stanford University Hospitals July 1, following an operation for intestinal obstruction

**Louis Thales Hess** \* Colonel, U S Army, retired, Columbus, Ohio, Jefferson Medical College of Philadelphia, 1895, entered the medical corps of the U S Army as an assistant surgeon in 1899, rose through the various grades to that of colonel in 1918, retired in 1931 at his own request after thirty two years' service, served for two years in Cuba during the American occupation and in 1902 was sent to the Philippines for three years, during World War I was chief of the medical service of the National Guards units in the militia bureau in Washington, D. C., for four years superintendent of the Ancon Hospital, now Gorgas Hospital, in Panama, from 1923 to 1931 was stationed at Columbus as Fifth Corps area surgeon, fellow of the American College of Surgeons, aged 72, died, July 27, of arteriosclerosis

**George Huston Bell** \* New York, University of Virginia Department of Medicine, Charlottesville, 1897, an Affiliate Fellow of the American Medical Association, member of the American Ophthalmological Society, past president of the New York Ophthalmological Society, fellow of the American College of Surgeons, a specialist certified by the American Board of Ophthalmology, served as eye consultant for the U S Public Health Service, consulting ophthalmic surgeon to the New York Eye and Ear Infirmary, consulting ophthalmologist to St Andrew's Convalescent Hospital and the New York Polyclinic Medical School and Hospital, visiting ophthalmic surgeon to the U S Marine Hospital, aged 77, died, October 5, of heart disease

**Burton Alexander Hall** \* Oxford, N. Y., Syracuse University College of Medicine, 1907, president and for many years a member of the board of education, past president of the Chenango County Medical Society, served overseas in the medical corps of the U S Army during World War I, for many years served as health officer of Oxford, member of the staff of the Chenango Memorial Hospital, Norwich, consultant physician on the staff of the Woman's Relief Corps Home, member of the board of managers of Brookside Crest Sanitarium, Sherburne, a director of the National Bank of Oxford, a charter member of the Oxford Rotary Club and past president, aged 62, died, July 24, of cerebral hemorrhage and chronic cardiovascular renal disease

**Frederick Calhoun Bugbee**, Tucson, Ariz., Jefferson Medical College of Philadelphia, 1925, member of the Arizona State Medical Association, diplomate of the National Board of Medical Examiners, captain in the medical reserve corps U S Army, not on active duty, at one time member of the Verona (N. J.) Council and served as chairman of the health and police committees, formerly on the staffs of the Essex Mountain Sanatorium, Verona, Orange Memorial Hospital and the Montclair Community Hospital, all of New Jersey, served on the staffs of the Comstock Children's, Pinckney County and St Mary's hospitals, affiliated with the Hicks-Bugbee Clinic, aged 44, died, July 25, of asthma

**Ralph Kinsey Updegraff Sr.**, Cleveland, University of Wooster Medical Department, Cleveland, 1902, specialist certified by the American Board of Internal Medicine, past president of the Academy of Medicine of Cleveland, member of the Ohio State Medical Association and formerly councilor of the Fifth District, fellow of the American College of Physicians, formerly instructor and associate in physical diagnosis at Western Reserve University School of Medicine, director of medicine at St John's Hospital for twenty-five years, served on the staffs of the City and St Luke's hospitals, aged 70, died in Wilmington, Del., July 13, of coronary occlusion

**Thomas Maximus Rivers** \* Kissimmee Fla., Medical College of the State of South Carolina, Charleston 1904, past president of the Midland Medical Society and the Ocala County Medical Society, served as health officer of Ocala and of Osceola County for many years, recently chairman of the health and housing unit under the Ocala County Defense Council, member of the Southern Medical Association and the Florida Railway Surgeons Association, on the staff of the Osceola Hospital, author of "The Diseases of the Coronary Arteries", aged 74, died, July 22, of coronary thrombosis

**John B-rost Blake**, Brattleboro Vt Harvard Medical School Boston 1891, member of the Massachusetts Medical Society, American Surgical Association New England Surgical Society Boston Obstetrical Society Boston Medical Library Association and the American Gastro Intestinal Association fellow of the American College of Surgeons formerly assistant professor of surgery at his alma mater and the graduate school served for many years on the staffs of the Boston City, Long Island and Massachusetts General hospitals, Boston co author of *Case Teaching in Surgery* aged 77 died August 17 of chronic myocarditis and arteriosclerosis

**George Goodhue Kineon**, Gallipolis Ohio Miami Medical College, Cincinnati 1905 member of the Ohio State Medical Association American Psychiatric Association National Association for the Study of Epilepsy American Association for the Study of the Feeble Minded Eugenes Research Association and the International League Against Epilepsy chairman of the Gallia County American Red Cross and the county draft board during World War I served as judge of the Court of Honor of the Boy Scouts of America medical director and superintendent of the Ohio Hospital for Epileptics since 1911 aged 64 died August 21 of heart disease

**Howard Gregory Case** & Syracuse N Y Syracuse University College of Medicine 1903 associate professor of clinical surgery at his alma mater where he had been demonstrator of anatomy instructor in anatomy and applied anatomy and associate professor of surgery specialist certified by the American Board of Surgery and a member of the founders group president of the board of trustees of the Cazenovia (N Y) Seminary served on the staffs of the Syracuse Free Dispensary and the Hospital of the Good Shepherd Syracuse University where he died, August 4 of coronary thrombosis aged 62

**Walter Elijah Bostwick**, Algonac Mich McGill University Faculty of Medicine Montreal Que Canada 1893 served in the medical corps of the U S Army during World War I for many years served as health officer of Clay Township and as treasurer of the school board for twenty five years chairman of the Clay Township unit of the St Clair County chapter American Red Cross formerly United States deputy collector of customs for several years a member of the village council a director of the Algonac Savings Bank aged 77 died in the Harper Hospital, Detroit August 3 of pneumonia

**George Hamilton Walker** & Winona Minn University of Minnesota College of Medicine and Surgery Minneapolis 1908, specialist certified by the American Board of Otolaryngology member of the American Academy of Ophthalmology and Otolaryngology and the Minneapolis Otolaryngology and Ophthalmology Association fellow of the American College of Surgeons member of the Winona Clinic for many years affiliated with the Miller Clinic St Paul from 1922 to 1926, aged 63 on the staff of the Winona General Hospital where he died July 2 of cerebral hemorrhage

**Edgar F Dods** & Tacoma Wash Northwestern University Medical School Chicago 1897 past president of the Pierce County Medical Society served in France and as a captain in the medical corps of the U S Army during World War I fellow of the American College of Surgeons chairman of the Tacoma Orthopedic Clinic consultant on the staff of the Northern Pacific Beneficial Association Hospital on the staffs of St Joseph's Hospital and the Tacoma General Hospital, where he died, July 23, of pernicious anemia and Hodgkin's disease, aged 71

**Ray Clifton Gabler**, Chambersburg Pa Hahnemann Medical College and Hospital of Philadelphia, 1932 member of the Medical Society of the State of Pennsylvania on the staff of the Chambersburg Hospital began active duty as a captain in the medical corps of the Army of the United States in November 1942 attached to the Air Corps Officers' Training School at Miami Beach, Fla relieved from active duty in June 1943 honorably discharged in July 1943 an account of physical disability, aged 39 died August 6 of a self-inflicted bullet wound

**Joseph W Albright**, Elizabethtown Pa University of Pennsylvania Department of Medicine Philadelphia, 1879 member and for two terms vice president of the Medical Society of the State of Pennsylvania president of the Lycoming County Medical Society in 1894 and 1901 and formerly vice president, served as president of the board of health of Muncy, formerly a member of the staff of the Muncy Valley Hospital, aged 86, died in the Philadelphia Freemasons Memorial Hospital, Masonic Homes, August 5 of chronic valvular heart disease

**Clyde Rolland Bennett**, Half Moon Bay, Calif., University of Nebraska College of Medicine Omaha, 1928, member of the American Psychiatric Association, aged 43, died, August 11

**Gabriel D Bos** & Holland, Mich Detroit College of Medicine and Surgery, 1920, on the staff of the Holland City Hospital, aged 55, died August 11, of coronary occlusion

**Harry S Bossart**, Buckley, Ill., Jefferson Medical College of Philadelphia 1886 also a pharmacist, for twenty-six years mayor of Buckley formerly a member of the school board for many years surgeon for the Illinois Central Railroad aged 78 died August 15, of cerebral hemorrhage

**Arthur J Bradbury**, Old Town, Maine University of Vermont College of Medicine, Burlington 1892 past president of the Penobscot County Medical Society served as minor and as city and school physician, aged 76, died, August 7, of heart disease

**Ralph Waddell Brown**, Roanoke Va University of the City of New York Medical Department, New York 1889 member of the Medical Society of Virginia, past president of the Roanoke Academy of Medicine served during World War I aged 76 served on the staff of the Jefferson Hospital where he died August 9, of heart disease

**Melchor Gist Cockey**, Salina, Kan University of Maryland School of Medicine Baltimore 1879 served in Cuba during the Spanish American War and in China during the Boxer rebellion formerly a captain in the Kansas National Guard aged 90 died in Kansas City, Mo, August 1 of empyema following pneumonia

**Frank Smith Collier**, Vicksburg Mich University of Michigan Department of Medicine and Surgery Ann Arbor, 1887 served during World War I president of the village for one term aged 79 died in a Kalamazoo hospital, August 9 of myocarditis and myocardial degeneration

**William Franklin Cope**, Easton Pa Jefferson Medical College of Philadelphia 1902, member of the Medical Society of the State of Pennsylvania served during World War I chief of the ophthalmology department Easton Hospital a director of the First National Bank, aged 64 died in the Cornell Medical Center New York August 17 of coronary disease

**Charles Smith Craig** & Hilton N Y University of Buffalo School of Medicine 1897 served as health officer of the town of Parma on the staff of the Brockport General Hospital formerly examiner for several insurance companies aged 71 died in St Mary's Hospital, Rochester, August 15 of coronary thrombosis

**Norman Wilbur Currie** & Plainfield N J University of the City of New York Medical Department, 1895 fellow of the American College of Surgeons served during World War I aged 71 on the staff of the Muhlenberg Hospital, where he died August 1 of heart disease and cerebral hemorrhage

**Matthew Hasbrouck Du Bois**, Washingtonville N Y Bellevue Hospital Medical College, New York, 1894 member of the Medical Society of the State of New York on the courtesy staffs of St Luke's Hospital, Newburgh and the Cornwall (N Y) Hospital, where he died August 8 of coronary thrombosis aged 71

**Leo Huggins Du Bose**, Great Falls S C University of Georgia Medical Department, Augusta 1912 also a druggist aged 55 died, August 13, of a self inflicted bullet wound

**Calvin A Eaton**, Yuma, Ariz Chicago Medical School 1927 member of the Arizona State Medical Association served as city health officer, aged 45 died in the Yuma County General Hospital August 2 of pulmonary embolism

**Erastus Michel Finch**, Takoma Park, Md National University Medical Department Washington D C 1902 also a lawyer for many years chief of the medical division of the bureau of pensions and later assistant medical referee formerly justice of the peace aged 88 died August 18 of cerebral hemorrhage, cerebral accident arteriosclerosis and hypertension

**Aaron Glass**, New Haven Conn St Louis College of Physicians and Surgeons and the Kansas City College of Medicine and Surgery 1922 aged 54 died suddenly August 2

**William Emmett Ham**, Beattie Kan Rush Medical College Chicago 1882 member of the Kansas Medical Society served as mayor councilman member of the school board of district number 29 and postmaster aged 85 died in the Randell Hospital, Marysville July 30

**Clara Addleman Hooper**, Glen Arbor Mich Bennett Medical College Chicago 1913 aged 73 died in the James Decker Munson Hospital Traverse City July 26, of cerebral hemorrhage

**Everett Dennison Hooper**, Boston College of Physicians and Surgeons, Boston 1891, aged 74 died, June 1

**Y Frank Hopkins** ♂ Taylor, Texas, Kentucky School of Medicine, Louisville, 1901, served during World War I, on the staff of the Wedemeyer Hospital served as president and director of the Kiwanis Club, aged 66, died, July 19, of carcinoma of the colon

**Maximilian R Horwitz**, St Louis, Missouri Medical College, St Louis, 1893, formerly on the staff of the Missouri Baptist Hospital, aged 72, died, July 29, of heart disease

**Thomas L Howard**, Augusta, Ga, University of Georgia Medical Department, Augusta 1908, also a pharmacist, at one time trustee from the 119th district, aged 64, died, July 28, of heart disease

**George Frederick Hughes Jr**, Somerville, Mass Tufts College Medical School, Boston, 1900, aged 71, died, June 3, of cerebral hemorrhage with hypostatic pneumonia

**Herbert Wellington Insley**, Chanute, Kan, University Medical College of Kansas City Mo, 1913, member of the Kansas Medical Society, served in France during World War I aged 61, died, July 16

**Alton Atwell Jackson**, Everett, Mass, Harvard Medical School, Boston, 1883, member of the Massachusetts Medical Society, member of the Selective Service Board during World War I on the staff of the Wludden Memorial Hospital, aged 89, died, July 26, of pneumonia

**Charles Albert Jenkins**, Willimantic Conn, Baltimore Medical College, 1911, member of the Connecticut State Medical Society, served as health officer of Willimantic, served in France during World War I, at one time trustee of the Norwich State Hospital, aged 55, died in the Windham Community Memorial Hospital, July 24

**Edgar Augustus Jones**, Avant, Okla, Vanderbilt University School of Medicine, Nashville, Tenn, 1885, member of the Oklahoma State Medical Association, served during World War I, aged 82, died in the Veterans Administration Facility, Muskogee, July 15, of cerebral hemorrhage

**William Frederick Kaiser** ♂ Portland, Ore, University of Oregon Medical School, Portland, 1908, recently on the staff of the Portland induction center, aged 63, died in the Providence Hospital, July 8

**George L Kearney**, St Louis, Missouri Medical College, St Louis, 1891, formerly on the staff of the City Sanitarium, aged 79, died, August 5, of myocarditis

**William R Kennedy**, Wauwatosa, Wis, State University of Iowa College of Homeopathic Medicine, Iowa City, 1895, member of the State Medical Society of Wisconsin, on the staff of St Luke's Hospital, Milwaukee, aged 71, died in St Mary's Hospital, Milwaukee, August 3, of diverticulosis of the colon

**John Francis Kent**, Brooklyn, Bellevue Hospital Medical College, New York, 1888, member of the Medical Society of the State of New York, served as medical inspector of schools for the department of health, aged 78, died in the Kings County Hospital, August 1, of arteriosclerosis and papilloma of the bladder

**Ralph Porter Kent** ♂ Attleboro, Mass, Harvard Medical School, Boston, 1904, served as health officer of Attleboro, member of the staff of the Sturdy Memorial Hospital, aged 63, died in Oak Bluffs, August 4, of cerebral hemorrhage

**James Silas Kolb**, Clarksville, Ark, University of Arkansas School of Medicine, Little Rock, 1892, member of the Arkansas Medical Society, past president of the Johnson County Medical Society on the staff of St Hildegard's Municipal Hospital, aged 78, died, August 9, of thromboangitis obliterans of the left leg

**Siegfried Kraft** ♂ Sheboygan, Wis, Leopold-Franzens-Universität Medizinische Fakultät, Innsbruck, Austria 1909, member of the staff of the Sheboygan Memorial Hospital dermatologist and urologist to the Sheboygan Clinic, aged 60, died, August 3, of bronchiogenic carcinoma of the lung

**John William Krohn** ♂ Joliet, Ill, the Hahnemann Medical College and Hospital, Chicago, 1912, fellow of the American College of Surgeons, formerly state surgeon, served in France

during World War I, member of the Selective Service System, on the staff of St Joseph's Hospital, active executive chairman and formerly chief of staff at the Silver Cross Hospital, where he died, August 21, of lobar pneumonia and coronary thrombosis, aged 52

**Bernard John Lammers**, Louisville, Ky, Louisville Medical College, 1890, aged 81, served on the staff of St Anthony's Hospital, where he died, August 2, of pernicious anemia and myocarditis

**Nicholson Chambers Lanier**, New Orleans, Medical Department of Tulane University of Louisiana, New Orleans, 1895, aged 77, died in the Charity Hospital, July 18, of malnutrition and anemia

**David William Medill**, Martins Ferry, Ohio, Colorado School of Medicine, Boulder, 1896, also a pharmacist, aged 71, died, July 28

**Amherst Merriman**, La Jolla, Calif, Detroit College of Medicine and Surgery, 1921, member of the Colorado State Medical Society, aged 46, died in Ramona, July 30, of acromegaly

**Marion Lexter Montgomery**, Louisville, Miss, Mississippi Medical College, Meridian, 1910, member of the Mississippi State Medical Association health officer of Winston County, member of the Rotary Club, aged 61, died in Memphis, Tenn, August 10, of coronary heart disease

**Albert Augustus Parker** ♂ Pocomoke City, Md, College of Physicians and Surgeons, Baltimore, 1909, a charter member and first president of the Rotary Club of Pocomoke City, aged 58, died in Dr Harvey Beck's Clinic, Baltimore, August 3, of coronary thrombosis

**James Haven Pond**, Los Gatos, Calif, Oakland College of Medicine and Surgery, 1910, a director of the First National Bank of Los Gatos, aged 80, died, August 6, of arteriosclerotic heart disease and coronary occlusion

**Albert Alexander Potterf**, Lenoir, Kan, Homeopathic Medical College of Missouri, St Louis, 1888, aged 91, died, July 16, of lobar pneumonia

**Ira W Robertson**, Tulsa, Okla, Memphis (Tenn) Hospital Medical College, 1901, formerly owner of a hospital in Henryetta, aged 74, died, July 30

**John Ansel Schoonover** ♂ Denver University of Cincinnati College of Medicine, 1925, assistant professor of pediatrics at the University of Colorado School of Medicine, specialist certified by the American Board of Pediatrics, Inc member of the American Academy of Pediatrics served as president of the medical staff of the Children's Hospital, where he died

July 13, of uremia, polycystic kidneys and a fractured scapula aged 43

**Thomas Campbell Sexton**, Fremont, Neb, Washington University School of Medicine, Baltimore, 1871, Civil War veteran, aged 99, died, July 28, of coronary thrombosis

**Alfred Joy Willits**, Anaconda, Mont, Northwestern University Medical School, Chicago, 1900, member of the Medical Association of Montana, fellow of the American College of Surgeons, clinical assistant in medicine from 1908 to 1912 and clinical assistant in surgery at his alma mater from 1912 to 1914, for twenty-three years chief of staff of St Ann's Hospital, aged 68, died, July 26, of heart disease

### KILLED IN ACTION

**Edward Ellsworth Evans** ♂ Surgeon 1st Class, Commander U S Navy, San Francisco University of Oregon Medical School, Portland 1923, entered the U S Navy in June 1928 as an assistant surgeon 1st junior grade, Evans Avenue on the reservation of the U S Naval Hospital Dublin Ga named in 1941 the Bureau of Medicine and Surgery aged 43 died in action in the Solomon Island Dec 12 1942



LIEUT COMDR EDWARD E EVANS,  
M C, U S N, 1899-1942

## Correspondence

### EVALUATION OF ALBUMINURIA

To the Editor—In THE JOURNAL, August 14, page 1151, a clinical pathologist for an army induction team described his difficulties in knowing when to reject a man with albuminuria. At one army induction station during the course of a study (to be published) on several aspects of albuminuria in March and April 1943 we formulated a series of rules to aid the examining physicians in evaluating the albuminuria cases. We have found them to be applicable to practically all questions regarding the significance of albuminuria that arise in connection with the processing of large numbers of men in a short period of time.

#### DIRECTIONS FOR DETERMINING SIGNIFICANCE OF ALBUMINURIA IN SELECTEE

1 All albuminuria cases except (a) those definitely rejected on other grounds and (b) those whose albuminuria clears with the second test, are studied by a special method.

2 When albumin is found in the first two urines the selectee is given a printed form by the laboratory with orders to return as soon as possible for additional urine examinations. He is also advised to restrict the intake of fluids.

3 On his return the selectee assumes the prone position on an examining table in one of the cubicles. A urine is collected at the end of half an hour and at the end of one and one-half hours, these samples are voided while the selectee is still in the recumbent position.

4 The results of the urine examinations are recorded by the laboratory on a special form which is then attached to the record of the selectee. On this special form are written

Name	Date	
Urine No	Albumin	Initials
1		
2		
3		
After ½ hour recumbency		
After 1½ hours recumbency		
If rejected state diagnosis		
This slip is to be kept by the Medical Officer		

#### INTERPRETATION OF RESULTS OF URINE TESTS

5 If the last two or more urines are negative for albumin, the case is one of transient albuminuria and the man should be accepted.

6 If the last urine (which is the second voided in the recumbent position) is negative for albumin the case is one of orthostatic albuminuria and the man should be accepted if no more than a rare cast or red or white cell is found on only one of several observations.

7 If albumin persists in all urines, the following inquiries should be made:

- Presence of urinary symptoms (such as frequency, nocturia, hematuria, pyuria and pain)
- Previous rejections here
- History of albuminuria or edema
- Previous diagnosis of kidney disease
- Upper respiratory infections (present or very recent)
- Moderate intake of alcohol previously
- Sexual intercourse or masturbation the night before examination
- History of gonorrhea

8 If a definite diagnosis of chronic kidney disease can be made on the basis of answers to the questions, the persistence of albuminuria and the findings in the sediment, the man should be rejected.

9 If a definite diagnosis cannot be made, the man should be deferred for two months. At that time urines will be examined again and a final decision made, unless a factor that may produce temporary albuminuria (such as colds or alcoholism) is present, in which case the selectee should again be deferred. If there is no such factor, and the albuminuria is persistent, then the man should be rejected on the basis of persistent albuminuria.

10 All pertinent information obtained in section 7 should be recorded on the back of the work sheet.

The terms transient orthostatic or persistent albuminuria are used to describe the several varieties encountered. Men who show persistent albuminuria should be rejected because they are the ones with overt or insidious renal disease (Derow, H. A. The Diagnostic Value of Serial Measurements of Albuminuria in Ambulatory Patients *New England J. Med.* **227**: 827 [Nov. 26] 1942; Young, H. H., Haines, J. S., and Prince, C. I. Orthostatic Albuminuria: The Importance of Its Recognition by Medical Examining Boards, *Mil. Surgeon* **92**: 353 [April] 1943).

HARRY A. DEROW, M.D.

LAWRENCE I. STELLAR, M.D.

Boston

### WOUND HEALING AND IMPLANTATION OF SULFONAMIDES

To the Editor—In the August 7 issue of THE JOURNAL in the article on 'Wound Healing and Infection After Local Implantation of Sulfonamide Powder' by J. Albert Key, mention is made of an earlier paper of mine. I believe it would be well if I answered certain of the observations.

Late in 1942 I published further observations in the *Journal of Bone and Joint Surgery* in which I pointed out that, among other things, larger amounts of sulfonamides were used topically in the earlier months than were necessary and that after the publication of my first report I began using smaller quantities. However, I feel that the larger amounts were not the only retarding factor in wound healing, that the application of the drug to the cutaneous edges of the wound was, if anything, more disadvantageous. Since my first publication I have used sulfanilamide topically in well over 400 cases of all types—clean, infected, lacerated and other traumatic wounds, and in surgical incisions. I am fully convinced, as I have been from the start of its protective and therapeutic effects. But I place it deep in the wound, and if I do place it subcutaneously I keep it away from the skin edges. By attending to these two factors, distribution and quantity I believe I have avoided any retardation of healing. May I add that the quantities used previous to my first report, and on which that report was based, were the quantities currently used at that time. If my memory serves me right, and I do not have any reference material at hand, Dr. Key shortly after that publication, or at about that time, was advocating lesser quantities of the drug than had been used.

The material which I am now seeing at rather close quarters has increased my belief in the efficiency of sulfonamides used topically. I am not yet ready to publish any data because I use it on all casualties since my faith in it forbids me to withhold it from any. Since my later publication (*J. Bone & Joint Surg.* **24**: 937 [Oct.] 1942) has already noted these changes it would be too bad if an earlier observation in any way dissuaded surgeons from its use. I believe that even there I stated that its use had become obligatory in any case of potential infection.

EDGAR M. BICK, Major M.C., A.U.S.

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS

##### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Oct 16, page 437

##### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II Nov 15 and Jan 17 19 Sec, Dr J S Rodman, 225 S 15th St, Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written Part I Locally Feb 12 Final date for filing application is Nov 15 Sec, Dr Paul Titus 1015 Highland Bldg, Pittsburgh 6, Pa

AMERICAN BOARD OF OPHTHALMOLOGY New York, Dec 13 16 Los Angeles, Jan 15 16 Final date for filing application is Nov 1 Sec, Dr John Green, 6830 Waterman Blvd, St Louis

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Written and Oral Part II Chicago Jan 21 22 Sec, Dr Guy A Caldwell, 3503 Pryorway St New Orleans, La

AMERICAN BOARD OF OTOLARYNGOLOGY Oral Los Angeles, Feb 25 Sec, Dr Dean M Lucie, University Hospital, Iowa City, Ia

AMERICAN BOARD OF PEDIATRICS Written Locally, Feb 4 Oral Philadelphia March 25 26, and San Francisco, May 6 7 Sec, Dr C A Aldrich 707 Fullerton Ave, Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY Oral Locally, Dec 20 21 Sec, Dr Walter Freeman, 1028 Connecticut Ave NW, Washington, D C

AMERICAN BOARD OF RADIOLOGY February Final date for filing application is Dec 15 Sec, Dr B R Kirklin, 102 110 Second Ave S W, Rochester, Minn

AMERICAN BOARD OF UROLOGY Oral Chicago, February Written Various centers, December Final date for filing application is Nov 1 Sec, Dr Gilbert J Thomas, 1409 Willow St Minneapolis, Minn

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Acts Failure of Physician to Appeal from Order Revoking License as Affecting Right to Equitable Relief**—The plaintiff was licensed in 1912 to practice medicine and surgery in the state of Washington. She was convicted in November 1938 of violating the federal narcotic act and was sentenced to imprisonment in a penal institution in Minnesota. In January 1939 a complaint was filed with the director of licenses of Washington, alleging that because of the facts on which the conviction was had the plaintiff was guilty of unprofessional conduct and asking that her license "to practice drugless healing" be revoked. Notice of this complaint and of the hearing to be held on it was served on her in the penal institution out of the state of Washington. On February 23, while the plaintiff was still confined in the penal institution, a hearing was held in Washington on the complaint and at that hearing she was represented by counsel. Following the hearing, the director revoked her license "to practice medicine and surgery," Aug 4, 1939. No appeal was taken from either the federal conviction or the order revoking her license. In February 1941, more than a year subsequent to the revocation of her license, she filed a motion with the state director of licenses to vacate the order of Aug 4, 1939, alleging that that order was unlawful and void because it revoked her license to practice medicine and surgery, a judgment in excess of the relief asked for in the unamended complaint filed with the director, which sought merely to revoke her license "to practice drugless healing." The director overruled the motion, and the plaintiff instituted an action in equity to set aside the director's order revoking her license. The trial court dismissed the action, and the plaintiff appealed to the Supreme Court of Washington.

The plaintiff contended that the trial court erred in dismissing her action because, (1) in view of the fact that she was confined out of the state when the notice of the hearing was served on her, the notice was insufficient in form and (2) the action of the trial court was based on certain "interdepartmental evidence of which she had no knowledge or opportunity to rebut." A sufficient answer to these contentions, said the

Supreme Court, is the fact that the plaintiff was at all times represented by counsel. This remark of the court impliedly indicated that all defects, if any, in the proceedings before the director were waived by the appearance of counsel. Apparently, it was then suggested that the attorney who appeared for the plaintiff at the hearing and in filing the motion with the director to vacate the order of revocation had merely appeared specially. In effect, this contention was that the counsel had appeared solely to question the jurisdiction of the director to proceed under the circumstances and not to defend the action on its merits and hence his appearance did not waive defects in the complaint and in the proceedings that followed. However, the court was unable to find anything in the record that would indicate that counsel had appeared specially only. Even if there had been a special appearance, said the court, it was waived by counsel's asking for affirmative relief. (Apparently, though the fact is not clear, the affirmative relief referred to as having been sought was the motion asking the director to vacate the order of revocation.)

The principal contention of the plaintiff seems to have been that the order of revocation was void because it was "relief of a different kind and in excess of the relief requested" in the original complaint, which remained unamended during the proceedings. But, said the court, it is elementary that the prayer of a complaint is not a part of the complaint. The prayer in this instance was the request in the complaint filed with the director that the plaintiff's license "to practice drugless healing" be revoked. Under the facts alleged in the complaint a cause of action was stated and it is not a controlling circumstance that the complaint was not amended so that the prayer would be to revoke her license to practice medicine and surgery. There is no basis for holding that the order revoking the license was void because the prayer of the complaint referred to drugless healing. The facts in this case, the court continued, furnish no basis for equitable intervention on our part. While it is true a party may obtain relief in equity against a judgment even after one year from the date of the entry of the judgment, nevertheless proper grounds for equitable intervention must be shown and that was not done here. Moreover, where a party has failed to make a proper defense at law through his own negligence, equity will not aid him. Even though a judgment may be inequitable, it will not be set aside nor will its enforcement be enjoined when it was the result of the complaining party's own fault or inexcusable neglect. In this case the applicable Washington statute gave the plaintiff the right to appeal from the order revoking her license if she acted within thirty days after the entry of the order. This was not done. Had it been done, any inequitable features surrounding the matter could have been corrected on appeal.

The judgment of the trial court adverse to the plaintiff was affirmed.—*Dale v Cohn, Director of Licenses, 127 P (2d) 411 (Wash., 1942)*

## Society Proceedings

### COMING MEETINGS

- Aero Medical Association of the United States Cincinnati, Ohio Oct 26 27 Dr David S Brachman, 5440 Cass Ave Detroit Secretary
- American Society of Anesthetists, New York Dec 9 Dr McKinnis Phelps 745 Fifth Ave New York 22, Acting Secretary
- Association of American Medical Colleges Cleveland Oct 23 27 Dr Fred C Zippie, 5 South Wabash Ave, Chicago Secretary
- Inter State Postgraduate Medical Association of North America Oct 26 29 Dr Arthur G Sullivan, 16 North Carroll St, Wash, Wis Managing Director
- Omaha Mid West Clinical Society, Omaha Oct 25 29 Dr J D McCarthy, 1036 Medical Arts Bldg Omaha Secretary
- Pacific Coast Society of Obstetrics and Gynecology San Francisco Oct 4 5 Dr T Floyd Bell, 431 Thirtieth St Oakland Calif Sec
- Radiological Society of North America Chicago Nov 25 Dec 3 Donald S Childs 607 Medical Arts Bldg, Syracuse N Y Sec
- Seaboard Medical Association Richmond Va, Nov 30 Dec 1 Clarence P Jones, 3117 West Avenue Newport News Va, Sec
- Southern Surgical Association, New Orleans Dec 7 9 Dr Ochsner 1430 Tulane Ave New Orleans Secretary
- Southern Medical Association Cincinnati, November 16 17 Dr Loran, Empire Building, Birmingham, Alabama Secretary
- Virginia Medical Society of, Roanoke Oct 25 27 Miss Edwards 1200 East Clay St, Richmond Secretary



# Current Medical Literature

## AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Backlog should be accompanied by stamps to cover postage (6 cents if one and 15 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent publication only from them.

Titles marked with an asterisk (\*) are abstracted below.

### Alabama State Medical Assn Journal, Montgomery

13 65 92 (Aug) 1943

- Rheumatic Infection in Children C K Pitt—p 65
- Diagnosis of Brain Tumor C H Moore—p 70
- Kidney and Ureteral Colic Unassociated with Calculi J U Reeves—p 71
- Use of Sulfonamides in Gastrointestinal Tract H Kennedy—p 75

### American Journal of Clinical Pathology, Baltimore

13 329 382 (July) 1943

- The Clinical Pathologist as an Experimenter H Goldblatt—p 329
- Healing Process in Wounds of Brain A H Baggenstoss J W Kernohan and J T Drapewski—p 333
- Effects of Homologous Tissue Extracts on Rate of Epithelization A Nettleship—p 349
- Virulence of Tubercle Bacilli and Failure of Assuming Grade of Virulence from Arbitrary Designations H J Corper and M L Cohn—p 352
- Studies on Histamine Sensitivity and Anaphylactic Response II Effect of Ascorbic Acid Deficient Diet I Farmer and Shirley R Krasman—p 362
- Histamine Sensitivity and Anaphylactic Response III Theoretical Considerations I Farmer—p 365
- Thallium Poisoning II Quantitative Determination of Thallium in Biologic Material A O Cettler and I Weiss—p 368
- Changes in Cerebrospinal Fluid Following Spinal Anesthesia B E Konwaler—p 378

**Healing Process of Wounds of Brain**—Baggenstoss and his collaborators reviewed 70 selected cases in which ventricular puncture wounds had been made in the course of ventriculographic studies. There were many wounds from one day or less to two weeks of age but examples of wounds older than two weeks were more difficult to obtain. Wounds of seven days duration or less presented (1) a central zone of hemorrhage and necrosis and (2) a peripheral zone of edema and perivascular hemorrhages. Degenerative changes predominated in both zones but proliferation of endothelial cells of the capillaries and small blood vessels became evident on the fourth day and was fairly well developed by the seventh day. Between the seventh and the tenth day the zone of edema had been transformed into a zone of capillaries and proliferating endothelial cells and fibroblasts. A third zone, consisting of hypertrophied astrocytes peripheral to the zone of capillaries, also became apparent during this time. From the twelfth day on the process of organization continued and gradual absorption of the necrotic debris in the central portion of the wound and its partial replacement by a network of capillaries and fibroblasts occurred. After a month or two fibroblastic proliferation subsided but connective tissue fibrils were more numerous than before. Observations of wounds of six months duration or more indicated that the healing process had progressed slowly and that complete repair had not yet taken place. Observations of older wounds suggest that complete closure of the defect may or may not take place, depending on the extent of the original injury. Compared with wounds in other parts of the body there is a decided lack of vigor in the healing process of wounds of the brain, and repair takes place at a slow tempo. Repair is more vigorous in the cortex than in the white matter, but no difference could be detected as between children and adults. Astrocytes play a minor role in the reparative process. Microglial cells appear to play only a small role in the production of compound granular corpuscles.

### American Journal of Diseases of Children, Chicago

66 1-102 (July) 1943

- Prevalence of Rickets in Children Between Two and Fourteen Years of Age R H Lellis Jr, Deborah Jackson, Martha M Lhot and J A Park—p 1
- Typhoid Paratyphoid Vaccine and Polymyositis J A Toomey and Linda A Tischer—p 12
- Disparity Between Oral and Rectal Temperatures After Exercise J Breckenmann—p 16
- Physical Measurements of College Women Results of Four Consecutive Years of Study Iva G Donald Margaret A Ohlson Bernice Kumerth Watt Mary Brown Patton and Gladys M Kinsman—p 21
- Variation in Diphtheria Antitoxin Titers of Human Serum Report of an Extended Study with Special Reference to an Endocrine and Vitamin Relationship Mary M Schmeckelner—p 25
- Congenital Atresia of Pancreatic Duct System as Cause of Meconium Ileus Critical Review of Literature with Report of 1 Case W Kaufmann and Dorothy B Chamberlin—p 55

### American J Obstetrics and Gynecology, St Louis

46 183 332 (Aug) 1943 Partial Index

- Excretion of Ictrogen and Gonadotropin in Late Pregnancy with Especial Reference to Toxicosis of Pregnancy and to Quantitative Methods Ruth M Watts and I I Adair—p 183
- Plasma Vitamin A and Carotene of Newborn Infant with Consideration of Fetal Maternal Relationship C J Lund and Marian S Kimble—p 207
- Action of Syntrophon on Uterus J A Wells and A C Ivy—p 222
- Irgot Alkaloids Comparison of Ergonovine with Total Alkaloids in Their Effects on Puerperal Uterus W Rickers—p 238
- Value of Pelvic Radiography in Management of Dystocia A Weinberg and S J Sardon—p 245
- \*Treatment of Syphilis in Pregnancy by Five Day Massive Dose Method H Rattner—p 255
- Use of Vaginal Tampons for Absorption of Menstrual Discharges Madeline J Thornton—p 259
- Influence of Placental Site on Fetal Presentation R Torpin and L P Holmes—p 268
- Caudal Anesthesia for Cesarean Section A H Lahmann and A C Vietus—p 274
- Analysis of 250 Cases of Postmaturity L S Rathbun—p 278
- Clinical Experiences with Pyridoxine Hydrochloride in Treatment of Nausea and Vomiting of Pregnancy B B Weinstein G J Mitchell and G F Sustental—p 283
- Vitamin B Factors in Toxic Psychosis of Pregnancy and Puerperium B T Hart and W T McConnell—p 304
- Inversion and Prolapse of Ruptured Uterus During Labor, Treated by Immediate Vaginal Hysterectomy P C Fox—p 305

**Five Day Method of Treatment of Syphilis During Pregnancy**—Twenty-seven pregnant women with syphilis were treated by the five day massive dose method. The majority were given concurrently arsenic and bismuth compounds. The treatment was well tolerated by both mother and fetus regardless of the stage of the pregnancy or the duration of the syphilis, whether primary, secondary or latent. Severe reactions or interference with the pregnancy were not observed. Of the 27 patients 1 was lost from observation, 25 have given birth to full term, normal infants. One syphilitic infant was born of a mother who apparently had acquired a second infection while the infant was still in utero. In addition to this group, 5 other patients who had been treated for early syphilis by the massive dose method later became pregnant and gave birth to normally developed seronegative infants although further antisyphilitic treatment was purposely withheld from the mothers. The results of the treatment on the mothers' syphilis were similar to results obtained in nonpregnant patients treated by the same method for similar types of syphilis.

### American Journal of Ophthalmology, Cincinnati

26 785-900 (Aug) 1943

- Reaction of Rabbit Eye to Normal Horse Serum Sensitization by Intradermal Injection T F Schlaegel Jr and J B Davis—p 785
- Retroillumination R I Lloyd—p 799
- Ocular Pathology of Methyl Alcohol Poisoning W H Fink—p 802
- Roentgenography of Exophthalmos with Notes on Roentgen Ray in Ophthalmology R L Pfeiffer—p 816
- Ophthalmic Prisms Some Uses in Ophthalmology G P Guibor—p 833
- Coloboma of Optic Nerve Report of Case T Steinberg—p 846
- Dermatologic Lesions About the Eyes Ocular Pemphigus Ectodermosis Erosiva Plurioculitis Triple Symptom Complex Avitaminosis (Ocular) Contact Dermatitis (Dermatitis Venenata) Xanthelasma Pseudoxanthoma Elasticum and Angioid Streaks and Lupus Erythematosus (Conjunctiva and Lid) O S Ormsby—p 850



## American Journal of Physiology, Baltimore

139 481-666 (Aug) 1943 Partial Index

- Ineffectiveness of Adrenal Cortex Preparations in Treatment of Experimental Shock in Nonadrenalectomized Dogs W W Swingle, R R O'Connor, J W Remington, W Kleinberg and W J Liversole —p 481
- Effect of 17 Hydroxy 11 Dehydrocorticosterone on Growth of Young Adrenalectomized Rats M H Kuizenga, J W Nelson and D J Ingle —p 499
- Back Diffusion of Urea in Mammalian Kidney V P Dole —p 504
- Comparison of Atropine and Curare as Antagonists of Acetylcholine J A Ince and M Altman —p 520
- Effects of Disturbances of Hypophysis Thyroid and Adrenal Cortex on Some Renal Functions P Hembeler, Doris Rolf and H L White —p 513
- Influence of Liver on Proteins of Blood Plasma G H Berryman, J I Bollman and F C Mann —p 556
- Relation of Physical Exertion to Resistance of Red Blood Cells to Laking C W Heath —p 569
- Resorptive Effect of Thermal Trauma W H Olson and H Necheles —p 574
- Cardiovascular Adjustments of Man in Rest and Work During Exposure to Dry Heat H L Taylor, A F Henschel and A Keys —p 583
- Adrenal Cortex and Blood Pressure Response to Carbon Arc Irradiation J S Gorman —p 604
- Properties of Hypertonic Preparations M H Kuizenga, J W Nelson and G I Carlund —p 612

## Archives of Dermatology and Syphilology, Chicago

48 143-250 (Aug) 1943

- Keratinosis Follicularis Study of 4 Cases Alice Carleton and D Steven —p 143
- \*Beneficial Effect of Smallpox Vaccine on Recurrent Aphthous Ulcers of Mouth and Tongue A W Grace —p 151
- Treatment of Occupational Dermatoses J V Klauder —p 153
- Epidermolysis Bullosa Report of Case M H Samitz —p 159
- Production of Bullae in Skin of Duck Preliminary Report I A Mirsky and L Goldman —p 161
- Phagedenic Ulcer (Pyoderma Gangrenosum) Treatment with Sulfa pyridine Powder and Moist Chamber Therapy A Dostrovsky and F Sagher —p 164
- Apparatus for Application of Irritant Vapors to Skin R R McNary —p 173
- Yipoma Like Basal Cell Epithelioma R L Sutton Jr —p 176
- Mycosis Fungoides Report of Case, with Chemical Postmortem and Experimental Observations E K Stratton —p 179
- Effect of Estradiol Locally Applied to Abnormal Skin H Selye —p 188
- Petroleum Dermatitis Report of 2 Cases M G Rosenbaum —p 193

**Smallpox Vaccine in Aphthous Ulcers**—Grace employed repeated inoculations of smallpox vaccine in 2 cases of aphthous ulcers on the assumption that the condition is probably caused by a virus akin to that of herpes simplex, a disease which, when recurrent, is frequently controlled by such treatment. In both cases the disease had been unaffected by local applications of caustic materials or by the use of diets or vitamins. Great improvement occurred in the 2 cases.

## Archives of Internal Medicine, Chicago

72 147-300 (Aug) 1943

- Carrion's Disease Immunologic Studies C Howe —p 147
- \*Comparative Value of Digitalis and of Ouabain in Treatment of Heart Failure I Chavez —p 168
- Involvement of Liver in Disease of Gallbladder J L Bitty and S Gray —p 176
- Influence of Iodine on Induced Hyperthyroidism R D Williams and E C Kendall —p 185
- Electrocardiographic Criteria of Left Ventricular Hypertrophy Factors Determining Evolution of Electrocardiographic Patterns in Hypertrophy and Bundle Branch Block R Gubner and H E Ungerleider —p 196
- QRS Complex of Electrocardiogram M Girdberg and R Ashman —p 210
- Physical Therapy Applied at Home for Arthritis Follow Up Study, with Supplementary Summary of Sedimentation Rate of Erythrocytes in 299 Cases of Arthritis J V Treusch and F H Krusen —p 231
- Effect of Exercise on Blood Pyruvic Acid Observations on Trained and Untrained Normal Subjects and on Patients with Heart Disease and with Hypertension Z A Yanof —p 239
- Limitations of Erythrocyte Sedimentation Test in Tuberculosis A L Banyar and A V Cadden —p 245
- Estrogen, Diabetes and Menopause S Gitlow and D M Kurschner —p 250
- Blood Review of Recent Literature F H Bethell, C C Sturgis, R A Hettig and O T Mallery Jr —p 260

**Comparative Value of Digitalis and Ouabain**—Digitalis and ouabain have similar but not identical action on the decompensated heart. Digitalis exerts a more pronounced effect on the functions of sinus excitation and the auriculoventricular

conduction, which it depresses, ouabain, on the contrary, acts primarily on the contractility and tonicity, which it stimulates. Digitalis chiefly affects the differentiated, neuromuscular tissue of the heart, ouabain the undifferentiated, contractile fibers of the myocardium. Digitalis administered by the oral route fixes itself slowly on the heart, ouabain administered intravenously acts rapidly. The maximum effect of digitalis is reached in two or three days, that of ouabain in one or two hours. Digitalis accumulates, ouabain does not. On discontinuance of the drug, digitalis extends its effect over a period of several days, up to eight or ten, the effect of ouabain disappears in twenty-four to thirty-six hours. The proper fields for digitalis are the congestive heart failure with tachycardia and especially with auricular fibrillation, fibrillation even in the absence of heart failure and long sustaining treatment of patients with slightly decompensated heart disease. The proper indications for exhibition of ouabain are the acute failure of the left ventricle and chronic failure of the left side of the heart in patients with vascular disease, such as coronary arteriosclerosis, hypertension and syphilitic aortitis. The author recommends one intravenous injection daily of 0.25 mg in a series of six doses and more according to the tolerance of the patient and the clinical improvement obtained. In thousand of patients treated over a period of twenty years he has not encountered a single death attributable to the drug.

## Archives of Otolaryngology, Chicago

38 101-204 (Aug) 1943

- Acoustic Sound Filtration and Hearing Aids F M Grossman —p 101
- Incidence of Pathologic Speech Behavior in American General Population C H Voelker —p 113
- Hygiene of Voice E Froeschels —p 122
- Response of Labyrinthine Apparatus to Electrical Stimulation Site of Action, Faradic Stimulation Inverse Effects of Anodic and Cathodic Stimulation E A Spiegel and N P Scala —p 131
- Bone Fistula Further Studies P Guggenheim and L Guggenheim —p 139
- Effect of Surgical Treatment of the Sinuses on Bronchiectasis Analysis of Results in 75 Cases R L Goodale —p 148
- Estimation of Percentage of Compensable Hearing Defects W E Grove —p 152
- Diced Cartilage Grafts New Method for Repair of Skull Defects, Mastoid Fistula and Other Deformities L A Peer —p 156

## California and Western Medicine, San Francisco

59 1-104 (July) 1943

- Gastric Resection for Peptic Ulcer J W Cline —p 7
- \*Welding Fumes and Gases Their Effect on Health of Worker J Brodie —p 13
- Health Control in Welding P Drinker —p 18
- Medical Service in U S S R Army C L Rubenstein —p 21
- Nerves of Arm Some of Their Affections, Their Diagnosis R Wartenberg —p 22

**Welding and Health of Worker**—According to Brodie the intense ultraviolet rays at the welding arc may produce eye flashes. The arc is also responsible for the nitrous fume. Another source of danger involves the particulate fumes of iron, manganese, chromium, cadmium, nickel, zinc and magnesium. Other hazards are from fluorides, silicates, varnish, rubber and other substances. There is also oxygen deficiency if the welding is done in a confined space. In cutting galvanized pipes or welding sheets with the electric arc or acetylene torch, operators will develop metal fume fever because the galvanized coating contains over 95 per cent zinc. A typical attack begins after the man has left his work, i.e. several hours after exposure to the fumes. Sometimes during work he may notice a metallic taste and a dryness in the throat, or may feel a heaviness in the chest. After going to sleep he awakens with a feverish feeling and breaks out in perspiration. His temperature is between 100 and 102 F. Such an attack lasts twenty-four to forty-eight hours. These workers often develop a resistance. Out of 100 workers exposed to galvanized fumes, about 75 do not suffer at all, about 20 have chills and fever and only 5 have frequent attacks. Nitrous gas may lead to a local reaction in the lungs which may lead to death. After exposure to the welding gas the worker has an acid taste in his mouth and becomes constipated.

goes out into the fresh air his condition may improve considerably, but five or six hours later the cough returns in a more intensive form with shortness of breath cyanosis and a feeling of pressure in the chest. This may be followed by acute pulmonary edema with profuse expectoration of frothy, yellowish or pinkish fluid. Heart failure and death may follow in forty-eight hours. If the amount of nitrous gases inhaled is smaller, the patient may develop not pulmonary edema but pneumonia or acute bronchitis. Welding is not a hazardous occupation provided the concentration of fumes is kept at a low level. Although after many years of welding the lungs may show certain fibrotic or nodular changes which in an x-ray film may remind one of early silicosis there is neither the shortness of breath nor the tendency to tuberculosis which is seen in silicosis. It is important that the physician realize the essential harmlessness of these so-called spots on the lungs so that he may be able to explain away the fears of his patient and reassure him.

### Canadian Medical Association Journal, Montreal

49 77-160 (Aug) 1943

- Challenge to Organized Medicine A I Archer—p 77  
Control of Tuberculosis in Manitoba I I Kos—p 87  
Retrograde Venography of Deep Leg Veins J C Luke—p 86  
Malignant Hypertension Produced by Treatment with Deoxycorticosterone Acetate and Sodium Chloride H Selve C F Hall and I M Rowley—p 89  
Subluxation of Ankle C F Pennell—p 92  
Proctosigmoiditis Due to Indomethacin Intoxication F B Bowman—p 95  
Recurring Vesicular Eruptions of Hands A M Davidson and A R Birt—p 97  
Optimistic Outlook for Rheumatic Fever Patient D Murnaghan—p 101  
Medical Officers' Battle Belt C M Orke—p 104  
Functional Disorders of Intestines and Their Management P H Sprague—p 105  
Brocq-Belot's Technique in Treatment of Superficial Skin Cancers P Brodeur—p 109  
History Taking G S Young—p 110  
Analysis of Gastric and Duodenal Ulcers in Vancouver General Hospital C J F Phillips Wolley—p 113  
Evaluation of Roentgen Therapy in Disease of Paranasal Sinuses C L Crank—p 117

**Recurring Vesicular Eruptions of Hands**—Davidson and Birt discuss the various types of recurring vesicular eruptions of the hands and present a classification based on the causative agent which may act directly or from a distance. A survey was made of the records of the last 200 patients in whom the chief complaint was an eruption localized mainly to the hands and featured by the presence of vesicles. Dermatitis venenata accounted for three-fourths of all the cases. If this group characterized by acute inflammatory reaction is excluded, the relative importance of the other conditions becomes evident. More than half of the remaining cases were diagnosed as cheiropompholyx and only about one-third were dermatophytids. Because of the relatively high incidence of cheiropompholyx found here an additional 134 cases were included from the records making a total of 175 patients with cheiropompholyx. Cheiropompholyx occurred about evenly in the two sexes, was commonest in the third and fourth decades of life, most often affected those engaged in white collar occupations and appeared chiefly in hot weather. Many of these patients had hyperhidrosis of the hands and feet, and outbreaks were often associated with nervous strain. It would seem that there is ample justification for such a diagnosis as cheiropompholyx, that it can occur in the absence of mycotic infection and that the attacks are dependent to some extent on the weather. It is suggested that the incidence of dermatophytids recorded may depend to some extent on the interpretation given to the so-called mosaic fungus. This fungus is commonly found on microscopic examination of scrapings taken from the feet and mounted in potash. It is in reality not a fungus but is formed by flat rhombic crystals of cholesterol. It is possible that the interpretation given to the presence of the mosaic may account for some of the conflicting opinions regarding the part played by fungi in the production of vesicular eruptions of the hands.

### Endocrinology, Springfield, Ill

33 67-120 (Aug) 1943

- Nature of Pituitary Factor Stimulating Mammary Duct Growth J J Trentin A A Lewis A J Bergman and C W Turner—p 67  
Evidence of Hypothalamic Control of Hypophyseal Gonadotropic Functions in Female Guinea Pig I I Dey—p 75  
Effects of Thyrotropic Hormone Gonadotropic Factor Pituitary Growth Substance and Insulin on Phosphatase Content of Rat Femurs C H Wheeler and I M Watson—p 83  
Growth and Metabolism of Young Hypophysectomized Rats Fed by Stomach Tube J T Samuel R M Remick and K J Bauman—p 87  
Effect of Hypoglycemia and Anoxia on Survival Period of Infant and Adult Rats and Cats H I Himwich J J Izyckas and I Hamburger—p 96  
Antagonism of Pituitary Adrenocorticotrophic Hormone to Growth Hormone in Hypophysectomized Rats W Marx Miriam F Simpson C H Li and Herbert M Fryn—p 102  
Increased Sodium Chloride and Water Intake of Normal Rats Treated with Deoxycorticosterone Acetate Katherine K Rice and C P Richter—p 106

### Illinois Medical Journal, Chicago

81 1-84 (July) 1943

- Disturbances of Peripheral Circulation—Considerations on Definition of Shock W D Gatch—p 12

81 85-172 (Aug) 1943

- Treatment of Burns H A Harkins—p 103  
Studies on Mercurial Diuresis IV Ammonium Chloride Evaluation of Its Clinical and Chemical Effects I F Volini R O Levitt and N L Camyone—p 107  
Rest Physical and Mental F Jacobson—p 110  
Preliminary Report on Attempt to Control Tuberculosis at Chicago State Hospital M Greenberg and J V Edlin—p 114  
Mediastinitis Secondary to Cervical Pathology 3 Case Reports G J Greenwood—p 120  
Some Evaluations of Constitutional Versus Accidental Factors in Mental Disease J M Radzinski—p 125  
Review of Amblyopia ex Anopsia G Morfitt—p 132

### Journal of Nervous and Mental Disease, New York

98 115-228 (Aug) 1943

- \*Electric Shock Therapy in Psychoses Study of 100 Cases J Epstein—p 115  
Dysmorphopsia During Course of Sulfanilamide Therapy N Savitsky and H Weitzen—p 130  
Protocol of an Individual Play Session J L Despert—p 133  
Some Remarks on Russell Brain's Article Concerning Visual Object Agnosia K Goldstein—p 148  
Environmental and Hereditary in Light of Modern Biology Critical Review B Karpman—p 154  
Introduction to Growth Concept of Nervous Integration (Application to Psychiatric Disease Schizophrenia and to a Somatic Disease Renal Hypertension) D F Schneider—p 164

**Electric Shock Therapy in Psychoses**—Epstein records observations on electric shock treatments administered to 100 patients of whom 37 had manic depressive insanity, 37 dementia praecox, 16 involutional psychoses and 10 undifferentiated psychoses. The ages of the patients varied between 16 and 73 years. He conceives of electric shock as a mass irritation or stimulation to the cerebrum, the intensity of the reaction being somewhat proportionate to the amount and force of the current. Irritation of the autonomic nervous system is expressed by changes in the size and reaction of the pupils, rate and rhythm of the heart, blood pressure respiration, sweating and the like. Motor irritation is expressed through muscular movements, changes in reflexes, and signs of pyramidal tract irritation. Mental reactions are in the nature of confusion, disorientation and amnesic or aphasic states. When the mass irritation is at its maximum, a convulsion is associated with these phenomena. The author empirically designated the degree of the reaction in terms of from 1+ to 4+++. The 1+ is the mildest type of petit mal response and 4+++ is a severe convulsion associated with prolonged apnea and frequent cardiac standstill. Convulsive reactions are most desirable for treatment purposes but 3+ petit mal reactions can be satisfactorily utilized in certain instances. Patients with manic depressive insanity and those with involutional melancholia responded best to electric shock treatment. Dementia praecox and mixed psychoses in which paranoid and delusional trends predominated responded poorly. When the duration of the illness was less than six months the general outlook for improvement or recovery was better, irrespective of the type of psychosis. Electroconvulsive shock is more easily administered and less hazardous than insulin or metrazol.

## Journal Neuropath and Exper Neurology, Baltimore

2 207-314 (July) 1943

- Patchy Blastomatous Infiltration of Central Nervous System (Patchy Schwannosis) A Ierraro, G A Jervis and W D Sherwood —p 207
- Studies on Corpus Callosum VII Study of Language Functions (Tricite and Visual Lexia and Graphia) Unilaterally Following Section of Corpus Callosum A J Akelutis —p 226
- Influence of Electric Current Application on Structure of Brain of Dogs J H Globus, A van Harreveld and C A G Wiersma —p 261
- Innervation of Blood Vessels of Rabbit's Iris O R Langworthy and L Ortegar —p 277
- \*Landry's Paralysis Its Clinical and Pathologic Features G B Hassin —p 293
- Cerebral Vascular Changes Associated with Azosulfamide and Sulfamethythiazole Therapy I M Schenker —p 301
- Cerebral Patchy Demyelination Case Report E K Holt Jr and C Tedeschi —p 306

**Landry's Paralysis**—Hassin describes the case of a boy aged 12 who died after an illness of seventy-two hours with respiratory difficulties. Necropsy revealed disseminated inflammation of both the gray and the white substance of the brain, pons, cerebellum, medulla and spinal cord, with disappearance of many nerve cells especially in the spinal cord and the medulla, cloudy swelling of the liver, kidneys and the heart, which exhibited indistinct cross striations with increased amount of connective tissue about the arterioles and small focal and diffuse accumulations of inflammatory cells (leukocytes, histiocytes) and scattered hemorrhages. Microscopic studies were made on the muscles. The parenchymatous changes consisted of swelling and disruption of the muscle fibers into fibrils and wavy degeneration. There were inflammatory changes in the form of focal and diffuse infiltrations with fibroblasts and lymphocytes. The changes were confined to the diaphragm and the intercostal and pectoral muscles but were especially in evidence in the musculature of the heart. The author stresses that in this case of poliomyelitis microscopic changes were present not only in the central nervous system but also in some muscles. He thinks that involvement of the muscles may be the essential pathologic feature in those cases in which no changes were found in the nervous system (central, peripheral or sympathetic). Like the Brown-Sequard paralysis, Landry's paralysis is not a morbid entity but a symptom complex. In all cases with a clinical picture of Landry's paralysis the muscles, especially those of respiration, should be examined carefully. It is even more important to ascertain the condition of the heart, which may be responsible for the rapid and often fatal course.

## Journal of Pediatrics, St Louis

23 1-130 (July) 1943

- Standards for Basal Metabolism of Children from 2 to 15 Years of Age Inclusive R C Lewis, Anna Marie Duval and Alberta Iliff —p 1
- Basal Metabolism in Rheumatic Children E E Brown and Valentina P Wasson —p 19
- \*Immunization Against Rheumatic Fever Valentina P Wasson and E E Brown —p 24
- \*Hematologic and Radiologic Study of Infants Receiving Massive Doses of Vitamin D in Rickets Prophylaxis A C Rambar, L M Hardy and W I Fishbein —p 31
- \*Significance of Plasma Ascorbic Acid Levels in Nebraska Children J L Gedgoud Violet M Wilder and J A Henske —p 39
- Pneumothorax in Newborn Infant Report of 3 Cases G W Salmon and G B Forbes —p 50
- \*Treatment of Tonsillitis, Pharyngitis and Gingivostomatitis with Bismuth Salt of Heptadienecarboxylic Acid in Cocoa Butter Suppositories S Silber —p 59
- Sanatorium Method for Cure of Rheumatic Heart Disease in Children L M Taran —p 69
- Bronchoscopy in Newborn Infant F D Woodward and W W Waddell Jr —p 79
- Infantile Scurvy Case Report with Follow Up Roentgenogram of Pre-existent Healed Scurvy D Blitz —p 87
- Severe Sublingual and Paratracheal Hemorrhage in Hemophilia with Recovery Following Tracheotomy Katharine H Baird and M S Fox —p 90
- Streptosymbioma Pediatric and Pedagogic Problem C W Wyckoff —p 95

**Immunization Against Rheumatic Fever**—After nine years of experience with immunization, first with crude and later with attenuated hemolytic streptococcus toxin, against recurrences of rheumatic fever attacks, Wasson and Brown feel that they can state that the children suffer no harm and that in most cases they are much benefited by the prophylactic treatment.

**Massive Doses of Vitamin D in Rickets Prophylaxis**—Rambar and his co-workers found that the use of a single massive oral dose of an electrically activated vaporized ergosterol, containing 600,000 U S P units of vitamin D, was effective in preventing rickets in a group of infants studied during the fall and winter months. The use of repeated smaller doses of 100,000 U S P units of the same antirachitic agent given monthly during this period (October to April) was effective also in preventing rickets in each of the infants studied. No toxic clinical or laboratory findings occurred in any of the infants receiving this type of prophylaxis.

**Plasma Ascorbic Acid Levels in Nebraska Children**—Gedgoud and his collaborators show that attempts to evaluate levels of ascorbic acid in the plasma in children have led to a variance of opinions. Doubt has been expressed as to whether or not a level of 0.7 mg per hundred cubic centimeters or more is actually the standard toward which to strive. The present investigation seeks to throw further light on these problems, utilizing children admitted to the University Hospital in Omaha from every part of the state of Nebraska and representing the lowest income group. On a daily intake of from 60 to 80 mg of ascorbic acid a level of 0.7 mg per hundred cubic centimeters or more was attained in 81 per cent of children entering the hospital without infection, regardless of the entrance value. The ease of attaining a value of 0.7 mg per hundred cubic centimeters or more indicates that 36.4 per cent of "healthy" children were probably on a diet containing less than from 60 to 80 mg daily and that levels of from 0.4 to 0.69 mg per hundred cubic centimeters may still be considered "borderline." In 2 healthy infants entering with plasma levels in the borderline (0.4 to 0.69 mg per hundred cubic centimeters) zone, 60 to 80 mg of ascorbic acid daily did not raise the level beyond 0.7 mg per hundred cubic centimeters over observation periods of from eighteen to nineteen days. This is an incidence of 2 in 96 cases. Of 12 children with infections, from 100 to 150 mg daily was adequate to raise the plasma level to 0.7 mg per hundred cubic centimeters or more in 11 over periods of from three to twenty-one days. Only 1 "healthy" child persisted in maintaining a low level of plasma ascorbic acid on an intake of from 60 to 80 mg daily during eleven days of observation.

**Treatment of Tonsillitis with Bismuth Salt of Heptadienecarboxylic Acid in Suppositories**—Thirty-two patients with tonsillitis, pharyngitis and gingivostomatitis were treated by Silber with suppositories containing the bismuth salt of heptadienecarboxylic acid. Subjective symptoms disappeared within twenty-four to forty-eight hours after treatment was begun. The temperature dropped within twenty-four hours and was normal in from thirty-six to forty-eight hours in most cases. Signs of local improvement appeared within twenty-four hours. In patients in whom attacks of similar nature had occurred, whatever form of treatment was used, the duration of the illness was much longer than in those treated with bismuth. No more than two suppositories at twenty-four hour intervals were required in all but 1 patient. There were no local ill effects from the use of the suppositories. There were no toxic reactions to bismuth. The method has advantages over other methods, including the sulfonamides and arsphenamines, because of the ease of administration, the freedom from danger of toxic reactions, the sparing of the sulfonamides for conditions in which their specificity and definite indications more strongly require their use, and the avoidance of production of sulfonamide resistance or sensitivity by their use in conditions in which another medicament of proved equal or greater value is available.

## Kentucky Medical Journal, Bowling Green

41 257-288 (Aug) 1943

- Some Tropical Diseases and Present War D R Johnson —p 257
- Symposium on Vitamin C Deficiency Scurvy B H Hirsch —p 258
- Pediatrician's View of Vitamin C Deficiency Marz et al —p 269
- An Internist's View of Vitamin C Deficiency V I De —p 271
- Vitamin C Cevitamic or Ascorbic Acid A F Lee —p 273
- Syphilis from View Point of Serology W H Allen —p 275
- Cancer of Cervix M Casper and A L Casper —p 277
- Child Feeding in Low Income Groups O S O' —p 279
- Puerperal Convulsions as Country Doctor Sues Th —p 283

**Medical Annals of District of Columbia, Washington**  
12 249-288 (July) 1943

- Presidential Address: A Watchful Care on the Horizon  
I. W. Rankin—p. 249  
Epilepsy—Clinical and Therapeutic Review H. K. Eitchfield—p. 251  
Alleviation of Hypertensive Symptoms S. H. May—p. 260  
Fetal Cirrhosis in Two Children of Same Family W. M. Viter and  
W. T. Sauerli—p. 264

12 289-326 (Aug.) 1943

- Lessons of Medicine During War Part I I. B. McVee—p. 289  
Part II A. I. Ichedenko—p. 293  
Continuous Caudal Anesthesia in 100 Unselected Obstetric Cases G. I.  
Ellis and I. B. Sheffery—p. 295  
Calcinosis: Report of 2 Cases B. L. Nunez and P. S. Arthur—p. 301

**Military Surgeon, Washington, D. C.**

93 117-236 (Aug.) 1943

- Dental Service in British Army A. B. Austin—p. 117  
Bomb Blast Injuries B. Burbank and J. H. Horrocks—p. 124  
Simple Field Test to Detect Quinine in Urine A. H. Cornell and  
S. Kave—p. 133  
Shaking Methods Applied to Serologic Technique I. I. Crawford and  
L. D. Hertert—p. 135  
Heat Exhaustion A. W. Wallace—p. 140  
Observations on Air Sickness T. Levy—p. 147  
Officer Instructor I. Herzberg and R. F. Duke—p. 151  
Plan for Standardization of Diagnosis and Treatment of Peptic Ulcer  
D. T. Chamberlin—p. 157  
Pterygopalatine Injection for Blood Anesthesia of Maxilla R. M.  
Kankow—p. 164  
Pellegrini Stieda Syndrome G. H. Stein, N. H. Gladstone and F. C.  
Lowry—p. 167  
Venereal Disease Problem United States Army: An Outline of Its  
History, Legislation and Points of Attack with Summary of Current  
Methods of Control J. P. Pappas—p. 172  
Osteochondritis Dissecans of Astragalus M. C. Cohen—p. 184  
Control of Postoperative Atomic Intestinal States with Prostaglandin  
W. B. Koufman—p. 187  
Stereoscopy from Flat Plate S. W. Seares—p. 190  
Night Flying C. E. Ahlm—p. 192  
Selective Breeding Habits of Mosquitoes as Correlated with Specific  
Gravity C. O. Masters—p. 194  
Field Expedient Method for Transporting Casualties Across Water  
Barriers F. E. Rubovits—p. 198  
Hot Foods to the Ward J. P. McGinn—p. 200  
Doctors at Arms Hugh Mercer—Brave and Worthy J. M. Philken  
—p. 200

**New England Journal of Medicine, Boston**

229 229-264 (Aug. 5) 1943

- So-Called Atypical Pneumonia Among College Students A. W. Con-  
tratto—p. 229  
Inhalational Therapy in Treatment of Serious Respiratory Disease  
M. S. Segal—p. 235  
Toxic Psychosis and Death Associated with Potassium Thiocyanate  
Therapy: Report of Case J. Solomon, M. Greenblatt and G. P.  
Coon—p. 241  
Regional Anesthesia M. J. Nicholson—p. 244

229 265-308 (Aug. 12) 1943

- \*Prothrombin Deficiency in Biliary Obstruction and Diseases of Liver  
Freda K. Herbert—p. 265  
Venous Pressure in Lower Extremities During Abdominal Operations  
D. Davis, S. Gilman and A. S. Freedberg—p. 272  
Advances in Malaria Research Q. M. Geiman—p. 283

**Prothrombin Deficiency in Biliary Obstruction and Diseases of Liver**—Maintenance of normal plasma prothrombin, according to Herbert, depends on an adequate supply and absorption of vitamin K. The deficiency can be rapidly corrected by injection of vitamin K or its analogues. Estimations of plasma prothrombin often give warning of the risk of post-operative hemorrhage in cases in which there is no spontaneous hemorrhage and no abnormality in coagulation time or bleeding time. The estimation of prothrombin is therefore a useful clinical test, indicating when prophylactic treatment is necessary. There is usually a fall in plasma prothrombin following operations on the biliary tract so that a normal value before operation does not necessarily exclude the risk. She describes a two stage method of estimating plasma prothrombin. The method was used in 51 cases with obstructive jaundice and with serum bilirubin levels over 2.4 mg per hundred cubic centimeters. Of these 68 per cent showed hypoprothrombinemia and in 30 per cent the titers fell below 50 per cent of the normal average. These results are closely similar to those obtained by Brinkhous, Smith and Warner and by Stewart and Rourke with the two stage method although there is a slightly higher

proportion of normal results in the present series. In 40 cases of liver disease studied in the present series 68 per cent showed hypoprothrombinemia and in 25 per cent the titers fell below 50 per cent. In some cases hypoprothrombinemia was found when the jaundice was extremely slight. Cases are quoted of the restoration of the plasma prothrombin level to normal by treatment with menadione in cases of biliary obstruction, and of failure of this treatment when there was damage to the hepatic parenchyma. When normal plasma prothrombin exists before operation hypoprothrombinemia and hemorrhage may develop a few days after the operation.

**New Orleans Medical and Surgical Journal**

96 1-42 (July) 1943

- Ancient Processes in Scientific Age: Development of Usefulness  
C. A. Aldrich—p. 2  
History of Yellow Fever in New Orleans R. M. Landry—p. 6  
Personal Experiences and Reflections on Yellow Fever R. Murray  
—p. 10  
Common Diseases and Injuries of Eye G. M. Haik—p. 13  
Glomerulonephritis I. Hull—p. 16  
Nonpruritic Glycosuria J. B. Cwin—p. 19

96 43-86 (Aug.) 1943

- Brucellosis H. J. Schmidt—p. 43  
Chincolithologic Conference: New Orleans Graduate Medical Assem-  
bly H. T. Karsner and L. Hamman—p. 50  
History of Aviation Medicine I. K. Knapp—p. 62  
Glaucoma and General Practitioner R. I. Lloyd—p. 67

**Northwest Medicine, Seattle**

42 207-240 (Aug.) 1943

- Old and New Horizons of American Tropical Medicine E. C. Faust  
—p. 213  
\*Vitamin A: Its Effect on Acne: Study of 100 Patients J. A.  
Straumfjord—p. 219  
Dissection of Vesical Calculi N. B. Rawls and E. S. West—p. 226  
Hospitalization of Tonsil Fossae L. C. Potter—p. 229

**Effect of Vitamin A on Acne**—Straumfjord points out that explanations offered for the causation of acne are obscure and conflicting. The basic primary lesion of acne is a hyperkeratosis of the pilosebaceous follicle identical with the hyperkeratosis described in vitamin A deficiency. During the last five years approximately 300 cases of acne were seen at his clinic. Vitamin A was prescribed in high dosage. The data obtained from 100 patients were sufficient for analysis. These 100 patients were treated with a supplement of approximately 100,000 international units of vitamin A daily for six months and longer. Seventy-nine became free or nearly free from the eruption and only three were unimproved. The response of follicular hyperkeratosis and of acne to the administration of vitamin A suggests that their cause is the same, that both are cutaneous lesions of vitamin A deficiency.

**Public Health Reports, Washington, D. C.**

58 1077-1120 (July 16) 1943

- Opening Remarks to Forty First Annual Conference of United States  
Public Health Service with State and Territorial Health Officers  
T. Parran—p. 1077  
Community Services vs. Lost Man Hours P. V. McNutt—p. 1082  
Outlook for Coming Year J. W. Mountain—p. 1088  
Opportunities in Newer Methods of Tuberculosis Case Finding H. F.  
Hilleboe—p. 1094

58 1121-1164 (July 23) 1943

- \*Extent of Immunization and Case Histories for Diphtheria, Smallpox,  
Scarlet Fever and Typhoid Fever in 200,000 Surveyed Families in  
28 Large Cities S. D. Collins and Clara Councill—p. 1121

58 1165-1200 (July 30) 1943

- Studies on Strains of Aerobacter Cloacae Responsible for Acute Illness  
Among Workers Using Low Grade Stained Cotton B. H. Cammisa,  
R. Schneider, R. W. Kolb and P. A. Neal—p. 1165  
Soap Which Indicates Presence of Mercury Fulminate H. S. Mason  
and I. Botwinick—p. 1183

**Extent of Immunization in Large Cities**—The study is based on a canvass of 213,931 households in twenty-eight cities of 100,000 or more population selected as representative of cities of that size in different geographic sections. Immunizations against scarlet fever and typhoid are negligible in frequency as compared with those against diphtheria and smallpox. In the preschool ages diphtheria immunizations are more

frequent than smallpox vaccinations, but after five years the reverse is true. At 8 years of age 61 per cent of the children had been immunized against diphtheria and 85 per cent had been vaccinated against smallpox at some time since birth. There is considerable geographic variation in the extent of immunization against these diseases. These twenty-eight large cities were divided into five geographic groups, Northeast, North Central, Intermediate, South and West. In diphtheria immunizations the West is lowest from birth through 7 years, but beyond that age the South is lowest, the Intermediate is highest from birth through 5 years, but after 6 years the Northeast and North Central are above the Intermediate. The South and Intermediate cities are highest in history of diphtheria cases. In smallpox vaccinations the Northeast, Intermediate and South all get above 90 per cent by about 8 years of age, but the North Central and particularly the West are low, the latter reaching only about 60 per cent. In history of smallpox cases the West is above any other section. In scarlet fever immunizations the West and North Central are far above the other sections, but no region gets above about 5 per cent. In scarlet fever cases the North Central and Intermediate are at the top. In typhoid immunizations the South is far above any other section, with the West second. The South shows the highest history of typhoid cases. The numbers of scarlet fever and typhoid immunizations are too few in any section to have any definite effect on the course of these diseases, the immunized, therefore, represent protection for certain individuals only, and the highest immunization rates show up where case rates are high enough to stimulate the use of the vaccine. When children were classified according to family income it was found that in the preschool ages the percentages of children who had been immunized against diphtheria and smallpox increase definitely with income. The same was true for diphtheria immunizations during the school ages, but there was little difference in smallpox vaccinations as between high and low incomes. Scarlet fever and typhoid immunizations increase with income in each of the three age groups under 15 years, indicating that these immunizations are largely the result of individual initiative rather than public programs.

### Puerto Rico J Pub Health & Trop Med, San Juan 18 387-504 (June) 1943

- Immunologic Relations Between Virus of Equine Encephalomyelitis of Colombia and of Venezuela V Kubek—p 402  
Weil Felix Reaction and Proteus Group of Bacteria A Pomales Lebron and P Morales Otero—p 412  
Poisoning by Carbon Tetrachloride and Oil of Chenopodium F Hernandez Morales and R Diaz Rivera—p 434  
Studies on Syphilis in Puerto Rico. Review of Literature of Island and of Surveys Based on Blood Tests with Comments O Costa Mandry—p 452

### Review of Gastroenterology, New York

10 187-232 (July-Aug) 1943

- Emotional Factor in Peptic Ulcer H L Bolen—p 187  
Colloidal Kaolin and Aluminum Hydroxide Gel (Kalam) in Management of Lower Bowel Conditions M G Spiesman—p 191  
Clinical Significance of Concentration of Pepsin in Gastric Juice H Barowsky, R Upham, L B Dotti and I S Kleiner—p 201  
Effectiveness of Syntrogeal in Treating Gastric Disturbances Characterized by Hyperacidity, Flatulence, Indigestion and Pain L H Turek—p 204  
Chase-Lain Goldstein Syndrome—Galvanic Batteries in Human Mouth H I Goldstein—p 206  
Sudden Death Following Use of Pontocaine as Gargle Anesthetic for Gastroscopic Examination F M Hansen Jr and C L Stealy—p 212  
Anatomic Basis for Study of Splanchnoptosis. Paths of Ascent to Erect Position from Birth to Fourth Year of Life and Their Relation to Splanchnoptosis and Body Form and Body Cavities Agnes C Victor—p 213

### Rhode Island Medical Journal, Providence

26 107-142 (Aug) 1943

- Changing Views of Contagious Diseases E H Place—p 115

26 143-186 (Sept) 1943

- Massive Arsenotherapy of Early Syphilis D W J Bell and K K Gregory—p 153  
Luxury of Social Insurance J Farley—p 157  
Essentials of Diagnosis of Heart Disease C B Leech—p 159

### Rocky Mountain Medical Journal, Denver

40 433-496 (July) 1943

- Place of Physician and Hospital in Use of Blood Bank O S Philpott—p 451  
Clinical Uses of Plasma and Whole Blood W Darley—p 452  
Selection and Care of Donors Mildred Doster—p 455  
Processing and Preservation of Blood Plasma M R Rymer—p 457  
Regeneration of Blood in Donors E R Mugrage—p 459

40 497-568 (Aug) 1943

- Thyroid Disease Military Surgical Problem K C Sawyer and J S Haley—p 516  
\*Perforating Gallbladder Report of 24 Cases N F Hicken and Q B Coray—p 524  
Practical Application of Liver Function Tests W B Yegge—p 529  
Coronary Occlusion F Mayner—p 533  
Sudden Death Following Injection of Mercurial Diuretic G G Richards and L G Moench—p 535

**Perforating Gallbladder**—Hicken and Coray present a study of 24 cases of perforated gallbladders. The complication occurred in 25.6 per cent of all cases of acute cholecystitis which the authors have seen. They maintain that acute cholecystitis constitutes the same type of surgical emergency as does acute appendicitis, except that it is even more urgent. Many appendical crises would subside if treated conservatively, yet immediate surgery pays good dividends. In acute cholecystitis corrective operations should be employed as soon as the patient has been properly prepared. This requires but twelve to twenty-four hours to accomplish. Clinical signs and symptoms, laboratory data and roentgenologic studies have all been unreliable in determining which "acute gallbladders" will subside and which will become progressively worse, hence surgical intervention is imperative. Spinal anesthesia is the agent of choice. It is nontoxic to the liver, provides complete muscular relaxation and effectively collapses the distended intestines, thus expediting surgical explorations. The operation must be selected to fit each individual case. In every instance the common bile duct must be explored either roentgenographically by means of cholangiograms or surgically before disturbing the gallbladder. Whenever possible the gallbladder should be removed. The postoperative care is essential and aims at maintaining the essential physiologic processes at a normal level. Postoperative cholangiograms are used to determine the proper time for removing the choledochal drains. The mortality rate for this series was but 9 per cent. Acute cholecystitis and perforations of the gallbladder are both preventable complications of chronic cholecystitis. Operations during the chronic phase would eliminate these exacerbative reactions.

### Southern Medical Journal, Birmingham, Ala

36 543-602 (Aug) 1943

- Anatomic and Mechanical Features of Treatment of Fractures of Humerus W G Stuck—p 543  
Evaluating Ureteral Splint R F Sharp—p 549  
Bone Lesions in Acquired Tertiary Syphilis H C Francis and R H Kampmeier—p 556  
Cardiovascular Allergy H M Davison, J C Thoroughman and H Bowcock—p 560  
Yardstick of Allergic Therapy C M Stroud—p 567  
Milk Intolerance, Cause of Nutritional Entity Clinical Study P A McLendon and Dorothy S Jeger—p 571  
Reactions to Nirvanol, Phenytol Sodium and Phenobarbital. Report of Case of Ectodermosis Erosiva Plurifocalis Following Injection of Phenytol Sodium F A Ellis—p 575  
\*Congenital Cerebral Aneurysms Lateralized by Electroencephalography, by B Woodhall and H Lowenbach—p 580  
Essential Pentosuria (Xyloketosuria) Report of Case R C Davis—p 587  
Carcinoma of Esophagus T D Woodward—p 590  
Proctologic Significance of Diarrhea H G Hummel—p 592

**Congenital Cerebral Aneurysms Lateralized by Electroencephalography**—Woodhall and Lowenbach describe a method of lateralization of the bleeding point in cases of spontaneous subarachnoid hemorrhage by the use of electroencephalography. The method is based on experiences in 3 cases showing a neurologic defect and in 3 selected cases with neurologic changes. The aneurysms in the first group were demonstrated at operation. In all of the cases the aneurysm was visualized by arteriography using 20 per cent thorotrast. The electroencephalographic signs which the authors regard as characteristic consist of a more or less constant asymmetry of amplitude, frequency and wave form between the tracings obtained from the two hemispheres.

findings present over the hemisphere containing the bleeding point. This abnormal activity may be due to relative cerebral anoxemia resulting from rupture of a congenital cerebral aneurysm the common cause for such hemorrhages.

### Texas State Journal of Medicine, Fort Worth

39 221-274 (Aug) 1943

- Rheumatic Heart Disease in Texas C M Decherd Jr and G R Herrmann—p 209  
Diabetic Insipidus T Lindley—p 211  
What is Wrong with Chronically Tired Patient? J H Reeves—p 235  
Mental Rehabilitation of Patients with Arrested Tuberculosis S I Thomp and W W Coulter Jr—p 248  
Gratic Failure in Middle Life T I Johnson—p 249  
Roentgenologic Diagnosis of Carcinoma of Colon I W Baird—p 243  
Increased Prevalence of Poliomyelitis in Texas and Possible Control Measures C W Cox—p 247  
Complete Lacerations of Testis J A Heymann—p 248

### Virginia Medical Monthly, Richmond

70 383-432 (Aug) 1943

- Rheumatic Fever and Rheumatic Heart Disease in Virginia P D Camp and Louise Olson—p 397  
Industrial Development of Vitamins of B Complex C R Addinall—p 402  
Ectopic Pregnancy Report of 130 Cases F S Johns—p 407  
Genesis of Disabling Heart Attack with Discussion of Symptoms A I Tynes—p 410  
Wolff Parkinson White Syndrome J P Lynch and R G McAllister—p 415  
Some Menstrual Disturbances J Nutt—p 418

### War Medicine, Chicago

4 129-246 (Aug) 1943

- Etiologic Factors in Adjustment of Men in Armed Forces D I Steinberg and Mary Phyllis Wittman—p 129  
\*Use of Plastic Gels as Vehicles for Applying Sulfonamide Compounds to Wounds R Hare and Eina M Clark—p 140  
\*March Fractures of Lower Extremity Report of Case of March Fracture of Cuneiform Bone H M Childress—p 152  
Medical Aspects of Accidents and Mistakes in Industrial Army and in Armed Forces F Dunbar—p 161  
Retention of Atabrine in Animal Body Excretion in Bile and Urine and Effect on Cholic Acid Output J H Annegers F E Snapp L Paskind A C Ivy and A J Atkinson—p 176  
Head Injury Review of Literature—H H Merritt—p 187  
Liquid Adhesive W Grossmann—p 216

**Plastic Gels as Vehicles for Sulfonamides**—Hare and Clark attempted to find a suitable method for the first aid treatment of persons wounded in battle who may be compelled to lie unattended for days before proper surgical treatment becomes available. Sulfanilamide alone or incorporated in a vehicle leaves much to be desired, for it is absorbed within the first twenty-four hours. Sulfathiazole without a buffer is much more slowly absorbed than sulfanilamide because it is so much less soluble. It also acts on a greater variety of clostridia than sulfanilamide and may even have some action on staphylococci. When the unbuffered drug is employed, an effective potential is maintained for only sixty hours and the formation of crystals is a great drawback. When the drug was incorporated in a plastic material, such as methyl cellulose, the effective concentration was maintained for much longer periods and crystal formation was not observed. Another advantage is its ability to absorb three to eight times its own weight of serum or plasma. This will tend to facilitate soaking up of oozing blood and serum, in this process the vehicle swells, and, if a tight bandage is applied, the pressure exerted by the swelling may prevent further capillary bleeding and may even arrest venous hemorrhage. Methyl cellulose is freely soluble in water and can be picked or washed out at debridement. Because methyl cellulose is not absorbed by plasma or other tissue fluids, primary or even secondary suture cannot be carried out until it has all been removed. Autoclaving decomposes sulfathiazole, but hot air sterilization has no deleterious effect. Satisfactory sterilization may be obtained by heating in hot air at a temperature of 140 C for three hours.

**March Fractures of Lower Extremity**—Childress points out that march fracture has long been considered synonymous with march foot. Recently, more attention has been given to similar fractures occurring in the long bones of the lower extremity. Terms used to designate this lesion include incomplete, exhaustion, insufficiency, false spontaneous, creeping

chronic, fatigue stress, insidious and soldiers' fracture. March fracture of the foot is the most common of all march fractures. Next in frequency are march fractures of the tibia. March fracture of the fibula usually occurs near the proximal or the distal end of the bone. March fractures of the femur occur in the lower portion of the shaft and at the neck. Occasionally the pelvic bones may develop march fractures. Regardless of the bone involved in march fracture, the onset and progression are much the same. The lesion is produced by repeated minimal trauma, which by summation causes an overloading of the functional capacity of an otherwise normal bone. This occurs particularly in soldiers carrying packs and in workers performing heavy labor. The onset may be acute but is usually insidious. The pain is dull and vague at first and is initiated by prolonged periods of weight bearing. Rest gives complete relief. With continued activity the pain increases in severity. A localized swelling of soft tissues develops in association with tenderness on deep pressure. The overlying skin may be slightly reddened with increased heat. Immediately after onset roentgenograms of the involved bone usually do not reveal anything abnormal. A faint incomplete fracture line may be demonstrated. In two to three weeks callus is noted. Diagnosis in many cases is not made until a large amount of callus has been formed. In the foot this osseous mass may exert pressure on adjacent soft structures and thus produce considerable pain. Complete rest of the part is indicated in order to decrease the size of the callus also to prevent a refracture. Adequate support must be maintained until full healing has been obtained. Osteogenic sarcoma, Ewing's tumor, nonsuppurative osteomyelitis and syphilitic periostitis should be differentiated from march fracture. Before a biopsy is done the bone should be observed clinically and roentgenographically during and after a few weeks of complete rest of the affected part. To decrease the incidence of this fracture a gradual physical build-up should be given to both army recruits and formerly unemployed civilian workers. The author reports a case of march fracture of the cuneiform bone. His review of the literature failed to disclose another solitary march fracture of the cuneiform bone. He suggests that many may have occurred but have been treated under other diagnoses.

### Western J Surg, Obst & Gynecology, Portland, Ore

51 305-348 (Aug) 1943

- Ureteral Injury During Gynecologic Surgery T W Adams—p 305  
Foreign Bodies in Air Passages of Children P M Frederick and J G Verberkmoes—p 325  
Cesarean Section in Portland Oregon During 1942 G P Lee—p 330  
Roentgen Diagnosis of Fractures M D Sachs—p 335  
Concerning Nature of Intracellular Inclusions and Their Significance in Gynecology A E Taft—p 342

### Wisconsin Medical Journal, Madison

42 749-880 (Aug) 1943

- Treatment of Cardiovascular Emergencies in Home F D Murphy—p 769  
Hospital Treatment of Cardiac Cases A G Koehler—p 775  
Kenny Concept of Infantile Paralysis W H Cole—p 778  
Wisconsin Experience with Kenny Treatment Methods H M Coon—p 783  
Modern Treatment of Acute Osteomyelitis A C Schmidt—p 785  
Treatment of Painful Feet How to Meet the Problem R P Montgomery—p 787  
Why Should Cancer Cases be Reported? W C Keettel—p 790

### Yale Journal of Biology and Medicine, New Haven

15 769-928 (July) 1943 Partial Index

- Simple Method of Evaluating Fitness in Boys Step Test J R Gallagher and L Brouha—p 769  
Toxicity of Chlorinated Hydrocarbons Alice Hamilton—p 787  
Factors Associated with Lesions of Brain That Follow Intravenous Injection of Thromboplastic Substance R Katzenstein and H Arnold—p 803  
Sulfonamide Activity as Influenced by Variation in pH of Culture Media A H Brueckner—p 813  
Experimental Hypothalamic Hyperphagia in Albino Rat J R Brobeck Jay Tepperman and C N H Long—p 831  
Role of Liver in Synthesis of Fatty Acids from Carbohydrate Virginia C Dickerson J Tepperman and C N H Long—p 873  
Left Subdiaphragmatic Abscess Report of Case G J Connor—p 905  
Study of Familial Spread of Hemophilus Influenzae Type B P G Good Mildred D Fousek Marya F Grossman and P L Boisvert—p 913



## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Journal of Dermatology and Syphilis, London

55 169-198 (July) 1943

Serologic Change Occurring During Short Courses of Neotarsphenamine and Bismuth Such as Were Possible While Patients Stayed at Venereal Diseases Center for African Soldiers W A Young—p 169  
Clinical Notes on 2 Cases of Acanthosis Nigricans A G Peterkin and E C Jones—p 185

### British Journal of Urology, London

15 39-78 (June) 1943

History of Urethral Stricture H L Attwater—p 39  
Operation Used for an Impassable Stricture of Penile Urethra T I D Lane—p 52

### British Medical Journal, London

2 127-158 (July 31) 1943

Typing of Paratyphoid B Bacilli by Means of a Bacteriophage A Ichikawa and Bessie R Cillow—p 127  
Value of Phage Typing in Investigation of an Outbreak of Paratyphoid B Fever J R Hutchinson—p 130  
Two Stage Amputation—Primary Planned Amputation in Presence of Sepsis E A Jack and I Charnley—p 131  
Pasteurization of Milk and Infant Mortality Rates in Toronto Vancouver and Victoria A Brown—p 133  
Ocular Criteria of Deficiency of Riboflavin M K Gregory—p 134  
Rupture of Rectus Abdominis Muscle During Pregnancy R C Thomas—p 136

**Two Stage Amputation**—Jack and Charnley show that the procedures at present in vogue for amputation accept infection of the stump as inevitable. The guillotine seeks to sidetrack it, the loose closure method to minimize its effects. The two stage amputation employs two principles. First, to combat implanted or invading organisms, sulfanilamide powder is introduced into the wound in large quantity to maintain a high local concentration. Second, to counter the predisposing conditions a large dry gauze pack is sutured under the flaps with its ends left projecting from the corners of the incision. The pack must be large so that the flaps are sutured over it under moderate tension approximating that obtaining in normal tissues, it must be of dry gauze so that it is absorbent. There is an outpouring of serum from the raw surfaces, which soaks into the pack. By the capillary action of the gauze it is conducted out. At the same time a proportion of the sulfanilamide is dissolved by the serum and the pack becomes a reservoir of sulfanilamide in high concentration. The tension of the flaps over the pack maintains the circulation as normal as possible, and at the same time an even pressure is produced over the whole surface of the wound, thus preventing edema and promoting effective hemostasis. The first stage starts as a standard flap amputation at the site of election. The second stage should be performed four or five days later. The two stage method has been used in 26 cases. Primary healing without complication was obtained in 18. In 3 others the skin margins slid apart for about half an inch but healed without sepsis when they were drawn together with strapping. Three cases developed sepsis at the skin edges, which did not interfere with the healing. Only 2 cases developed severe infection with suppuration. The two stage amputation has yielded impressive results. Should it fail in its object of preventing infection, no harm has been done. The two stages of the procedure fit logically into the average time lag between forward area surgery and arrival at a base hospital.

2 159-190 (Aug 7) 1943

Some Problems in Control of Infectious Diseases R Cruickshank—p 159  
\*Early Treatment of War Wounds of Upper Part of Face M C Oldfield—p 163  
Specific Gravity of Cerebrospinal Fluid, with Special Reference to Spinal Anesthesia W Etherington Wilson—p 165  
Traumatic Arterial Spasm C W Clark—p 167  
Common Cause of Diarrhea, Vomiting and Dehydration in Infant P W Leathart—p 168

**Early Treatment of War Wounds of Upper Part of Face**—Oldfield emphasizes the following six elementary principles in the early treatment of wounds of the upper part of the face. 1 Cleanse the wound most thoroughly with soap and

water, peroxide and saline solution. 2 Never excise a facial wound. 3 Save the framework of the face even if it is loose, sacrifice a bony fragment only if it is completely detached from all the surrounding tissues. 4 If there has been any skin loss, pack the wound with sulfanilamide powder and leave it open. 5 If there has been no skin loss and the wound is recent, insert fine silk stitches and remove them within three days. 6 In the face, never insert a few big stitches under tension, they usually lead to serious septic complications and will always be followed by an irreparable scar, which will remain a disfigurement for life.

### Journal of Physiology, Cambridge

102 1-126 (June 30) 1943

Effect of Muscular Exercise on Serum Cholinesterase Level in Normal Adults and in Patients with Myasthenia Gravis H B Stoner and A Wilson—p 1  
Effect of Temperature on Blood Flow and Deep Temperature in Human Forearm H Barcroft and O G Edholm—p 5  
Sympathetic Vasoconstrictor Tone in Human Skeletal Muscle H Barcroft, W McK Bonnar, O G Edholm and A S Effron—p 11  
Histamine in Nervous Tissue H Kwartkowski—p 32  
Seasonal and Annual Changes in Calcium Metabolism of Man R A McCance and E M Widdowson—p 42  
Effects of Arrows on Acetylcholine Solutions Showing Dilution and Protection Phenomena Found for Enzymes W M Dale—p 50  
Oxygen Affinity of Human Maternal and Fetal Hemoglobin F F McCarthy—p 55  
Experiments on Blood Supply of Nerves F H Bentley and W Schlapp—p 62  
Effect of Pressure on Conduction in Peripheral Nerve F H Bentley and W Schlapp—p 72  
Determination of Oxygen Combining Power of Blood with Barcroft Differential Manometer Q H Gibson—p 83  
Periodic Changes in Respiratory Depth, Produced by Changes in Lung R V Christie and G W Hayward—p 88  
Mechanism of Vasomotor Reflexes Produced by Stimulating Mammalian Sensory Nerves G Gordon—p 95  
Effects of Iodoacetic Acid, Glycerinaldehyde and Phosphorylated Compounds on Small Intestine of Rabbit W Feldberg—p 105  
Pancreozymum Stimulant of Secretion of Pancreatic Enzymes in Extracts of Small Intestine A A Harper and H S Raper—p 115

### Lancet, London

2 91-118 (July 24) 1943

Dehydration N Morris—p 91  
Anaerobic Infections of War Wounds in Middle East T D MacLennan—p 94  
Serial Sedimentation Indexes, Measure of Progress in Pulmonary Tuberculosis G Day—p 99  
Supersaturated Sulfathiazole Solutions for Local Application J A De Loureiro—p 102  
\*Generalized Vaccinal Reactions in Allergic Subjects I S P Davidson and L J Davis—p 103

**Generalized Vaccinal Reactions in Allergic Subjects**—Davidson and Davis report observations during the recent small outbreak of smallpox in the Edinburgh area, when a large proportion of the population was vaccinated or revaccinated. Four patients manifested generalized complications after vaccination in whom there was presumptive evidence of an underlying allergic diathesis. The ages of the patients varied between 4 and 40 years. The abnormal reactions appeared from eight to ten days after the vaccination. Purpuric manifestations appeared in 3 of the patients, 2 of whom developed well defined edema at the same time. The remaining patient showed generalized vaccinia. These abnormal reactions may be related to an allergic tendency, since in case 1 there was a personal and in case 2 a familial history of allergy, and in the other 2 cases there were clinical grounds for postulating the presence of abnormal sensitivity.

2 119-146 (July 31) 1943

\*Injuries Produced by Blast in Water T C Gohlander D I F H T Simmons—p 119  
Anaerobic Infections of War Wounds in Middle East T D MacLennan—p 121  
Phytic Acid and Iron Absorption R A McCance E M Widdowson—p 126  
\*Suprapubic Catheterization for Paralysis of Bladder C A L E W Riches—p 128

**Injuries Produced by Blast in Water**—Gohlander and Simmons report a clinical and pathological study of 17 water blast injuries. All of the men were suffering from lesions to the abdomen. The lesions found were confined to the intestine, stomach and lower end of the bladder and consisted of intramural hematomas and perforations.

tortions occurred only in the small intestine and were present in 9 cases. The only constant sign of injury outside the alimentary tract itself was a retroperitoneal hemorrhage behind the right colic flexure. The solid abdominal organs escaped injury. Seven cases showed signs of injury to the lungs, and the pulmonary hemorrhages were identical with those described in bomb blast casualties. In the differentiation of perforating from nonperforating abdominal lesions, the features of diagnostic value were persistent severe abdominal tenderness and rigidity together with elevation of the pulse rate of patients with perforations. In cases in which perforating injuries were diagnosed or could not be excluded, laparotomy was performed. Because of the associated lung injuries, infusions of plasma and blood were as far as possible avoided, but it was not always practicable to dispense with them entirely. Of the 9 patients with intestinal perforation 2 were too ill to stand operation and died and 7 were operated on with four deaths. Of the 8 cases with nonperforating lesions 6 were treated conservatively with one death (from shock immediately after admission) and in 2 in which the diagnosis was doubtful laparotomy was done with recovery. The causes of death were shock, the lung injury and in 1 case peritonitis.

**Suprapubic Catheterization for Paralysis of Bladder in Spinal Injury**—Riches deplors that there is still no agreement on the treatment of a bladder paralyzed as a result of spinal injury. He shows that a safe and rapid method of suprapubic catheterization has now been devised. It has been used successfully as a means of bladder drainage in more than 20 surgical cases and in a few cases of spinal injury. The simple instrumentarium and the technique are described. After paralysis from spinal injury the bladder should be allowed to distend. When it is distended, suprapubic catheterization should be performed. Tidal drainage should be added after two days. The use of a urethral catheter in the treatment of the paralyzed bladder should be forbidden.

### Medical Journal of Australia, Sydney

1 549 570 (June 19) 1943

- Surgeon as Whale-hump Owner W. F. I. H. Crowther p. 549  
Note on Identification of Skulls by X-Ray Picture of Frontal Sinus A. Schuller p. 554  
Causes of Blindness in Children I. C. Halliday p. 556  
Deep X-Ray Treatment of Gas Gangrene Recovery A. M. Davidson p. 557  
Observations on Treatment of Certain Types of Fractures and Dislocations of Cervical Part of Spine E. F. West p. 557

1 571 592 (June 26) 1943

- Pneumococcal Meningitis of Otic Origin Recovery Following Chemotherapy and Operation T. J. F. Frank p. 571  
Studies on Toxicity in Dextrose Sodium Citrate Solutions P. W. Gill p. 573  
Significance of Glycosuria in Absence of Diabetic Symptoms A. B. Corkill and J. P. Marks p. 577

**Fractures and Dislocations of Cervical Part of Spine**—West observed a series of cases of injuries of the cervical portion of the spine, chiefly following accidents in the surf. He gives a detailed description of 2 cases to illustrate the management of such lesions. He recommends a light type of plaster cast, which he describes and illustrates. A short period of immobilization and the avoidance of heavy types of plaster casts will lessen the incidence of neuroses in these cases.

### South African Medical Journal, Cape Town

17 183-198 (June 26) 1943

- Soviet Medicine in Wartime N. Grashenkov p. 185  
Table Knife Lying in Peritoneal Cavity for Five Years I. Gordon p. 187

**Table Knife Lying in Peritoneal Cavity for Five Years**—Gordon reports the history of a truck driver who complained that for the last three months he had experienced discomfort in the region of the right ischio-rectal fossa. A tender lump was found near the skin in the right ischio-rectal fossa. X-ray examination showed a table knife in the abdomen with the point near the skin at the tender spot. He had been admitted to the hospital five years previously suffering from a stab wound of the upper abdomen. At that time the symptoms suggested an injury to the lung. The chest was X-rayed and

nothing abnormal was noted. The entrance scar was situated just below the left costal margin 2 inches from the midline. X-ray examination now showed the handle of the knife in the upper end at McBurney's point and the point of the blade in the right ischio-rectal fossa. No evidence of damage to the stomach or the intestine was found when the abdomen was opened. The knife was lying free in the peritoneal cavity. A sausage-shaped roll of omentum completely surrounded the knife, forming a sheath extending down into the pelvis. This sheath was opened and the knife was extracted without difficulty. The patient was discharged on the seventeenth day. The blade of the knife, which was 8 inches long, was as bright as if it had just been polished. There was no evidence of any rusting, nor had the color of the bone handle changed.

### Schweizerische medizinische Wochenschrift, Basel

72 1401-1428 (Dec 19) 1942 Partial Index

- Diabetes Insipidus and Simmonds' Syndrome After Encephalitis T. Glanzmann and C. Wegelin p. 1401  
Present Vitamin Supply for Pregnant and Nursing Women W. Neuweiler p. 1404  
Sulfathiazole Therapy of Acute Otitis Media A. M. Hild p. 1410  
Clinical Investigations on a Stable Water Soluble Vitamin K Preparation H. J. Wespi p. 1414  
Does Tetus in Utero Become Involved in Poliomyelitis During Pregnancy? J.otti Hurny p. 1417

**Vitamin Supply for Pregnant and Nursing Women**—Neuweiler studied the vitamin supply of pregnant and nursing women. Although many of these women receive some added rations, these will be divided among a family and the pregnant or nursing woman will receive only a part of the ration. Neuweiler determined the vitamin C content of the blood according to the method of von Eckelen and Emmerie in three groups of 40 women each. One group comprised nonpregnant women, one pregnant women and one nursing women. The results were compared with those obtained in similar groups in 1937 and 1938. During the summer of 1942 the values were much lower than they had been during the summer of 1938 and during the winter of 1937. The values were most unfavorable in the blood of nursing mothers. Investigations on the vitamin C content of breast milk, however, revealed practically the same values as during the prewar years. Apparently the danger of hypovitaminosis in the nursing mother is greater than in other women because of considerable diminution into the milk. Physicians should inform themselves regarding the diets of pregnant and nursing women and should prescribe vitamin preparations if the diets seem inadequate. Attention should be given not only to vitamin C but also to vitamins of the B group and to vitamin A.

**Sulfathiazole in Otitis Media**—Hild treated 180 cases of febrile acute otitis media with sulfathiazole, 168 responded favorably while 12 were uninfluenced. Antrotomy was necessary in 7 cases. It was found that in the cases treated with sulfathiazole the time necessary for cure was shortened by one third in comparison with the cases in which no sulfathiazole was employed, surgical treatment was required only one fourth as frequently. Sulfathiazole was administered only in the form of tablets, the oral administration answered all requirements. The simultaneous administration of 25 per cent solution of nikethamide counteracted the occasional occurrence of nausea and vomiting. The total dose of sulfathiazole was 16 Gm for adults, 9 Gm for children between 2 and 12 years and 6 Gm for children less than 2 years of age. These doses were given in the course of six days, larger doses being given on the first two days. Serious secondary effects were not observed. The sulfathiazole was particularly effective during the first five days after the onset, but even during the later stage noticeable effects were obtained. Inspection of the tympanum and testing of the hearing by whispering should be done during the entire course of the chemotherapy because these tests reveal an otherwise unnoticed advancement of the disease process and make possible the consultation of a specialist in doubtful cases.

**Poliomyelitis During Pregnancy**—Hurny reports the histories of 2 women who developed acute anterior poliomyelitis at the end of their pregnancy. In both patients cesarean operations were done. All three children (1 set of twins) were and remained healthy but both mothers died as the result of Landry's type of poliomyelitic paralysis shortly after the

cesarean operation. This indicates that the placental barrier is impermeable for the virus of poliomyelitis. The literature contains only few records of similar cases. Three of these are cited by the author. In these the children also remained healthy. The transmission of antigens was examined in only 1 of the cases reported in the literature. In this instance, in which the child was born four and one-half months after onset of the poliomyelitis, the antigen titer was unusually high.

### Medicina, Madrid

11 357-439 (May) 1943 Partial Index

Cerebral Symptoms of Lymphogranulomatosis (Hodgkin Sternberg's Disease) J. R. Garcia Martin—p. 386  
Vascular Collapse in Obstetrics R. Garcia Pastor—p. 394

**Cerebral Symptoms of Lymphogranulomatosis**—Garcia Martin directs attention to the cerebral form of lymphogranulomatosis, of which a case is reported. A man aged 32 presented typical lymphogranulomatosis of two years' duration. The diagnosis was verified by a lymph node biopsy. In the course of the disease there developed anarthria, which did not improve on administration of arsenicals and roentgen therapy. Three months later there were irritability, mental confusion and acute epileptiform attacks. Lymphogranulomatosis is caused by a virus with a selective localization in the lymph nodes or in the entire lymphatic system and rarely in the nervous tissue. In the reported case the virus was localized in the cortical centers of speech and in the psychomotor zones.

### Prensa Médica Argentina, Buenos Aires

30 787-830 (May 5) 1943 Partial Index

\*Coagulation of Blood in Intermittent Claudication and Gangrene of Lower Limbs A. V. Di Cio and R. Bay—p. 789  
Mycotic Ulcer of Cornea F. L. Niño—p. 797  
Heart Disease and Liver Function M. Bernstein, E. B. Le Win and S. Simkins—p. 816

**Coagulation of Blood in Intermittent Claudication and Gangrene of Lower Extremities**—Di Cio and Bay studied 86 patients with peripheral vascular diseases. Lee and White's technic, in which coagulation between five and eight minutes is considered normal, was used. Tanturi-Banfi-Quick's modified technic for determining the time of formation of prothrombin and the concentration of prothrombin in the blood, in which a time of formation of prothrombin between eighteen and twenty seconds and a concentration varying between 80 and 110 mg per hundred cubic centimeters of blood are considered normal, were also used. The time of blood coagulation was diminished in 10 of 19 cases of intermittent claudication without arterial blood hypertension, in 22 of 32 cases of intermittent claudication with arterial blood hypertension, in 4 of 7 cases of intermittent claudication with intestinal parasitism, in 10 of 18 cases of gangrene of the lower limbs without arterial hypertension and in 6 of 10 cases of gangrene of the lower limbs with arterial blood hypertension. Blood coagulation time was normal in the remaining cases in each group. The time of formation of prothrombin and the concentration of the substance in the blood were normal in all cases. The authors believe that the diminished blood coagulation time is due to a diminished concentration of heparin and other anticoagulating substances in the blood.

### Rev. Brasileira de Oto-Rino-Laringologia, São Paulo

11 5-148 (Jan-Feb) 1943 Partial Index

\*Otitis Media and Its Complications in Diabetic Patients F. de Paula Pinto Hartung—p. 5  
Total Destruction of Tongue Due to Carcinoma E. Moreira—p. 97

**Otitis Media in Diabetic Patients**—De Paula Pinto Hartung directs attention to the grave prognosis of acute otitis media in diabetic patients. The success of therapy depends on maintaining the patient on a correct antidiabetic diet and on proper doses of insulin and sulfanilamide in preparation for operation when the latter is indicated. Coma following on the appearance of labyrinthine symptoms and in the course of pneumococcal meningitis complicating the otitis media does not constitute a contraindication to an operation, which should be performed without delay. A man aged 35, with diabetes, had an attack of acute otitis media. He improved on sulfanilamide therapy, insulin and proper diet. A mastoidectomy performed

for symptoms of mastoid involvement was followed by improvement which lasted two months, after which the patient developed acute meningitis and coma. The cerebrospinal fluid was under increased pressure, was purulent and contained pneumococci. The patient recovered after an operation, sulfanilamide and insulin therapy.

### Deutsche medizinische Wochenschrift, Leipzig

68 365-392 (April 10) 1942 Partial Index

Hormone Therapy During Childhood G. Bessau—p. 365  
Treatment of Hormonal Disturbances with Estrogenic Stilbestrol Preparations O. Bauer—p. 369  
\*Morphology of Symptom of Infantile Little Finger Maria Lutz—p. 371  
\*Development of Malarial Sporozoites in Warm Blooded Animals W. Schulemann—p. 374  
Occurrence of Wallgren's Epidemic Serous Meningitis in Hungary R. von Engel—p. 379

**Symptom of Infantile Little Finger**—Lutz points out that the symptom of infantile little finger was first described by Du Bois in 1926 under the term "auriculaire infantile" and was identified by him as a sign of congenital syphilis. After citing and evaluating subsequent reports on this sign, the author describes her own studies on the basis of roentgenograms. In a normal hand there exists a definite ratio between the different parts of a finger as well as between each part of a finger and the corresponding part of the other fingers. The shortening of a bone becomes manifest in a shifting of this ratio. The author investigated these ratios roentgenologically in 7 normal hands and in 20 hands with the symptom of infantilism of the little finger. She emphasizes that the shortening of the little finger is due either to a noticeable isolated shortening of the fifth metacarpal or of the middle phalanx of this finger or it results from a summation of minimal shortenings of several bones. Roentgenoscopy shows that in the normal hand the second interphalangeal cleft of the little finger is considerably distal to the first interphalangeal cleft of the fourth finger. In the hand with the little finger sign, however, the two clefts are in the same line or the little finger cleft is proximal to that on the fourth finger. Roentgenologic examination is not always necessary, since Hissard's description of the relative shifting of the skin folds usually indicates the bone shortening. Shortening of the fourth finger is occasionally added to the infantilism of the little finger. If such bone metaphasias are unilateral they can be designated as finger asymmetry, which is likewise a sign of congenital syphilis.

**Development of Malarial Sporozoites in Warm Blooded Animals**—Schulemann points out that experimental studies by Missiroli and by Kikuth and Mudrow proved that the sporozoites of the malarial plasmodia do not attack the erythrocytes of warm blooded animals directly but pass through an intermediate development. Considerable discussion arose regarding the intermediate stages. The author made studies with an improved technic. Salivary glands of *Culex pipiens* which contained sporozoites of *Plasmodium cathemerium* were crushed with canary serum. This suspension was stained with trypan violet and then injected into the subcutaneous fat of canaries. The injected area was excised twenty-four, forty-eight, sixty-three and ninety-nine hours after injection. At the end of twenty-four hours the majority of sporozoites appear as slender forms with one but mostly two and rarely three chromatin granules. In some of the sporozoites the protoplasm shows slight swelling. In the sporozoites that have two chromatin granules it can be seen that the granules become separated and shift to the ends. In injected areas removed later (after forty-eight, sixty-three or ninety-nine hours) the swelling of the protoplasm increases continuously. The chromatin granules likewise grow, the lacings in and the later complete division of the protoplasm between the chromatin granules progresses and division follows. The resulting mononuclear forms develop into polynuclear forms. The sectioned specimens show that the described sporozoites are extracellular. Later development is extracellular as well as intracellular. The author thinks that it is too early to decide definitely, and in what manner sporozoite development takes place. His observations so far seem to prove Missiroli's claim that there is a division of sporozoites. The later development is more varied than has hitherto been believed.

## Book Notices

**Allergy** By Irich Urbach MD Chief of Allergy Service Jewish Hospital Philadelphia with the collaboration of Phillip M Cottlieb MD Associate on Allergy Service Jewish Hospital Fairbaird Price \$12 1p 1077 with 396 illustrations New York Grune & Stratton 1947

This is the most ambitious work on allergy in recent years. The massiveness of this volume of more than a thousand pages, with 2,262 references appearing as footnotes indicates the thoroughness of the work. The illustrations are excellent in reproduction and choice. It is a reference work which the specialist in allergy will appreciate for its thoroughness in both allergy and applied immunology. Whether physicians other than specialists will equally appreciate it will depend on the degree of their interest in allergy and immunology. The very completeness with which the literature is covered and the thoroughness of many of the discussions may overwhelm the reader who is not definitely interested in these subjects.

This book is divided into three parts. In part I, covering the first 283 pages, the author discusses the fundamentals of allergy from the point of view of the immunologist. An excellent and clear presentation with a thorough review of the literature is given of this subject. However, the weakness of this entire work first appears in this section. The author rejects Pirquet's concept of allergy as too broad. For it he substitutes his own classification—a very complex one requiring many obscure terms coined by the author or by other Europeans but not generally used or accepted in the American literature. The following are a few examples: pathergy, allergization, deallergization, paralergy, metallergy and many other newly coined or generally unaccepted terms. Our knowledge of immunology and certainly of allergy is today too limited to warrant burdening it with a multiplicity of new terms for the sake of the 'working hypothesis' of any one man. If the critical reader will disregard this objection he will find in this section an excellent discussion of immunity as related to allergy and of the identity of anaphylaxis and atopy.

The latter part of this first section deals with the methods of diagnosis and with the general methods and principles of treatment. Here much controversial material will be found. It starts with such a simple subject as the technique of performing intradermal tests (p 237). Among the precautions advised by the author are that no two biologically related substances should be used simultaneously for testing. This would be acceptable as justifiably cautious if the author had not selected as his examples goose and chicken feathers. Feathers are among our weakest allergens. Systemic reactions to them are either rare or unknown. A less understandable error in this section is the advice to withdraw the plunger (intracutaneous tests!) and observe for blood as a precaution against the needle being in a blood vessel before injecting the materials. A dermatologist of Urbach's experience could not have written such advice except through inadvertent error.

More serious than these objections is the emphasis on "deallergization" (primarily by oral therapy) as a method of preference over hyposensitization. Here Urbach emphasizes his use of protein digests, propeptans, to "deallergize" most allergic conditions. Despite the fact that Urbach introduced this form of 'propeptan' therapy in 1930, workers in this country still have not accepted this method of treatment. Most reliable workers who have experimented with it reject it as a method of treatment although they admit that their experience with this form of therapy is limited. Urbach's explanation of these carefully qualified but unfavorable reports is that these workers used their own protein digests rather than those prepared by Urbach (p 268). This defensiveness is unjust to such careful workers as Bray, Rowe, Vaughn and C J White.

Part II, consisting of about 260 pages is devoted to a thorough discussion of the etiologic agents of allergic diseases. The classic division used is that of inhalants, ingestants, injectants, contactants, physical agents and infectants. These subjects are likewise thoroughly presented. The part which the reviewer considers especially excellent is the discussion of allergy and immunity in acute and chronic diseases. The principles of allergy and immunity as revealed in the studies of

tuberculosis and syphilis are particularly well correlated with what is usually classified as the "allergic diseases".

Finally, part III presents the symptomatology and therapy of allergic diseases. This part covers about 150 pages, of which the last hundred are relatively unimportant since they cover the more unusual and questionable allergic entities, as allergy of the eye, the ear, the nervous system, the cardiovascular system and the joints. In this section also the one serious objection the reviewer finds is the disproportionate importance placed by Urbach on oral therapy in such a condition as seasonal hay fever. From the material presented here the reader inexperienced in allergy cannot help but conclude that this is the method of choice both for ease, safety and for optimum results. This is certainly not accepted by most allergists in this country.

Summarizing, this is an excellently organized work presenting the literature of allergy in a very thorough and lucid fashion. It emphasizes a correlation of the principles of immunology as studied in chronic and acute infections with the immunology of the allergic conditions. The faults found in this book—the use of many unusual and newly coined terms and the overemphasis of the value of oral therapy—may well be disregarded by the critical reader in view of its general excellence.

**Mass Miniature Radiography. A Practical Handbook.** By R R Trill MC MA MD Wing Commander R A F V R H J Trenchard MB ChB MRCP Squadron Leader R A F and J A Kennedy, MB BS MRCS Flying Officer R A F V R Foreword by Lord Dawson of Tem I C CVO KC B. Cloth Price 8s 6d 1p 96 with 21 illustrations. London J & A Churchill Ltd 1947

This book contains complete information for setting up and operating equipment for the making of miniature films of the chest. Chapters are devoted to administration, apparatus, processing and storage of films, viewing methods, interpretation, correlation of findings and consequent disposal of patients. The authors point out that the Canadian army has used full size x-ray films and that the Metropolitan Life Insurance Company of America has combined such films with fluoroscopy in mass survey work. The idea of photographing the image on a fluorescent screen on a photographic film was first attempted in 1896. However, it was not until 1934 that de Abreu of Brazil used it in making mass examinations. The authors describe two types of film now in common use, one 4 by 5 inches in size and the other approximately 1 inch square on a 35 millimeter film. They consider the former superior in technical excellence but prefer the 35 millimeter film for mass radiography because of greater speed with which exposures can be made. Attention is called to the use of these miniature films in the United States Army and Navy, and their value in the civilian population is emphasized. Their opinion as to the value of an x-ray film in diagnosis is expressed as follows: "Miniature films or large films are not generally speaking sufficient evidence on which to found a diagnosis. If they are so used the results are likely to be disastrous. Diagnosis must be based on a review of clinical, radiological and pathological evidence and it is essential that this fact be ever borne in mind. In other words, mass miniature radiography is a means of picking out those individuals who are in need of a full, clinical examination." This statement was formulated after the authors had made 150,000 examinations including the follow-up to final diagnosis of those discovered to have abnormalities on x-ray films. The conclusion of these authors with reference to diagnosis coincides with that of clinicians who are expert in chest diseases in this country.

The authors call attention to the extreme tiring of the eyes and the mental fatigue which results when viewing miniature films. They find that 350 to 450 films represent the extreme limit that any one can be expected to do in a day, and that one hour of continuous viewing is the maximum that should be attempted. Clinicians who are beginning this work should not attempt the reading of more than 60 films at one session. However as experience increases one can read about 150 to 200 films at one time without experiencing extreme fatigue.

In the chapter on interpretation of miniature films they say "In the ordinary way miniature films cannot be described as diagnostic. They should not be considered as showing more than an abnormality which requires a large film and other investigations to ascertain the nature of the lesion present. Consequently the report on a miniature film must usually be

limited to two alternatives. These alternatives are 'normal' and 'large film required'. The presence of a lesion should then be confirmed by a full sized x-ray film."

The authors point out that mass x-ray film inspection may also reveal evidence of nontuberculous infection such as abscesses, malignancy and fungous infection, as well as changes in the outline of the cardiac shadow. In the entire book nothing is said about the tuberculin test as a screen to determine who should have x-ray film inspection of the chest. This is probably because the authors assume that where they worked nearly 100 per cent of adults were infected with the tubercle bacilli. In this country where 50 per cent or less of adults are infected, the tuberculin test has extreme value. However, the reactors need other phases of the examination for tuberculosis. A film of the chest which shows no evidence of disease often gives the individual a false sense of security, and he sees little need for subsequent film inspection of the chest, whereas a tuberculin reaction informs him that he has a potential case of clinical tuberculosis, and even though the film of the chest at the moment is clear he is easily convinced that periodic films are important. This is a good book, and the reader should frequently refer to the statement on page 3 with reference to the disastrous results which may follow attempts to make diagnoses from x-ray films alone, regardless of the size of film used.

**Release from Nervous Tension** By David Harold Fink, M.D. Cloth Price \$2. Pp 232. New York: Simon and Schuster, Inc., 1943.

It is, perhaps, inappropos to review this volume for a scientific journal, since at best it must be relegated to the seemingly endless and wearying stream of popular "expositions" of that most abused and long suffering branch of medicine, psychiatry. To begin with, the book's breathless Sunday supplement style will probably offend the literate reader, whereas the informed one will resent its assertive naïveté ("Human beings have no instincts"), its pretentious and often misleading pronouncements ("For sufferers from mental disease, Pavlov has sounded a veritable liberty bell. To cure sick nerves, the patient must be dehypnotized") and the frequent lapses into gross misinformation ("[The] nervous center of our emotional life is called the interbrain. Inspiration without expression leads to cell death within your brain"). Many of the "case histories," as the author indirectly admits, are obviously invented to suit the occasion, and even so reveal a superficiality of insight and interpretation that cannot but confuse and misguide the lay reader.

Fortunately, not all sections of the book are equally disappointing, since the basic theme of some chapters is that many bodily dysfunctions are the expression of emotional conflicts and tensions—a thesis quite in accord with the holistic principles of modern psychosomatic medicine. Conceivably, some readers may thus be induced to seek much needed psychiatric advice, although, unfortunately, most psychiatrists would be hard put to it to find the simple explanations and invoke the thaumaturgic cures described with such fervor in his own practice by Dr. Fink. Again, the author shows some appreciation of the dynamics of unconscious motivations, although he continually confuses them with a mysterious 'subconscious' which resides in the "interbrain." But here are the curealls recommended in the final chapters: a ten weeks course of verbalized, self-hypnotic "relaxation exercises," regressive and even compulsive "play" activities, Korzybskiesque (though not so accredited) "control" of "words that are triggers to action" and the inevitable autobiographic cost and credit "self analysis" designed to reveal hidden "complexes [which are] really conditioned reflexes." At the end of all this self-administered treatment the patient, according to the author, is ready for a "fresh start," which may involve sudden, untimed and thoroughly disruptive occupational, marital and social changes. All in all, it is difficult to imagine a set of recommendations potentially more dangerous for the illuminating, anxiety ridden, impulsive neurotic who, even under the most competent and individualized psychotherapy, is notoriously apt to misinterpret and misapply his physician's analysis and guidance. But perhaps this is less an indictment of Dr. Fink's book than a lament for the morbid activity of that portion of our population of neurotics that creates an apparently insatiable demand for this type of pseudopsychiatry.

**Edward Tyson, M.D., F.R.S., 1650-1708 and the Rise of Human and Comparative Anatomy in England. A Study in the History of Science** By M. F. Ashley Montagu, Associate Professor of Anatomy, Hahnemann Medical College and Hospital Philadelphia. With a foreword by George Sarton. Memoirs of the American Philosophical Society, Volume XX. Cloth Price, \$5. Pp 488, with 56 illustrations. Philadelphia: American Philosophical Society, 1943.

When an American scientist gives the Croonian lecture before the Royal Society of London for Improving Natural Knowledge he is paid from an endowment fund secured after William Croone's death, 1684, by Edward Tyson of Bristol and London M.D., F.R.S., "founder of comparative anatomy in England," who laid the foundation on which was built Darwin's demonstration of animal evolution and the descent of man. Tyson was the first in England to institute the routine of systematic dissection and was one of the great protagonists of embryology, biochemistry and psychiatry. He "ranks with the immortals among anatomists" but has not been fully appreciated.

After the Puritan revolution in England of 1649 and after the restoration of 1660 some great spirits sought refuge from the fanaticism of religion, politics and scholastic philosophy in the direct study of nature. Inspiration had been given them by Gilbert, Bacon and Harvey, and for them the influence of tradition and authority had vanished. Their meetings for discussion founded the Royal Society. Among Tyson's friends in it were the crotchety Robert Hooke, the anatomic draftsman William Cowper, the selfless John Ray, Isaac Newton, Thomas Sydenham, Samuel Pepys and Robert Boyle. Tyson's contributions were many "preferring the language of artisans and countrymen to that of wits and scholars." Among the leading ones were the anatomy of the chimpanzee (pygmy), opossum, ostrich, lion, civet cat (Tyson's glands) and tapeworm. The publication of the first mentioned is "one of the outstanding landmarks in the history of science," Sarton.

Dr. Montagu makes these old times live again and makes these men our friends. We live with the bachelor Tyson from his boyhood days on the sea near Bristol to his death (from coronary occlusion?) aged 58 in London. He gives us their thoughts and their language and happily their quaint spelling: ostridge, pensil, phisitian, buigness, brunt, blood, blew. One name may seem especially quaint to us, a Latin name Tyson gave to an American animal he dissected, "vipera caudivora" the rattlesnake.

It is very appropriate that this history of one of the early members of the London Society is published as a memoir of "The American Philosophical Society held at Philadelphia for Promoting Useful Knowledge." The form and presswork are beautiful. Dr. Montagu's work is so scholarly and sympathetic, so thoroughly and convincingly documented and illustrated that it deserves a place among the foremost American biographies of scientific men.

**Regional Analgesia for Intra Abdominal Surgery With Special Reference to Amethocaine Hydrochloride** By Norman R. James, L.R.C.P. & S.D.A. Cloth Price, 6s. Pp 57, with 27 illustrations. London: J. & A. Churchill Ltd., 1943.

This book was written to increase the interest of surgeons and anesthetists in the use of regional methods of anesthesia in England. It is an excellent presentation of the value of anethame (amethocaine hydrochloride, or what is known in the United States as pontocaine hydrochloride) as an agent in producing prolonged anesthesia. The method of preparing the solution, its mixture with epinephrine and the equipment that is used are all described. Supplementary narcotics intravenously, administration of omnopon (pantopon) and the use of oxygen and anesthesia by inhalation and by use of bromurates are discussed. Thoracic nerve block is described, as is also splenic block, especially the posterior method of Kappas, infiltration of lines of incision and infiltration for suprapubic drainage, as well as for other purposes are described. The toxic effects and prophylaxis in relation to amethocaine hydrochloride are described. General operative technique is discussed. Some suggestions in operative technique are suggested to facilitate the use of local anesthesia. Application of the method in various operations is described. A short index is included. This book is of size and will be of interest to surgeons and anesthetists.



## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT NECESSARILY REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### EARLY ABORTION, LATE ABORTION AND PREMATURE DELIVERY

To the Editor—What is the dividing line in time of gestation between an early and a late abortion? The other day a baby was born in this hospital after six months gestation breathed a few times and died. One of the members of our record committee said that this should be classified as a late abortion. Will you please tell us if this is correct?

Katherine Lehman R.R.L. Napa Calif

ANSWER—The following criteria are widely followed and employed as definitions for these terms in the Standard Nomenclature of Disease. Premature delivery is to be diagnosed if any two of the following criteria are present. 1 The length of the gestation is from twenty-eight to thirty-eight weeks. 2 The fetal size is between 1000 and 2500 Gm. 3 The fetal length is from 35 to 47 cm. Late abortion is to be diagnosed in the event of delivery of a previsible fetus if any two of the following criteria are present. 1 The length of the gestation is from twenty-two to twenty-eight weeks. 2 The fetal size is between 400 and 1000 Gm. 3 The fetal length is from 28 to 35 cm. Early abortion is presumed to have occurred if any two of the following criteria are present. 1 The length of the gestation is less than twenty-two weeks. 2 The fetal size is less than 400 Gm. 3 The fetal length is under 28 cm.

This classification is arbitrary and not entirely above criticism. It does not relate to stillbirth or live birth certification. Occasionally an immature live fetus of twenty-six or twenty-seven weeks gestation may survive and it would certainly be awkward for such a person to look back at his own history to find that he had been classified as a late abortion. It is probably better however to have such an unusual occurrence than to dislocate a series of otherwise satisfactory definitions in order to try to cover all contingencies.

### PREGNANCY RESULTING FROM COITUS OR ARTIFICIAL INSEMINATION

To the Editor—A woman aged 28 had been married six years without pregnancy and had been 'trying to get pregnant' by intercourse for about one year without result. Examination showed an enlarged cervix with mucous discharge, a crooked cervical canal and a definite uterine retroflexion. After treatment of the cervicitis with florquin suppositories and vinegar douches the condition improved somewhat. Five inseminations with the husband's seminal fluid found to contain a normal number of normal appearing sperms were done during a period of time extending from October 24 until January 15 of the next year, an attempt being made to choose a time during the latter part of the menstrual cycle. The last period was from January 22 to 29 just as expected but with slightly increased bleeding thereafter there were none and pregnancy was diagnosed definitely on May 4, being about three months along. The patient has had regular unguarded coitus during the time of the inseminations. The periods previous to the last one had been of normal character. The patient feels that this pregnancy is due to insemination. I am doubtful owing to the period following a week after the last insemination still circumstantial evidence points to insemination rather than normal coitus as being the cause. What would your impression be?

M.D. California

ANSWER—If all of the inseminations were carried out during the latter part of the menstrual cycle as implied in the query and the woman's menstrual intervals were of the usual twenty-eight to thirty day type, it is practically certain that the pregnancy was not due to the inseminations but to the normal coitus. The reason for this statement is as follows. As far as is known the majority of women ovulate only once a month and the ovum is expelled fourteen to fifteen days before the ensuing menstrual flow is to begin. An ovum lives for only about twenty-four hours, and unless it is fertilized within this time it dies. Spermatozoa are capable of fertilization for forty-eight to seventy-two hours. Therefore in order for pregnancy to take place, living spermatozoa capable of fertilization must be present in the genital tract for at most forty-eight hours before the ovum is expelled and for only about twenty-four hours after ovulation has taken place. Since the unfertilized egg is capable of fertilization for only twenty-four hours insemination of sperm in the latter half of the menstrual cycle is of no avail. If however, a woman's menstrual intervals are thirty-five or more days long, insemination at the twentieth or twenty-first day of the cycle can result in pregnancy. This is because

the ovum in such cases is expelled from the ovary on or about the twenty-first day of the cycle. In the determination of the day of ovulation, the preovulatory interval is of little significance. What is important is the number of days which elapse between ovulation and the ensuing menstrual flow, and this is usually fourteen to fifteen days.

### DIAGNOSIS OF TYPE OF HYPERTENSION

To the Editor—A man aged 36 developed hypertension following an infarct of the lung. The history goes back to one year ago when he was seized with severe pain in the lower right quadrant of the abdomen. Acute appendicitis was suspected. The consulting surgeon found the patient in a shocklike condition with low blood pressure and feeble pulse, and sweating profusely. Renal colic was the tentative diagnosis. Urinalyses revealed many red cells in the sediment. White cell and differential counts were normal. Twenty-four hours later pain in the lower right quadrant of the abdomen was still present, muscle spasm was evident and there was an increase in the white cell count. Appendectomy was performed under nitrous oxide anesthesia. The pathologist's report was 'catarrhal appendix'. The patient was free from pain until the seventh postoperative day, when lodgment of an embolus in his right lung resulted in an infarct. Recovery followed in six weeks without any pulmonary residual. Two months later he returned to work but complained of pulsating headaches, nausea and anginal pains on exertion. The blood pressure at this time was 170/120 (right arm). The symptoms persisted for three months and on reexamination he was found to have unequal blood pressure in his arms. After rest in bed for one month his average blood pressure was 145/110 (right arm) and 120/80 (left arm). In the erect position the blood pressure in both arms was 150/110. Other clinical findings during this time were as follows: grade 1 arteriosclerosis of the retinal vessels; electrocardiographic evidence of minimal myocardial damage and sinus arrhythmia; normal blood chemistry (sugar, chlorides, nonprotein nitrogen, creatinine); normal hemoglobin values; white blood cell count and differential count negative Wassermann and Kahn reactions; normal results from urinalysis and culture of urine; normal results from the sedimentation test, the urea clearance test, the phenolsulfonphthalein test and the concentration dilution test; normal x-ray appearance of the skull, the chest, the kidney, ureter and bladder, the heart and the aorta; normal intravenous pyelograms; x-ray evidence of four devitalized teeth previously treated by apicectomy and root canal medication and showing no foci of infection. Other findings were psoriasis (chronic, minimal, nonprogressive) and a postnasal drip. The cold pressor test was within normal limits. Neuropsychiatric examination was noncontributory. During preparation for the intravenous pyelograms the patient was given 1 cc of posterior pituitary injection of twice U.S.P. concentration intramuscularly. The symptoms previously complained of returned and persisted for three hours. At present the patient's blood pressure after prolonged rest in bed will be as low as 120/80. Limited activity in the erect position soon results in a blood pressure of 150/110. Anginal pains and nausea occur at infrequent intervals. During one such episode the blood pressure in his left arm for three consecutive readings was 135/110, 140/100 and 125/90. The blood pressure in the right arm was 150/120. The nausea disappeared in about fifteen minutes and the blood pressure in both arms was found to be 150/110. Can the blood pressure be explained as a Goldblatt phenomenon? What is the significance of the variation in blood pressure in the arms and legs? Is it possible that he suffered renal infarcts as well as a pulmonary infarct during his initial illness with the result that renal circulation is impaired sufficiently to cause hypertension? Any suggestions will be appreciated. M.D., South Dakota

ANSWER—The absence of preexisting hypertension must be presumed since previous levels are not recorded. In spite of the reported differences of blood pressure in the two arms, the right arm showing higher levels while the patient is recumbent, this feature must be minimized, since equal levels (150-110) occur in the erect position and this level seems to be basic on activity especially since x-ray and physical examinations indicate that no aneurysm is present. If available, cutaneous temperature and oscilometer readings taken when significant variations were present would aid in determining if true circulatory inequality exists.

A degree of paroxysmal hypertension appears to be present. This may be caused by adrenal tumors (difficult to diagnose) or by postural hypertension, especially with a mobile kidney. It is true that in the vast majority of cases of renal prolapse or mobile kidneys no hypertension or Goldblatt mechanisms will exist but there is an increasing number of authenticated cases in which such conditions or malposition of kidneys, with the pelvis not directed truly medially in which case the renal vessels may be compressed or angulated in reaching the pelvis will result in hypertension of the Goldblatt type.

In the case cited it would be impossible for renal infarction to have occurred directly from the primary (presumably pelvic) source but the remote possibility of a secondary source (from the lung following primary infarction) cannot be disregarded. Apparently the right kidney was the seat of trouble (many red blood cells) in the first attack and it may be the site of unilateral renal disease.

Another intravenous pyelogram taken in the standing position may reveal an unsuspected renal prolapse. It is significant that the pressures are higher when the patient is in the upright position than when he is recumbent. Should such a prolapse be found a well fitted girdle or a renal belt with pads to keep



the kidney in place may be tried. If this is unsuccessful and elevations of pressure persist, nephropexy is justified since otherwise persistent and progressive essential hypertension may be anticipated.

### TREATMENT OF CONGENITAL SYPHILIS WITHOUT INTRAVENOUS INJECTIONS

**To the Editor**—A girl aged 15 years has interstitial keratitis. I treated her in infancy for syphilis but the parents stopped the treatments before she was cured. She has had no treatment in the meantime. She weighs 230 pounds (104 Kg) and it is impossible to find any veins in which to give intravenous therapy. Will you please outline the treatment this patient should have? All treatment will have to be intramuscular or by mouth.

M D, Iowa

**ANSWER**—In view of the impossibility of administering intravenous treatment to the patient a girl aged 15 with congenital syphilis and interstitial keratitis, the best plan of treatment would be initially with induced tertian malaria during which the patient is allowed to have ten to twelve paroxysms of fever, followed immediately on its termination by bismuth arsenophane sulfonate (bismarsen) administered intramuscularly twice weekly in alternate buttocks in a dosage of 0.2 Gm to a total of twenty injections in the course. On completion of the bismarsen course, bismuth subsalicylate in oil should be given intramuscularly for eight to twelve weeks in a dosage of 0.2 Gm the injections being given at weekly intervals. Potassium iodide should not be used.

Further than this it is impossible to plan without knowing the results of the suggested treatment on the interstitial keratitis. More treatment must be given, but its character will depend on the therapeutic result obtained.

### ROENTGEN IRRADIATION FOR MASTOIDITIS AND OTITIS

**To the Editor**—Has the x-ray radiation treatment of acute mastoiditis and otitis media ever been used in the majority of ear clinics in the country? What is the present status of this treatment?

Nathan Sedofsky, M D, Oteen, N C

**ANSWER**—X-ray radiation therapy for acute otitis media and acute mastoiditis has never been widely used in the majority of ear clinics in this country. There has been no fundamental change in opinion as to the way these diseases are to be handled. It is no doubt true that here and there individuals have tried x-ray therapy. In properly selected cases gratifying results have been obtained.

It would be impossible however, without a poll of all the major clinics in the country, to know how many of them have used x-ray treatment in the conditions named and to what extent they have employed it. Judging by one large community it is not used extensively nor is it the treatment of choice.

In early cases x-rays may be used properly empirically and experimentally. It is precisely this type of case that yields so well to sulfonamide therapy, however, and which has a high incidence of natural recovery. There can be no useful outcome in debating the merits of special therapy under these circumstances. Able practitioners working under proper controls and using good judgment may try at times any reasonable method of therapy.

### NORMAL PYELOGRAM IN PRESENCE OF IMPAIRED RENAL FUNCTION

**To the Editor**—A woman was admitted to the urologic service because of numerous red and white cells in the urine. In the course of a routine examination the resident said he found a large kidney on the left side in addition to a few white and red blood cells in the urine. An intravenous pyelogram was of little assistance in making a diagnosis as little dye appeared on the left side. Cystoscopy revealed a normal bladder and ureters, the latter were readily catheterized for a distance of 25 cm. The urinary outflow was normal on both sides. A functional test was normal on the right, the dye appearing in six minutes. No dye appeared on the left side in twenty-five minutes. A retrograde pyelogram was made, 10 cc being injected on both sides with no pain. A roentgenogram shows normal outline of both kidneys. Would you kindly explain the poor function of the left kidney in view of the normal retrograde pyelogram?

M D, New York

**ANSWER**—Failure of visualization of the renal pelvis on one side occasionally is observed in the excretory urogram for which there is no adequate explanation. In a few of these cases, when a subsequent excretory urogram is made after an interval of several weeks or months the visualization will have become normal for no apparent reason. In many cases failure of visualization can be explained by temporary obstruction in the ureter, often a small ureteral calculus, which is nonopaque and is not visualized in the plain roentgenogram. Such a calculus might

also be the cause of the red and white cells which appeared in the urine in the case in question. The fact that the ureteral catheter when introduced met with no obstruction would not exclude a calculus. In fact, the failure of secretion of dye from that kidney in the presence of secretion of fluid would tend to corroborate the hypothesis of reflex irritation or short obstruction caused by intraureteral blockage. Such obstruction may be sufficient to interfere with renal function but still cause no visible deformity in the outline of the renal pelvis or ureter. In most of these cases of ureteral blockage the outline of the kidney in the plain roentgenogram appears somewhat larger than that on the other side, apparently due to congestion.

There may, of course, be some kind of intrarenal lesion present. An infarct or some other type of cortical lesion might also cause failure of secretion of the dye without visible deformity in the pelvic outline. Repeating the differential functional tests and the excretory urograms at intervals would be of considerable interest.

### POSSIBLE EFFECTS OF EPINEPHRINE AND EPHEDRINE ON CUTANEOUS TESTS WITH ALLERGIC SUBSTANCES

**To the Editor**—A patient with hay fever is relieved by an ephedrine-cyt-l capsule. Are the cutaneous tests interfered with if this capsule is used immediately preceding the tests?

H F Kohler, M D, Tacoma, Wash

**ANSWER**—Swineford and Grove (*J Allergy* 8 475 [July] 1937) have pointed out that the maximum effect of an injection of epinephrine on the size of cutaneous tests occurs within fifteen to thirty minutes and is gone in an hour or less. They therefore believe that it is not necessary to postpone these tests longer than one hour after a single therapeutic injection. When the patient is receiving frequent injections of epinephrine, however, especially if given in oil, cutaneous tests are certain to be lessened in size and should not be performed at that time.

There is no definite report in the literature on the effect of ephedrine on cutaneous tests, but since ephedrine acts in similar fashion to epinephrine it too almost certainly diminishes the size of cutaneous tests. This is especially important with patients who take ephedrine more or less continuously.

It would be wise to avoid both ephedrine and epinephrine for at least twenty-four hours before the tests are carried out.

### EPIDIDYMITIS FOLLOWING STRAIN

**To the Editor**—Could you give me the pathology of a condition which I have been seeing frequently in the past two years but which I do not find described in textbooks on urology? It occurs only in men usually doing heavy work, who give a story of having felt a sharp pain in the lower part of the abdomen on one side or the other while straining as in lifting a heavy weight, the pain frequently radiating down the spermatic cord to the testis. The following day the spermatic cord and sometimes the epididymis is also swollen, hard and tender. Sometimes only the upper pole of the epididymis is involved. Needless to say these are cases in which no evidence of gonorrhea is found. The condition being apparently traumatic in origin. Pain and tenderness vary in severity, and the condition gradually subsides in about a few weeks' time. As far as can be made out by physical examination it appears to be the vas deferens itself which is thickened and tender. Torsion begins with a severe pain which lasts for a considerable period. The cord is always swollen, indurated and tender. In fact, the swelling seems to progress from above downward as frequently the cord at only the upper part of the epididymis are involved. I have seen many cases of this condition that I regard it as a clinical entity.

M D, Puerto Rico

**ANSWER**—As nearly as can be determined from the description, this is an acute epididymitis. The history is typical, namely pain in the lower part of the abdomen on one side or the other and frequently radiating down the spermatic cord to the testis, followed by changes in the epididymis, the epididymis being tender, hard and swollen. The fact that there is no evidence of gonorrhea is irrelevant.

Most urologists believe that when a patient develops an epididymitis he has infection in the seminal vesicle. This infection may or may not be gonorrheal in origin. As a matter of fact most cases of seminal vesiculitis and chronic prostatitis are nongonorrheal in origin.

Acute and chronic epididymitis that fit into the category described in textbooks on urology. How much of this condition is ascribed to the onset of the condition to the lifting of heavy weights is open to question. If persons do not have a previous infection in the vesicles and lift a heavy weight, it is not clear how it happens.

The second possibility is torsion of the spermatic cord or torsion of the testis, but the description given does not fit with torsion of the spermatic cord. This condition has been written up a good many times in the literature within the past ten years.

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## SPIROCHETAL JAUNDICE

A REPORT ON FIFTY CASES INCLUDING TWO  
CASES OF LEPTOSPIRA CANICOLA INFECTION

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CARL J W WILLY, MD

AND

J R SNALLY MD

NEW ORLEANS

Spirochetel jaundice has been reported from practically every country in the world.<sup>1</sup> Despite its universality the number of cases reported in North America appears to be disproportionately less than that reported from continental Europe. In the interval 1924-1937 808 cases were diagnosed in the Netherlands.<sup>1</sup> Between 1924 and 1932 263 proved cases were found in France.<sup>2</sup> In the Netherlands the diagnosis was established in 374 cases between 1924 and 1938, and there were at least 248 cases in Great Britain between 1922 and 1939.<sup>3</sup> In contrast, up to 1940 Stiles and Sawyer<sup>4</sup> state that they were able to collect only 73 authentic cases from North America, with half as many additional cases on which laboratory data were regarded as inadequate. Larsen<sup>5</sup> states that up to August 1941 98 cases of spirochetel jaundice had been observed in Puerto Rico and in fourteen states and the District of Columbia in the United States.

Many authors<sup>6</sup> feel that the condition is not rare in this country. Why then is the disease so infrequently diagnosed? In this article we wish to show that spirochetel jaundice has been overlooked in the past to emphasize certain interesting features of the disease which have come under our observation and to point out some of the problems in differential diagnosis which occurred in 15 cases that were recently observed at Charity Hospital.

It is most certain that vectors harboring leptospira are not lacking in the United States. Raven,<sup>7</sup> during the months of May and June 1941, found positive agglutinations for leptospiras in 28 per cent of serums collected from dogs in Philadelphia. Serums of dogs from rural communities in Pennsylvania showed 38.1 per cent positive agglutinations. In these animals data relative to clinical history were not available, so that it was

impossible to tell whether a clinical or a subclinical infection had preceded the seropositive reactions. Serologic tests performed on supposedly normal dogs in San Francisco and northern California gave positive reactions in 34 per cent.<sup>8</sup> In this study 14.3 per cent of dogs from a rural community showed latent infection. Blood of dogs from Louisiana, Nebraska, New York, Pennsylvania and Virginia were reported as giving positive agglutinations for *Leptospira icterohemorrhagiae*.<sup>9</sup>

Rats have been found to be infected to no less an extent in the United States. Sampling of 467 rats in San Francisco yielded renal leptospira by dark field examination in 176 instances (35 per cent). Meyer and his associates<sup>8</sup> state that renal leptospira infection has been definitely established in Washington D C 10 per cent, in Nashville, Tenn., 10 per cent, in New York 17.2 to 21.9 per cent, in Albany, N Y 40 per cent, in Baltimore, 7 per cent, in Chicago, 3 to 5 per cent, in Rochester, N Y, 38 per cent, and in Detroit, 16 per cent.

Recently, examination of mine water and muck revealed leptospiras morphologically indistinguishable from *Leptospira icterohemorrhagiae* in a single mine in Alabama where 14 human cases of spirochetel jaundice occurred in a period of two and a half years.<sup>10</sup> Non-pathogenic saprophytic spirochetes occur in natural waters all over the world.<sup>1</sup> Although there is a disagreement concerning this possibility, apparent transformation of nonpathogenic strains to virulent forms after culture or animal passage has been described.<sup>11</sup>

It might be supposed that the murine strains which have been found in such a large proportion of American rats were nonpathogenic. However, Langworthy and Moore<sup>12</sup> have demonstrated that strains in New York State were virulent.

In addition to the rat and dog, it has been shown that leptospirosis may occur in field mice, cats, pigs, foxes and horses.<sup>2</sup> Although leptospiras have not been demonstrated in these animals in the United States, it may be assumed, with the proportion of infected dogs and rats that has been demonstrated, that leptospirosis is present in these animals in at least a moderate percentage.

It has been pointed out by Ashe<sup>2</sup> that North Americans are not immune. The occupations which are described as being commonly affected in Europe are in the main the same for the reported American cases. It is our impression that typical cases of spirochetel jaundice have always been present in Louisiana if not

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2. Ashe W F, Pratt Thomas H R and Kumpke C W. Weil's Disease. Medicine 20: 145 (May) 1941.

3. Creene C H and Farrell Elliston. Liver and Biliary Tract. Arch. Int. Med. 65: 847 (April) 1940.

4. Stiles W W and Sawyer W A. Leptospirosis Infection (Weil's Disease) as an Occupational Hazard. J. A. M. A. 118: 34 (Jan 3) 1942.

5. Larsen C L. Weil's Disease in Puerto Rico and the United States. Pub. Health Rep. 56: 1650 (Aug 15) 1941.

6. Teghiers H J, Houghton J D and Foley J A. Weil's Disease. Report of Case with Postmortem Observations and Review of Recent Literature. Arch. Path. 20: 447 (Sept) 1935. Welch Sorgdrager G.

7. Raven Clara. Canine Leptospirosis in Pennsylvania. J. Infect. Dis. 69: 131 (Sept-Oct) 1941.

8. Meyer K F, Stewart Anderson B and Eddie B. Epidemiology of Leptospirosis. Am. J. Pub. Health 29: 347 (April) 1939.

9. Packham A. Positive Agglutination Tests in Suspected Cases of Weil's Disease. Pub. Health Rep. 56: 2145 (Nov 7) 1941.

10. Lester B S, Denison G A and Posey L C. Weil's Disease. South. M. J. 55: 325 (April) 1942.

11. Buchanan G. Spirochetosis Icterohemorrhagiae. Brit. M. J. 2: 990 (1927). Baerman and Zuelzer cited by Welch Sorgdrager G. p. 228.

12. Langworthy V and Moore A C. A Study of Leptospira Icterohemorrhagiae. J. Infect. Dis. 41: 70 (July) 1927.

the entire United States. Ideal situations for exposure exist for the trappers and fishermen and for the rice and cane field workers of southern Louisiana. Older clinicians have told us that in their opinion numerous cases of spirochetal jaundice have been confused with yellow fever in the past. In this connection it is an interesting commentary that Stimson<sup>13</sup> discovered, in 1905, "spirochetes" in the organs of a Louisianan dying from what was thought to be yellow fever. Such mistakes are not difficult to make because clinically and pathologically<sup>14</sup> spirochetal jaundice and yellow fever may be quite similar.

Ashe believes that the clinical manifestations are not well enough known in this country for the disease to be considered in the differential diagnosis. Other authors<sup>15</sup> feel that the diagnosis is chiefly dependent on the laboratory and that the fault lies in the fact that too few American laboratories are equipped to establish the diagnosis.

An occupational history has usually been present in the reported cases. In most instances a history of moist, damp or wet environment is obtainable. Frequently immersion accidentally or intentionally, in a polluted stream has resulted in the disease. Consequently, occupations commonly encountered in the disease are those of sewer workers, trapped coal miners, canal workers, fish workers, rice-field workers and cane cutters.

The disease is a severe one and is typically characterized by an acute onset which is associated with chills, headache and extreme muscle pain with nausea and vomiting. The majority of patients are prostrated. The amount of fever is variable, ranging from 99 to 104 F. Abdominal pain localized in the epigastrium or right upper quadrant is frequently a prominent feature of the disease. In the latter part of the first week jaundice and enlargement of the liver usually become apparent. Conjunctivitis and injection of the pharynx have been described by many authors. A moderate leukocytosis is usually present. Renal function is usually affected, oliguria, anuria, albuminuria, casts and cells may occur and there may be retention of the nitrogenous factors in the blood. A hemorrhagic tendency or anemia is apparent in about half the cases. In seven to thirteen days there is improvement in the general symptoms and convalescence begins. In some instances a febrile relapse may occur at the beginning of the third week. Meningeal signs may be present.<sup>16</sup>

The diagnosis is essentially dependent on the laboratory.<sup>9</sup> The leptospires can be found in the blood in the first stage (seven to thirteen days). Immune bodies can be found between the twelfth and the seventeenth day and are present in increasing concentration after this time. The organisms may be found in the urine after the second or third week. Inoculation of guinea pigs or hamsters after the technic described by Ashe<sup>2</sup> may facilitate diagnosis either from the blood or from the urine in the appropriate period. We wish to emphasize here the important work of Schultz,<sup>17</sup> who demonstrated the ease with which the inexperienced investigator may be misled in his interpretation by "pseudospirochetes" observed in dark field preparations of blood.

#### CHARITY HOSPITAL CASES

Stimulated by the characteristic findings shown by 4 white male patients<sup>18</sup> studied in the Tulane Medical Service at Charity Hospital during August and September 1941, an attempt was made to ascertain how many cases of spirochetal jaundice had been overlooked in the interval Sept. 1, 1939 to Sept. 1, 1941. Accordingly the charts of 463 patients whose discharge diagnoses could possibly have been confused with spirochetal jaundice were reviewed. Of this number 54 records were sufficiently suggestive to warrant recall of the patients for an agglutination test. Blood from 40 patients of this group was sent to the National Institute of Health. Three of the serums were found to have a diagnostic titer of agglutinins against *Leptospira icterohemorrhagiae*. The case histories of these patients follow in brief. Comparison with the other cases on a chart which outlines the salient features of the 15 cases recently observed at Charity Hospital show that the following 3 cases are typical. It will be noted that these<sup>14</sup> cases did not constitute an epidemic but occurred over a period of two and one-half years and in widely separated parts of southern Louisiana.

F. H. (case 5), a white man aged 58, a laborer, admitted to Charity Hospital on May 7, 1941, complaining chiefly of jaundice, had been noted as being icteric six days prior to admission. Four days later anorexia developed and later he became nauseated and vomited at frequent intervals. The vomitus was "streaked with red." Physical examination revealed that he was poorly nourished, asthenic and "yellow as a canary." He was acutely ill but afebrile. The sensorium was cloudy. There was old, clotted blood present about the mouth. The mucous membranes were soft and bleeding. The teeth were carious, and oral hygiene was poor. The pharynx was injected. The heart and lungs were normal. The remainder of the physical examination was negative except for small areas of hemorrhagic extravasation into the skin at various points over the body.

The red blood cell count was 3.5 million, the white blood cell count was 7,000 with 93 per cent polymorphonuclear leukocytes. The platelet count was 310,000. Urinalysis revealed 1 plus albumin and 1 plus bile. The blood urea nitrogen was 42.7 mg per hundred cubic centimeters. The icterus index on admission was 195 units and rose to 300 units.

The patient was discharged on May 30 with the diagnosis of acute catarrhal jaundice. He was subsequently recalled and blood submitted to the National Institute of Health on April 2, 1942 was reported as positive against *Leptospira icterohemorrhagiae* in a dilution of 1:1,000.

C. B. (case 10), a white man aged 39, a farmer, admitted to Charity Hospital on July 31, 1940, suffered from "indigestion" after every meal one week prior to admission, with mild abdominal pain and belching. On the following day fever developed and he had two chills which were associated with pain in the extremities, backache and a severe headache. The following day it was noticed that he was jaundiced. In the next few days he noticed that his urine had become red. On admission he was well oriented and presented well developed jaundice. The only positive physical condition he exhibited were carious teeth and slight tenderness in the right upper quadrant.

The red blood cell count was 1.81 million. A urinalysis revealed hemolysis beginning at 0.36 and completed at 0.24. Urinalysis revealed 2 plus bile. The icterus index was 180.

The patient was discharged on August 30 with a diagnosis of acute catarrhal jaundice. He was recalled on January 11, 1942 and agglutinins were found against *Leptospira icterohemorrhagiae* in a dilution of 1:1,000.

B. O. (case 11), a Negro youth aged 19, a porter, admitted to Charity Hospital on July 25, 1941 had been ill for several days with a headache and generalized aches and pains.

13 Stimson, A. M. A Note on an Organism Found in Yellow Fever Tissue, *Pub. Health Rep.* 22: 541, 1907.

14 Harris, W. H. The Pathology of a Case of Weil's Disease with Comparative Study of Yellow Fever, *Arch. Path.* 34: 663 (Oct.) 1942.

15 Jeghers, Houghton and Foley.

16 Rathbun, H. K., and Waghelestein, J. M. Weil's Disease. Report of Six Cases, *Ann. Int. Med.* 15: 395 (Sept.) 1941.

17 Schultz, E. W. The Pseudospirochetes Derived from Red Blood Cells, *Lab. & Clin. Med.* 8: 375 (March) 1923.

18 Welen, C. T. W., Snively, J. R., and Prince, E. F. Recently Observed Cases of Weil's Disease. *New Engl. J. Med.* 338 (Jan.) 1942.

prior to admission. In a short while he became nauseated and vomited. Four days later his family noticed that his scleras were yellow. Because of the persistent nausea and vomiting the patient came to the hospital.

On admission his temperature was 99 F. The scleras were icteric and there were subconjunctival hemorrhages. There were a few palpable submaxillary nodes. A few crepitant rales were present at the base of the right lung. The liver was palpable two fingerbreadths below the costal margin. The remainder of the physical examination was negative.

The red blood cell count was 3.9 million. The white blood cell count was 15,700 with 82 per cent polymorphonuclear leukocytes. The prothrombin time was 73 per cent of normal. Urinalysis revealed 3 plus albumin and a trace of bile. Bile stained casts were present. The blood urea nitrogen was 7.77 mg per hundred cubic centimeters. The icterus index was 50. On August 16 the patient was discharged with a diagnosis of acute catarrhal jaundice. The patient was subsequently recalled, Feb. 3, 1942, and agglutinins were found to be present in the patient's serum against *Leptospira icterohemorrhagiae* in a dilution of 1:10,000.

We believe that the following conditions have been most commonly confused with leptospirosis: catarrhal jaundice, typhus fever, malaria, acute yellow atrophy, toxic hepatitis, amebic hepatitis, yellow fever and obstructive jaundice with associated cholangitis. In the first world war many cases of spirochetel jaundice<sup>1</sup> were described as occurring in French, Italian, British and German troops. Undoubtedly if trench warfare is resorted to in this war numerous cases will develop in rat-infested trenches which are frequently contaminated with stagnant water. It has been shown<sup>10</sup> that leptospires can live for a period longer than three weeks in stagnant water that is slightly neutral or alkaline.

#### BRONCHOPULMONARY FEATURES

A point which deserves further emphasis is the ease with which the disease can be confused with acute pneumonia. The sudden onset with chills, fever, cough and expectoration of sputum, which is often blood tinged combined with physical and radiologic evidences of pulmonary infiltrations, can be indistinguishable from atypical bacterial, virus or influenzal pneumonia. The diagnosis is especially difficult in the anicteric or preicteric case. The development of icterus in such a severely ill patient, especially if it is associated with myalgia, hemorrhagic tendencies and appropriate urinary findings, should strongly suggest spirochetel jaundice. If jaundice appears several days after the institution of sulfonamide therapy, the diagnosis of toxic hepatitis as a complication of either pneumonia or sulfonamide therapy may be easily entertained and the true condition overlooked. Just this sequence of events occurred in 4 of our cases.

An illustrative case is the following:

H. G., a man aged 34, a warehouse workman, became suddenly ill with fever, chills and headache on Aug. 18, 1941. He began to expectorate blood tinged sputum within a few hours and was treated for pneumonia by a physician who gave the patient sulfathiazole. This medication was discontinued on the fifth day of his illness because of the appearance of well defined jaundice. During this time there were repeated chills and fever to 104 F, and the patient was disoriented at times. Urine was noted to be very dark brown, but at no time was oliguria observed. The patient was admitted to the hospital on the ninth day, at which time his pulse was 120, respirations 24 and blood pressure 130/20.0. Save for deep icterus and a barely palpable tender liver, there were no positive physical manifestations on admission. The white blood cells numbered 12,400 with 85 per cent polymorphonuclear

leukocytes. The urine showed 4 plus bile and urobilinogen to a dilution of 1:10, the icterus index was 333 and the blood urea nitrogen was 80. For four weeks in the hospital the patient's condition ran a continuously febrile course with chills and fever to 104 F. Repeated small transfusions were given, and near the middle of the fourth week of illness 250 cc of blood from a patient who had recovered from spirochetel jaundice two years previously was given. No dramatic results followed, but the patient's temperature gradually fell until near the end of the sixth week he became afebrile and definitely convalescent. On the twenty third day of illness the patient's serum agglutinated *Leptospira icterohemorrhagiae* to 1:100,000 and on the thirty-fourth day to 1:1,000,000.

#### CENTRAL NERVOUS SYSTEM FEATURES

The meningeal form of leptospirosis was discussed in detail by Walch-Sorgdrager.<sup>1</sup> He states that it is characteristic of the meningeal form that there is nothing to suggest spirochetel jaundice. There are variable degrees of meningeal signs and symptoms in the cases reported. The spinal fluid is usually under increased pressure, it is nearly always clear, it is weakly positive for albumin and the number of cells is increased. Blood agglutination tests are positive. Forty-three per cent of our patients had a severe headache, and, of the 14, 4 had delirium or a severe degree of restlessness. Spinal puncture in 2 cases was negative. Patient 12 was disoriented and had a convulsion followed by weakness of the right hand. Lumbar puncture was not performed in this instance.

#### VARIATION IN SERUM TITER

In the majority of our patients the titer of agglutinins increased as convalescence occurred. In 1 case (L. D., case 14) the titer dropped from 1:1,000 to 1:100 in twenty-one days. In another (A. E., case 9) agglutinations on blood were positive in a dilution of 1:30,000 in October 1939. When the patient was recalled on Jan. 19, 1942 the agglutinations were negative. As can be seen from the following brief report, this history is typical for spirochetel jaundice.

A. E., a Negro youth aged 19, a laborer in the rice fields and a trapper in the off season, admitted to Charity Hospital Oct. 10, 1939, became acutely ill five days prior to admission. He was seized with epigastric pain which shifted to the right upper quadrant. This was associated with chills, fever, nausea and vomiting. There were severe muscle pains and headache. On admission the patient had herpes and conjunctival hemorrhages and he became definitely jaundiced. On admission the pharynx was hyperemic. The base of the right lung was dull to percussion and tubular breathing was thought to be present. The liver was palpable. The white blood cell count was 18,300 with 86 per cent polymorphonuclear leukocytes. Blood urea nitrogen was 22.4. The icterus index was 300 units. Urinalysis revealed 3 plus albumin, 3 plus bile, 3 to 5 red blood cells and white blood cells with an occasional bile-stained cast per high power field. The electrocardiogram was interpreted as showing evidence of myocardial damage with a slightly long PR interval and QT interval. Roentgenograms of the chest were negative. Serum sent to the National Institute of Health was reported as positive in a dilution of 1:30,000 in October 1939. The patient was recalled and serum taken on Jan. 19, 1942 was sent to the National Institute of Health and was reported as negative.

This shows that the power of agglutination can be lost in spirochetel jaundice and suggests that perhaps immunity may likewise be lost.

#### LEPTOSPIRA CANICOLA INFECTIONS

The serum in 2 of our cases (12 and 15) agglutinated against the *Leptospira canicola* in a dilution of 1:10,000 and 1:1,000,000 respectively and against the *Leptospira icterohemorrhagiae* in a dilution of 1:1,000 and

<sup>10</sup> Davidson, L. S. P., Campbell, R. M., Rae, H. J. and Smith, J. *Wells Disease Brit. M. J.* 2: 1137 (Dec. 22) 1934.

1,000,000 respectively. Ashe in his comprehensive review on spirochetel jaundice states that up to May 1941 only 1 human case due to *Leptospira canicola* had been reported in the United States. Though our patients had no knowledge of contact with jaundiced dogs or other animals, it is interesting that in the three months prior to the illness of patient 12 local veterinarians<sup>20</sup> had observed at least 9 cases of icterus in dogs. Unfortunately we were unable to secure blood for agglutinations or tissues for examination from these jaundiced animals. Lester and his co-workers<sup>10</sup> in their investigation of an epidemic of spirochetel jaundice occurring in mine workers attempted to determine the possibility of dogs serving as a reservoir of infection. The examination of blood and tissue sections in jaundiced dogs provided by local veterinarians failed to demonstrate leptospira. Walch-Sorgdrager states that the canicola disease has certain special characteristics. Severe symptoms were uncommon and jaundice was

and hyperemic. The oropharynx was injected. The lungs were clear and resonant. There was slight enlargement of the heart. The rate and rhythm were regular. No murmurs were heard. The liver was just barely palpable. The remainder of the physical examination was not worthy of note. The red blood cell count was 4,900,000, the white 13,600, with 65 per cent polymorphonuclears. Urinalysis showed 3 plus bile and an occasional white cell. The icterus index was 129 units. The blood urea nitrogen was 69.6 mg per hundred cubic centimeters. On March 31 agglutinations performed by Dr. Elliston Farrell were positive in a dilution of 1:300 against *Leptospira icterohemorrhagiae*. A sample of serum sent to the National Institute of Health on April 14 was reported as being positive in a dilution of 1:10,000 against *Leptospira canicola* and 1:1,000 for *Leptospira icterohemorrhagiae*.

#### HEMORRHAGIC DIATHESIS AND GASTRO-INTESTINAL FEATURES

One of the essential pathologic features of spirochetel jaundice is a hemorrhagic diathesis which presumably results from a local toxic effect of the spirochete on the capillary wall. The prothrombin time of the blood may or may not be abnormal. Six of our patients had prothrombin determinations during the height of their illness. Four of these had an obvious hemorrhagic diathesis and the prothrombin determinations were 75 per cent, 83 per cent, 73 per cent and 100 per cent of normal, respectively. The determination of 100 per cent normal was made on patient 8, who had severe melena and hematemesis. Two patients who showed no evidence of a bleeding tendency had readings of 60 per cent and 95 per cent respectively. This hemorrhagic tendency may cause minute hemorrhages in the skeletal muscles, lungs, liver, stomach, pancreas, adrenals, peritoneum and spleen. In the more severe cases purpura, hematuria, hematemesis and melena may be present. Fully one half of our patients showed hemorrhagic phenomena. These manifestations consisted of purpura, petechial and subconjunctival hemorrhages, bleeding mucous membranes, hematemesis and melena and 1 patient had a uterine hemorrhage.

As a consequence of these factors and notably from hemorrhage into the intestinal wall and an inflammatory reaction in the duodenum and around the ampulla of Vater, severe gastrointestinal symptoms may develop. All but 1 of our patients complained of abdominal pain. Rigidity of the abdominal wall was present in 4 cases and in 9 cases nausea and vomiting were present for a varying length of time. Patient 8 had melena and hematemesis and required five blood transfusions. Patient 13 entered the hospital with severe abdominal pains, rigidity, nausea and vomiting. The leukocyte count was 50,000. The physical examination indicated an acute abdominal emergency, but the nature of the onset and course of the disease and our previous experience with spirochetel jaundice were the determining factors in a conservative policy. Twelve hours later the acute symptoms had subsided and the leukocyte count had fallen to 30,000, and the patient went on to uneventful convalescence. In connection with this case it is of interest to point out the experience of White and Prevost. A cholecystogastrostomy was done on their patient two months after the onset of spirochetel jaundice and the gallbladder was found to contain hemorrhagic material which on dark field examination was positive for *Leptospira*. Another case reported by Gaines and Johnson<sup>21</sup> on operation showed an intramural obstruction.



Fig. 1—Section of kidney of O. D. Arrows indicate *Leptospira*.

rare. Meningeal symptoms occupied a prominent place in 4 of the 12 cases reported by him. Because of the rarity of *Leptospira canicola* disease, case 12 will be described in brief.

E. R. (case 12), a white man aged 63, a night watchman, admitted to Charity Hospital March 25, 1942, stated that two weeks prior to admission he had an infection of the upper respiratory tract with mild malaise for a few days and only a slight cough. About ten days prior to admission his temperature was 102° F. The local physician who was called said he had a "touch of pneumonia" and gave him white powders and a cough medicine. His fever subsided in one or two days. In one week the patient's wife noticed that he had a yellowish tinge to his skin. At this time his urine became "red as blood." He was voiding small amounts of urine frequently. He made satisfactory progress until the day of admission, when his wife noticed that he was cloudy mentally. Shortly after this he had a mild convulsion. He regained consciousness in a few minutes but was mentally hazy on admission.

Physical examination revealed that he was well nourished and was uniformly jaundiced. There were numerous excoriations over the abdomen and back. The scleras were icteric.

21 White J. J. and Prevost J. V. *Wells Disease*. 1941. Cases Including Marked Anatomy of One Case and Pathological Literature. *Ann. Int. Med.* 15: 207 (Aug.) 1941.  
22 Gaines, A. R. and Johnson R. P. *Wells Disease*. Seven Cases. *Arch. Int. Med.* 60: 817 (Nov.) 1937.



of the ductus choledochus consequent to inflammation of the duodenum and the ampulla of Vater. Appreciation of the various aspects of the gastrointestinal manifestations of this disease are of great importance in the differential diagnosis during the acute stage.

#### CARDIAC AND ELECTROCARDIOGRAPHIC FEATURES

Symptoms and findings referable to the heart are not uncommon in our experience. The German literature cites numerous instances of pathologic changes in the heart consisting of myocardial necrosis, fibrous pericarditis, intussusception and vegetative endocarditis. Descriptions of similar complications have not appeared in the American literature to our knowledge. In our 1 case that came to autopsy (case 4) scattered petechial hemorrhages were observed in the endocardium. Microscopic examination showed fibrinous exudate on the epicardium with collections of lymphocytes in the underlying connective tissue. The myocardium showed scattered areas of fragmentation and there were areas containing free red blood cells in the stroma.

We have observed the following clinical conditions during the acute stages of the disease: gallop rhythm, pericardial friction rub, enlargement of the heart, severe sinus tachycardia and premature beats. Most of these findings disappeared during convalescence. Electrocardiograms were taken on 5 of our patients and among the significant findings noted were prolongation of the QT interval, defective auriculoventricular conduction, low T waves, blocked auricular beats and prolonged PR intervals. Electrocardiograms taken during convalescence showed a gradual return to normal.



Fig 2—Section of heart of O. D. Note transverse fragmentation of myocardial fibrils. Interstitial edema and hemorrhage are also present.

A brief report of our fatal case referred to is given here. The pathologic changes in this case have been described in detail by Harris.<sup>14</sup>

O. D., a white man aged 39, a dirty hand, noted the sudden onset of his illness on Sept. 14, 1941 associated with severe pains in the muscles of his forearms, legs and back. Later in the day a shaking chill was experienced, and his temperature was found to be 101 F. Shortly thereafter he began to vomit greenish material, and by evening he had begun to experience

a dry hacking cough. This course continued for five days, during which time much smaller amounts of urine than normally were passed, and the patient became progressively more exhausted with chills and high fever. He was admitted on the fifth day of his illness when a definite icterus was observed. Physical examination was otherwise negative save for a tender

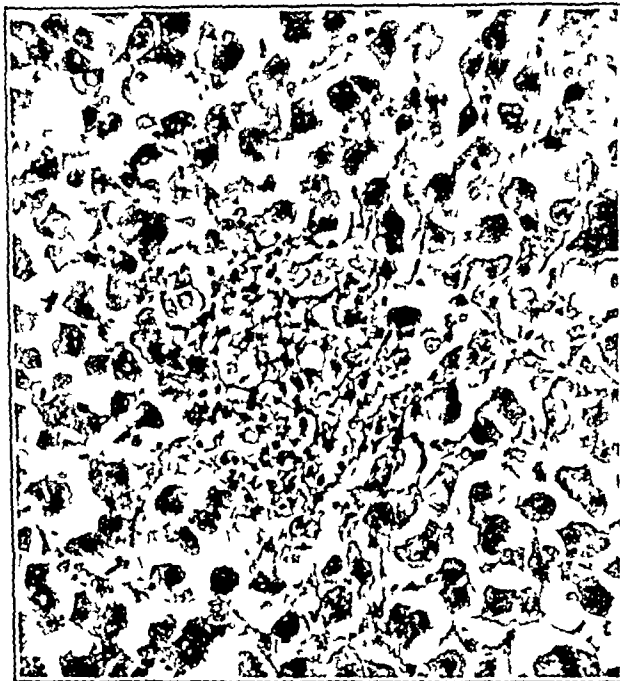


Fig 3—Section of liver of O. D. Note central area of necrosis.

enlarged palpable liver. The white blood cell count was 15,000 with 97 per cent polymorphonuclear leukocytes, the urine showed 3 plus albumin, numerous red blood cells, many granular casts and 4 plus bile. Blood urea nitrogen was 16.1, dextrose 143 and the icterus index 110. A chest film revealed no abnormalities. While in the hospital, the patient became steadily more toxic, his temperature went higher and he voided very little urine. On the eighth day a pericardial friction rub was heard. Death occurred on the ninth day of his illness, when his temperature was 103 F. No urine was passed in spite of heroic measures to produce diuresis.

Autopsy revealed, among the essential findings, jaundice, petechial areas over the chest and ecchymotic areas over the parietal peritoneum. The liver was enlarged. Microscopic sections of the liver showed considerable disorganization of the arrangement of the liver cells which occurred in groups of 2 or 3 cells rather than in continuous cords. These groups were interspersed with clumps of lymphocytes. The kidney sections showed a diffuse infiltration of lymphocytes between the glomeruli. The latter were small and showed large capsular spaces. Many endothelial lined spaces filled with blood were observed in the medulla and to a lesser extent in the cortex. Levaditi stains of the kidney showed many leptospiras. When the pericardial cavity was opened some fibrinous exudate was noted on the epicardium in the region of the right auricle. Microscopic examination showed fibrinous material with collections of lymphocytes in the underlying connective tissue. The myocardium showed areas of fragmentation. Free red blood cells were evident in areas of the stroma. Blood taken from the patient post mortem agglutinated *Leptospira icterohemorrhagiae* in a titer of 1:500.

#### COMMENT

We are inclined to agree with Ashe and his group that a clinical diagnosis of spirochetal jaundice is feasible, but we would like to add the qualification "with assurance only in typical cases." We feel that many cases are typical and will be missed unless the condition is considered and the proper laboratory studies are car-



ried out We wish to suggest that in any acute infectious condition in which agglutinations for other diseases are negative tests for leptospirosis be made

As Welch-Sorgdiager has pointed out, the clinical symptoms of diagnostic significance are

1 An acute infectious disease with acute onset, fever, headache and prostration 2 Severe myalgia appearing spontaneously and on pressure in the thigh, calves and back 3 Signs of liver damage 4 Signs of kidney damage 5 Leukocytosis 6 Epidemiologic information—immersion, occupation We feel that if any four of these features are present the diagnosis of spirochetel jaundice should be strongly entertained

#### SUMMARY AND CONCLUSIONS

There are some factors which might explain the increasing incidence of reported cases of human leptospirosis in North America It has been pointed out that spirochetel jaundice has been present in Louisiana since at least 1905 Salient features of 15 cases have been observed at Charity Hospital over a period of two and one-half years Interesting aspects are encountered in the differential diagnosis of these cases There is a high incidence of gastrointestinal symptoms and abdominal crises The similarity of spirochetel jaundice in its early phases to pneumonia makes it possible for the condition to be mistaken for hepatitis secondary to pneumonia or sulfonamide therapy Symptoms and clinical signs referable to the heart and the electrocardiogram have been encountered

### OCCIPITOPOSTERIOR POSITION

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NEW YORK

The occipitoposterior position is perhaps the most common and important abnormality in the mechanism of vertex presentations, occurring in approximately 25 per cent of all such presentations Its management has long been a matter of discussion Although the literature on the subject is voluminous and facts of some value have been derived from it, there will undoubtedly be many more contributions, for there will always be a posterior

The occipitoposterior position is probably much more common than is generally supposed I am convinced that many prolonged labors supposedly occipitoanterior were occipitoposterior in the beginning The reported incidence varies greatly Tweedy and Wrench<sup>1</sup> reported 121 cases in 15,167 deliveries (0.8 per cent), Williams,<sup>2</sup> 11.3 per cent in 5,000 cases, Scott,<sup>3</sup> 14.04 per cent in 1,000 consecutive cases, Piper<sup>4</sup> 17.1 per cent, Danforth,<sup>5</sup> 25.1 per cent in 1,131 private deliveries In an earlier paper<sup>6</sup> I reported 500 cases of occipitoposterior position in 3,966 deliveries, an incidence of 12.6 per cent D'Esopo<sup>7</sup> noted that 19 per cent of all vertex presentations engaged in the posterior position In our series of 5105 deliveries in St Ann's Maternity Hospital, including both private and general services, there were 600 cases of occipitoposterior position (11.76 per

cent) Detailed statistics of these cases will be found later in this paper

In vertex presentations the occiput, as a rule, lies at a lower level in the pelvis than the sinciput and consequently rotates forward even in cases in which

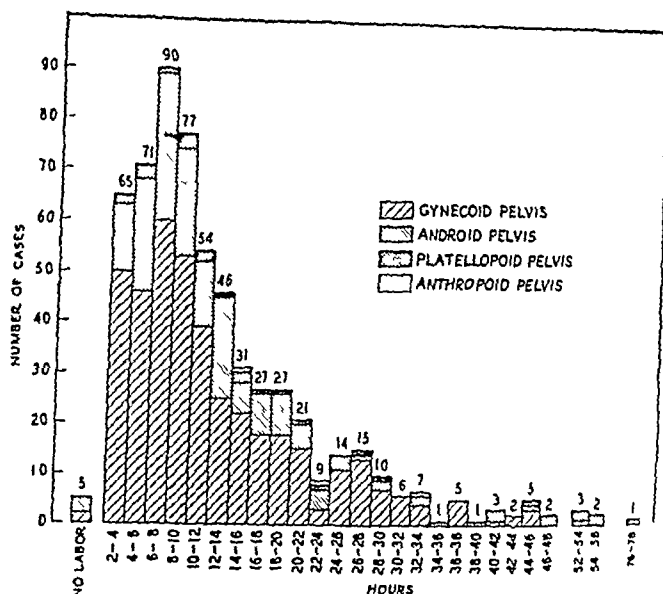


Chart 1—Correlation of length of first stage of labor with type of pelvis in cases of occipitoposterior position in two hour intervals

it was posterior in the beginning In a small proportion of cases the back is posterior at first and flexion is not complete, consequently the sinciput is as low as or even a little lower than, the occiput As a result the sinciput tends to rotate forward, the face lying behind the pubes, and the occiput is carried into the hollow of the sacrum

Incomplete flexion of the head, and hence posterior rotation of the occiput, is more common when the occiput is primarily directed backward Herman<sup>8</sup> explains this tendency as follows Extension of the head in occipitoposterior presentations comes about in two

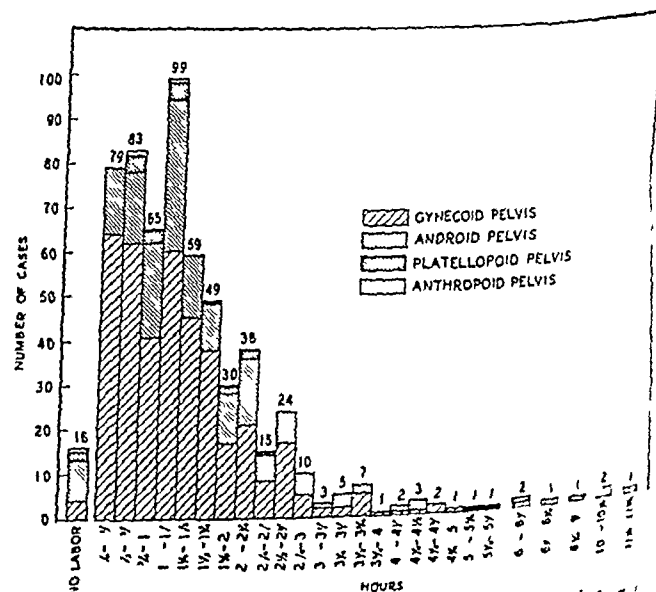


Chart 2—Correlation of length of second stage of labor with type of pelvis in cases of occipitoposterior position in fifteen minute intervals

ways (a) because the axis of the uterus and of the pelvic brim is concave behind, (b) because the greatest diameter of the head is behind the center The child must accommodate its attitude to the space in which it lies When the axis of the upper part of the fetal pelvic canal is concave behind then the child is in the

8 Herman G E Difficult Labour ed 7 London 1929 p 7

From St Ann's Maternity Hospital  
1 Tweedy, E H, and Wrench, G T Practical Obstetrics ed 7, revised by Bethel Solomons and N M Falkner, London, Milford 1937, p 336  
2 Williams, J W Obstetrics, ed 6, New York, D Appleton & Company, 1930, p 322  
3 Scott, R A Am J Obst & Gynec 23 400 (March) 1932  
4 Piper, E B, in Curtis A H Obstetrics and Gynecology Philadelphia, W B Saunders Company 1933, vol 2 p 86  
5 Danforth, W C Am J Obst & Gynec 23 360 (March) 1932  
6 Hennessy, J P Virginia M Monthly 63 663 (Feb) 1937  
7 D'Esopo D A Am J Obst & Gynec 42 937 (Dec) 1941

lies in front the spine will be bent and the abdominal surface, which is behind may be concave. If the position of the child is such that the abdomen lies in front then accommodation to the cavity can be obtained only by some extension of the spine. If this extension is enough to bring the occipitospinal joint in front of the line along which the propelling force acts, this force will, unless opposed, produce full extension of the head. When the head enters the birth with the occiput anterior the biparietal diameter corresponds almost exactly with one or the other oblique diameter of the pelvis when there is room for it. If however the occiput is posterior the biparietal diameter must fit into a diameter of the pelvis which is posterior to and smaller than the oblique diameter. As a result the occiput is retarded, producing a varying degree of extension.

As to the cause of primary occipitoposterior position opinions differ, but many authors<sup>9</sup> agree as to the deviations from normal of the bony pelvis. Thoms<sup>10</sup> mentions the relative or the actual diminution of the transverse diameter of the inlet and Caldwell and Moloy<sup>11</sup> state that this type of deformity, as exhibited in their "android" pelvis, necessarily tends to cause posterior engagement. Our experience has shown that the narrower the anterior pelvis the higher the percentage of posterior positions. Many authors recognize definite pelvic contraction as a cause of posterior posi-

tion with anterior positions. On an average it lasts from two to four hours longer in primiparas and from one to two hours longer in multiparas. I believe that this delay occurs during the stage of expulsion and that in the majority of cases rotation occurs spontaneously if labor is allowed to continue long enough.

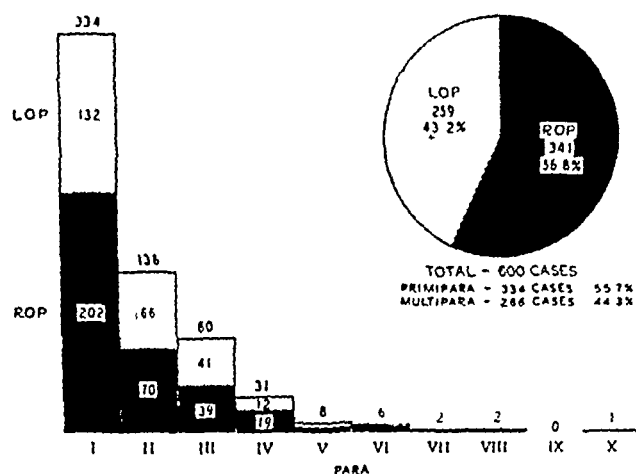


Chart 4—Correlation of the left and the right occipitoanterior position (LOP and ROP) with number of birth

but we have tried to spare our patients and shorten the second stage of labor by correcting this abnormality. How this should be done depends on the individual operator. Every obstetrician who has had a large experience with this position is apt to have rather definite ideas as to its treatment, and probably the procedure in which he is most adept is the best for his use.

In determining whether intervention may be necessary, careful palpation of the ischial spines is most important. If they are unduly prominent there will be more midplane contraction and the chances of long rotation are considerably decreased. A warning that manual rotation, use of forceps or version may be required. X-ray findings may be misleading for the X-rays do not always show clearly the size, height and thickness of the

ischial spines and the narrowing of the midplane. If the biparietal diameter is narrow, posterior position may be anticipated early in labor and operative intervention may be instituted under the most favorable circumstances. Delay in anterior rotation of the head as it descends in the pelvic cavity is definitely the result of cephalopelvic disproportion or of that pelvic asymmetry which materially diminishes the space in the fore pelvis. With the relatively greater amount of space in the posterior pelvis, the law of accommodation necessitates a posterior position of the occiput, that is descent in the line of least resistance.

In cases with no satisfactory progress it is our rule to recheck, owing to the probability of a posterior position.

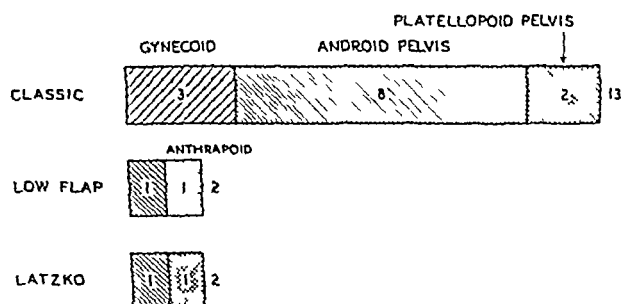


Chart 3—Correlation of delivery by cesarean section with type of pelvis. This operation was performed in 17 (2.8 per cent) of the 600 cases of occipitoposterior position.

tion. The etiologic importance of deflection of the head is often mentioned, but deflection in turn depends on such pelvic asymmetry as disturbs the equality of pressure on the ends of the occipitospinal lever (Cosgrove). Other important causative factors to consider are the posture of the fetus in utero and weak labor pains (poor muscle tone). The latter also applies to the abdominal muscles, particularly in lax or pendulous abdomens. The association of weak labor pains with a deficient pelvic floor is found in a large percentage of multiparas. Here the elements which normally bring about flexion and internal rotation are absent, and the occiput is likely to remain posterior.

The occipitoposterior position is not in itself a pathologic condition, but it may become so because of persistence caused by the factors mentioned. Posterior positions are likely to be a cause of difficult labor, owing to the fact that the head is usually extended when difficulty is encountered. Naturally, therefore, if there is any pelvic disproportion the labor is increasingly prolonged. Whether or not subsequently the position is corrected by anterior rotation, labor is more tedious.

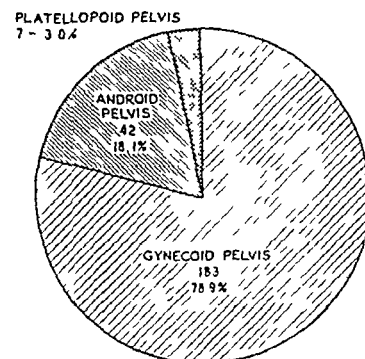


Chart 5—Correlation of spontaneous anterior rotation with type of pelvis in the 232 cases of occipitoposterior position in which it occurred.

9 Vaux N W. Am J Obst & Gynec. 20:782 (Dec.) 1930.  
Hanson Samuel. Surg. Gynec. & Obst. 59:102 (July) 1934.  
Crosby S A. Am J Obst & Gynec. 31:402 (March) 1936.  
10 Thoms Herbert. Surg. Gynec. & Obst. 56:97 (Jan.) 1933.  
11 Caldwell W F and Moloy H C. Am J Obst & Gynec. 26:479 (Oct.) 1933.

4 In the narrow fore pelvis the true conjugate is of average length, also with a forward promontory of the sacrum there are more occiput transverse presentations

5 In a series of 600 consecutive cases of occipito-posterior position at St Ann's Maternity Hospital New York the gross fetal and neonatal mortality was 1 per cent. The fetal mortality, therefore, was no greater than in occipitoanterior positions

6 Parity and age apparently are not factors in this complication

7 Large size of the baby per se is not the cause of posterior positions, it is a factor only when associated with pelvic deviations from the normal

8 The occipitoposterior position need no longer be dreaded, as nearly all cases can be dealt with successfully even if anterior rotation should fail to occur spontaneously

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## PREVENTION OF EXPERIMENTAL RABIES

TREATMENT OF WOUNDS CONTAMINATED BY RABID  
VIRUS WITH FUMING NITRIC ACID, SOAP  
SOLUTION, SULFANILAMIDE OR  
TINCTURE OF IODINE

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Prevention of rabies by local treatment of bites inflicted by rabid animals has occupied the attention of practitioners of the healing art from at least as early as the first century A. D. Celsus<sup>1</sup> at that time and Galen<sup>2</sup> in the next century advised cauterization with a hot iron. The latter also suggested that the wound be incised and drawing medicine applied in order to maintain a running ulcer for at least forty days.

Between that time and the eighteenth century many other methods of treatment were employed. Many of these were based on mysticism or empiricism, often in conjunction with the actual cautery. Soon after the eighteenth century began, cauterizing agents other than the hot iron came into use. Silver nitrate and burning with gunpowder were employed. The first to advocate the use of nitric acid seems to have been Dr. Samuel Danforth.<sup>3</sup>

Little information is available in the literature in regard to the efficacy of these methods of treatment. Most of the results have been presented in the form of case reports. Since physicians now know that about 65 per cent of those bitten by rabid animals escape infection,<sup>4</sup> this kind of proof means little when only 1 or 2 cases are cited.

Scant proof has been offered to show the value of the various types of local treatment that have been

applied to wounds contaminated with rabies virus experimentally. Babes<sup>5</sup> studied the value of the thermo-cautery in dogs and rabbits. He inflicted wounds on the faces of 10 dogs and 15 rabbits and then contaminated the wounds with fixed rabies virus. The wounds of 8 dogs and 13 rabbits were deeply cauterized at different intervals, and the remaining 2 dogs and 2 rabbits served as controls. Three of the 8 treated dogs and 4 of the 13 treated rabbits did not develop rabies while all of the controls died.

In the experiment in which he used rabbits all of the 7 animals whose wounds were cauterized more than twenty-five minutes (twenty-five to sixty minutes) after contamination developed rabies. In his experiment with dogs all but 1 of the 5 animals whose wounds were treated after twenty-five minutes developed rabies. The dog that escaped infection was 1 of 2 treated after an interval of twenty-four hours.

In 1899 Follen Cabot<sup>6</sup> published his studies on the prevention of experimental rabies by local treatment of wounds with fuming nitric acid. Since his publication is widely quoted as a basis for the use of fuming nitric acid for the treatment of wounds inflicted by rabid animals on human beings, the technique that he followed is stated in full.

A portion of medulla taken from a rabbit dead from laboratory rabies was beaten into an emulsion composed of 1 part of medulla to 5 parts of sterile water. Of this emulsion 1 cc. was injected with a hypodermic needle into the outer and upper part of the thigh of a guinea pig. The hair was closely cut, and the point of the needle introduced one-fourth of an inch, at right angles, into the region of the sciatic nerve. The injected virus was left undisturbed for twenty-four hours at the end of which time an incision half an inch long was made over the seat of puncture, exposing the nerve. The tissue in the wound surrounding the point of puncture was carefully swabbed out and the cautery applied. The animal meantime being anesthetized with chloroform.

For each of his experiments Cabot divided his animals into four groups. Group 1 was treated with fuming nitric acid, group 2 with the thermocautery and group 3 with silver nitrate. In group 4 the wounds were swabbed out with dry absorbent cotton and left open. Each group had its own set of control animals. Of the guinea pigs that were treated with fuming nitric acid 91 per cent did not develop rabies, against 15 per cent of the controls. The results with the actual cautery were equally striking, as 70 per cent of the treated animals and only 11 per cent of the controls escaped infection. In the experiments with silver nitrate 55 per cent of the treated animals did not become infected compared with 16 per cent of the control animals. Thus one per cent of the guinea pigs whose wounds were only swabbed out with cotton and 16 per cent of the controls did not develop rabies.

Poor<sup>7</sup> reported the results of a single experiment in which he used fuming nitric acid to treat wounds that had been contaminated with rabies virus. He made an incision on the back of the neck of each guinea pig and cut the subcutaneous tissues on either side of the wound in several places with scissors. The wound was

From the Illinois Department of Public Health Division of Laboratories

1 Underwood, J. W. The Eight Books on Medicine of Aulus Cornelius Celsus, 1830, vol. 3, p. 107.

2 Hamilton, Robert. Remarks on the Means of Obviating the Fatal Effects of the Bite of a Mad Dog or Other Rabid Animals, London: Shaw and Jackson Company, 1780, p. 30.

3 Thatcher, James. Observations on Hydrophobia, Joseph Avery Company, 1812, p. 239.

4 Cornwall, J. W. Statistics of Antirabic Inoculations in India. Brit. M. J. 2, 298, 1923.

5 Babes, V. Etudes sur la rage. Ann. Inst. Pasteur, 1894.

6 Cabot, Follen. The Cauterization of Wounds Infected with Rabies After an Interval of Twenty-Four Hours. New York News, 74, 329-331, 1899.

7 Poor, I. W. The Late Cauterization by Means of Wounds Infected with Rabies Virus. Collected Papers of Research Laboratory No. 6 Department of Health, New York, p. 25.

contaminated with street virus and then the edges were brought together with adhesive plaster. Twenty-two hours later they were opened and fuming nitric acid was applied. Twenty guinea pigs were used in this experiment and of this number 12 were treated and 8 served as controls. Five of the treated animals did not develop rabies whereas all the controls succumbed.

It is difficult to evaluate the results of these experiments. With the exception of Cabot's<sup>8</sup> experiments the studies were conducted with comparatively small numbers of animals. The experimental procedures used by these investigators were varied and in some instances were quite unlike the natural mode of infection and application of therapy. Cabot's methods especially may be criticized in the latter regard. The application of cauterizing agents to the region of the exposed sciatic nerve might have damaged the nerve sufficiently to prevent progression of the virus along its fibers. Possibly this explains, at least in part, why Cabot obtained such good results. Obviously, however, such a method of treatment which may involve the destruction of many nerve trunks could not be employed in the prevention of human rabies.

Rosenau<sup>9</sup> wrote in his textbook:

Experiments under my supervision (unpublished) indicate that practically all guinea pigs may be saved by prompt application of nitric acid that its effectiveness decreases with time but that it is still partially protective up to forty-eight hours. No other substance gives equally good results. Strong germicides such as carbolic acid are not reliable. Nitrate of silver is valueless. Formalin and the actual cautery are not effective. Nitric acid on account of its diffusibility and penetration is almost specific for rabies.

The experiments referred to by Rosenau have not been published; consequently it is not possible to analyze his results. It would be of interest, however, to know how many substances other than those he mentioned were tried by him and how he determined the diffusibility and penetration of nitric acid applied to wounds of this character. It should be pointed out that Rosenau's and Cabot's observations conflict in respect to the use of silver nitrate and the actual cautery but that they are in complete agreement in regard to the effects of fuming nitric acid.

The clinical and the experimental evidence cited in the preceding paragraphs do not, in our opinion, establish the value of fuming nitric acid in the prevention of rabies. Yet it appears that on the basis of these reports most public health and medical authorities at the present time recommend that bites inflicted by rabid animals be treated with fuming nitric acid. Cauterization with fuming nitric acid produces many undesirable reactions. Its application to wounds is painful and bacterial infections may result because of its destructive action on tissues. Usually healing is slow after its use and severe scarring may follow. If the acid is applied to deep wounds, contractures may result or periosteal and bony tissues may be damaged. Consequently, physicians are reluctant to apply fuming nitric acid to bites of rabid animals, especially when the bites are deep and badly lacerated or when they are inflicted on the face. Gowen's<sup>9</sup> survey of the actual practice in Illinois bears this out. He showed that fuming nitric

acid was used to treat only about 28 per cent of the cases in which wounds inflicted by presumably rabid animals were given any form of local treatment.

In view of these facts we decided to investigate more thoroughly the effect of fuming nitric acid in the prevention of rabies by applying it to wounds that were contaminated experimentally with rabies virus. In addition we compared the value of soap solution and tincture of iodine with that of fuming nitric acid. We also studied the effect of packing the wounds with sulfanilamide after they had been treated with soap solution.

#### METHODS AND MATERIALS

**Viruses.**—In these studies it was desired to infect either guinea pigs or mice with rabies virus in such a manner as to simulate as closely as possible the mode of the infection resulting from a bite of a rabid animal. Since natural rabies is caused by an infection with rabies street virus and since most of the animal bites are deep enough to reach subcutaneous and muscle tissues, attempts were made to obtain a strain of street virus that would be infectious for these animals on inoculation into these tissues. Twenty-eight strains of street viruses were isolated from brains of dogs that had died of the natural disease. The isolations were made by preparing a 10 per cent suspension of the brain of each dog and by injecting 0.5 and 0.15 cc intramuscularly and 0.15 and 0.03 cc intracerebrally into guinea pigs and mice respectively. Usually 2 guinea pigs and 4 mice were given an injection by each route and with each specimen. The intramuscular inoculation was made into the gastrocnemius muscle.

Only 5 of these 28 strains produced rabies by intramuscular inoculation. Each of these 5 strains infected about 50 per cent of the guinea pigs and mice in the first passage. By the intracerebral route of injection, all of the strains were infectious for both guinea pigs and mice, producing about 96 per cent mortality. A diagnosis of rabies was made in the test animals by detecting Negri bodies in smear preparations of the brains of those that died.

Only those viruses that were infectious by intramuscular injection were employed in the experiments. Each virus was passed once either in guinea pigs or in mice by the intramuscular route before it was used to infect the experimental animals. In attempts to infect a larger number of animals under the experimental conditions it was found that these strains did not produce rabies consistently. The rates of infectivity varied from 5 to 50 per cent in the control mice and from 1 to 80 per cent in the control guinea pigs. Their virulence could not be enhanced or maintained by serial intramuscular passages either in guinea pigs or in mice. Four strains lost their infectivity by the intramuscular route after two passages and one after four. Consequently these studies could not be successfully conducted with any of these strains of viruses. They were employed in a few of the preliminary studies but a fixed rabies virus was used in the main experiments.

After testing the virulence of several strains of fixed rabies viruses it was found that one strain, S-1, consistently infected guinea pigs and mice by the intramuscular route of inoculation. S-1 virus was fixed for rabbits, and it was maintained in them by serial intracerebral passages. Before it was used to inoculate the animals in the experiments it was passed once through guinea pigs by intramuscular injection except in experiments 16, 17 and 18 in which rabbit brain virus was employed. Its virulence after the first passage in guinea pigs was such that 0.5 and 0.1 cc of a 1 per cent suspension of an infected guinea pig brain produced rabies in 100 per cent of the guinea pigs and mice respectively. The virus was inoculated in the muscle tissues of the left hindleg and the animals died within ten days after the injection. The minimum lethal dose of S-1 virus for mice by the intracerebral method of inoculation was about 0.03 cc. of a  $10^{-6}$  dilution.

In the experiments each guinea pig was given an injection of 0.2 cc of either a 10 or a 20 per cent suspension of the

<sup>8</sup> Rosenau, M. J. Preventive Medicine and Hygiene, ed. 6. New York: D. Appleton-Century Company, 1935, p. 353.

<sup>9</sup> Gowen, C. H. Rabies in Illinois, 1936. Illinois M. J. 72: 174 (Aug.) 1937.

virus. The virus suspensions were prepared from approximately equal portions of the brains of at least 2 guinea pigs which had died after intramuscular injection of S-1 virus. Only brains that were free from bacterial contamination and had not been stored longer than five days at about  $-5^{\circ}\text{C}$  were used. The suspensions of virus were made in hormone broth.

Inclusion bodies were found in the brains of guinea pigs and mice that died from infection with S-1 virus. Some of these bodies were spherical and others oval. They were about the size of Negri bodies with the exception that about 25 per cent of the spherical type were much smaller. When the bodies were stained by Seller's method their peripheries were dark blue; the bodies themselves were pink and the typical dark blue granules seen in Negri bodies were absent. The presence of these inclusion bodies was not considered diagnostic for rabies.

**Animals.**—Guinea pigs weighing from 300 to 450 Gm were employed in the main experiments. Albino Swiss mice each weighing about 20 Gm, were used in the preliminary studies and in the virus neutralization tests. The sexes were about equally represented in both the guinea pigs and the mice. The animals were kept in individual cages to prevent fighting, cannibalism and cross infection. In the experiments the animals were kept under observation for thirty-five days after inoculation. Thereafter the surviving animals were released and about 90 per cent of the female and about 15 per cent of the male guinea pigs were used for breeding purposes. Under such an arrangement more than 65 per cent of the released guinea pigs were observed for about one year. The longest incubation period that was noted in the guinea pigs inoculated with S-1 rabies virus was fifteen days; the average being about seven days.

**Methods of Inflicting the Wounds and Inoculating Them with Rabies Virus.**—The procedures of inoculation were designed to approximate as closely as possible the mode of the infection caused by a bite of a rabid animal. Three such methods were employed. The site selected for the wound in each case was the muscular tissue on the back of the neck, slightly anterior to the shoulder blades. The hair was always clipped from the site of inoculation, and aseptic technic was observed in all of the methods.

**Method 1.** A rat tooth forceps was dipped into a 20 per cent virus suspension and then clamped on the neck muscles of the animal. By this procedure the wound was contaminated at the same time that it was inflicted. The amount of the virus suspension transferred by the forceps in a single dip could not be accurately determined. It was estimated, however, that about 0.05 cc of the suspension was planted in the wound. The wound inflicted in this manner contained three punctures and in the course of treatment it was necessary to treat each puncture separately. For inoculation of guinea pigs this procedure was unsatisfactory because the skin of these animals owing to its thickness could be punctured by the teeth of the forceps only with difficulty. Although method 1 probably simulates most closely the natural mode of infection it could not be used in experiments with guinea pigs.

**Method 2.** This is a modification of the technic employed by Cabot<sup>10</sup> and Poor.<sup>11</sup> Only guinea pigs were inoculated by this method. Each animal received 0.2 cc of a virus suspension in the muscle tissues in the back of the neck, slightly anterior to the shoulder blades. A 22 gage hypodermic needle, 3 mm long was used. The needle was inserted 3 mm deep at right angles to the surface of the body. Thirty minutes after the inoculation an incision about 12 mm long and about 9 mm deep was made exposing the locus of the virus injected and the needle track. The open wound was then treated.

**Method 3.** In this procedure an incision was made with a scalpel in the muscles on the back of the neck, slightly anterior to the shoulder blades in each guinea pig. The incision was about 12 mm long and about 6 mm deep. Immediately after the wound was inflicted, approximately 0.2 cc of a virus suspension was deposited in it from a syringe with an 18 gage blunt needle. Following the inoculation the wounds were slightly irritated with the tip of the needle.

**Treatment of Animals Inoculated with Rabies Virus.**—Fuming nitric acid, 20 per cent aqueous solution of soft soap,<sup>12</sup> tincture of iodine and powdered sulfanilamide were used to treat the wounds of the animals after they were inoculated with rabies virus. The application of the nitric acid was made by means of a glass rod drawn out to about 15 mm in diameter and 40 mm in length. This glass applicator was dipped in fuming nitric acid to the depth of about 10 mm and then applied to the wound. The clotted blood was removed from the wounds before the acid was applied. The irrigation with the soap solution was carried out with either 20 or 50 cc syringes fitted with 16 gage hypodermic needles 65 mm long. The wounds were irrigated under the pressure produced by the application of the full force of the hand to the plunger of the syringe. A small hole was drilled in the bottom of a 250 cc beaker through which the needle was inserted into the beaker. By holding the beaker in an inverted position over the wound of the animal it was possible to carry out the irrigation without allowing the spray to endanger the operator. The volume of the soap solution that was used is stated in reference to each experiment. The iodine was applied with a cotton swab on a wooden applicator. The methods of treatment with sulfanilamide are described in detail in the protocols of experiments 17 and 18.

The application of the fuming nitric acid to the wound caused severe burns and extensive scarring in most of the animals. The wounds healed slowly, requiring about twenty-eight days for complete healing. Consequently it was not possible to apply any more of the acid than could be picked up by one dipping of the applicator without causing death. The treatment with the soap solution, the tincture of iodine or the sulfanilamide did not cause any apparent toxic effects. The wounds healed much sooner than those treated with the fuming nitric acid and scarring was minimal. In each method of treatment the wounds were allowed to heal without being bandaged.

**Methods of Diagnosing Rabies.**—Since the clinical symptoms shown by guinea pigs and mice that develop experimental rabies cannot be considered definitely pathognomonic, laboratory methods were employed to establish the diagnosis of rabies in the animals that died. Two such methods were used. In those experiments in which the animals were inoculated with street rabies virus a diagnosis of rabies was established by the detection of Negri bodies in the brain tissue. The brain smears were prepared and stained for Negri bodies by Seller's method.<sup>13</sup> In most of the experiments in which the animals were inoculated with S-1 fixed rabies virus the diagnosis of rabies was confirmed by the neutralization test.<sup>14</sup> This test which was made only on representative animals was conducted as follows. One part of a 1:100 dilution of the virus infected guinea pig brain was combined with two parts of antirabic serum. The mixture was incubated at  $37.5^{\circ}\text{C}$  for one hour. During the incubation period it was thoroughly shaken every fifteen minutes. Then 0.03 cc of the mixture was injected into each of at least 3 mice by the subdural route. The test was controlled by using normal rabbit serum in place of the antirabic serum. In addition the brains and heart bloods of representative animals that died in each experiment were studied culturally for bacterial infection. When contamination was encountered the pathogenicity of the organism was determined by animal inoculation.

#### EXPERIMENTS

The preliminary experiments were conducted with the five strains of rabies street viruses which were isolated in our laboratory and which were found to be infectious for guinea pigs and mice by intramuscular inoculation. Four hundred and seventy-five mice and 75 guinea pigs were used. The mice were inoculated by

10 The soap used in these experiments was purchased from Industrial Soap Company, St. Louis.  
11 Sellers, T. F. A New Method for Staining Negri Bodies. *Rabies, Am. J. Pub. Health* 17: 16 (1927).  
12 The antirabic serum used in experiments 1 to 16 was supplied by Dr. Harold A. Johnson of the Alabama State Health Department. The antirabic serum used in the remaining experiments was prepared in our laboratory.

method 1 and the guinea pigs by methods 1, 2 and 3. From 5 to 50 per cent of the control mice developed rabies. In the control guinea pigs that were inoculated by method 1 the mortality was about 1 per cent and in those inoculated by the other two methods the mortality ranged from 15 to 80 per cent. In addition a

TABLE 1—Results in Guinea Pigs Inoculated with S-1 Rabies Virus and Treated About Thirty Minutes Later

Experiment	Guinea Pigs Treated by Method 3 with			Untreated Controls
	Fuming Nitric Acid	20% Soap Solution	Tincture of Iodine	
1	0/10	0/10	7/10	7/10
3	0/10	10/10	7/10	1/10
4	0/10	10/10	10/10	1/10
	10/10	0/10	10/10	7/10
6	7/10	6/10	5/10	5/10
-	1/10	18/10	07/10	8/10
Number survivors/number used	6/10	67/10	46/10	00/10
Per cent not developing rabies	60	67	46	0

The numerator is the number of guinea pigs that did not develop rabies; the denominator the number of guinea pigs used.

large number of the treated mice died in which a diagnosis of rabies could not be established. These deaths were attributed to the small size of the animals which involved exposure of a relatively large percentage of their body surfaces to the burning and toxic effects of fuming nitric acid, soap solution or tincture of iodine. In view of these results it was apparent that these studies could not be successfully conducted with either mice or our strains of street viruses. Consequently the work with mice and the street viruses was discontinued and the subsequent experiments were conducted with the S-1 fixed rabies virus and guinea pigs.

EXPERIMENTS 1 TO 6—The guinea pigs in these experiments were treated about thirty minutes after they were inoculated with rabies virus. Two hundred and twenty-five guinea pigs were used, and they were distributed among the experiments as shown in table 1.

In each experiment the guinea pigs were inoculated with S-1 rabies virus by method 3. An incision was made in the muscles on the back of the neck slightly anterior to the shoulder blades in each animal and then 0.2 cc of a 10 per cent suspension of the virus was deposited in the wound. If hemorrhage had occurred, the clots of blood were removed before treatment was begun. The fuming nitric acid was applied to the wounds by carefully probing them with the glass applicator after dipping it in the acid. A cotton swab was used for the application of the tincture of iodine. The wound of each animal treated with the soap solution in experiments 1 to 4 was irrigated with about 60 cc of the soap solution while in experiments 5 and 6 about 120 cc was used. The control guinea pigs were inoculated by the same procedure but their wounds were not disturbed after the inoculation with virus.

A diagnosis of rabies was established in representative guinea pigs that died in each experiment by means of the neutralization test with antirabic serum. The heart bloods and brains of representative animals in each experiment were studied culturally and pathogenic bacteria could not be found.

The results of experiments 1 to 6 show (table 1) that 89 per cent of the guinea pigs that were treated with fuming nitric acid, 93 per cent of those treated with soap solution and 90 per cent of those treated with tincture of iodine, compared with 37 per cent of the control animals, did not develop rabies. The results of treat-

ment with tincture of iodine compared favorably with those obtained with fuming nitric acid and with soap solution. They are, however, less conclusive because a smaller number of animals were treated with it. Since the application of tincture of iodine to open wounds causes discomfort and in some instances chemical burns, it was decided to limit further studies with it.

As shown in these experiments (table 1) the application of fuming nitric acid, 20 per cent solution of soft soap or tincture of iodine to wounds about thirty minutes after they were inoculated with rabies virus was of decided value in preventing rabies. It is not always possible, however, to treat human beings or animals within thirty minutes after they have been bitten by a rabid animal. For this reason it was desired to determine what effect these agents would have when applied two or six hours after the animals were inoculated with rabies virus.

EXPERIMENTS 8 TO 12—In these experiments the guinea pigs were inoculated with S-1 rabies virus by method 3 and they were treated about two hours after inoculation.

Two hundred and eighty guinea pigs were employed, and they were distributed among the experiments as shown in table 2. Each animal received 0.2 cc of a 20 per cent suspension of the virus. The control animals were inoculated with the virus by the same procedure but they did not receive treatment.

The experiments were conducted in the same manner as experiments 1 to 7 except that approximately 80 cc of the soap solution was used to irrigate the wound of each animal that was treated with the soap in experiments 8 and 9 and about 200 cc in experiments 10, 11 and 12.

The rabies virus used in these experiments was identified by the neutralization test with antirabic serum. The test was performed only on representative animals from each experiment. In addition cultural studies were made of the brains and heart bloods of representative guinea pigs from each experiment and no bacteria could be found.

As shown in table 2, in experiments 8 to 12, 81 per cent of the guinea pigs that were treated with fuming nitric acid, 85 per cent of those treated with the soap solution, 60 per cent of those treated with tincture of iodine and 26 per cent of the control animals showed

TABLE 2—Results in Guinea Pigs Inoculated with S-1 Rabies Virus and Treated About Two Hours Later

Experiment	Guinea Pigs Treated by Method 3 with			Untreated Controls
	Fuming Nitric Acid	20% Soap Solution	Tincture of Iodine	
8	8/10	9/10	6/10	4/10
9	7/10	6/10	6/10	1/10
10	13/20	18/20		0/20
11	20/20	10/20		7/20
12	17/20	19/20		10/20
Number survivors/number used	63/80	68/80	12/20	22/80
Per cent not developing rabies	81.3	85.0	60.0	27.5

\* The numerator is the number of guinea pigs that did not develop rabies; the denominator the number of guinea pigs used.

no evidence of infection with rabies virus. The results of these experiments show that the application of fuming nitric acid, soap solution or tincture of iodine to the wounds of guinea pigs two hours after they were inoculated with fixed rabies virus was of definite benefit in preventing infection. The treatment with tincture of iodine was less effective than that with either of the other two substances. As in the previous experiments



however, a much smaller number of animals were treated with tincture of iodine. Consequently a fair comparison of the results cannot be made. These results also show that treatment with either fuming nitric acid or soap solution was just about as effective when it was instituted in two hours as when in thirty minutes. The slightly lower percentage of survivors among the animals treated two hours after inoculation is probably of no significance since the percentage of survivors among the controls is also smaller in these experiments.

EXPERIMENTS 13, 14 and 15—The guinea pigs in these experiments were treated six hours after they were inoculated with rabies virus. Sixty guinea pigs were used in each experiment and they were divided into three groups of 20 each. The wound of each animal was inoculated with 0.2 cc of a 20 per cent suspension of S-1 virus by method 3. The fuming nitric acid was applied to the wounds in the same manner as in the previous groups of experiments. The wound of each animal treated with soap was irrigated with about 200 cc of the solution.

In these experiments (table 3) 63 per cent of the guinea pigs treated with fuming nitric acid, 67 per cent of those treated with the soap solution and 35 per cent of the controls did not develop rabies. The diagnosis of rabies in representa-

TABLE 3—Results in Guinea Pigs Inoculated with S-1 Rabies Virus and Treated About Six Hours Later

Experiment	Guinea Pigs Treated by Method 3 with		Untreated Controls
	Fuming Nitric Acid	20% Soap Solution	
13	14/20*	17/20	10/20
14	14/20	14/20	8/20
15	10/20	9/20	1/20
Number survivors/number used	38/60	40/60	41/60
Per cent not developing rabies	63.3	66.6	35.0

\* The numerator is the number of guinea pigs that did not develop rabies, the denominator the number of guinea pigs used.

tive animals from experiment 14 was established by the neutralization test. The brains and heart bloods of representative guinea pigs from each experiment were studied culturally and bacterial contamination could not be detected.

The results of these experiments show that either fuming nitric acid or soap solution was of pronounced benefit in preventing rabies even when applied in six hours, although considerably less effective than when it was applied in two hours or thirty minutes.

As in the two previous groups of experiments here again the results of treatment with the soap solution were apparently slightly better than those obtained with fuming nitric acid, although the differences are not statistically significant.

EXPERIMENT 16—In this experiment it was desired to repeat as closely as possible the technique employed by Cabot<sup>6</sup> and Poor.<sup>7</sup> The guinea pigs were inoculated as described in method 2, 0.2 cc of a 20 per cent suspension of S-1 virus being injected into the muscle tissues on the back of the neck slightly anterior to the shoulder blades of each animal. About thirty minutes after the injection an incision was made as previously described, and the animals were treated immediately thereafter. The control guinea pigs were inoculated by the same procedure but they were not given any treatment after the incision was made.

Sixty guinea pigs were employed in this experiment. Twenty were treated with fuming nitric acid, 20 with soap solution and 20 were used as controls to determine the virulence of the virus. The fuming nitric acid was applied as in the previous

experiments, and about 100 cc of the soap solution was used to irrigate the wound of each guinea pig.

Fifty per cent of the guinea pigs that were treated with fuming nitric acid, 60 per cent of those that were treated with soap solution and 15 per cent of the control animals did not develop rabies. Brain tissues and heart bloods of representative guinea pigs were cultured and no bacteria could be detected.

The results of experiment 16 are in agreement with those reported by Poor.<sup>7</sup> Also they are in general agreement with the results reported by Cabot<sup>6</sup> although in his studies a much larger percentage of the guinea pigs that were treated with fuming nitric acid escaped infection. Possibly this difference may be attributed to the variation in the technique used in the inoculations and treatment.

EXPERIMENT 17—Soap solution and sulfanilamide<sup>13</sup> were employed for treatment in this experiment. Each guinea pig was inoculated with 0.2 cc of a 20 per cent suspension of S-1 rabies virus by method 3. About thirty minutes later the wound of each animal was irrigated with 100 cc of soap solution, then sponged dry and packed with 0.5 Gm of powdered sulfanilamide. In each case immediately following treatment the wound was clipped together with metal clips. The control guinea pigs were inoculated by the same procedure but their wounds were clipped together without treatment.

Sixty guinea pigs were used in this study. Treatment was given to 30, and the other 30 served to control the virulence of the virus. Ninety per cent of the treated animals, compared with 20 per cent of the controls, did not develop rabies. Cultural studies were made of the heart bloods and brains of representative guinea pigs that died and bacterial contamination was not observed.

The results of this experiment are in agreement with those of our first group of experiments in which treatment was carried out only with soap solution showing that the sulfanilamide apparently did not influence the results one way or another.

EXPERIMENT 18—Each guinea pig in this experiment was inoculated with 0.2 cc of a 15 per cent suspension of S-1 virus by method 3. The treatment was carried out exactly as in experiment 17 except that the wounds were not irrigated with the soap solution. Before the sulfanilamide was applied, each wound was carefully and thoroughly swabbed out with cotton swabs that had been soaked in soap solution. At least four swabs were used in treating each wound.

Twenty-eight guinea pigs were used in this experiment. Of this number 14 received treatment and 14 were used as controls. Seventy-nine per cent of the animals that received treatment and 36 per cent of the controls did not show evidence of rabies. Cultural studies of the heart bloods and brains of the animals that died did not reveal any bacterial contamination.

These results show that the type of treatment employed here was considerably less effective than the type used in experiment 17. Although a comparatively small number of animals were used in this study, the results indicate that irrigation of the wounds with soap solution is much more effective in preventing rabies than cleansing the wound with cotton swabs that had been soaked in the soap solution. Here again the results indicate that the application of sulfanilamide to the wounds did not help to prevent rabies.

#### COMMENT

In these studies it was not possible to duplicate in every respect the natural mode of infection with rabies virus as represented in bites of rabid animals. The natural disease resulting from a bite of a rabid animal is caused by the rabies virus that is present in the saliva. It was not possible for us to employ a saliva

13 The sulfanilamide was supplied by E. R. Squibb & Co., N. J.

virus however because of the many difficulties involved in its procurement. Neither were we successful in our efforts to isolate from brain tissues of dogs that died of natural rabies a virus which would infect either guinea pigs or mice with any degree of consistency by intramuscular inoculation. For this reason our experiments were conducted with a fixed rabies virus which was found to cause the disease consistently by intramuscular inoculation.

A good deal of confusion exists in the literature regarding the infectivity of street and fixed rabies viruses by intramuscular inoculation. Investigators seem to be in agreement that a fixed virus is less infectious by this route. Marie<sup>14</sup> Pasteur and his co-workers<sup>1</sup> and Genevray and Dodero<sup>16</sup> have shown however that certain strains of fixed viruses do produce rabies in animals when inoculated intramuscularly. Little information is available on the infectivity of fixed viruses in man. Athas and Franca<sup>17</sup> Franca<sup>18</sup> Breggi<sup>1</sup> and Remlinger<sup>10</sup> cited cases in which death followed antirabic treatment with vaccine that apparently contained living virus. On the other hand Remlinger<sup>10</sup> and Wissokowicz<sup>9</sup> pointed out that people have been inoculated subcutaneously and intravenously with fixed rabies viruses without becoming infected. As to natural rabies, Cornwall<sup>4</sup> stated that about 35 per cent of human beings bitten by rabid dogs die of rabies and Hutyrá and Marek<sup>21</sup> reported that about 30 per cent to 40 per cent of dogs bitten by rabid animals develop rabies. These reports are based on cases without treatment. In our own studies we tested 28 strains of street viruses isolated from rabid dog brains, and although all the strains produced rabies in guinea pigs and mice by intracerebral injection only 5 were infectious by the intramuscular route. In our experimental methods of infection, which involved exposure of cutaneous, subcutaneous and muscular tissues to these 5 strains of street viruses the infectivity was quite irregular. It varied from 5 to 50 per cent in mice and from 1 to 80 per cent in guinea pigs. On the other hand, the S-1 fixed rabies virus consistently infected about 70 per cent of the guinea pigs following use of the same methods of inoculation. From the information available in the literature and from our own results it appears that the infectivity of a rabies virus by the intramuscular route of inoculation depends more on the strain of virus than on whether it is a street or a fixed virus.

We realize that the methods of inoculation we used did not altogether simulate the natural inoculation occurring from a bite of a rabid animal. We believe however, that our methods did in many respects simulate the natural mode of infection. The wounds were produced in skin and muscle tissue, and in relation to the size of the animals they were deep, extensive and ragged. The virus was deposited in the wound and then worked into the muscle tissues with the tip of a blunt

hypodermic needle as it might be by the teeth of a rabid animal in the course of biting.

The mortality rates in experiment 16, in which we attempted to locate and expose with an incision the virus that had been injected into the muscle tissues of guinea pigs were considerably higher than the rates in our other experiments. No doubt it would be difficult by such a procedure to reach all of the virus so that effective treatment could be applied. This would explain some of the difficulties involved in local treatment of deep and punctured wounds. It also emphasizes the necessity of using antirabic vaccination in addition to local treatment.

The application of fuming nitric acid to the wounds of the guinea pigs caused severe chemical burns and scarring in about 90 per cent. The wounds healed slowly, requiring about four weeks for complete healing. On the other hand, the wounds of the guinea pigs that were treated with soap solution, tincture of iodine or sulfanilamide healed in about two weeks without showing toxic effects or excessive scarring. Less than 1 per cent of the guinea pigs in these experiments contracted intercurrent infections.

The results of these experiments show that cauterization with fuming nitric acid of wounds after experimental contamination with rabies virus is of definite value in preventing rabies. They also show that irrigation with soap solution is of equal or perhaps slightly more value. When either agent was applied within two hours after the inoculation of the virus only about one third as many guinea pigs developed rabies as among the untreated controls (tables 1 and 2). Treatment with fuming nitric acid or soap solution was only about two thirds as effective when applied in six hours as it was when employed after the thirty minute and two hour interval respectively.

As shown in experiments 17 and 18, sulfanilamide apparently did not aid in preventing rabies, neither did it appear to predispose to infection.

#### SUMMARY AND CONCLUSION

In experiments in which treatment of wounds contaminated with rabies virus was instituted within thirty minutes, only 11 per cent of those treated with fuming nitric acid and only 6 per cent of those treated with soap solution became infected, compared with about 63 per cent of the untreated controls. The application of treatment in two hours was apparently somewhat less effective, and its application in six hours was definitely less effective than when it was applied in thirty minutes.

In tests using a limited number of guinea pigs, the results of applying tincture of iodine within thirty minutes compared favorably with the results obtained following treatment with either fuming nitric acid or soap solution. However, when tincture of iodine was used after an interval of two hours it appeared to be considerably less effective than the other substances.

Packing the wounds with sulfanilamide after they had been treated with soap solution seemed to have no effect on the incidence of rabies.

The results of these experiments show that in the treatment of guinea pig wounds that have been inoculated with fixed rabies virus irrigation with 20 per cent solution of soft soap is just as effective as chemical cauterization with fuming nitric acid and possibly even more effective.

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# THE PREVENTION OF EAR AND NASAL SINUS COMPLICATIONS OF THE COMMON COLD

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Practically all infections of the ears and nasal sinuses are secondary to acute coryza or nasopharyngitis and are due to bacterial invasions. The primary inciting agent may be a virus but prolongation of symptoms and complications are caused by pyogenic organisms. Nasal and throat cultures of large numbers of patients with acute coryza show that the predominating type of organism varies from year to year. A group of nurses at the Johns Hopkins Hospital during the winter of 1943 were shown by cultures to have pneumococci in the nasopharynx and pharynx three times as frequently as beta hemolytic streptococci, while during the winter of 1942 beta hemolytic streptococci had been the commoner type. In other years *Hemophilus influenzae* predominated.

Beta hemolytic streptococci, pneumococci and *H. influenzae* are the types of bacteria most commonly found in the nose and throat during acute coryza but as mentioned their incidence varies from year to year. In 1942 beta streptococci were found in 36.2 per cent of the patients examined, while in 1943 they were present in only 11.2 per cent, *H. influenzae* was found in 29.3 per cent in 1942 and in 12.1 per cent in 1943. The incidence of pneumococci was more nearly the same—25.8 per cent in 1942 and 34.6 per cent in 1943. These figures are based on the number of cases in which these organisms predominated in several cultures. A few colonies of beta hemolytic streptococci, pneumococci and *H. influenzae* may be found in cultures of an individual with no clinical evidence of infection.

Alpha streptococci, several types of gamma streptococci, *Neisseria catarrhalis*, diphtheroids and *Staphylococcus albus* and *Staphylococcus aureus* are found so frequently in the nose and throat of normal healthy persons that they must be regarded as the normal flora of the throat, but one or more of these types, particularly staphylococci and alpha streptococci, are not infrequently found in almost pure culture in an infected ear or sinus. The designation "normal throat flora" implies that the types of organisms mentioned are present in the cultures without predominance of any one type. It is worthy of note that in 1943 the nose and throat cultures of 11.2 per cent of the nurses with signs and symptoms of acute pharyngitis or coryza were reported as showing normal throat flora, while not a single report of this kind was made during 1942. This suggests that both acute coryza and acute pharyngitis may sometimes be due to a virus or some agent other than bacteria. So-called virus pneumonia was more prevalent in this hospital during the winter of 1943 than in 1942, but only 2 of the 12 nurses with an acute infection of the upper respiratory tract and normal throat flora had virus or atypical pneumonia.

The incidence of nose and throat complications of coryza is steadily decreasing among the general population, owing to the widespread practice of the family physician and the pediatrician of giving sulfonamides by mouth for every acute infection of the respiratory tract. However, one of the objections to giving large doses of these drugs by mouth and thus saturating the entire body to prevent or to cure an infection in one small area is that approximately 30 per cent of the patients develop nausea, dizziness, fever, cutaneous rash or some more serious evidence of sensitivity to the drug.<sup>1</sup> The ideal procedure would be to use bactericidal and bacteriostatic agents locally in minor infections and reserve administration by mouth and by vein for the more serious spreading infections. Powdered sulfonamides have proved very satisfactory for local application in wounds but are not suitable for insufflation in the nose and throat during acute coryza. Drugs used in the nose should be neither too alkaline nor too acid and must in no way interfere with the movements of the cilia.

Pickrell<sup>1a</sup> in 1941 showed that a large burned area on the skin could be kept far more sterile by frequently spraying it with 2.5 per cent sulfadiazine in ethanolamine solution than by giving sulfadiazine tablets by mouth. The sprayed material is absorbed, and the concentration of sulfadiazine in the tissues in a localized area may be six times that in the blood stream. Thus the growth of organisms in the sprayed area is inhibited and further spread of the infection is prevented. This observation is the basis for spraying the nose and throat during the early stages of acute coryza. If the treatment is begun soon after the symptoms of infection appear and is repeated at frequent intervals, the concentration of sulfadiazine in the mucous membranes and lymphoid tissue soon reaches a level that inhibits growth of the bacteria in the region and prevents extension of the infection to the ears and sinuses.

## AN INVESTIGATION OF THE METHOD

Infections of the sinuses and ears commonly follow acute coryza, and physicians are greatly in need of some simple, safe method to prevent them. A controlled study was made during the winters of 1942 and 1943 to test the value of the sulfadiazine spray when used not to prevent the common cold itself but to prevent the complications. Observations were made on 103 nurses at the training school in the Johns Hopkins Hospital. Nurses were selected because their living conditions, food and working hours were uniform and because they were available at any hour during the day for observation and treatment. A special nurse was employed to carry out the treatment as directed, since it was evident that no conclusions could be reached unless the number and the frequency of treatments and the amount of sulfadiazine solution actually sprayed into the nose and throat at each treatment were known. As a rule the nose and throat were sprayed from eight to twelve times a day for the first three days and from five to eight times daily for an additional three days. Unless the cough was unusually troublesome the treatment was omitted during the night. Irritation of the skin around the external nares was prevented by frequent application of cold cream or petrolatum. Nurses were asked to report as soon as possible after the first symptoms

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<sup>1</sup> This percentage is approximately correct for sulfadiazine, sulfathiazole and sulfapyridine but several recent reports indicate that 8 per cent have toxic reactions following oral or intravenous administration of sulfadiazine.  
<sup>1a</sup> Pickrell, Kenneth L. A New Treatment for Burns. *J. Johns Hopkins Hosp.* 69: 217-220 (Nov.) 1941.

of an infection of the nose or throat because it is during this phase of infection that the best results are obtained.

The routine described previously<sup>2</sup> was followed in all cases. Without their knowledge nurses reporting with colds were alternately placed in a treated and a control group. In the treated group the pharynx and both sides of the nose were sprayed with 2.5 per cent sulfadiazine in ethanolamines solution, in the control group the solvent alone was sprayed an equal number of times. In all other respects the treatment was the same for the two groups. When patients in the control group had sinusitis, otitis, severe cough or sore throat they were at once transferred to the treated group.

Cultures were made of material from the nose, the nasopharynx and the pharynx of all patients at the first examination and daily thereafter until they were discharged—a total of fifteen to twenty-five cultures for every patient. The sulfadiazine spray usually cleared up the symptoms of an infection with beta hemolytic streptococci within twenty-four hours, and occasionally these organisms completely disappeared from the cul-

*Incidence of Complications*

Group Treated with Sulfadiazine Spray 5% in Ethanolamines (59 Patients)	Control Group Treated with the Solvent (Ethanolamine 8%) (44 Patients)	Group Not Treated with Sulfadiazine, In This Experiment Who Reported to Infirmary with Complications of a Cold (18 Patients)
Sinusitis 9.7%. All cleared up with no local treatment other than sulfadiazine spray.	7.7%. Patients were transferred to treated group and in all sinusitis cleared up with no local treatment other than sulfadiazine spray.	4.4% required hospitalization.
Otitis 1.8%. Cleared up with no local treatment other than sulfadiazine spray.	4.5%. Patients transferred to treated group and in all otitis cleared up with no local treatment other than sulfadiazine spray.	8.7% required hospitalization, tympanic membrane ruptured in 1 paracentesis done in 1.
Laryngitis. No laryngitis developed in any patient during treatment.	2.3%. Patients transferred to treated group.	5.4% required hospitalization.
Sore throat. No sore throat developed in any patient during treatment.	10%. Patients transferred to treated group.	12% required hospitalization.
Cough 8%. Cough developed during treatment.	44% developed cough.	Incidence not known.

tures after the first day of treatment. Pneumococci and staphylococci were more resistant, but evidently the drug reduces the virulence of these organisms since the incidence of complications was much less in the treated than in the control group. Proper use of the sulfadiazine spray prevents many of the complications of the common cold. The truth of this statement is attested by the contrast between the incidence of sinusitis, otitis, laryngitis, sore throat and severe cough in the treated group, the control group and an additional group of 183 nurses who did not volunteer to take part in this study but reported at the infirmary with colds.

The incidence of sinusitis in the control group may seem high, but acute coryza is an infection of mucous membrane, and the mucous membrane of the nasal cavity is continuous with that lining the sinuses. The sinuses are infected with every cold, but symptoms of sinusitis appear only when the cilia cease to function or when a thick discharge or edema interferes with drainage. In most of the cases in which a diagnosis of sinusitis was made it was based on the findings in the antrums. When both antrums transilluminated

clearly and no pus was seen under the anterior ends of the middle turbinates at the first examination but became apparent in subsequent examinations the diagnosis was sinusitis even though the patient had no pain or fever. Every patient was examined daily with the transilluminator, the nasal speculum and the nasopharyngoscope during the period of observation. The incidence of the more severe type of sinusitis in the infirmary group (4.9 per cent) indicates that many of the 30 per cent in the control group would have recovered spontaneously even if they had not been transferred to the treated group and had not received the sulfadiazine spray. It seems equally evident, however, that in some a severe sinusitis was prevented by the use of the sulfadiazine spray.

**Summary**—A controlled bacteriologic and clinical study was made to determine the effectiveness of 2.5 per cent sulfadiazine solution in ethanolamines (Pickrell's solution) used as a spray for the nose and throat, in preventing complications of the common cold. Cultures of material from the nose, the nasopharynx and the pharynx and a complete examination of the upper air passages were made before treatment was begun and daily thereafter until the patient was discharged. Without their knowledge the nurses were alternately placed in a treated and a control group. In the first group the nose and the pharynx were sprayed with the sulfadiazine solution from eight to twelve times a day for three days and from five to eight times a day for two or three additional days, in the second group the corresponding areas were sprayed an equal number of times with the solvent alone. In all other respects the treatment was the same in the two groups. The primary object of this treatment is not to cure the common cold, which is probably initiated by a virus infection, but to prevent the bacterial infections of the sinuses, the ears and the pharynx that so commonly follow it.

#### COMMENT

There can be no doubt that bacterial infection is the important factor in the prolongation of symptoms, the loss of time from work and the more serious complications of the common cold.

Bacteriologic studies show that the sulfadiazine spray does not sterilize the nose and throat with the occasional exception of a beta hemolytic streptococcus infection. Some strains of this organism are so sensitive to sulfadiazine administered in this way that many patients with a red, edematous pharynx and constitutional symptoms due to streptococcal infection are cured within twenty-four hours both bacteriologically and clinically by using only 20 to 25 cc of the 2.5 per cent sulfadiazine solution as a spray.<sup>3</sup> To get this result the treatment must begin as soon as possible after the sore throat is noticed and while the bacteria are still on the surface of mucous membrane and lymphoid tissue and accessible to the action of the drug. The results are not so good if treatment is begun after the fourth day of the disease. Other strains of streptococci and pneumococci do not disappear or noticeably diminish in numbers in the cultures, but clinical results suggest that they lose their virulence or their ability to become virulent. Extension of infection to the sinuses, ears or larynx of properly treated patients is rare. Although *H. influenzae* is presumably not sensitive to the sulfonamides, certainly the incidence of complications due to this organism seems to be reduced.

2 Bordley, John E., Crowe, S. J., Dolowitz, David A. and Pickrell, Kenneth L. The Local Use of the Sulfonamides, Gramicidin (Tyrothricin) and Penicillin in Otolaryngology. *Ann. Otol. Rhin. & Laryng.* 51: 936 (Dec.) 1942.

3 The blood level for Sulfadiazine was 1.6 mg. per hundred cubic centimeter.

Some patients object to the taste. Others complain of irritation of the skin around the external nares, which can be prevented by frequent application of cold cream or petrolatum. About 3 per cent of our patients were sensitive to the sulfadiazine spray, as evidenced by sneezing and increased rhinitis. One patient developed a generalized cutaneous rash. Another patient had definite localized tissue sensitivity. A year previously her hand had been badly burned and was treated with sulfadiazine. This treatment produced a generalized cutaneous rash, which cleared up when the drug was withdrawn. The burn healed promptly and had been perfectly well for at least eleven months when she came to us with acute coryza. After three days of spraying her nose with the 2.5 per cent sulfadiazine solution the scar on her hand became extremely red and irritated. These symptoms gradually disappeared after the sulfadiazine spray was stopped. The only manifestation of sensitivity was in the scar on her hand.

The possibility exists that general sensitivity may develop in some patients, following local application of sulfonamides for a minor ailment, which might prevent administration of these drugs by mouth for a really serious illness at some future time. No evidence of this was observed, but the subject deserves the consideration and study of members of the medical profession.

## SINUSITIS AND INFECTIONS SECONDARY TO THE COMMON COLD

TREATMENT WITH STABILIZED AQUEOUS SOLUTION OF SULFATHIAZOLE SODIUM WITH DESOXYEPHEDRINE HYDROCHLORIDE

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Two years ago Turnbull<sup>1</sup> reported that a 5 per cent solution of the sodium salt of sulfathiazole brought greater relief from the symptoms of chronic sinusitis than any other preparation he had used. It relieved congestion, opened the nasal passages, promoted drainage and relieved pressure headaches. The use of sodium sulfathiazole appeared to be a perfectly safe procedure, and the results obtained in cases of sinusitis seemed to justify further investigation. The solution was reported unstable when exposed to light and air, as it tended to crystallize and discolor.

By adding sodium sulfite we were able to make the solution stable to light, air and heat. A vasoconstrictor was then added to the solution, decreasing congestion and thus assisting the antibacterial action of the sodium sulfathiazole. dl-Desoxyephedrine hydrochloride—discovered by Ogata in 1919 and, like the original sulfanilamide, a "sleeper" for twenty years—was found to be compatible with sodium sulfathiazole and actually to form a new sulfonamide drug, desoxyephedronium sulfathiazole.

Because of the presence of this new compound, the vasoconstrictive action of the solution was so pro-

nounced that a concentration of only one eighth of 1 per cent of dl-desoxyephedrine hydrochloride was necessary to obtain adequate shrinkage of the acutely congested membranes of the nose. Such activation is known as synergism, and this was demonstrated by clinical and laboratory work.

Synergism permitted the use of a very small proportion of the vasoconstrictor and therefore appeared to give the optimum clinical results—shrinkage of swollen tissues, drainage and ventilation of the sinuses without the after-effects so commonly experienced with prolonged use of vasoconstrictors, such as secondary congestion of the membrane, sneezing, sleeplessness, nervousness and tachycardia. Further, the incorporation of a vasoconstrictor enabled the sodium sulfathiazole to reach the deeper layers of the nasal mucous membrane.

Our results have shown that if the solution is used early in colds many were apparently aborted and also that the pressure pains in the acutely blocked sinuses were relieved. The stable, vasoconstrictive solution used in packs in the nose on acutely swollen membranes and left in place for twenty to thirty minutes effected noticeable relief, and patients reported improvement the day following treatment instead of the usual complaints after former methods of treatment with comments of "no relief" or "worse, with a sleepless night."

### CLINICAL EXPERIENCE

In our experience of over 1,000 cases of nose, throat and ear infections, the following conditions have been treated:

Sinusitis, acute and chronic frontal, maxillary, ethmoid, sphenoid

Rhinitis, pharyngitis, laryngitis, tracheitis, acute and chronic

Otitis media suppurativa, acute and chronic

In acute sinusitis with headaches and in acute head colds it is well to saturate the packs with the solution and place as high in the nose as possible without discomfort. If the nose is very sensitive, a spray of 1 per cent solution of cocaine may be used first. The patient should be lying down (modified Proetz position), and at five minute intervals instillation of from 10 to 15 drops in each side of the nose should be continued until the swollen tissues are sufficiently shrunk to give relief from pressure. This usually takes twenty to thirty minutes in severe cases. In this way a very complete shrinkage of the congested mucous membrane results without blanching, sneezing or subsequent swelling.

For home treatment patients were instructed to use spray or drops with sufficient frequency to keep the nose open. At the beginning of the treatment this often necessitated using spray or drops at five minute intervals, usually two or three times until the deeper tissues in the nose were reached.

Chronic sinusitis was treated by irrigating the affected sinuses and following with the instillation of the solution into the sinuses together with the use of spray or drops at home.

Acute pharyngitis and laryngitis were treated by spraying the nose and throat and, in office treatments, the larynx and upper trachea.

Acute suppurative otitis media was treated by myringotomy and medicated tampons in office treatment, and by drops in the ear and nose and in the epipharynx by the patient at home.

From the Research Laboratory, Chemical Division, Lockheed Aircraft Corporation.  
<sup>1</sup> Turnbull, F. M. Intranasal Therapy with Sodium Salt of Sulfathiazole in Chronic Sinusitis, J. A. M. A. 116: 1899-1900 (April 26) 1941.

Chronic suppurative ears were treated by cleaning thoroughly with peroxide, followed by insertion of tampons, home treatment consisted in the prescribed use of drops.

This type of treatment we have found safe and effective. In children the treatment has been especially effective, particularly when the nose was blocked from colds and acute or chronic sinusitis. Packs used in the swollen nose opened it up and gave relief without discomfort so that the child soon overcame fear of treatment.

For elderly people and in systemic involvements in which surgery is contraindicated, the therapy has offered a form of treatment that has produced considerable relief.

#### SAFETY AND EFFECTIVENESS IN SPECIAL CASES

*Membranous Laryngitis of Alpha Streptococcus Origin*—The patient's blood count showed leukocytes 3,300 following oral administration of six tablets of sulfadiazine over a period of twelve hours. Stable sulfathiazole solution was used as a spray in the nose throat and larynx every hour. The following day the

Variation in  $pH$

Compound	$pH$
1% neosynephrin (Sterns)	2.6-4
Isophren solution (Brommel)	2.6-4
1% propadrine (Sharpe & Dohme)	7.8-5
% ephedrine solution (Lilly) (single sample)	7.9
Glucoc Fedrin (Parke Davis)	4.6-8
1 edrin compound (1% ephedrine sulfate) (Lilly) (single sample)	6.0
5% solution of mild protein silver (single sample)	8.9-9.1
Metaphedrin Aqueous Isotonic (Abbott) (single sample)	10.0
1% ephedrine compound in oil (Lilly) (single sample)	10.5
Values given are subject to change dependent on the age and condition of the preparations	
The $pH$ of stabilized sodium sulfathiazole solution with dl deoxy ephedrine hydrochloride is 8.6-9	

leukocyte count had risen to 5,300 and the next day to 7,000 with clearing of the membrane in the larynx.

*Acute Infectious Mononucleosis with Acute Alpha Streptococcus Membranous Tonsillitis*—The patient was seen at the hospital on the twelfth day of the disease. The temperature was 104° F, leukocytes 14,800 polymorphonuclears 14 per cent, lymphocytes 83.5 per cent. Sulfathiazole orally with local use of stable sodium sulfathiazole solution brought the temperature to normal on the third day. A membrane which had covered the tonsil and part of the pharynx with dyspnea, disappeared.

Six unfavorable reactions have occurred in over 1,000 cases. In 4 the nasal congestion was not relieved or was made worse, in 1 a skin reaction resulted, around the nose, in 1 there was a rise in temperature. All these patients were allergic to the sulfonamides.

#### ALKALINITY

Comparative study of nose drop medications shows wide variations in  $pH$  as presented in the table.

It is indicated that a mildly alkaline sulfonamide solution is preferable for nasal medication because

1 The sulfonamides have the greatest bacterial action in the  $pH$  range of from 8 to 10 (Schmelkes and Wyss<sup>2</sup>)

2 Schmelkes Franz C and Wyss Orville. The Synergistic Action of Sulfonamides Wetting Agents and Azochloramid. J. Bact. 43: 1 (Jan) 1942

2 Ciliary motility shows greatest activity in the  $pH$  range of 8.2-8.6 and slows down in slightly acidic solutions,  $pH$  6.5 or less (Negus,<sup>3</sup> Gray,<sup>4</sup> Schafer<sup>5</sup>). Use of stabilized aqueous sodium sulfathiazole with dl-desoxyephedrine hydrochloride has been shown to allow ciliary action to continue for a long period of time.<sup>6</sup>

3 Effective concentrations of the sulfonamides are readily obtainable in mildly alkaline solutions.

#### TOXICITY

Hunnecutt<sup>7</sup> states that in the mouse there are no permanent ill effects from the use of a 5 per cent solution of sodium sulfathiazole (not stabilized), there is a pronounced inflammatory reaction the first few days and after this the effect on the mucosa is almost nil.

The olfactory membrane, which is first affected when irritating drugs are used as Turnbull had previously found, is not injured.

The toxicity of desoxyephedronium sulfathiazole has been studied by Richards<sup>8</sup> who reports that "toxicity of the compound is certainly not greater than that of desoxyephedrine itself."

#### BACTERIOSTATIC AND SELF-STERILIZING PROPERTIES

In a test for self-sterilizing properties of the stable sodium sulfathiazole solution it was found that "there is a gradual diminution of bacteria over a period of six hours, but about one sixth of the total number inoculated still remains viable at this time."

Stable sodium sulfathiazole solution was also submitted to a cooperating university laboratory to determine if the action of sodium sulfathiazole against *Staphylococcus aureus* was in any way altered by virtue of its chemical combination with dl-desoxyephedrine hydrochloride. It was found that "the average percentage inhibition of hemolytic *Staphylococcus aureus* in tryptone broth by sulfathiazole (125 mg per hundred cubic centimeters) was 73.0, and by sulfathiazole (125 mg per hundred cubic centimeters) when combined with dl-desoxyephedrine hydrochloride at  $pH$  7.8 was 70.3."

#### CLINICAL OBSERVATIONS

In acute colds, stable sodium sulfathiazole solution combined with dl-desoxyephedrine hydrochloride treatment resulted in rather prompt relief and the duration of the infection was apparently shortened. This was also true in acute sinusitis with less tendency to become subacute or chronic.

In chronic sinusitis many cases reacted favorably where formerly surgery would have been indicated. There is no intention to suggest that this is a cure or that it substitutes for surgery when massive pathologic changes of the membrane or bone exist but indications are that it will greatly reduce the number of sinus surgical operations that might otherwise be necessary.

Acute suppurative otitis media has been a much less frequent complication. Chronic suppurative otitis media that has resisted other forms of treatment has cleared up without a radical mastoid operation.

3 Negus V F. The Action of Cilia and the Effect of Drug on Their Activity. J. Laryng & Otol. September 1934.

4 Gray J. The Effect of Ions on Ciliary Movement. Quart. J. Microscop. Sc. 64: 1930.

5 Schafer E A. The Essentials of Histology 1907.

6 Reported in personal communication from the Squibb Institute for Medical Research.

7 Hunnicutt Leland G. Reaction of Five Per Cent Solution of Sodium Sulfathiazole. Arch. Otolaryng. 36: 837 (Dec.) 1942.

8 Richards R K. Personal communication to the authors.

9 Report by the Medical Research Laboratory of Parke Davis & Co.



## CONTINUOUS CAUDAL ANALGESIA

AN ANALYSIS OF THE FIRST TEN THOUSAND  
CONTINUOUS CAUDAL ANALGESIA  
THE REPORT OF THE AUTHORS'  
FIRST THOUSAND CASES

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"The Poena Magna the chief or the great pain of the Romans which referred to the pangs of childbirth has been the object of attack by medicine men, midwives and physicians for centuries. The fear of it in the hearts of women has been a contributing factor to childless marriages and one of the major factors of the one-child family in our present civilization. The absolute alleviation of it in selected cases has been accomplished by continuous caudal analgesia.

"The failure of medicine men and midwives to deal with this pain adequately, if at all compelled women in labor to seek the services of physicians. The cries of women in pain, not usually fears concerning the welfare of unborn babies have brought physicians to the bedside. With physicians came poppy leaves and bitters, wine and morphine ether and chloroform, nitrous oxide and scopolamine, paraldehyde and the barbiturates, cyclopropane and ethylene, avertin and hypnosis. Yet women in travail still cried out through muffled anesthesia, screens of analgesia and curtains of amnesia as they were delivered of babies in varying degrees of narcosis and anoxemia."

Continuous caudal analgesia was designed to relieve the pains of labor and delivery. Properly administered, it furnishes a comfortable labor and delivery, and a vigorous, crying baby in the overwhelming majority of instances.

The history of the development of caudal and continuous caudal analgesia has been described in detail in numerous medical publications.<sup>2</sup>

Our purpose in this paper is to report the first 10,000 cases managed with continuous caudal analgesia in North American medical schools and teaching hospitals and to present the results of our first thousand cases so managed. It seems timely to discuss the modifications and improvements in the technic which have developed with increasing experience. It is also desired to discuss in detail the indications and contraindications based on the accumulated experience of many physicians. Finally, we desire to present frankly all the complications thus far encountered and the precautions necessary to avoid them.

The accompanying questionnaire was sent to obstetric clinics several months after we had presented teaching demonstrations in them. These reports indicated that 10,000 obstetric labors and deliveries were managed

with continuous caudal analgesia with the incidence of success indicated in the results of fifty-five clinics.

The percentage of success with this method seemed to vary directly with the experience of the operator and the percentage of complications and failures seemed to vary inversely with the experience of the operator.

In our series of 1,150 cases, 1050, or 91.3 per cent have been managed through labor and delivery without resorting to any other form of analgesia or anesthesia. The reasons for supplementary anesthesia have been

1 The inability to insert the needle in the canal, or faulty insertion recognized within one hour. Sixty-five cases, or 5.6 per cent.

2 Increased anxiety on the part of the patient with emotional distress, which indicated sedation and general anesthesia. Twenty-three cases, or 2 per cent.

3 The accidental escape of the needles in 5 cases, or 0.43 per cent. It was decided that reinsertion in these cases would increase the hazard of infection.

4 Cases of monsters or abnormal babies as previously determined by x-ray. Five cases, or 0.43 per cent.

5 Discontinuance of the procedure because of the reaction of the patient. One of these was a case with convulsions in which an overdosage of the drug had been given. The other was a case in which there was a manifest increase of nausea and vomiting. Two cases, or 0.17 per cent.

The other 1,050 cases were managed successfully through labor and delivery with continuous caudal analgesia. During this time the patients were usually kept on their sides. Occasionally, when the level of analgesia rose to a higher level on the dependent side, the patient was turned to the opposite side.

All the patients were offered every meal, and they were able generally to partake of fluids and nourishment before and after delivery.

Of the 1,050 patients whom we managed successfully with continuous caudal analgesia, 679 were primiparas and 371 multiparas. The average length of analgesia for primiparas was six and one-half hours and the average dosage of metycaine was 4.5 Gm. The average time of analgesia for multiparas was two hours and twenty minutes and the average dosage of metycaine was 2 Gm.

Since the introduction of continuous caudal analgesia with the malleable needle technic we have tried constantly to improve our apparatus and refine our technic in order to provide the maximum of safety to the patient, in addition to developing the facility of administration for the doctor. Some of the technical difficulties reported in the earlier part of our series were overcome with the perfection of our present instrument. While we have used this apparatus almost exclusively for all of our series, other physicians, in an attempt to prevent the recurrence of the early difficulties of needle breakage, have devised other forms of apparatus and modified technics.

Thus far from the literature there have been reported three important methods of administration of continuous caudal analgesia:

1 The malleable needle technic with the closed circuit apparatus.

2 The ureteral catheter technic with both closed and broken circuit apparatus.

3 The continuous drip caudal analgesia technic with the closed gravity apparatus.

The special malleable needle technic with the closed apparatus has been used by us in 10,000 of our cases. Of the 10,000 cases reported, this technic has been used in 6,400 cases. This is the technic of fractional dosage.

Published with permission of the Surgeon General, U. S. P. H. S.  
1 Pitkin, G. P. Conduction Anesthesia, St. Louis, C. V. Mosby Company, to be published.

2 Edwards, W. B., and Hingson, R. A. Continuous Caudal Anesthesia in Obstetrics, *Am. J. Surg.* 57:459 (Sept.) 1942. Hingson, R. A., and Southworth, J. L. Continuous Caudal Anesthesia, *ibid.* 58:93 (Jan.) 1942. Hingson, R. A., and Edwards, W. B. Continuous Caudal Anesthesia During Labor and Delivery, *Anesth. & Analg.* 21:301 (Nov-Dec) 1942. Continuous Caudal Analgesia in Obstetrics, *J. A. M. A.* 121:225 (Jan. 23) 1943. Southworth, J. L., Edwards, W. B., and Hingson, R. A. Continuous Caudal Analgesia in Surgery, *Ann. Surg.* 117:321 (March) 1943. Irving, F. R., Lippincott, C. A., and Meyer, F. C. Continuous Caudal Anesthesia in Obstetrics, *New York State J. Med.* 43:1023 (June 1) 1943. Hingson and Edwards.<sup>2</sup> Edwards and Hingson.<sup>4</sup>

in which an initial dose of 30 cc of 1.5 per cent metycaine is used is soon as the labor has been definitely established to relieve subjective pain. Supplementary doses are injected at intervals varying from forty minutes to an hour and a half.

In our hands it has given increasing satisfaction with the minimum of complications. We have been able to teach this technique readily to others with greater facility than would be experienced in teaching the catheter and the continuous drip method.

Nevertheless each method has its own merits and demerits which should be thoroughly understood before its use is attempted.

In our preliminary studies we used the following cocaine derivatives and substitutes in varying concentrations and solutions of distilled water: isotonic solution of sodium chloride; isotonic solution of three chlorides (Ringer's solution); and isotonic Ringer-metycaine modified solution: (1) procaine hydrochloride, (2) metycaine, (3) pontocaine, (4) nupercaine, (5) monocaine and (6) eucupin.

pressor substance as we did with procaine and pontocaine. When an obstetric patient is able to keep up her normal fluid intake during labor and when the level of analgesia is not permitted to rise above the umbilicus, less than 8 per cent of parturients will have a blood pressure drop of more than 20 mm of mercury and this drop is usually symptomless.

In cases of persistent vomiting in labor in which dehydration is also a problem, any local anesthetic agent exerting a block of the white rami communicantes presents a hazard that must be overcome by judicious use of a vasopressor substance, intravenous fluids and oxygen when the patient has a high degree of anemia.

#### ANATOMIC AND PHYSIOLOGIC CONSIDERATIONS

In a comprehensive review of continuous caudal anesthesia for anesthetists we stated that

The anatomic proximity of the sacral hiatus to the nerves of the pelvis, perineum and the lower extremities makes this method applicable to all types of obstetric and gynecologic procedures. The peridural space surrounding the dura mater

#### Results of Questionnaire

	North American Clinics		Authors' Series	
	Number	Per Cent	Number	Per Cent
A. Number of cases managed with continuous caudal analgesia	10,000		1,150	
B. Number of cases with complete relief of pain	8,100	81	970	80.0
C. Number of cases with partial relief of pain	1,900	12	170	12.2
D. Number of cases considered as failures	700	7	100	8.8
E. Complications to the mother				
1. Immediate reactions following injection	710	2.1	8	
2. Number of cases with fall in blood pressure exceeding 0 mm of mercury in systolic reading	670	8.7	46	4.0
3. Increased nausea sometimes associated with vomiting	670	6.9	56	4.8
4. Infection at site of injection				
(a) Simple cellulitis around site of injection	80	0.8	7	
(b) Severe cellulitis or peridural abscess	0	0.0	1	
5. Broken needles	20	0.3	9	
6. Post delivery headache	40	0.4	7	
7. Neurologic sequelae attributed to method (The 6 include urinary retention with need for catheterization more than once post partum, residual backache, hypesthesias)	280	2.8	3	
F. Complications to the fetus	70	0.7	3	
G. Maternal mortality attributed to continuous caudal analgesia	4	0.04	1	
H. Uncorrected fetal mortality	101	1.0	10	1.4
I. Fetal deaths presumed to be due to continuous caudal analgesia	2	0.02	1	
J. Average interval between induction of analgesia and delivery. There are many answers to this question, varying from 1/4 to 8 hours.				
K. Observations regarding blood loss. 60 of the 69 doctors reporting indicated that the blood loss was less with continuous caudal analgesia than with other methods.				

We prefer a 1.5 per cent solution of metycaine in isotonic solution of sodium chloride or isotonic solution of three chlorides because of the (1) high analgesic efficiency of the drug, (2) the reduced number of reactions that could be ascribed to the drug and (3) the rapid elimination of the drug with a quick recovery of nerve impulses and physiologic control after delivery.

However, we have found that some analgesia could be obtained with all the drugs mentioned. Procaine, pontocaine and monocaine in many instances gave results closely approximating the relief we achieved with metycaine. Recently we have reviewed all our original comparative experiments with these various drugs after the report of Irving Lippincott and Meyer with an indicated preference for pontocaine and the report of Siever and Mousel with a preference for procaine.

We have found that the blood pressure falls have been in direct proportion with the anesthetic efficiency of the drug and are apparently due to the pharmacologic effect of producing splanchnic and lower extremity peripheral vasomotor block. We find no evidence to indicate that the blood pressure drop is associated with the toxic effect of the drug used. In the greater number of our continuous caudal injections with metycaine we did not use a prophylactic vaso-

as a sleeve from the foramen magnum to the hiatus sacralis comprises the area between the dura mater and the periosteum lining the spinal canal but usually at the second sacral segment communication between these two parts is interrupted by the closure of the dura mater around the nerve trunks. In dissection of cadavers we found that the dura sometimes encircles the spinal nerves of the cauda equina and the filum terminale, with its distal sac extending no farther down the vertebral column than the fifth lumbar segment. In approximately 0.5 of 1 per cent it extends all the way to the fourth or fifth sacral segment. In these instances spinal fluid can be obtained by inserting a short needle through the sacral hiatus. While this phenomenon has been observed by one of the authors in only 9 in 2,000 caudal injections, the occurrence of anomalies and malformations of the vertebral and spinal canals should be kept in mind.

On the outer surface of the dura in the epidural space especially at the sides are extensive venous plexuses which may be penetrated with the caudal needle. The operator should attempt to direct his needle always in the midline and just under the bony roof of the sacral canal in order to minimize this hazard.

The sacral canal terminates below in the hiatus sacralis forming a triangular opening the sides of which are marked by bony ridges known as the sacral cornua. This opening varies in different individuals. It may be abnormally large owing to a deficiency in one or more of the vertebral arches or it may be reduced even to the extent of complete obliteration by ossification.

We have also noticed in dissecting these peridural spaces that a median fenestrated, fibrous raphe is not uncommonly produced by the continuation of the dura along minute nerve fibers extending upward between the spines and the periosteum of the vertebral arches.

*Nerve Supply to the Uterus*—The classic work of Head, Sherrington and Cleland established that the uterus derives its extrinsic nerve supply from three sources, that is, the motor fibers to the uterus are derived from the sympathetic nerves of the aortic plexus reinforced by fibers from solar, renal and genital ganglions, the sensory fibers are derived from sympathetic nerves and ganglions of the eleventh and twelfth dorsal spinal segments and the sensory and motor fibers to the cervix and also to the birth canal are found in the sympathetic and parasympathetic plexuses communicating with the second, third and fourth sacral nerves. The perineum receives its nerve supply from pudendal and perineal plexuses from the lower somatic sacral nerves. Thus a peridural injection through the sacral hiatus of 30 cc blocks all the sensory fibers to the uterus and birth canal, but the motor fibers sending impulses from higher levels are untouched. We have substantiated Cleland's thesis in our dissection of cadavers and in our clinical observations on more than 1,000 patients. A total of 30 cc of indigo carmine was injected into the sacral hiatus of 60 cadavers. Dissection of the peridural space in every case revealed that the dye disseminated at least as high as the eleventh and never higher than the sixth dorsal segment. Clinically it was found that when there is analgesia of the skin over the distribution of the ilioinguinal nerves (receiving components as high as the twelfth dorsal segment) and the eleventh thoracic nerves, on both sides, there is always complete subjective absence of labor pains. Usually the initial dose of 30 cc of 1.5 per cent metycaine produces this analgesia. Unless the anesthetic solution ascends this high in the peridural space, the parturient experiences discomfort.<sup>3</sup>

When the analgesic agent is permitted to ascend to the higher levels of the thoracic peridural space there is diminution in the force and frequency of the uterine contractions with a retardation of the progress of labor noted. This observation has recently been substantiated with both the Murphy and Fenning tocographic determinations.

#### MAILEABLE NEEDLE TECHNIC AS RECOMMENDED BY AUTHORS

1 The patient is placed in the modified left lateral Sims position. The sacral and coccygeal area is cleansed with ether and prepared with one of the antiseptic tinctures.

2 The tip of the coccyx is palpated with the middle finger of the left hand, and the thumb is used to find the U or V shaped notch indicating the sacral hiatus between the sacral cornua. This is usually about 1½ or 2 inches from the tip of the coccyx. In cases in which there was a failure of the inferior sacral arches to fuse into the bony roof of the sacrum, this hiatus may be 2½ to 4 inches from the inferior caudal tip. Experience with the standard single caudal injections is a desired prerequisite for the success in the use of the continuous method.

3 The middle finger of the left hand then changes place with the thumb and marks the spot for raising the initial skin wheal.

4 A special apparatus has been developed for this procedure. The analgesic agent recommended by us is 1.5 per cent metycaine in isotonic solution of sodium chloride. Two Gm of the drug diluted in approximately 125 cc of saline solution in the reservoir bottle will most nearly approach this concentration. With a few cubic centimeters of this solution, skin anesthesia

is obtained by raising a skin wheal with a 25 gage, and deeper infiltration to the sacrococcygeal ligament with a 2 inch 22 gage, needle.

5 The special malleable stainless steel 19 gage needle is then inserted in the midline in the direction of the hiatus at about a 45 degree angle with the skin.

6 As soon as the bevel of the needle pierces the sacrococcygeal ligament, its reinforced metal collar is depressed through an arc of 1 to 3 cm and the needle is thrust slowly and evenly in the midline for 1 to 2 inches within the sacral canal, where its bevel should be inferior to the lowest extent of the dural sac. This may be ascertained by measuring on the skin with the stilet the approximate extent of the needle. The point of the needle should always be below the level of the second sacral spine.

7 The small section of tubing with special adapter is then slipped over the collar of the needle. The Luer-Lok syringe is securely attached to the adapter. A careful aspiration is performed.

(a) Should clear spinal fluid be obtained, the needle has pierced the dura and lies within the subarachnoid space. In such event the needle should be immediately withdrawn and the case ruled unsuited for caudal analgesia for fear of producing a massive spinal injection of the analgesic drug. Anatomic anomalies with such low lying dura are rare. (In our experience this has happened only twice in more than one thousand injections.) A failure to recognize this situation would be extremely hazardous, if not fatal.

(b) The withdrawal of pure blood indicates that the needle has pierced a small blood vessel in the highly vascular peridural space. In this event the point of the needle should be moved until blood can no longer be obtained. Then the injection is continued cautiously.

8 The danger of intraspinal injection, with appearance of spinal fluid previously mentioned (see 7) can be minimized if a trial dose of 8 cc of the solution is injected and further action delayed for ten minutes to see that a low spinal anesthesia does not ensue. Without relief of pain or loss of motor power in the lower extremities in ten minutes after injection, one can safely assume that the subarachnoid space was not entered.

9 After these precautions have been carried out, the hose end of the special 4 foot rubber tubing is secured over the collar of the special caudal needle. The tubing should previously have been connected to the remainder of the apparatus, all air having been expelled by filling the entire system with metycaine solution.

10 With the palm of the left hand firmly pressed over the skin area against the dorsum of the sacrum, 30 cc of 1.5 per cent solution is slowly injected.

11 Five per cent sulfathiazole ointment is then generously spread around the collar of the needle.

*Indications that the Solution Is Being Injected into the Peridural Space of the Sacral Canal*—(a) The patients usually experience a sense of fullness progressing to an uncomfortable sensation in one or both legs as the solution circumscribes the perineural components of the sciatic nerves. This sensation can be minimized by slower injections.

(b) There will be a progressive analgesia in the areas supplied by the coccygeal, hemorrhoidal, perineal, pudendal, ilioinguinal and iliohypogastric nerves. Analgesia should be complete in twenty minutes.

(c) There is relief of abdominal uterine cramping within five to fifteen minutes after injection.

<sup>3</sup> Hingson, R. A., and Edwards, W. B. Comprehensive Review of Continuous Caudal Analgesia for Anesthetists, *Anesthesiology* 4: 181 (March) 1943.

(d) Pronounced vasodilatation, cessation of sweating and increase in temperature of the skin of the feet will ensue within five to fifteen minutes after injection. This phenomenon is often noticed on one side several minutes before it occurs on the other.

*Indications that the Solution Is Being Injected Outside the Sacral Canal*—(a) Failure of the injection to relieve pain within thirty minutes. (b) The appearance of an injection tumor superficial to the dorsum of the sacrum.

*Supplementary Injections*—12 The supplementary injection will depend on the rate of metabolism of the drug by the individual patient. In our experience 20 cc of additional solution injected every thirty to forty minutes is sufficient to keep the parturient comfortable for the entire course of labor. We have continued our supplementary injections for a maximum of thirty hours and for an average of seven hours.

We consider this method of analgesia to be a specialized procedure which requires special training in order to attain uniform satisfactory results.

#### INDICATIONS FOR THE USE OF CONTINUOUS CAUDAL ANALGESIA

There are certain obstetric conditions which indicate the use of continuous caudal analgesia for both the mother and the child.

*Premature Babies*—The use of any sedative, amnesic or anesthetic is contraindicated in the case of premature or small poorly developed babies. All these drugs have been shown to be transplacental and have been rightly accused of obtunding the vital mechanisms of the fetus during and for several hours after birth. The survival of these babies is difficult enough without the addition of narcotic, hypnotic and anesthetic influence to their undeveloped respiratory and cardiovascular mechanisms.

Thus far in our series we have managed the labors of 20 women with premature infants ranging in age of development from 26 to 36 calculated weeks and from 2 to 6 pounds (0.9 to 2.7 Kg) in weight. In only 1 of these cases was there a stillborn infant. The others breathed spontaneously after delivery. It was not unusual for these babies to cry before their shoulders were delivered during a vertex presentation, and four breech deliveries in this group were entirely satisfactory. The progress of these babies during their first postpartum days seemed to us more favorable than premature infants managed by us and in other clinics delivered through other managements.

There are certain physiologic reasons why the premature infants do so well under continuous caudal analgesia.

- 1 Labor is generally shorter and usually spontaneous.
- 2 The lower uterine segment, cervix and perineum and birth canal of the mother are completely relaxed, producing the minimum of trauma to the baby's head in passage through the birth canal.
- 3 Convulsive and voluntary expulsive muscular powers of the mother are not suddenly brought to bear on the contracting uterus, thus increasing the intrauterine pressure around the body or head of the baby.

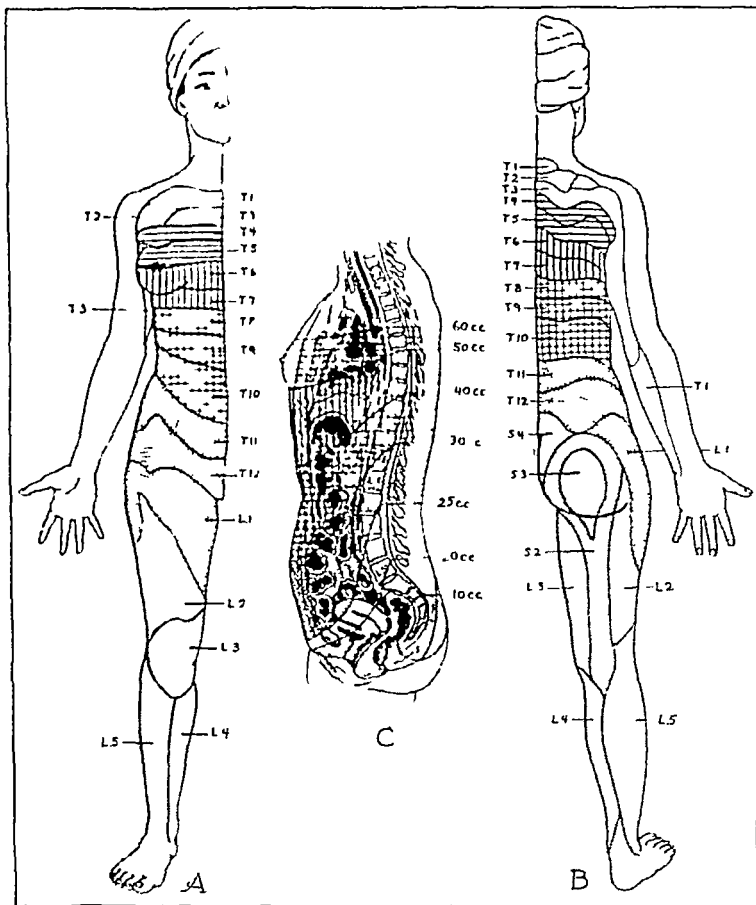
4 The mothers during these labors, alert and usually cheerful, are not secreting various harmful endocrine products such as epinephrine during moments of pain, anxiety and fear.

5 The blood sugar level and fluid balance of the mothers approach normal since they are able to keep up their fluids and foods. Therefore the hazard of dehydration and hypoglycemia is not added to the dangers of prematurity.

6 The baby may be delivered deliberately with no sudden and traumatic manipulations by the obstetrician as he controls the passage of the baby at will.

7 The minimum of blood loss and systemic shock to the mother prepares the physiologic stage for the prompt formation of maternal milk, which is vital to the premature infant.

*Heart Diseases*—We were impressed early in our series with the well being of cardiac patients under continuous caudal analgesia.



Segmental analgesia produced with indicated caudal doses of 1.5 per cent metycaine solution (courtesy of Pitkin's Conduction Anesthesia)

There are certain physiologic phenomena which add to the burden of a diseased heart during the process of natural labor: (1) the emotional strain of the patient, often associated with cries of pain, (2) fear of what the next few hours will bring forth, (3) tachycardia, (4) voluntary straining. All of these increase the demand on a diseased heart. In some cases an actual decompensation with permanent myocardial damage develops. The stress and strain of labor has been known to account for an anoxemia which would contraindicate a general anesthetic.

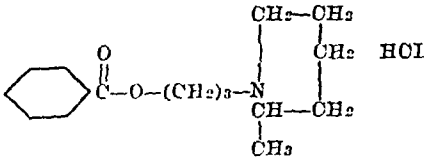
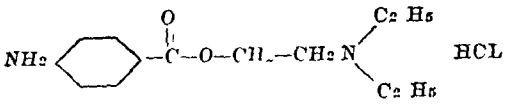
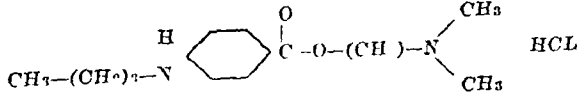
The patient under continuous caudal analgesia, however, is at ease and does not need her voluntary expulsive efforts. The rhythmic contractions of the uterus will expel the presenting part into the birth canal and will usually deliver it to the point of perineal bulging.

continuous caudal block produces an obliteration of the lumbosacral curves or the "strut" of pregnancy with undesirable rapidity, we insist that our patients lie on their sides and have insisted that they remain on one or the other side throughout labor. They may be turned on their backs and delivered in the usual manner.

Since we have adopted this regimen the incidence of backaches during labor has diminished. About 5 per cent of our patients complain of some backache and a few of these also have an associated pain in the neck incident to subsequent injections. These pains are transient and rapidly disappear as the analgesia becomes more intense.

slightest change in her pulse and blood pressure. Subsequently the needle was rotated and the continuous caudal analgesia was continued to a successful completion with the delivery of a vigorous baby which breathed spontaneously. The second patient had 3 Gm of 6 per cent metycaine in 50 cc of solution injected by mistake at a single dose. The patient developed disorientation, complete motor and sensory nerve block to the nipples and a severe convulsion which was controlled with an intravenous barbiturate. She remained in this state of complete analgesia below the nipples for a period of six hours. The baby was delivered with outlet forceps without pain to the mother, and the baby breathed

TABLE 2—Comparison of Analgesic Efficiency of Drugs Used

Name and Concentration of Drug	Effectiveness of Pain Relief	Effect on Blood Pressure	Duration of Analgesia with 30 Cc Solution	Disadvantages as Determined by Reactions and Complications
<b>METYLCAINE</b> 1.5 per cent in isotonic solution of sodium chloride or isotonic solution of three chlorides	Profound 100 per cent pain relief, rapid in onset with complete relief often in five minutes	Blood pressure fall exceeding 20 mm in 85 per cent of 10,000 cases, satisfactorily treated with epinephrine	30 minutes to 2 hours with average of 50 minutes	1 Slight increase in incidence of nausea 2 Increased bladder atony for 48 hours (reported to us, but observed by us in only 1 case)
				
<b>PROCAINE</b> 1.5 and 2 per cent in isotonic solution of sodium chloride	Profound 90 to 100 per cent pain relief, occasional cases not relieved with procaine would respond to metycaine	Incidence of blood pressure fall approximately the same as with metycaine, usually prevented with addition of 1:200,000 epinephrine	30 minutes to 2 hours with average of 40 minutes	1 Slight increase in incidence of nausea 2 Increased mental excitement
				
<b>POMOCAINE</b> 0.25 per cent and 0.2 per cent with 1:2,000,000 epinephrine in isotonic solution of sodium chloride	Generally satisfactory, but patients still complained of slight discomfort, 80 to 90 per cent effective, slow in onset	Blood pressure fall when used with epinephrine not so constant as with metycaine	1 to 5 hours average 70 minutes	1 Incidence of nausea definitely increased 2 Postdelivery complaints as regards hypalgesia and hypesthesia more constant
				
<b>MONOCAINE</b> 0.75 and 1 per cent in isotonic solution of sodium chloride	90 to 100 per cent effective	Blood pressure fall similar to metycaine when used without epinephrine and epinephrine	30 minutes to 1 hour and 30 minutes, average 40 minutes	1 Nausea increased

**Dermatitis**—Thus far we have had only 2 cases of dermatitis in our series which we have attributed to metycaine. These were typical erythema multiforme lesions which cleared up spontaneously in two days. The subjective symptoms of itching were treated with calamine lotion and 1 per cent phenol. In both instances the rash developed within twelve hours after delivery in patients who had been under continuous caudal analgesia for more than six hours.

**Convulsions**—In our series there have been only 2 instances of convulsions. One patient had had 3 cc injected unintentionally into the blood vessel. She complained of tasting the drug within ten seconds and had a mild clonic convulsion with complete disorientation within twenty seconds. This condition cleared up spontaneously within a minute and a half without the

spontaneously. Neurologic examinations of the mother at the end of seven days, two weeks and six weeks after delivery revealed no residual complications which could be attributed to the analgesic agent used.

**Headache**—The headaches which have occurred in our series have been transient in duration. All of them occurred in cases in which the solution was being injected more rapidly in an attempt to gain a higher level of analgesia. It was determined that these headaches could be diminished or completely arrested if subsequent injections were made more slowly.

**Vomiting**—Nausea and vomiting one or more times during the course of labor and delivery occurred in 20 per cent of our patients. Since many patients under all forms of sedation and without sedation in labor have a tendency to vomit with complete dilatation of the

cervix we do not believe that this 20 per cent incidence in our series could be ascribed entirely to the drug used.

A few of our patients complained of nausea with each uterine cramp before the induction of the analgesia. After the analgesia was instituted the nausea ceased and the patients were able to retain their fluids and some servings of nutritious meals.

Several other patients became nauseated and vomited as the analgesia was near the end of its effective nerve block period.

Therefore we have concluded that nausea and vomiting during labor and delivery are in some way associated with the intensity of the pain and distress which the patient experiences. It appears that the pylorus will not function during a painful labor.

The relief of pain and anxiety will often diminish the instances of nausea. However in 5 per cent of our cases there has been recurrent nausea and vomiting coincidental with subsequent injections of metycaine solution. These we ascribe to the toxic action of the drug on the maternal organism.

*Jaundice*—We have had no instances of jaundice in the mother at any time during the postpartum period even though some of our patients have had impaired liver function and some of them were known to be eclamptic.

*Hypesthesia, Hysteria and Bizarre Reactions*—The complaint of hypesthesia includes complaints of unpleasant subjective numbness, dizziness, tinnitus, spots before the eyes, increased nervous irritability and residual postdelivery disturbances in sensation over the extremities, perineum or abdomen.

We have had only 2 patients complain of a postpartum hypesthesia. One of these patients complained that the numbness extended over both arms, the trunk and both legs. After a careful checkup by our neurologist who found no objective evidence of this complaint the patient declared that she felt much better and that her sensation returned completely by the third week post partum. Another patient has complained of a hypesthesia of the vaginal vault and rectal area since delivery of a baby three months ago.

A 15 year old Negro developed total hysteria which extended from her soles to her scalp on both sides a few minutes after the initial injection. She remained in the vegetable state for a period of one hour. A few whiffs of ammonia brought her back to the state of reality a few minutes later. In this case we purposely let the metycaine wear off and let her have one hour of strong uterine pains. After this chastisement she requested more metycaine and from then on her analgesia worked perfectly.

*Drop in Blood Pressure*—Patients under continuous caudal analgesia not only have a block of the nerve pathways transmitting uterine pain from the eleventh and twelfth thoracic sympathetic segments but also have a block of the upper lumbar sympathetic ganglions which produces a vasomotor dilatation of the blood vessels of the pelvic viscera and the lower extremities. This produces an increase in the volume of the vascular bed in much the same manner as would be experienced from a bilateral lumbar sympathectomy. Therefore in the hypertensive patients a definite fall in blood pressure is usual. This sometimes exceeds 80 to 100 mm of mercury in both systolic and diastolic pressure. In individuals with normal blood pressure this fall is never so pronounced. In 80 per cent of our cases there was no blood pressure fall at all throughout either

the labor or the delivery. In 20 per cent in our personal series of 1150 cases and in 27 per cent of the reported series of 10000 cases there was a blood pressure drop greater than 20 mm of mercury.

Some of the physicians who have used this procedure have put a vasopressor substance in the solution. In some instances this has been 1/20,000 epinephrine and in other instances it has been 1/5,000 ephedrine sulfate or 25 mg of ephedrine to 125 cc of this solution. It has been our recent practice to use no vasopressor substance unless the blood pressure should fall below 90 mm of mercury systolic. In these instances it is our practice to use 25 mg of ephedrine at this time either intravenously or intramuscularly depending on the need of the patient. In such a case either 25 mg of ephedrine or 10 minims of 1/1,000 epinephrine should be added to each 125 cc of the metycaine solution subsequently used to maintain the analgesia.

We have seen blood pressure falls with all of the recognized cocaine derivatives and cocaine substitutes for this procedure. We believe that the blood pressure fall may be attributed to the pharmacologic action of the drug with its associated vasomotor dilatation of the blood vessels of the lower extremities and splanchnic reservoirs rather than any toxicologic effect.

*Contraindications*—1 Infection over the site of the area to be injected. (a) furunculosis (b) carbuncle or abscess over the area, (c) infected pilonidal cyst (d) pyoderma, (e) fungous or Tinea versicolor infection.

2 (a) Anatomic anomalies of the sacrum or bony obliteration of the sacral hiatus. (This is a very rare condition which occurs less than once in 200 cases.) This condition will be found more frequently in the early part of the obstetricians' series.

(b) A low lying dura mater in which spinal fluid may be aspirated through the caudal needle. This is an absolute contraindication. The case should be termed unsuited for caudal analgesia and should be managed in some other manner.

(c) Gross deformities of the spinal column such as Pott's disease, scoliosis or exaggerated lordosis.

(d) Patients with sacrums having no bony dorsal arches.

3 Patients with a history of sensitivity to one of the cocaine derivatives or substitutes.

4 Patients with advanced anemia unless the procedure is to be supplemented with the periodic or continuous administration of a high concentration of oxygen. These persons should be given a transfusion of whole blood if the anemia has reached a critical stage.

5 The psychically unsuited. (a) patients with a history of hysteria or vasomotor instability, (b) epileptiform seizure, (c) central nervous system disease or (d) persons who have had meningitis or encephalitis.

6 Cases of placenta previa, unless cesarean section under this form of analgesia is contemplated immediately after its institution. The cervix and lower uterine segment in these cases will become very much softened thereby increasing the possibility of hemorrhage.

7 Cases of bony disproportion between the pelvis and the presenting part of the fetus unless cesarean section under this analgesia is anticipated.

8 Extremely obese persons in whom the sacral hiatus cannot be palpated. It should be emphasized



that blind prodding with a needle by the untrained physician will certainly result in disaster

Of one hundred physicians who were given intensive postgraduate instruction in the technic of continuous caudal analgesia, ten of them stuck the needle to the side of or below the coccyx and into the rectum or pararectal tissues. One of these physicians inserted the needle through both walls of the rectum, the vagina and one lip of the cervix. Fortunately, the fact that the needle was malleable caused it to deflect away from the parietal bone of the baby.

It has been reported to us that a fatal injection of metyname was performed with a stiff needle into the cranial vault of the baby.

It is unwise to attempt insertion of the needle more than three times in any case. Multiple punctures should not be made and if continuous caudal analgesia cannot be performed by an expert immediately with a minimum amount of physical and psychologic trauma to the patient, other forms of sedation should be used.

We are convinced that continuous caudal analgesia will give complete relief of pain to the parturient with absolute safety to her and her baby, provided the procedure is supervised by a specially trained person. We have found that the ideal person for this responsibility is an obstetrician who has been fundamentally trained in the specialized form of anesthesiology. We have also observed that in some instances the specially trained obstetrician's nurse is able to make some of the subsequent injections and to determine the progress of the parturient with absolute safety. However, the obstetrician in charge of the case should be in absolute control of the management of the procedure and should be available for consultation immediately if the patient should need him.

#### SUMMARY

From our experience and the accumulated experience of others we believe that the following postulates should be emphasized by all obstetricians who use this method:

1 The incidence of operative obstetrics is increased. No physician should use continuous caudal analgesia unless he is well trained in the use of forceps.

2 The incidence of posterior positions is increased to about 8 per cent because of the relaxation of the levator muscles with the resultant failure of a large number of the fetuses to rotate spontaneously.

3 The incidence of transverse arrest in the mid-pelvis is slightly increased because of the failure of the patient to use her auxiliary expulsive forces.

4 In the hands of the experienced, to offset the first three disadvantages, all types of operative obstetrics are facilitated because of the relaxation of the cervix, lower uterine segment and perineum. This relaxed state is not achieved by any other form of general anesthesia.

5 No oxytocic drug should be given until after the termination of the third stage of labor, because the uterus in every instance after continuous caudal analgesia contracts firmly with the delivery of the baby. Hemorrhage during the third stage is therefore definitely minimized. Gentle constant pressure on the fundus of the uterus as the placenta separates will usually expel it within two to five minutes after delivery. When oxytocic drugs are given immediately after the birth of the baby, the incidence of trapped placentas is increased.

6 Continuous caudal analgesia should be started only after labor is definitely established and the patient is in need of relief from pain.

(a) The head must be engaged (unless for cesarean section).

(b) The contractions should be occurring at five minute intervals or less.

(c) There should not be any disproportion between the presenting part and the pelvis.

(d) Progressive dilatation of the cervix 3 cm. or more should be in progress.

7 The babies born under continuous caudal analgesia are just as alert and wide awake at birth as those born to mothers who had no form of sedation or anesthesia. Many of them cry before their shoulders are born. Therefore every attempt should be made to shield the mouth and nose of these babies from aspirating fluid and mucus as their noses cross the perineum.

8 The incidence of fetal mortality and morbidity may be expected to decrease considerably, since there is apparently less birth shock to them by this than by any other method.

9 The entire course of labor is altered<sup>5</sup> from the pictures described in textbooks under other forms of management. The first stage of labor is definitely shortened, the third stage is shortened and simplified. However, the terminal part of the second stage of labor is greatly prolonged unless outlet forceps are used on complete dilatation of the cervix and descent of the presenting part to the perineal floor.

10 An understanding of the anatomy of the peridural space, the sacrum and the surrounding structures is essential. A thorough knowledge of the neurology of the pelvic viscera is a prerequisite. A familiarity with the pharmacology of the cocaine derivatives and substitutes used in this method is necessary. The proper interpretation of the physiology of labor as altered by continuous caudal analgesia must be studied diligently.

11 For success with continuous caudal analgesia, knowledge of the related principles of the basic sciences must be combined with a high degree of obstetric competence and a skilful application of this new technic in anesthesiology.

807 Spruce Street

5 Siever, J. M., and Mousel, L. H. Continuous Caudal Anesthesia in Three Hundred Unselected Obstetric Cases, *J. A. M. A.* 122: 424 (June 12) 1943.

**Discovery of Radium**—The discovery of radium was an indirect result of the discovery of roentgen rays. In the early roentgen ray tubes the impact of the cathode rays on the glass wall of the tube produced a green fluorescence. This phenomenon suggested that there might be some relationship between visible fluorescence and invisible roentgen radiation. Jules Henri Poincaré, a physicist at the University of Paris, was the first to suggest the desirability of testing ordinary fluorescent or phosphorescent substances to see if they emitted invisible rays similar to roentgen rays. His colleague Henri Becquerel undertook a systematic investigation of these substances. They were placed on a photographic plate, which was wrapped in black paper and put aside for some hours. His results were all negative until he tested several uranium salts in this manner. With all of them a distinct photographic effect was observed. On Feb. 24, 1896 Becquerel reported his discovery at the Academy of Sciences.—Haagensen, C. D., and Lloyd, Ward, *N. E. B. A Hundred Years of Medicine*, New York: St. Louis House, Inc., 1943.

# Clinical Notes, Suggestions and New Instruments

## LABORATORY IDENTIFICATION OF SULFONAMIDE RESISTANT GNOCOCCIC INFECTIONS

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Sulfonamide resistance is an important factor in the therapy of gonorrhea and constitutes a formidable barrier in the present campaign for the complete eradication of this disease. An analysis by Cox<sup>1</sup> of over 700 cases of gonorrheal arthritis in the male treated with sulfathiazole, sulfadiazine and sulfamerazine shows that 70 per cent of the cases are clinically and bacteriologically negative within five days and that the remaining 30 per cent show varying degrees of resistance. The principal manifestations of sulfonamide resistance are (1) persistence of symptoms and positive cultures for from several days to many months and (2) persistence of positive cultures in asymptomatic carriers. The latter group particularly constitute a serious public health menace.

Evidence has been reported showing that factors within the invading gonococcus determine sulfonamide resistance more than constitutional factors within the host provided drainage is adequate and that proper therapeutic measures have been taken. The Bangs,<sup>2</sup> Cohn Steer and Seijo<sup>3</sup> and Lankford, Scott and Cooke<sup>4</sup> have studied the growth of gonococcus strains in the presence of sulfonamides by various methods in the laboratory. All these investigators report that in general the strains from resistant cases of gonorrhea tolerate a much higher concentration of drug outside the body than strains from responsive cases.

The aim of the work reported here was primarily to confirm the correlation of clinical and in vitro response to sulfonamides by an independent method. Since the results in a series of 32 cases gave a complete correlation the method was then modified for the purpose of providing a simple and rapid laboratory test for the typing of cases of gonorrhea into sulfonamide responsive and sulfonamide resistant types. The test is simple enough to be carried out readily in any clinical laboratory; it can be completed in two to four days after the first examination of the patient and finally it makes possible the prediction of the results of therapy. Most of the 32 original cases and 26 additional cases were then studied by means of the simplified test and a high degree of correlation was obtained. The original method, which was developed by two of us (W. G. and L. S.) gave a quantitative index of the sulfonamide resistance of each strain. It will be described in detail elsewhere and the strains studied by this method are reported here merely as sulfonamide resistant, responsive or partially resistant.

### METHOD

Pure cultures of gonococci are obtained in the usual way prior to therapy using either the starch casein hydrolysate-meat

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From the Department of Bacteriology and Immunology, Harvard Medical School and School of Public Health.

Constant advice and encouragement were given by Dr. Oscar F. Cox, head of the genitourinary clinic at the Boston Dispensary and by Dr. J. Howard Mueller, professor of bacteriology and immunology, Harvard Medical School.

1. Cox, O. F. Chemotherapy in Gonococcal Infections. New England J. Med. 226: 184 (Jan. 29) 1942.

2. As sulfonamide is well known to be less effective than other sulfonamides against the gonococcus it has not been used in the present study and the term sulfonamide is here restricted to the three drugs mentioned.

3. Bang, Frederik and Bang, Betsy. Sulfonamide Sulfapyridine and Sulfathiazole Therapy of Gonococcal Infections of the Chorioamnion. Membrane Proc. Soc. Exper. Biol. & Med. 46: 527 (April) 1941.

4. Cohn, Alfred Steer, Arthur and Seijo, Irma. Correlation Between Clinical and In Vitro Reactions of Gonococcus Strains to Sulfathiazole. Am. J. M. Sc. 203: 276 (Feb.) 1942. Cohn, Alfred and Seijo, Irma. Further Observations on the Correlation Between Clinical and In Vitro Reactions of Gonococcus Strains to Sulfathiazole. Am. J. Syph. Gonorr. & Ven. Dis. 27: 391 (May) 1943.

5. Lankford, C. E., Scott, Virginia and Cooke, W. R. Studies of Sulfonamide Resistance of the Gonococcus. J. Bact. 45: 201 (Feb.) 1943.

infusion medium of Mueller and Hinton<sup>6</sup> or chocolate agar. From this pure culture small inoculums are streaked on a control plate of the Mueller-Hinton medium and on a series of three plates of the same medium containing sulfathiazole concentrations of 0.10, 0.25 and 0.50 mg. per hundred cubic centimeters of medium respectively.

The medium is prepared as described by Mueller and Hinton and 0.1 cc., 0.25 cc. and 0.50 cc. of a 0.1 per cent solution of sulfathiazole added to 100 cc. portions of the medium just before autoclaving. This medium should not be autoclaved for more than ten minutes at 10 pounds. The sulfathiazole solution is prepared by suspending 1 Gm. of sulfathiazole in 10 to 20 cc. of water adding sodium hydroxide solution until a clear solution is obtained (4 to 5 cc. of first normal) and then diluting to 100 cc. Best results are obtained with plates less than 2 to 3 weeks old.

It is important to use an approximately standard amount of inoculum on each plate. The main source of error is the use of too large an inoculum since this may protect susceptible strains against the action of the drug.

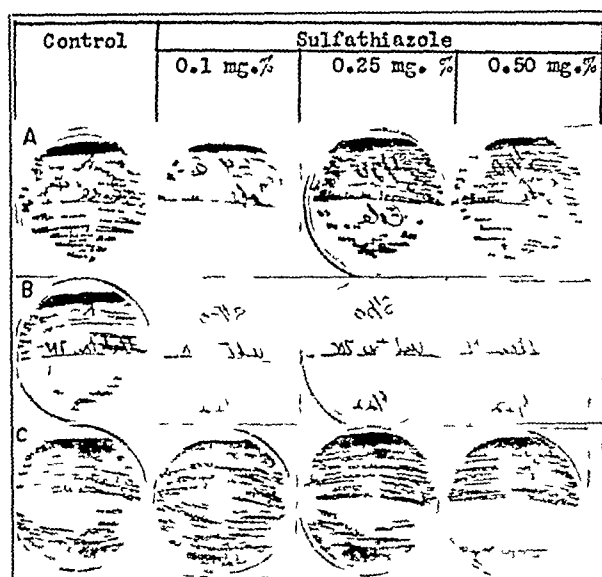


Fig. 1.—Simplified test with pure cultures. A shows a resistant strain and B a responsive strain. C shows another resistant strain (upper half of each plate) and D a partially resistant strain (lower half of each plate).

The plates are then incubated at 36 to 37 C in a candle jar for eighteen to thirty-six hours and read as follows:

1. Equally or almost equally good growth on all the plates indicates a resistant strain.

2. Good growth on the control and no growth, or only traces of growth, on the sulfathiazole plates indicates a susceptible strain.

3. Good growth on the control and intermediate degrees of growth on the sulfathiazole plates, with considerably better growth on the 0.1 mg. per hundred cubic centimeters plate than on the 0.50 mg. per hundred cubic centimeters plate indicates a partially resistant strain.

It has been found advantageous to spray the plates with a solution of the 'oxidase reagent' (para-amino dimethyl aniline hydrochloride) to identify the colonies as Neisseria. Occasionally contaminants resistant to sulfathiazole and closely resembling gonococcus colonies in appearance have been encountered but they are readily distinguished from gonococci by the use of oxidase reagent.

Photographs of plates treated in this way are given in figure 1 and show typical examples of the three types of strains: Neisseria colonies appearing black.

6. Mueller, J. H. and Hinton, J. A Protein Free Medium for Primary Isolation of the Gonococcus and Meningococcus. Proc. Soc. Exper. Biol. & Med. 45: 330 (Oct.) 1941.

Partially resistant strains have been found to constitute only a small fraction of the total and both the other types may be readily classified by the use of only one sulfathiazole plate. The 0.1 mg. per hundred cubic centimeters plate is preferable for selecting the most responsive strains and the 0.5 mg. per hundred cubic centimeters plate for the most resistant strain. A second drug plate is, however, useful in providing a check on the first.

**Time Required**—The isolation of a pure culture requires twenty-four to forty hours and the test another twenty-four to forty hours, making a total time of two to four days. Highly resistant strains can be easily classified after eighteen hours of incubation, but the longer period of incubation gives a more reliable differentiation of partially resistant and responsive strains.

However, preliminary results obtained by Cox indicate that in cases of untreated acute gonorrheal urethritis the test may be completed in less than twenty-four hours after the first examination of the patient by using urethral swabs or urine sediment directly for the test, thereby eliminating the preliminary isolation of a pure culture. Figure 2 shows typical results obtained by this modification. Spraying the plates with the oxidase reagent is particularly useful here because of the frequent occurrence of contaminants.

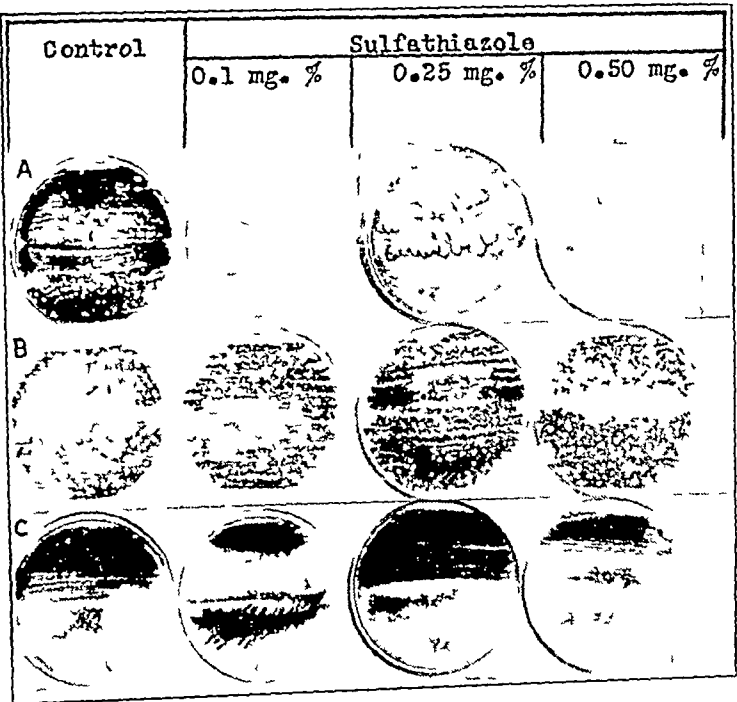


Fig. 2—Direct streaking with urethral swabs (A, B and upper half of C) and with urine sediment (lower half of C). Strain A is responsive and strains B and C are resistant.

Until more cases have been studied by this new direct method it should be regarded as only presumptive evidence and the test repeated with a pure culture. It has been reported that certain species of bacteria can protect susceptible bacteria from the action of the drug in mixed culture.

RESULTS

The data obtained by both the original and the simplified methods are given in the accompanying table, together with the clinical data.

Of the total 58 patients 22, or 38 per cent, were found to have resistant strains by one or the other or both methods. All these patients were decidedly resistant clinically, failing to respond to treatment in less than two to four weeks. Thirty-three patients, or 57 per cent, gave responsive strains and all these patients showed negative smears, cultures and symptoms on the first examination after therapy was started, with negative follow-ups thereafter. This examination was usually made forty-eight hours after drug was started, but occasionally the patient delayed his second visit for from three to six days.

The remaining 3 cases, or 5 per cent, gave partially resistant strains in vitro. Clinically, 1 resembled the resistant type and 2 were definitely intermediate, requiring approximately one week for cure.

Results Obtained by the Original and the Simplified Method, with Clinical Data

Case No.	Laboratory Result		Days of Infection Before Therapy	Previous Sulfonamide Therapy	Drug Used	Clinical Response, Days Required for Complete Cure
	Original Method	Simplified Method				
1	Responsive		7	None	Sulfadiazine	0.1
2	Responsive		1	None	Sulfadiazine	0.2
3	Responsive		1	?	Sulfamerazine	0.5
4	Responsive		1	None	Sulfathiazole	0.2
5	Responsive		2	None	Sulfathiazole	0.1
6	Responsive		0	None	Sulfathiazole	0.2
7 <sup>1</sup>	Responsive	Responsive	4	None	Sulfadiazine	0.1
8	Responsive	Responsive	10	None	Sulfamerazine	0.1
9	Responsive	Responsive	6	None	Sulfamerazine	0.2
10	Responsive	Responsive	5	None	Sulfamerazine	0.6
11	Responsive	Responsive	1	None	Sulfamerazine	0.2
12	Responsive	Responsive	0	None	Sulfadiazine	0.1
13	Responsive	Responsive	30+	None	Sulfadiazine	0.1
14	Responsive	Responsive	18	None	Sulfamerazine	0.1
15	Responsive	Responsive	23	S A	Sulfadiazine	0.1
16	Responsive	Responsive	4	None	Sulfadiazine	0.3
17	Responsive	Responsive	2	None	Sulfamerazine	0.1
18	Responsive	Responsive		None	Sulfadiazine	0.1
19		Responsive	1	None	Sulfamerazine	0.1
20		Responsive	2	None	Sulfadiazine	0.3
21		Responsive	4	None	Sulfadiazine	0.2
22 <sup>1</sup>		Responsive	?	?	Sulfamerazine	0.3
23		Responsive	1	None	S M S D	4.1
24		Responsive	0	None	S T S M	4.1
25		Responsive	12	None	Sulfamerazine	0.1
26		Responsive	6	None	Sulfamerazine	0.1
27		Responsive	4	None	Sulfamerazine	0.1
28		Responsive	1	None	Sulfamerazine	0.1
29		Responsive	4	?	Sulfamerazine	0.1
29 <sup>2</sup>		Responsive	2	None	Sulfamerazine	0.1
30		Responsive	2	None	Sulfamerazine	0.2
30 <sup>2</sup>		Responsive	6	None	Sulfadiazine	0.7
31		Responsive	2	None	Sulfamerazine	0.2
32	Resistant		0	Yes?	Sulfadiazine	90+
33	Resistant		?	S T	Local	90+
34				S A		
35	Resistant		0	None	Sulfadiazine	0.1
36	Resistant		0	Yes?	Local	0.1
37	Resistant		10	?	S T S D	14.1
38	Resistant	Resistant	2	None	Sulfadiazine	1.0+
39	Resistant	Resistant	0	None	S T S D	1.1
40	Resistant	Resistant	11	None	S T S M	1.1
41	Resistant	Resistant	1	None	S D, S I	7
42	Resistant	Resistant	4	None	S D S I	7.0+
43				S M		
44	Resistant	Resistant	0	S T	Local	90+
45	Resistant	Resistant	1	None	S M S D	1.1
46	Resistant	Resistant	1	None	S M S D	1.1
47	Resistant	Resistant	1	None	Sulfamerazine	1.1
48	Resistant	Resistant	2	None	Sulfamerazine	1.1
49	Resistant	Resistant	2	None	Sulfamerazine	1.1
50	Resistant	Resistant	2	None	Sulfamerazine	1.1
51	Resistant	Resistant	2	None	Sulfamerazine	1.1
52	Resistant	Resistant	2	None	Sulfamerazine	1.1
53	Resistant	Resistant	2	None	Sulfamerazine	1.1
54	Resistant	Resistant	2	None	Sulfamerazine	1.1
55	Resistant	Resistant	2	None	Sulfamerazine	1.1
56	Resistant	Resistant	2	None	Sulfamerazine	1.1
57	Resistant	Resistant	2	None	Sulfamerazine	1.1
58	Resistant	Resistant	2	None	Sulfamerazine	1.1

Two patients each had two infections as denoted by the superscript on the case numbers.

Culture were obtained before sulfonamides were administered in the clinic in all cases but 4 from the sulfonamide resistant group. In an additional 4 resistant cases and 1 responsive case sulfonamides were taken before admission to the clinic.

7 Zimmerman, A., and Pike, R. M. A Satellite Phenomenon in Mixed Cultures of Bacteria on Agar Containing Sulfonamide. J. Bact. 45: 522 (May) 1943.

Several incidental findings are worth noting.

1 In this series of cases no relationship was found between the speed of cure with sulfonamides and the time after onset of symptoms at which sulfonamide therapy was started. In other words, it appears that a responsive case will respond immediately at any stage of the disease, while a resistant case will run its course no matter how soon sulfonamide therapy is started. Case 15 is worthy of special mention in this connection. This was the only responsive case in which drug had previously been administered, 50 sulfonamide tablets, and these without success. On the twenty-second day of symptoms sulfadiazine was given and an immediate cure within twenty-four hours resulted. A culture taken just before drug was given showed a responsive *in vitro* picture by both methods.

2 The *in vitro* inhibitory powers of sulfathiazole, sulfadiazine and sulfamerazine appear to be similar, though, weight for weight sulfathiazole is several times as powerful as either of the other two.

The strain from case 54 was first reported to be responsive by the simplified test and the method failed in this case to predict the result of therapy correctly. However, later tests showed it to have definitely more resistance than any of the responsive strains studied and it is therefore classified as partially resistant. It is to be expected that a small percentage of cases will give strains with a small degree of sulfonamide resistance making the prognosis doubtful but in this series all the strains except the one discussed were either decidedly resistant or responsive.

#### COMMENT

This method is an entirely practical typing procedure for use in the clinical laboratory, since it involves only elementary bacteriologic technique. In the hands of the average well trained technician, practically all cases of male gonorrheal urethritis can be definitely classified as sulfonamide resistant or responsive in from two to four days. An absolute bacteriologic diagnosis, including fermentation reactions, usually cannot be made in less time than this.

Of greatest importance is the fact that routine use of this test may serve as a guide in the therapy of any given case in the clinic. If the strain is responsive *in vitro* and the patient appears cured after one course of sulfonamide therapy, there is less need of follow-ups and he can be discharged with considerable assurance of a complete cure.

If the strain is highly resistant the patient is almost certain to respond slowly if at all to sulfonamides, and other methods of therapy are indicated. When penicillin is available for the treatment of a limited number of cases of gonorrhea,<sup>8</sup> this test would be useful in selecting the most sulfonamide resistant cases with a minimum loss of time.

The test is also of value in focusing attention on patients who become asymptomatic carriers. These patients, although only a small fraction of the total, are of importance not only because they are probably more apt to infect others than are patients who are frankly ill but also because they spread sulfonamide resistant strains of gonococci.

#### SUMMARY

1 A practical rapid laboratory method for the identification of sulfonamide resistant and sulfonamide responsive strains of gonococci has been developed.

2 Forty-four cases of male gonorrheal urethritis have been studied by this method and a high degree of correlation has been obtained between the clinical response to sulfonamides and the *in vitro* response of the strain to sulfonamides.

3 The advantages of the routine use of this method in the treatment of gonorrhea are that (a) it permits an accurate prognosis of the results of sulfonamide therapy, (b) prognosis of potentially successful use of sulfonamides safely permits fewer clinical check-ups and (c) prognosis of sulfonamide failure indicates the desirability of other forms of therapy.

<sup>8</sup> Herrell W. E., Cook E. N., and Thompson Luther. Use of Penicillin in Sulfonamide Resistant Gonorrheal Infections. *J. A. M. A.* 122:289 (May 29) 1945.

## BALANTIDIUM COLI

### REPORT OF CASE WITH PROCTOSCOPIC STUDY

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*Balantidium coli* is an intestinal parasite of pigs and human beings, however, infections by this ciliate in man are comparatively rare, as is indicated by the cases reported.<sup>1</sup> The organisms have been found also in the intestinal tracts of orangutans and monkeys. Awakura<sup>2</sup> found a *balantidium* in wild rats in Moscow, Russia. It seems therefore reasonable to assume that this parasite is a potential hazard because of its universal distribution and its numerous hosts.

In spite of the fact that the possibility for infection is great, the opportunity for proctosigmoidoscopic study of cases is not frequent because they are not readily recognized. The following case was extremely interesting to us.

M. H., a white man aged 33, a farmer, poorly developed, entered the Creighton Clinic on Jan. 7, 1941 complaining of periodic attacks of diarrhea of seventeen years' duration. The



Fig. 1—Low power view of *Balantidium coli* obtained by scraping the rectal mucosa of the patient. Intermixed with the organisms can be seen some of the granular and amorphous debris which was removed concomitantly.

onset occurred in 1924, while he was camping on the Iowa State Fair grounds. The stools were watery in character and contained blood and mucus. He was taken to the emergency hospital and treated for three or four days. He was dismissed when the bowel movements were again under control. He has had periods of abatement and of exacerbation since. His condition has always been worse during the winter months than during the summertime. In 1935 the patient suffered a particularly severe attack of dysentery, and a diagnosis of

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<sup>1</sup> Nisbet W. O. A Case of *Balantidium coli* Infection. *South M. J.* 13:403-406, 1920. Young M. D. *Balantidiasis*. *J. A. M. A.* 113:580-584 (Aug. 12) 1939. Hummel H. G. Amebic Granuloma of Rectum and Balantidiasis in Same Patient. *Am. J. Digest. Dis.* 7:178, 179, 1940. Craig C. F. and Faust E. C. *Clinical Parasitology*, ed. 2 Philadelphia: Lea & Febiger, 1940, p. 217. Mason C. W. Case of *Balantidium coli* Dysentery. *J. Parasitol.* 6:137-138, 1919.

<sup>2</sup> Brooks H. A Few Animal Parasites Sometimes Found in Man. *Proc. New York Path. Soc.* 3:28, 1903. Brumpt E. Demonstration du rôle pathogène du *balantidium coli*. *Compt. rend. Soc. de biol.* 67:103-105, 1909.

<sup>3</sup> Awakura A. Studies on Intestinal Protozoa of Rats. Rats as Carriers of *Balantidium*. *Tr. Roy. Soc. Trop. Med. & Hyg.* 31:93-98, 1937.

*Endameba histolytica* infection was made. Emetine was prescribed, but he could not tolerate the drug so the medication was changed to acetarsone. His condition improved after the administration of this drug, and normal bowel habits were established for a brief interval. The dysenteric condition recurred but was again controlled by the administration of another course of acetarsone. Subsequent exacerbations were handled in this manner and the patient would remain symptom free for periods varying from three to four weeks.

At the time of his entrance to this clinic his complaints were frequency of bowel movements (three or four per day), soreness and cramping of the lower part of the abdomen. His diarrhea had no relation to meals or to different types of food. The physical examination revealed numerous caries in his teeth, the tongue was coated, the breath was fetid (of a peculiar odor which was noted to be similar to that coming from the bowel on sigmoidoscopic examination), the left arm and the right leg were spastic, speech was slurring. There was tenderness on deep palpation over the right lower quadrant of the abdomen.

Proctosigmoidoscopy revealed a diffuse inflammation of the rectal mucosa. In the upper third of the rectum were several irregularly shaped diphtheritic patches varying from 1.5 to 3 cm in length and 0.5 to 1.5 cm in width. There were also numerous small, round, white plaques, these had the appearance of bacterial colonies, as they are seen growing on an agar plate. The plaques were easily wiped off and exposed a raw, hyperemic area from which blood exuded. Scrapings from these areas when examined microscopically, on a warm stage, revealed the vegetative forms of *Balantidium coli*. Photomicrographs were prepared of the stained specimens (figs. 1, 2 and 3).

A low residue, high vitamin, high calory diet was ordered and carbarsone was prescribed, one tablet (0.25 Gm) to be taken twice daily for ten days. When the patient was seen two weeks later he stated that he no longer had a diarrhea. Proctoscopy revealed only a slight hyperemia of the mucosa, the white patches had entirely disappeared. There remained



Fig. 2—High power view of the same material as in figure 1, showing greater detail of the internal structure of *Balantidium coli*.

only light areas corresponding in size to the plaques and having the appearances of superficial scars. Fourteen days after the carbarsone was stopped the patient stated that he did not feel well and that he was again having frequent bowel movements. Proctoscopy showed a diffuse inflammation of the mucosa which was partially covered with a white form exudate. Smears taken at this time contained an abundance of very active balantidia. Another course of carbarsone was prescribed, the same results as those recorded were observed

Since oil of chenopodium has been used with good results by some authors,<sup>4</sup> the following treatment was employed. The bowel was flushed with a weak solution of sodium bicarbonate and this was followed by 4 cc of oil of chenopodium in 30 cc. of olive oil. The solution was instilled in the rectum by means of a small catheter and was retained for two hours. This treatment was again repeated in three days. Examination of



Fig. 3—Oil immersion view of *Balantidium coli* showing cilia, cytochrome, micronucleus, food vacuoles and surrounding granular debris.

the patient seven and fourteen days later showed that there was no improvement, however, when the amount of oil of chenopodium was doubled the mucosa appeared normal after only one week had elapsed. The patient remained free from symptoms for one month, therefore he was instructed to return to the clinic in six or eight weeks for a check-up. When he returned he again was having frequent bowel movements.

Proctoscopy revealed the same picture that was seen at the time of his first visit to the clinic.

Diodoquin tablets (Searle) were prescribed, ten tablets of 0.25 Gm size daily for twenty days. When the patient returned at intervals of one, two, four, six and eight weeks he stated that his bowel movements were regular and that the stools were well formed. He was instructed to return in six months for another examination, provided there was not a recurrence of symptoms at an earlier date. The rectal mucosa appeared normal and *Balantidium coli* could not be demonstrated when he was next examined. The patient is feeling well and has gained considerable weight.

Eighteen months have elapsed since the administration of the diodoquin and there has been no return of symptoms or other evidence of the disease. The arsenicals and oil of chenopodium were of little value in the treatment of this case.

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<sup>4</sup> Mason, C. W. Personal communication to the authors. *Cott E. C. Infection with Balantidium coli*. J. A. M. A. 90: 1430-1431 (May 5) 1928.

**Whooping Cough**—Of all the infectious diseases of childhood that occur in epidemic form, perhaps none is more important from the point of view of both morbidity and mortality than is whooping cough. The disease occurs both endemically and in epidemics and is most serious when complicated by secondary pulmonary infections, these are produced as a rule by those organisms that commonly inhabit the upper respiratory tract. When uncomplicated by secondary infection whooping cough is rarely fatal, when death does occur it is more or less accidental and usually is due to suffocation accompanying convulsive seizures or to hemorrhage within the cranial cavity incident to the violent spasms of cough which characterize the disease.—Forbes, Wiley D. *Reaction to Injury*. Philadelphia: Williams and Wilkins Company, 1943.

## Special Article

### AMERICAN HEALTH RESORTS

#### CLIMATE AND DISEASE

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*These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.*

Certain fundamental principles of climatic effects should be kept constantly in mind when spa therapy is being considered. In many types of disease the climatic background of a spa will exercise a considerable influence over its possible benefits to the patient. Facts showing just how and why this is true have not been sufficiently appreciated by the medical profession, hence this article, setting forth the pertinent information available.

Climate is now beginning to receive the attention its importance warrants. Through its dominance of ease of body heat loss it largely determines the energy level on which man may exist in a given region and we now know that much more than mere working ability is attached to this energy level of existence. All vital functions of the body are based on the energy derived from cellular combustion of foodstuffs, but as an energy conversion machine the body is not of high efficiency. It is thus very sensitive to the ease with which its waste heat can be thrown off, and it is here that climatic dominance is exercised. Where heat loss is accomplished easily, growth is most rapid, maturity comes early, resistance to infection is highest, energy for thought and action is most plentiful, and health assumes a positive and dynamic quality. As heat loss becomes more difficult, all these indexes of vitality are depressed and a lower, more vegetative level of existence results.

Physicians, particularly in the intense climatic contrasts of America, should have a clear understanding of these forces at work. Enlightened practice now goes far beyond the mere diagnosis and treatment of disease. Underlying most research into the treatment of disease has been the ideal of disease prevention—the maintenance of unhindered health. Among the factors influencing this maintenance of health, climatic environment probably will be found as important as adequate food supply or genetic background. Proper food is, of course, an essential requirement, but so too is the ability to utilize this food. With the lower combustion level of people in tropical warmth, more vitamins are needed to utilize each gram of food than are required for optimal response in cooler climates. Man is less energetic in warm climates but he is a more efficient working machine and shows less evidence of bodily and mental stress. In cooler regions where more dynamic and buoyant health prevails, the most acute and worrisome problems facing the medical profession arise from the wear and tear of too strenuous an existence.

While mean temperature level and ease of body heat loss thus dominate the energetics of life there is a second climatic factor which in some regions seriously disturbs the smooth flow of healthful functioning.

Storminess or atmospheric turbulence, with the accompanying sudden changes in temperature, pressure and humidity is now recognized as a major disturbing factor in certain regions of the earth where cyclonic storms prevail. These sudden changes in the atmosphere seriously disrupt tissue functioning in ways as yet little understood and seem closely related to the initiation of many types of acute infectious attacks. Storm changes certainly constitute a major health factor in regions where they are frequent and abrupt, but much more evidence must be accumulated before the physiology of their effects can be clearly understood. Physicians should realize that individuals differ greatly in their sensitiveness to storm changes. Some people are utterly unfitted for existence in a stormy region and should be advised of the advantages of migration to a region of lesser turbulence.

This article is offered in the hope that it may help physicians to a clearer understanding of the workings of these climatic factors. Knowledge in this field still is in the stage of rapid expansion but sufficient information already is at hand to warrant positive advice along several lines. The newness of much of this knowledge necessitates for its clear understanding a rather comprehensive presentation of the physiologic principles involved.

#### PHYSIOLOGIC CONSIDERATIONS OF CLIMATIC EFFECTS

*Human Energetics*—The most fundamental effects of climate are exerted on the energetics of human existence so let us first consider the body as an energy conversion machine. At all times it lives and functions only by virtue of the cellular combustion of foodstuffs. Much of this combustion energy is wasted, however, because of low working efficiency. Man himself has designed a machine of greater working efficiency than the human body. As high as 37 per cent efficiency has been reached in Diesel engines, while even gasoline motors reach the 20-25 per cent efficiency exhibited by man, the horse and dogs. The human body, however, is much more limited than are inanimate motors in the temperature range within which it can function well. Even a very few degrees of rise or fall from the normal level seriously interferes with efficient functioning.

To meet this handicap the body has developed an intricate mechanism for regulation of heat loss. Through the vasomotor control of blood supply to the skin the amount of heat reaching the body surface for dissipation can be altered with great rapidity. Normal loss from the deeper tissues by direct conduction is slow and is impeded by the insulating layers of fat encountered, but the blood with its high specific heat capacity and speedy circulation can carry internal heat to the body surface at a rapid rate. Blood flow through skin capillaries may be increased as much as thirtyfold within a few minutes when a sudden need arises. When this increased flow through the skin proves inadequate for quick elimination of the heat of combustion the sweat glands become active and make possible a still greater increase in rate of heat loss by water vaporization.

This intricate heat control mechanism functions quickly to meet sudden changes in heat production (as in bodily activity) or in the ease of heat loss (as with sudden external temperature changes). With more prolonged changes in the ease or difficulty of heat loss, however, the body adapts by an increase or decrease in its own basic rate of tissue combustion. Thus external heat that lasts only a few days calls into play only



the vasomotor and sweating mechanisms, but if such heat persists for ten days to two weeks there occurs a definite suppression in tissue combustion rate. Therein lies the chief reason why severe summer heat waves may persist for weeks but cause prostration and death in the affected population only during the first ten days.

It is this combustion rate response to the more prolonged changes in external temperature level and ease of body heat loss which holds greatest significance for man. Any decrease in total tissue combustion, enforced by difficulty in heat loss necessarily means a curtailment of energy available for carrying out such vital functions as growth, work performance, tissue repair and the fight against infectious invasions. Such direct linking of these vital functions to tissue combustion rate and ease of body heat loss, although logical enough, has not received the appreciation its importance warrants. Indeed there has existed among medical men in America a disbelief that any such dependence really exists. This disbelief dates back to the publication of a paper by Benedict and Cathcart<sup>1</sup> in which they cite oxygen consumption data on 14 subjects in Boston and claim a lack of any seasonal influence. Even though their own data show a strong tendency for lowest oxygen consumption to occur in July or August, and this in Boston where summer heat is rarely severe, this article has been extensively quoted as indicating that tissue combustion rates are independent of external temperature levels.

This point is of such basic importance in any analysis of climatic effects that recently it was made the subject of a special article<sup>2</sup> in which the available evidence was presented and discussed. As set forth in that article the evidence points conclusively to a clear inverse relationship between tissue combustion rates and prevailing external temperature levels in both men and animals (within physiologic limits). Practically all investigators who have looked for this heat suppression of combustion rate have found it. Let us next see what it means in terms of growth and other vital functions.

**Growth**—All types of experimental animals suffer a growth retardation when heat loss becomes difficult. This happens even though all factors of existence other than ease of heat loss are kept constant. Animals at 91 F eat only about two thirds as much food as at 65 F. Herein lies the principal reason why domestic animals do so poorly in tropical warmth, giving lean, stringy meat of strong flavor. Coarseness of the tropical forage crops and leaching of soils under the heavy rainfall may be factors of considerable weight, but suppression of tissue combustion by difficulty in body heat loss is probably more important.

Children show this same retarded growth and inferior adult size under tropical heat conditions, while in the optimal coolness of middle temperate regions growth is most lusty and adult stature greatest. The close relation of such growth differences to oxygen utilization is emphasized by the pronounced differences in vital lung capacity exhibited by individuals from the two types of climate. Vital capacity in Filipino college students is only a little over half as great as that of students in the northern part of the United States.

**Sexual Functions**—Onset of sexual functions and degree of fertility are closely linked to ease of body

heat loss and tissue combustion level. Most rapid development and highest fertility occur at environmental temperatures around 65 F. As difficulty in heat loss comes on and growth rate slackens, we regularly see also a later onset of sexual cycles in young females both human and animal, and lowered fertility. Animals mate freely at 90 F, but conceptions are difficult to obtain and result in small litters of puny young while at 65 F almost every mating results in a large litter of lusty offspring. Microscopic changes in gonadal tissues indicate that this suppression of reproductive tissue is extensive and very real. Spermatogenic activity in the testes is almost obliterated within ten to fourteen days of application of tropical moist heat. After several weeks of adaptation some recovery of function occurs but to a much lower level of activity than is seen at lower temperature levels.

Man, living under natural climatic habitats, shows just as striking sexual variations at different levels of environmental temperature as do laboratory animals. Onset of the menses in girls occurs earliest in middle temperate latitudes and comes at a progressively later age as more and more severe tropical heat is encountered. At the present time here in North America the earliest menarche is found in the upper half of the Mississippi basin. Nowhere else on earth do children grow with such lusty vigor and enter such early adolescence. Development in the Gulf states is somewhat retarded by the long summer of tropical moist heat, but most severe suppression takes place in tropical lowlands, where depressive moist heat renders heat loss difficult at all times.

Medical literature and lay belief back through the centuries, at least to the time of Hippocrates, have held that the earliest onset of the menses occurred in the tropics. Even though all recorded statistics contradict this belief, it is encountered among people of all lands both lay and medical. Since we know it has been handed down through medical literature for two thousand years without factual support, we can well presume that it may have originated several thousand years earlier still. Only twenty thousand or so years ago present middle temperate regions had polar climates and optimal temperature conditions for man were to be found only in what are now tropical or subtropical lands. That such beliefs, perhaps once based on real facts, can be handed down through many thousands of years without further supporting factual background is well illustrated by the ancient astrological beliefs so widely held today even among intelligent people.

Wherever human populations are exposed to seasonal swings in mean monthly temperature, highest conception rates nearly always occur when the mean temperature level is near 65 F. As mean temperatures rise above 70 F or fall below 40 F fertility is reduced. With really severe moist warmth, as in Japan's monsoon summer heat or in the prolonged severe heat waves in the upper Mississippi valley in North America, conceptions may be reduced as much as 50 per cent. Nor is this reduction in conceptions merely a result of less frequent intercourse in hot weather, for there occurs no significant reduction in the frequenting of houses of prostitution. Apparently both men and animals continue the mating urge in hot weather but suffer a sharp drop in biologic fertility.

Malnutrition from any cause tends to retard development of the sexual functions. Difficulty in body heat loss is no more effective in this respect than is inadequacy of available food supply either in total amount

1 Benedict, F. G., and Cathcart, E. P. Muscular Work. A Metabolic Study with Special Reference to the Efficiency of the Human Body as a Machine, Pub 187, Carnegie Institution of Washington, 1913.  
2 Mills, C. A. Climate and Metabolic Stress. Am J Hyg. Sect. A 29: 147 (May) 1939.

or in composition of serious childhood illnesses. The menarche usually is delayed in girls who have been subjected to any of these depressive influences during their childhood years.

*Resistance to Infection*—Although such factors as malnutrition, vitamin deficiency and exhaustion usually have been thought important in determining the body's ability to fight infection, there has been little apparent inclination to consider tissue combustion level. Yet such a relationship would seem logical since all vitality factors must have their functional basis in the energy liberated from such combustion. It is infectious disease which kills people living under depressing tropical warmth while the more energetic residents of middle temperate regions die mainly from the degenerative and breakdown ailments. In 1932 we showed that ability to survive tuberculous infection was decidedly higher in Cincinnati residents who were born in the North than in those born in the Gulf states. Dealing only with deaths of tuberculosis among the indigent population of Cincinnati it was shown that the survival time from first symptom to death was almost twice as long in patients born in the northern part of the United States or North Central Europe as in those born in the Gulf states of North America or in the Mediterranean countries of Europe. Ability to survive attacks of acute appendicitis also is considerably higher in the North than in the South.

Human disease statistics, however, are influenced by too many extraneous factors to be of any great value in determining climatic effects, unless they can be substantiated by studies on experimental animals under carefully controlled conditions. Human data may supply indications of existing differences or trends but conclusive proof in such a matter must come from laboratory studies. Fortunately such studies<sup>3</sup> have now shown that ability to fight infection is definitely higher under conditions that facilitate body heat loss than it is where heat loss is difficult. With all other existence factors except ease of body heat loss held constant, practically all mice adapted to 90 F. will be dead after inoculation with a given dose of pneumococcus organisms before those adapted to 65 F. even begin to succumb. If one uses a less lethal organism, such as a hemolytic streptococcus, the minimum lethal dose for the 65 F. mice is found to be about four times as great as it is for those kept at 90 F. Antibody production after thyroid vaccine injection into rabbits is almost twice as great in animals kept at the lower temperature.

Locke<sup>4</sup> has provided support also for the idea that the combustion level is an important factor in determining resistance to infection. He found that ability of animals to survive pneumococcus inoculation or of human beings to maintain freedom from respiratory infection was related directly to their rate of oxygen utilization. The matter needs more thorough study, but in the main it would seem that man's susceptibility to infection and his chances for survival are conditioned rather strongly by his ease of body heat loss and the resulting tissue combustion level allowed him. Temperate zone man does not, then, enjoy greatest freedom for respiratory disease during the summer months because of better tissue vitality as has been so commonly supposed. Actually the fatality rate per hundred cases of acute appendicitis is almost twice as high in summer heat as in winter cold and tuberculosis runs its

most rapid course when symptoms of disease activity first appear in summer heat. It now seems almost certain that the summer freedom from respiratory infection is attributable in very large part to the lessened storminess of that season and the greater freedom from body chilling.

*Sensitivity to Heat*—In addition to the profound effects on tissue combustion rate and body functions exerted by moderate difficulties in heat dissipation there are also more acute disturbances brought by excessively high environmental temperatures. Such disturbances are predominantly problems of middle temperate latitudes. This is true for two reasons, both of which are involved in an explanation of the physiology of these excessive heat effects.

The first reason is that man's own internal heat production is highest in temperate regions and his necessity for rapid heat dissipation greatest. Either animals or men adapted for weeks or months to cool surroundings develop a high combustion rate, and this proves embarrassing when sudden difficulty in heat loss is encountered. People residing in tropical moist heat have adapted themselves to a lower rate of heat production and acute heat effects there are seldom seen except in newcomers from cooler regions. Severe heat waves of summer come on middle temperate populations suddenly and sometimes kill thousands before their body heat production can be brought down within their capacity for dissipation under the difficult conditions suddenly prevailing. Particularly prone to this embarrassment from the sudden heat are the less resilient sclerotic patients and those of limited cardiac capacity. Increased peripheral circulation to facilitate the loss of internal heat throws a greater burden on the heart and hence the heat wave dangers for those with heart trouble.

Animal and human studies have shown that ten days to two weeks are required for any considerable subsidence of basic internal combustion in response to external heat. Population masses demonstrate this delay in adaptation by being able to stand considerably more severe heat in August than in June or early July. In fact, most heat stroke epidemics occur in early July rather than in the hotter weather of August. But if a severe July heat wave was to be inflicted on these same populations at the height of their winter activity, its effects would be truly devastating—perhaps as much as would a North Dakota winter suddenly inflicted on the people of Manila, Singapore or Calcutta. It is, then, the prevailing internal heat production rate of man that largely determines his sensitivity to acute heat effects when faced suddenly with severe external warmth.

The second factor responsible for the greater prevalence of acute heat effects in temperate latitudes is that most severe heat actually occurs there. Dry bulb temperatures of over 100 F. are rare in tropical regions except in desert areas while temperatures above this level are not unusual during severe summer heat waves as far north as the prairie provinces of Canada. Heat deaths and prostration occur mostly in urban and desert regions and for somewhat similar regions. With the dense vegetation of tropical lowlands and less so in rural temperate areas the physical surroundings of man have a high water content. Green foliage is largely water, and the high heat capacity of water enables it to absorb large amounts of radiant heat from the daytime sun with little rise in temperature. Baked earth, desert sands and urban building or paving materials have a very low specific heat and suffer a material rise of

3 Mills, C. A. *Climate in Health and Disease*. Oxford Medicine Series, vol. I, chapter XI, pp. 453-500 (1935).

4 Locke, Arthur. Lack of Fitness as the Predisposing Factor in Infections of the Type Encountered in Pneumonia and in the Common Cold. *J. Infect. Dis.* 60: 106 (Jan-Feb.) 1937.

temperature under the radiant heat load from the sun. In desert regions this daytime heat is quickly radiated off into space soon after sundown, but in built-up urban areas it tends to be trapped within buildings and to cause progressively higher temperatures as the heat wave persists day after day. Building construction in tropical cities takes account of this danger and provides for ample air currents to carry away any such daytime heat that gains access, but in temperate zone cities winter cold prohibits this open type of construction, and the trapping of daytime radiant heat makes the heat problem for urban dwellers worse with each added day of a summer heat wave.

Lack of space prevents full consideration of the physiologic and therapeutic aspects of heat stroke, heat exhaustion and heat cramps. Those particularly interested can find the matter treated in detail elsewhere.<sup>5</sup> One point of great importance is the protection against severe

studies, however, and those of others in this field were carried out at approximately optimal environmental temperatures for the animal subjects, so that there was no way of knowing whether this ratio might not vary as external temperatures were raised or lowered.

In more recent studies on this point it has, in fact, been found that the optimal requirement for dietary thiamine is twice as high at 91 F. as it is at 65 F. Animals show definite inadequacy in the heat at dietary thiamine levels twice as high as those at which inadequacy appears in a cool environment.

With animals on vitamin free synthetic diets to which have been added the known B vitamins in pure form those kept at 65 F. seem not to miss the unknown B fractions ordinarily supplied to them as liver extract. Addition to their diet of liver extract or the newer B fractions (inositol, para-aminobenzoic acid, choline, biotin) seems to make little difference in growth rate or

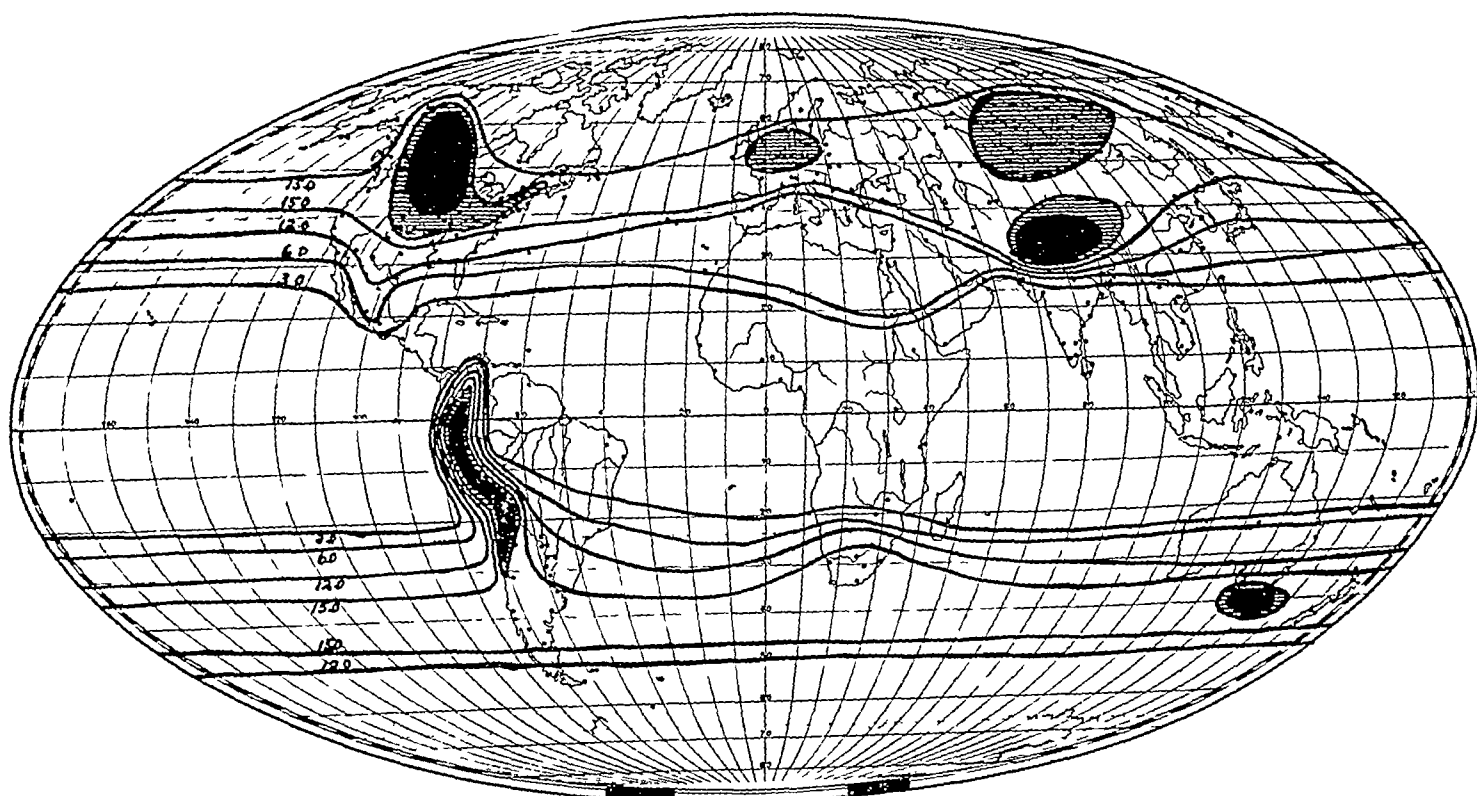


Fig. 1—Climatic stimulation over the earth

heat afforded by a high intake of the B vitamins. Thiamine 10 mg. a day has been found much more effective than salt tablets in warding off the effects of severe heat, but it is probably safer to increase the intake of all the B fractions.

**Vitamin Requirements**—Since human vitality and energy level seem so dependent on ease of body heat loss and tissue combustion rate, it is well to look into the combustion process itself. Perhaps tissue requirements for the combustion catalysts are higher when the combustion rate is slowed down by difficulty in heat loss. With the lowered food intake of hot climates or in summer heat it may well be that a higher dietary content of thiamine and other combustion catalysts of the vitamin B group is needed to maintain optimal concentration for proper tissue oxidative processes. It has quite generally been considered, largely as a result of Cowgill's studies, that thiamine requirement is determined by the amount of dextrose there is to be burned, that a more or less constant ratio exists between thiamine requirement and total nonfat calories of the diet. His

development. In the heat, however, these newer and unknown fractions have now been found badly needed.

As pointed out recently,<sup>6</sup> man relies on meats and other animal products for the greater part of his B vitamin supply. Nuts are also a rich source but are eaten in much lesser quantities, while the vitamin in legumes is largely destroyed by cooking processes. Of the vitamin rich cereals the only two in common use (rice and wheat) are robbed of their supply by milling methods. Meats thus assume a very important dietary role quite aside from their protein content. It is unfortunate that tropically grown meats and eggs have been found deficient in these essential vitamin catalysts.<sup>7</sup> Residents of warm climates thus face a double handicap: they need a higher B vitamin intake but instead find their native animal products deficient in these elements. Hence they are depressed both by their difficulty in heat loss and by a widespread vitamin deficiency. In cooler climates the meats are richer in vitamin and the human need is less for each pound of food.

6. Waisman, Harry A. and Elvehjem, C. A. *The Vitamin Content of Meat*. Minneapolis: Burgess Publishing Company, 1941.  
7. Mill, C. A. *The Influence of Climate on the Vitamin Content of Meat*. Bull. New York Acad. Med. 17: 922-933 (Dec.) 1941.

Man's higher requirement for the vitamin B fractions in tropical warmth, coupled with a poorer dietary supply, probably plays an important part in the widespread occurrence there of such deficiency states as beriberi and pellagra. The subject needs a thorough investigation, for on this situation may hinge a considerable part of the malnutrition and low physical level seen among tropical populations. The magnitude of the problem can be appreciated only when it is remembered that half the earth's human population lives under just such depressive heat as is being discussed here. We can as yet only guess at the many bearings this variation in vitamin requirement at different temperature levels may have in the problems of human welfare. Since it directly affects cellular combustion and the source of energy for all body functions it must of necessity have important bearings on all the vital processes and functions of the body. A whole new field seems to be opened up by this dynamic view of physiologic response to climate.

#### CLIMATE AND DISEASE

The preceding discussion of climatic physiology provides a most useful background for an understanding of the geography of many diseases. Tropical people, with their more sluggish combustion rate and lowered vitality, die largely from infectious diseases, energetic residents of cooler lands die from the breakdown and degenerative diseases. Only with pneumococcal and streptococcal infections, mainly respiratory or of the nasopharynx, is the attack frequency higher in temperate regions and then only during the seasons of great cyclonic storminess. Since these disease differences are based largely on demonstrable differences in physiologic response to living environment and are susceptible of a considerable degree of control, it seems wise that the medical profession consider them against their proper physiologic background.

It is not at all surprising that clearest climatic relationships should be found for the diseases of metabolic overstimulation or breakdown. Metabolic stress rises highest in middle temperate regions where most nearly optimal heat loss conditions prevail, while toward tropical warmth evidences of such stress progressively decrease. Diabetes, with its breakdown in ability to prepare dextrose for the cellular combustion on which all bodily energy depends, shows this climatic relationship perhaps most clearly, but the relationship is also quite evident for pernicious anemia with its exhaustion in the production of red cells to carry the oxygen from

lungs to tissues. Toxic goiter and hyperthyroidism seem involved in this same environmental influence.

Perhaps most worrisome to the medical profession of stimulating regions are the growing evidences of stress and failure in the vascular system. On this system falls the most direct load as tissue combustion increases, for it must transport to the tissues all the needed combustion factors. The advance of sudden heart failure toward ever earlier ages in American men of middle temperate latitudes is presenting an acute health problem. Over two thirds of American physicians dying in 1939 did so from primary failure of one sort or another in the circulatory system. Addison's disease with its adrenal failure and other exhaustion states such as myasthenia gravis and neurocirculatory asthenia also most frequently occur in middle temperate latitudes. And for some reason it is in these latitudes that can-

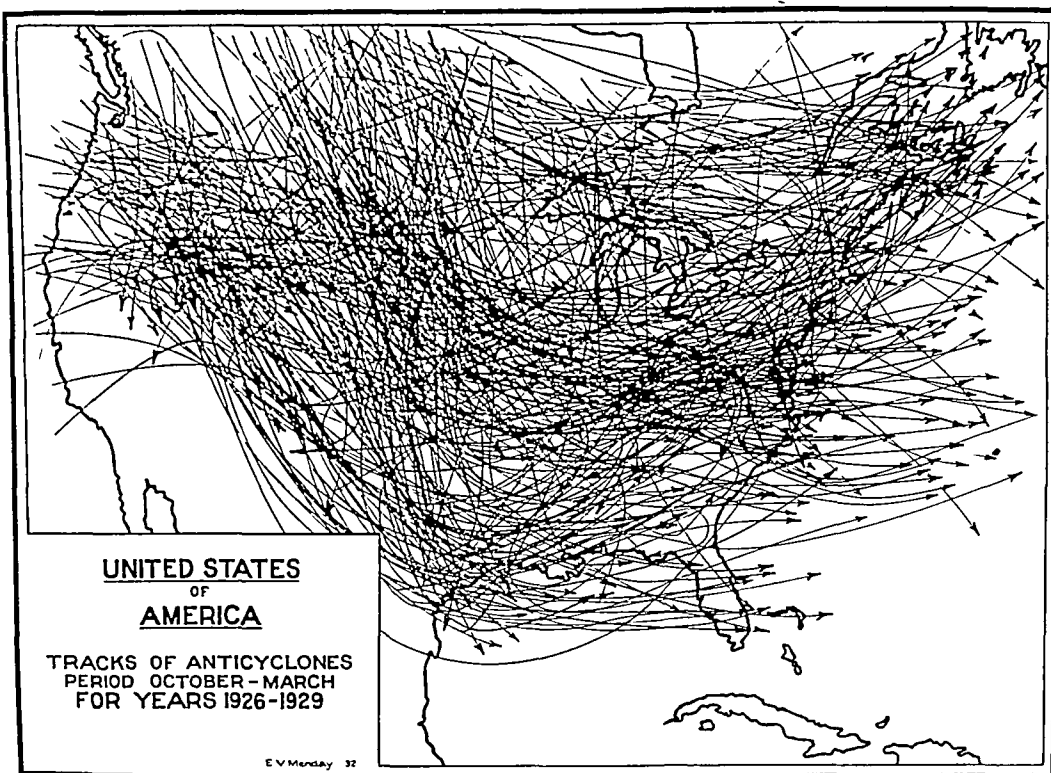


Fig. 2—Storm tracks over the United States winter highs 1926-1929

cer is presenting its greatest menace to man. Leukemia, which some consider a form of neoplasia, is almost exclusively a cool climate disease.

Infectious diseases present the other side of the picture, for with them greatest frequency and highest death rates go hand in hand with lowered tissue resistance in the debilitating warmth of tropical and subtropical regions. Temperatures there are more nearly optimal for parasitic and bacterial contamination of water and food supply, it is true, and added to this is the tremendous problem of insect vectors, but working beneath these major health threats in the tropics is the lowered general tissue vitality from sluggish cellular combustion. Figure 1, showing regional differences in the intensity of climatic stimulation over the earth, is presented here so that the reader may have before him this rough idea of the metabolic driving force exerted on man in the different regions. The methods used in calculating the indexes of climatic stimulation have been described in detail elsewhere.

Cyclonic storminess, with the atmospheric changes which accompany passage of successive "highs" and "lows" over a given region seems in some manner related to the initiation of infectious disease attacks. Respiratory and rheumatic infections are most closely involved in this type of climatic effect, but it also influences such other infectious attacks as acute appendicitis and puerperal septicemia.

Respiratory infections are associated with winter cold and storminess in north temperate latitudes to a striking degree. Life hazards of all sorts reach a peak at this season, for to the infectious dangers of the more violent storminess is added the greater stress of an increased metabolic load. In the southern hemisphere winter brings much less of an increase in life's hazards for there storminess is least during midwinter cold. The increase in mortality from respiratory infections in the

seaboard of North America and to a lesser degree the southwestern coastal region of Mexico. Low pressure storm centers passing over these regions seem to bring much the same respiratory disease problems as are faced by people living in the temperate zone storm belts. They do not have the body chilling from sudden temperature change, such as afflicts people of stormy temperate regions, but the pressure changes alone seem capable of initiating the infectious attacks. Careful physiologic studies are badly needed in this field of pressure change effects, particularly as regards disturbances in tissue water balance. Present knowledge is extremely sketchy and inadequate.

In order to give a general appreciation of the storm problem over North America, there is shown in figures 2 and 3 the course followed by anticyclonic high pressure centers affecting the United States during the

total year period 1926-1929. Each such major 'high' center affects an area 1500 to 2000 miles in diameter as it sweeps across the continent. From these figures one may get some idea of the relative differences in storm effects man faces in different parts of the continent during the winter, and the total reduction in storminess which comes with summer warmth. In the summer, storm centers cross the continent less frequently, travel more slowly and are accompanied by less abrupt and less extensive atmospheric changes. At no time of the year do major storm centers cross the southwestern

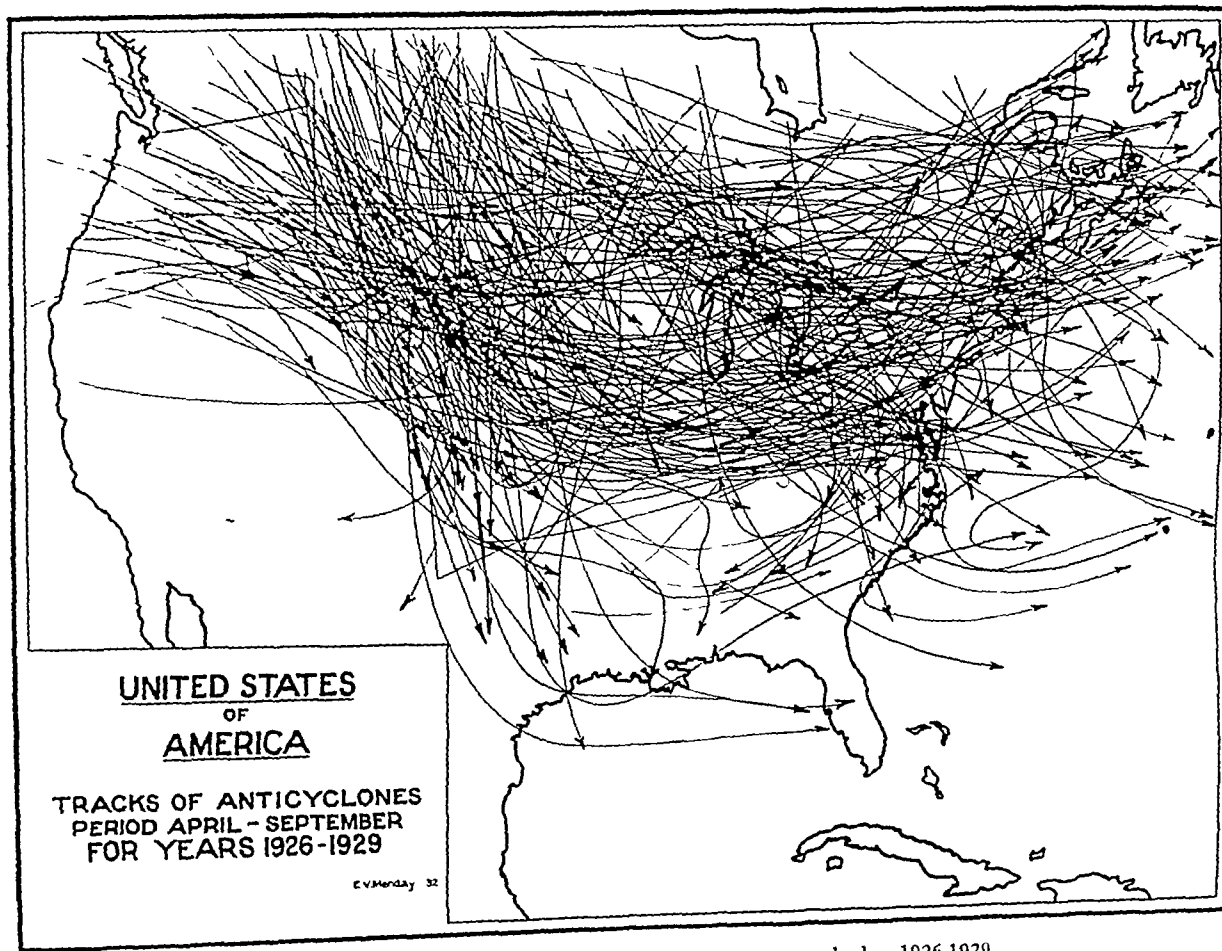


Fig. 3.—Storm tracks over the United States—summer highs 1926-1929

United States from summer low to midwinter high is almost three times as great as it is in similar latitudes of Australia. And in the United States unusually stormy winters are accompanied by much greater frequency of respiratory illness and death than are those of lesser atmospheric turbulence. Hospital admissions for acute rheumatic fever at Cincinnati show a similar parallelism with seasonal changes in storminess.

This relationship of storminess to infections is just as evident on a regional as on a seasonal basis. Acute respiratory infections and acute rheumatic fever are predominantly diseases of stormy regions being worst in the middle temperate belt of cyclonic storms and least troublesome in calm tropical warmth. Respiratory disease in the tropics becomes a real problem only in those regions afflicted with cyclonic storms of the typhoon or hurricane type. Such regions include most of the Philippine Islands and the eastern Asiatic coast up to Japan, those parts of India around the bay of Bengal, most of the West Indies and nearby eastern

part of the United States or the highland regions of Mexico. This nonstormy zone expands northeastward during summer warmth, and at this season people of the Old South are left with the stagnant moist heat typical of tropical regions.

These two storm maps deserve considerable study for from them can be obtained much of the storm health story. It is in the stormy winter season and in the stormy regions of the earth that respiratory and rheumatic infections most severely afflict mankind.

#### CONCLUSION

Plans for spa therapy should not be made without due consideration of possible climatic and weather effects in the region to be chosen. Spas of the non-stormy Southwest are to be preferred for patients with respiratory or rheumatic complaints while victims of the metabolic or degenerative diseases will usually benefit more in the calming warmth of the Gulf coast. For low vitality patients of tropical or subtropical area.



a summer sojourn in northern coolness works wonders; however they should beware of the cold and storms of northern winters. Each patient constitutes a separate problem in his relation to climatic environment, hence final decision must be made by the physician in charge. In reaching that decision the physician should be guided by the general principles of climatic and weather effects here set forth.

The therapeutic duties of a physician can no longer be concerned simply with the specific treatment of the disease at hand. He should look further afield for the larger forces affecting his patient's welfare and future health. And among the outside forces bearing on these more general aspects of existence climatic and weather influences are of great importance. The most perfect diet cannot lend to physical vigor and high vitality unless the heat generated in its use can be readily dissipated from the body. The physician of the future will therefore need to develop more deeply his interest in and knowledge of, climatic and meteorologic influences affecting man throughout his existence in the different regions of the earth.

5046 Oberlin Boulevard

## Council on Industrial Health

THE COUNCIL ON INDUSTRIAL HEALTH HAS APPROVED THIS ARTICLE AS THE SEVENTH IN A SERIES ON MEDICAL SERVICE IN INDUSTRY  
C. M. PETERSON, M.D., Secretary

### INDUSTRIAL PHYSICAL EXAMINATIONS

#### PURPOSE

The purpose of industrial health programs is to promote and maintain the physical and mental welfare of all industrial employees. Physical examinations in industry are a means to this end.

Specifically, the objectives of industrial physical examinations are:

- 1 To facilitate placement and advancement of workers in accordance with individual physical and mental fitness
- 2 To acquaint the examinee with his physical status and to assist him in improving and maintaining personal good health
- 3 To safeguard the health and safety of others
- 4 To discover and control the effects of unhealthful exposure
- 5 To promote cooperative support and understanding of industrial health practices by employer and employee alike

Unjust or questionable exclusion from work through improper application of the findings on physical examination in industry is against the public welfare and contrary to sound industrial health principles.

#### SCOPE

- Industrial physical examinations should include:
- 1 Past medical family and occupational history
  - 2 Physical findings
  - 3 Personality appraisal
  - 4 Laboratory data
  - 5 Summary and recommendations

#### GENERAL PROCEDURES

Since placement of the worker in suitable employment is an important objective of industrial physical examinations the examiner will obtain best results only when he is familiar with the industry he serves. Medical inspection of the plant or industrial premises at regular intervals is essential to an adequate physical examination program as well as in other aspects of industrial hygiene.

Physical examinations in industry are classified under two major headings:

- 1 Preplacement examinations of applicants for employment
- 2 Periodic reexaminations (regular or special)

In either case the examination should be complete.

The examination should be conducted by the physician himself except such routine procedure as can safely be assigned to

trained assistants. The examinee should remove all clothing in a private room. Special arrangements and a nurse in attendance are necessary in examining women employees.

#### EQUIPMENT

Physical examinations will be facilitated if the following equipment is available:

Examining table	Dynamometer
Stools, chairs and couch	Centrifuge
Mirror	Microscope
Screen	Stethoscope
Scale and measuring rod	Ophthalmoscope
Metal measuring tape	Blood vacuum tubes
Spotlight	Otoscope
Distant and near reading cards	Reflex hammer
Color sense testing cards	Rubber gloves and finger cots
Nose and throat mirror	Tuning forks
Transilluminator	Hemoglobin outfit
Blood pressure instrument	Urinalysis equipment
Infer syringes (2 cc and 10 cc)	Garment racks
Thermometer	

#### RECORDS

**Content**—No single form has been devised to suit all requirements. The accompanying example is a composite of many used successfully in industry. Regardless of form the records should contain:

1 Identification data: name, address, date and place of birth, race, sex, marital status, clock or social security number, and in certain circumstances photograph and finger prints. Some industrial physicians include name and address of next of kin.

2 Past medical and occupational history. Although details may be elicited by assistants, the importance of significant past health experience should be evaluated by the physician himself.

3 Physical findings.

(a) **Preplacement examination**. The attached form is designed for preplacement physical examination. Clarity and uniformity of expression are desirable. Variation in procedure will depend on specific industrial exposures and special job requirements. Examinations for transfer to other work or on return to work after prolonged absences are essentially preplacement in character.

(b) **Periodic examination**. Reexamination should be conducted in the same detail as the original preplacement examination survey. The recommended form can be readily modified to allow for reexamination and to meet special requirements. General principles are fully described in "Periodic Health Examination—A Manual for Physicians, Chicago American Medical Association 1940. Repetition of physical examinations must be determined by the physician in charge, based on his original examination and the nature of the industrial environment.

4 **Personality data**. Observation of temperament, personality and significant nervous or mental manifestations should be a correlated part of a complete examination. The brief outline suggested in the form has been used in practice with good results. Comparative schooling refers to the level of education attained in comparison with other children in the family.

5 **Laboratory data**. Urinalysis, hemoglobin determination, blood test for syphilis, chest x-ray examination, differential blood smear and blood sedimentation rate are employed in industry in about that descending order of frequency.

6 **Summary and recommendations**.

**Coding**—Usage varies in coding or rating physical and mental status, but the common intent is to classify examinees in one of the following groups:

- A General approval for all work
- B Approval for placement under medical supervision
  - 1 With limited physical exertion
  - 2 In nonhazardous work
  - 3 With orthopedic defect
  - 4 With defective vision
  - 5 With defective hearing
  - 6 With neuromental handicap
- C General disapproval for any work

From the public and industrial health standpoint the only absolute bar to immediate employment in ordinary occupations



should be communicable disease, psychosis or serious disabling injury or disease. Other considerations related to employer liability, workmen's compensation, factory acts and health codes must be determined separately for each jurisdiction.

**Preservation and Use**—The examining physician may properly put information derived from records of industrial physical examination to the following uses:

- 1. All major findings should be discussed with the employee, with emphasis on the importance of obtaining immediate and adequate medical care.
- 2. A transcript may be supplied to the employee's personal physician or to other official community health agencies on consent of the employee.

INDUSTRIAL PHYSICAL EXAMINATION

Employer		City		State	
Name	Address	Clock No.		Social Sec. No.	
Age	Race	Marital Status	Sex	Next of Kin	
Personal Physician					
Personal and Family History					
Immunization Record					
Occupational History					
Physical Examination		Date		Examiner	
Height	Weight	Chest Measurement		{Inspiration Expiration	
Temperature	Pulse {Resting After Exercise	Girth			
Blood Pressure	Posture	Musculature		Nutrition	
Skin	Glands	Hair		Scalp	
Vision	Distant {R L	Corrected {R L			
	Near {R L	Corrected {R L			
	Color Sense	Depth Perception		Eyegrounds	
Hearing {R L	Nose Throat		Tongue		
Tonsils	Neck				
Teeth	Gums				
Lungs {R L	Hernia		Prostate		
Heart	Rectum				
Abdomen	Reflexes		Hands		
Genitalia			Feet		
Spine					
Joints					
Dysmenorrhea					
Laboratory Data		Date		Examiner	
Urine Appearance	Specific Gravity	Albumin		Sugar	
Blood Hemoglobin	Smear	Sedimentation Rate		Kline	
Wassermann	Kahn	Other			
X Ray Chest					
Personality Data		Aggressive		{Quick Average Dull	
Appearance {Neat Careless Slovenly	Temperament	{Quiet Cooperative Noncooperative			
Comparative Schooling {Advanced Average Retarded		Summary {High Medium Low			
Summary and Recommendations				Code	

- 3. The employer should be given information in accordance with the suggested code described in this report to facilitate placement or promotion. A special simple form can be devised for this purpose. The employer should especially be notified of any condition or disability thought to be caused by faulty work environment.
- 4. Governmental agencies such as courts, workmen's compensation commissions or health authorities should be supplied with information on legally enforceable official order. In all other respects the confidential character of physical examination records should be rigidly observed and access should be granted only on request or consent of the examinee preferably after preliminary discussion with the examining physician.

Suitable filing equipment and training of personnel should be maintained for the safe keeping of all medical records in the medical department.

PERSONNEL

Physical examination is an important service of an industrial medical department having regular medical staff supervision. Where considerable numbers of examinations occur, nurses, technicians and clerks are helpful in securing and recording data in routine procedure. They require training which should be accepted as a special responsibility of the medical director.

In small plants, employers customarily make arrangements with individual examiners. A modification of this practice is to secure the services of an examiner from a panel of physicians approved by the county medical society for services of this kind.

THE JOINT COMMITTEE ON INDUSTRIAL OPHTHALMOLOGY REPRESENTING THE SECTION ON OPHTHALMOLOGY OF THE AMERICAN MEDICAL ASSOCIATION AND THE AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY HAS SUBMITTED THE FOLLOWING REPORT TO THE COUNCIL ON INDUSTRIAL HEALTH FOR PUBLICATION.  
C M PETERSON, M.D., Secretary

THE KEYSTONE TELEBINOCULAR IN INDUSTRY

The Joint Committee on Industrial Ophthalmology has participated in careful analysis of visual records made in industry employing the Keystone Telebinocular. These records have been correlated statistically with subsequent job performance, incidence of accidents and with conventional professional aptitude tests. Evidence at present permits the following appraisal of the industrial use of the Telebinocular.

- 1. The Telebinocular is a sturdy, well made instrument, originally designed as a hand stereoscope. In 1933 it was modified by attaching a special shaft and slide holder, mounted on a stand. The slides are modifications of the original Ready to Read Tests designed by E. A. Betts to measure the visual performance of school children.
- 2. The record forms designed to classify employees for jobs in accordance with visual ability are based on arbitrary standards not justified by actual experiment on thousands of industrial employees. A simplified form has been developed by a member of the Joint Committee which has proved to be more practical. The Keystone View Company is also working on a simplified record form.
- 3. The Telebinocular visual acuity tests at distance have, through the work of the Joint Committee, been correlated with Snellen equivalents.
- 4. The depth perception test, while not accurately graduated can be used to advantage in screening out examinees in the lowest quarter of performance who are under consideration for special or dangerous assignments.
- 5. The phoria tests will identify most examinees with muscle imbalance lying outside the general range of normality. These measurements cannot be expressed in prism diopter equivalents.
- 6. The telebinocular has no adequate near point test of acuity in its series. Because of the importance of near point acuity in many jobs, special provisions will need to be made.
- 7. The color vision test, while inadequate as a whole, is useful in identifying certain types of color deficiency.
- 8. Several of the tests show little or no relationship to success on the job or with standard clinical practice in ophthalmology and are likely to create an impression of significant visual deficiency. Actually, the tests detect what might better be called substandard visual function.

The Joint Committee believes that the Telebinocular, used wisely by a properly trained tester will uncover subnormal visual performance not detected by the common industrial practice of testing for central visual acuity alone. However, the tests employed for determining muscle balance, stereopsis and color sense have definite limitations. The existing standards for acceptance or rejection of examinees in industry or for the classification of employees are not accurate enough for dependable use. Instead, individual standards should be created in each industry based on available data and the practical experience of associated medical and ophthalmologic staffs.

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION  
OF THE FOLLOWING REPORT HOWARD A. CARTER, Secretary

### SIMPLE METHODS FOR PERFORMING ARTIFICIAL RESPIRATION

RALPH M. WATERS, MD  
MADISON, WIS

Artificial means to replace the act of breathing need not be complicated or difficult.<sup>1</sup> Any intelligent person, even a child, may be taught to perform artificial respiration which is adequate and safe.

In his teaching at Padua four hundred years ago Vesalius<sup>2</sup> emphasized the importance of proper respect for the thoughts of the ancients—an excellent attitude of mind for modern people. He demonstrated the adequacy of simple intermittent inflation of the lungs with air as a substitute for normal breathing. Goodwyn<sup>3</sup> was the first physician to apply the knowledge of the exchange of oxygen and carbon dioxide during respiration. He called attention to the advantage of adding oxygen to the atmosphere used during artificial respiration. In the intelligent employment of these two contributions is embraced the beginning and the end of "artificial respiration." There is no more to it than that. And yet in the century and a half since Goodwyn's book was published much paper has been used in describing how and with what mixtures of gases ventilation of the lungs ought to be accomplished.

Children are thought to like mechanical gadgets, nevertheless, how frequently do we find father playing with the electric train weeks after Junior has found other interests. Enthusiasm for the clever construction and intricacy of a mechanical respirator is more likely to determine its purchase and use, even by a physician, than is thoughtful reasoning or experiment as to its physiologic effects, its simplicity, reparability and all round availability. It is not my present purpose to discuss the relative merits of the numerous manual maneuvers suggested for the performance of artificial respiration, nor do I intend to compare the advantages of the many mechanical gadgets manufactured for the purpose. It is desired only to emphasize four facts: (1) that, as Vesalius demonstrated, gentle intermittent inflation of the lungs with air can serve as an adequate substitute for normal breathing, (2) that, if oxygen is available, it is desirable, as Goodwyn suggested, to add this gas to the atmosphere used, (3) that, regardless of the method employed atmosphere cannot enter and leave the lungs if the air passages are obstructed, and (4) that elaborate equipment is not essential. If these four points are properly appreciated, any one can perform artificial respiration. It ought to be begun as soon as natural breathing stops by whoever is present at the time. Blowing into the subject's nose or mouth is the method which is always available.

1 It is well recognized that the various manual maneuvers (Schafer, Silvester and their modifications) to accomplish artificial respiration are capable of accomplishing adequate ventilation of the lungs when the air passages are not obstructed. The impression is gaining prevalence that when apparatus is used it must be costly and elaborate. This paper emphasizes the long recognized fact that very simple mechanical devices are satisfactory. No originality is claimed for the method described nor is it claimed to accomplish more efficient or safer pulmonary ventilation than the manual maneuvers.

2 Vesalius Andreas. *De humani corporis fabrica*. Basel: J. Oporini 1543.

3 Goodwyn Edmund. *The Connection of Life with Respiration*. London: J. Johnson 1788.

Manual maneuvers (Silvester, Schafer) can also be quickly applied. If apparatus is used, the simpler it is the better.

Anesthetists find it essential to be prepared to do artificial respiration at a second's notice. Overdose of an anesthetic or depressant drug, as well as various other accidents, sometimes stops normal breathing of the patient during an operation. The equipment described here is constituted of materials similar to those constantly used by many anesthetists to contain the anesthetic atmospheres breathed by their patients. They are therefore always in the hand of the anesthetist when an accident happens. In fact, when the anesthetist is alert, cessation of breathing is rarely dangerous. The method of artificial respiration described in the following paragraphs has been used to "breathe" efficiently for the patient over long periods of time. It is even employed during some surgical operations to hold in abeyance for hours the normal movements of the respiratory muscles when such movements may interfere with delicate surgical procedures. Such experience constitutes evidence that serious harm from such artificial respiration need not result. Simple apparatus, similar to that used by the anesthetists, costs little, is light and easily transported and can be employed by any intelligent person to perform artificial respiration. No elaborate and expensive machine will do a better job of artificial respiration.

#### EQUIPMENT AND PROCEDURE

Any manufacturer of anesthesiologist's equipment can furnish a face mask with a 5 or 6 liter

breathing bag of strong rubber connected to a rubber tube several feet long. A yoke to fit a small oxygen cylinder and a wrench with which to open the cylinder complete the assembly (fig 1). The operator holds the mask tightly over the nose and mouth and fills the bag with oxygen (fig 2A). If oxygen is not available, the operator may hold the rubber tube in his mouth and keep the bag partly filled by blowing into it. Compression of the bag with the hand (fig 2B) forces atmosphere into the lungs (provided the mask is in approximately airtight contact with the face and the upper air passages are not obstructed). Release of pressure allows the atmosphere to return from the lungs. Such intermittent inflation of the lungs alternating with pauses to allow for deflation accomplishes adequate ventilation. The bag will need to be refilled frequently enough to replace the atmosphere which unavoidably leaks from under the mask during inflation. The frequency of inflation is relatively unimportant provided a pause after each

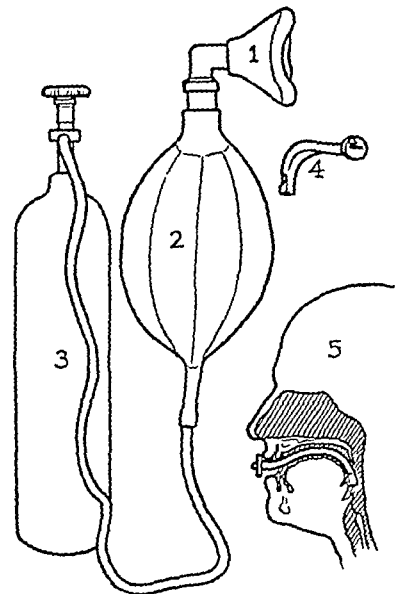


Fig 1—A mask (1) to cover the mouth and nose and a sturdy rubber bag (2) connected to an oxygen cylinder (3) constitutes adequate equipment. A properly shaped pharyngeal airway (4) of metal or hard rubber when placed over the tongue into the throat (5) sometimes helps to maintain a free passage to the windpipe.

compression of the bag is sufficient to allow the chest wall to sink back to its passive condition and the lungs to collapse partially and force the inflated atmosphere out.

Artificial respiration should resemble normal breathing. The operator ought to estimate how frequently and how vigorously this subject, save for the accident, would breathe for himself. Such activity should be imitated as exactly as possible both in depth and in rate. As pressure is made on the bag the thorax of the subject must be watched to see when it begins to expand. If beginning movement of the chest can be seen or felt, enough pressure has been exerted and the bag should be released. The operator must be sure that the outflow of atmosphere from the lungs is not impeded by the weight of the hand against the bag.

*Face Exchange Essential*—It for some reason passage to the windpipe is not open atmosphere may fail to reach the lungs or it may be forced down the gullet



Fig 2—The bag is filled with oxygen (A) and squeezed by the hand (B) to force atmosphere through the upper air passages and windpipe into the lungs. As soon as movement of the chest is seen indicating that the lungs are filling, the operator's hand releases the bag completely to allow the lungs to empty. Normal rates of breathing are 12 to 20 per minute. Try to imitate nature in both rate and depth.

into the stomach. To assure a free passage to the trachea and avoid blowing up the stomach or forcing vomited fluids, food or other foreign substances into the windpipe, three procedures may be useful.

1 Empty the mouth, nose and throat of any liquid (water in drowning, vomitus) or solid substance (food, tobacco, chewing gum, loose teeth). This can be done with the fingers, with a cloth sponge or, better by gravity. Place the patient on his stomach, face down.

4 If the mask is held in really airtight contact with the face for several minutes, too much carbon dioxide—produced by the patient—may accumulate in the bag. Usually the necessary addition of oxygen or air to replace that which leaks between the mask and the skin of the face during the pressure of each inflation serves to remove carbon dioxide. Even if leakless contact is maintained, artificial respiration for less than five minutes will not permit a harmful accumulation of carbon dioxide. If long periods of artificial respiration are maintained with this equipment frequent emptying and refilling of the bag is necessary. This is particularly important if breathing has stopped as the result of poisoning with volatile or gaseous substances such as ether or carbon monoxide.

and head lowered if possible (fig 3). A child can be "stood on his head." Hospitals are equipped with devices for sucking material from the throat.

2 The relaxed and swollen tongue may fall backward to sit on the opening to the windpipe. In the face down position, gravity tends to keep the tongue away from the opening. In addition, the operator may pull the tongue forward. (a) By pushing the jaw

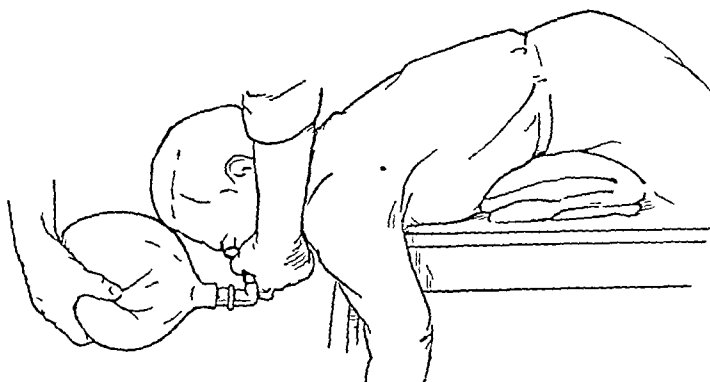


Fig 3—When intermittent inflation of the lungs is done with the subject's face down, the head low and a pad under the stomach, water and other fluids may drain from the lungs and throat.

forward with pressure behind the angles of the jaw. (b) By grasping the tongue with a cloth (fig 4). To hold the tongue forward while a mask covers the face, a large safety pin may be passed through the midline of the tongue, a half inch from the tip. Persons needing prolonged artificial respiration are unconscious and the slight injury to the tongue caused by the pin results in little soreness afterward. (c) By placing a rubber or metal artificial airway if available (5, fig 1).

3 To prevent inflation of the stomach, the hand or a moderate weight may be placed over the upper part of the abdomen if the victim lies on his back, or a soft roll of cloth may be under his stomach when his face is down (fig 3).

#### ALTERNATIVE PROCEDURE

*Intermittent Direct Inflation of Lungs by the Operator*—If the apparatus just described is not immediately available, valuable time must not be lost. Lives

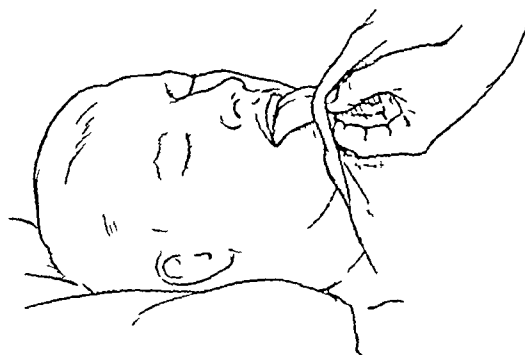


Fig 4—With your handkerchief the tongue may be pulled forward before gently passing an artificial airway over it (see 5, fig. 1).

are sacrificed by neglecting the first thirty seconds after breathing stops. Direct inflation of the lungs is always at hand (fig 5). Either the nose or the mouth may be blown into while one hand of the rescuer holds the other portal closed. The other hand, resting on the subject's chest, perceives the point at which the chest moves. In other words, when the lungs are sufficiently inflated. If no movement takes place, obstruction is present and the air passages must be cleared by the various maneuvers described.

## COMMENT

Natural breathing is a very delicately adjusted mechanism for causing the atmosphere to enter and leave the lungs. The frequency of exchange and the depth of each breath are attuned to the needs of the blood and tissues for oxygen. The amount of air which enters and leaves the lungs each minute therefore varies widely for each individual and for the same individual at different times. Artificial respiration will therefore rarely exactly simulate normal breathing. The life processes of the individual who has ceased to breathe are at a low ebb and hence his demand for oxygen is comparatively little. When the air passages to the lungs are not obstructed, efforts at artificial breathing are apt to be overdone rather than underdone. If obstruction is present the opposite is true. Thoughtful and deliberate attention to the movements of the chest resulting from one's efforts will succeed while hasty and thoughtless activity may fail. Remember the object of normal breathing—to ventilate the lungs with air or oxygen which flows gently and slowly back and forth through the windpipe to and from the air sacs. Try to imitate normal breathing for each particular subject.

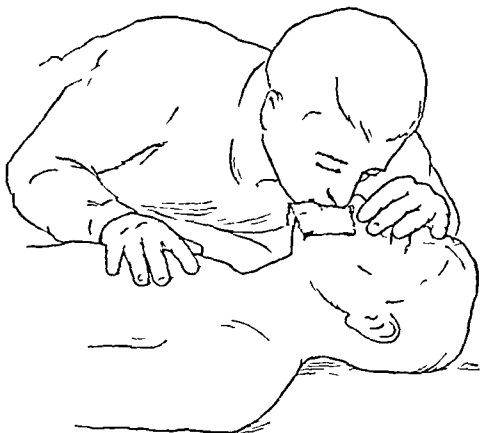


Fig. 5—With his left hand the operator holds the subject's nose closed while he blows into the mouth intermittently. A handkerchief or other light material prevents contamination. The operator's right hand rests lightly on the chest in order that he may appreciate when air is entering the lungs.

## SUMMARY

If a reasonably robust person ceases to breathe, adequate artificial respiration may sustain life until breathing is reestablished. Only disappointment can result from performing artificial respiration on persons who cease to breathe as a terminal event in the course of disease. Methods are most useful which are instantly available and simple.

1 When breathing has stopped, do not concern yourself with calling for help, moving the patient, wrapping him in blankets or any maneuver other than keeping up intermittent rhythmic exchange of the atmosphere in his lungs.

2 Utilize inflation of the victim's lungs from the lungs of the operator, or exchange by manual maneuver, if apparatus is not at hand.

3 If and when a mask, rubber bag and a cylinder of compressed oxygen are available fill the bag with oxygen and inflate the lungs by pressing on the bag.

4 In either case (2 or 3) use only sufficient pressure to expand the chest slightly. If one can see or feel the chest begin to expand as one blows or presses on the

bag enough pressure is being used. The amount of pressure necessary may be great if the air passages are partially obstructed. Try to relieve such obstruction as soon as possible.

5 Allow adequate time for the lungs to empty before inflating them again.

6 Persist until the subject breathes for himself or until a physician has pronounced him dead.

7 If water or other substances are thought to be in the mouth, throat, and air passages, work with the patient in the face-down position with the head low if possible.

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**Council on Pharmacy and Chemistry**

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**NEW AND NONOFFICIAL REMEDIES**

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONTRIBUTING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

**CONCENTRATED OLEOVITAMIN A AND D—**

"Fish liver oil, or fish liver oil diluted with an edible vegetable oil, or a solution of vitamin A and D concentrates in fish liver oil or in an edible vegetable oil. The vitamin A shall be obtained from natural (animal) sources and the vitamin D may be obtained from natural (animal) sources or may be synthetic oleovitamin D. Concentrated Oleovitamin A and D contains in each gram not less than 50,000 and not more than 65,000 U. S. P. units of vitamin A, and not less than 10,000 and not more than 13,000 U. S. P. units of vitamin D." U. S. P.

For description and standards see the U. S. Pharmacopeia under Oleovitamins A and D Concentrata.

*Actions, Uses and Dosage*—See under Vitamin A and D preparations (N. N. R., 1943, p. 605).

WALKER VITAMIN PRODUCTS, INC., MOUNT VERNON, N. Y.

**Concentrated Oleo Vitamin A-D Drops** Each gram contains not less than 62,500 U. S. P. units of vitamin A and not less than 10,000 U. S. P. units of vitamin D. Natural esters of vitamin A (distilled from fish liver and vegetable oils) plus activated ergosterol in refined corn oil. Flavored with cinnamon.

**DEHYDROCHOLIC ACID** (See New and Nonofficial Remedies, 1943, p. 322).

The following dosage form has been accepted:  
GEORGE A. BREON & COMPANY, INC., KANSAS CITY, MO.  
Tablets Dehydrocholic Acid 0.25 Gm.

**SODIUM CITRATE** (See New and Nonofficial Remedies, 1943, p. 458).

The following dosage forms have been accepted:  
BAXTER LABORATORIES, INC., GLENVIEW, ILL.

**Sodium Citrate 4% W/V in Distilled Water** 25 cc and 50 cc in Centri-Vac containers. A sterile 4 per cent solution of sodium citrate in distilled water.

**Sodium Citrate 4% W/V in Distilled Water** 50 cc in Transfuso-Vac containers. A sterile 4 per cent solution of sodium citrate in distilled water.

**TRYPARSAMIDE** (See New and Nonofficial Remedies, 1943, p. 212).

The following dosage forms have been accepted:  
MERRICK & CO., INC., NEW YORK.

Ampuls Tryparsamide 1 Gm., 2 Gm. and 3 Gm.

**LIVER INJECTION** (See New and Nonofficial Remedies, 1943, p. 392).

The following dosage form has been accepted:  
THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO.  
Liver Injection, 10 U. S. P. Units per Cc. 10 cc vials. Preserved with 0.5 per cent phenol.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 30, 1943

## NURSING SERVICE IN WARTIME

Nursing service "as usual" is gone for the emergency. The armed forces have a priority on nurses. The remaining nurses must be utilized for all non-military governmental agencies and essential civilian nursing services. The private duty nurses available in the country constitute a small group and there are numerous calls upon them for a wide variety of services. "Luxury" nursing is certainly out for the duration. The nursing section of the Procurement and Assignment Service for Physicians, Dentists, Veterinarians, Sanitary Engineers and Nurses urges that private duty nurses not eligible for military service should be utilized for the care of acutely ill patients, first, in hospitals and, second, in homes. Every nurse should be used on the highest level of skill of which she is capable. A private duty nurse should be assigned to the care of a single patient only when it is impossible to arrange for adequate care by using a part of the service of a nurse who is attending also to other patients. In homes private duty nurses should be employed only when it is impossible to provide enough care through such facilities as are offered by the visiting nurse associations and the hourly nursing services. Another important civilian need is the work of private duty nurses in positions on the staffs of hospitals. Also there are such places as those associated with public health nursing agencies, industry and physicians' offices.

The superintendents of hospitals might give further serious consideration to their utilization of personnel. The tendency should be to utilization of nurses almost wholly by assignment to large groups of patients. The nurse's duties should be evaluated so that the major portion of her time is used in actual nursing care rather than in the serving of meals or in other duties which may be performed by nurses' aides or any of the other auxiliary services that have been developed. In some hospitals already the practice is developing to assign a nurse to the care of a single patient only on the recom-

mendation of the physician in cooperation with the superintendent of nurses and the superintendent of the hospital.

The work of nurses in industry is of increasing significance. The Procurement and Assignment Service has established criteria of essentiality for nurses in industry. Such nurses will not for the present be urged into military service. A nurse who is an industrial nursing consultant, or a state or city health department or a labor department nurse, a supervisor, a staff nurse who is working full time at professional nursing duties or a nurse who is the only full time nurse in an industry, will be considered for the present essential. However, nurses in industry will be expected to limit their activities to professional nursing duties connected with the medical department of the industry with which they are associated. Industries will be urged to utilize existing community services for nursing care if those resources are adequate to meet the needs. Furthermore, industry is urged to avail itself of nonprofessional technical aides whenever possible.

On the medical profession particularly rests the special obligation to utilize the services of nurses in the doctor's office only when absolutely necessary. In each community a local committee of nurses has been established which is to advise in determining offices that need professional nursing services. Physicians who employ a nurse without actual need are requested to release such nurses for use in essential nursing service and to employ other personnel instead. It is realized that the practices of physicians remaining in civilian service have in many instances increased so greatly that there is more need now for efficient office nurses than previously. Even under such circumstances, however, the employment of a nurse not eligible for military service may release an eligible nurse for the armed forces.

Since the Red Cross is charged with the recruitment of nurses for the armed forces, attention might well be given by that organization to the extent to which the nurses now employed by the Red Cross in this country are replaceable by nurses' aides or other partially trained personnel. This applies particularly to the employment of considerable numbers of nurses in blood banks, in teaching of nurses' aides, in mobile units and in other activities in which their time does not seem to be in many instances, wholly utilized.

The problem of supplying nursing personnel has become for the present even more acute than the problem of providing physicians. Under the auspices of the Procurement and Assignment Service for Physicians, Dentists, Veterinarians, Sanitary Engineers and Nurses a number of procedures are in contemplation which it is hoped will yield the names of every woman in the coun-

try ever qualified as a nurse and capable now of being drawn into nursing service. These plans will be announced as rapidly as they are developed. In the meantime a complete enrolment of young women in the U. S. Cadet Nurses Corps and serious consideration to the suggestions here made for the employment of available nurses will do much to help the rapidly growing crisis in the profession of nursing care.

## MALARIA AND WORLD WAR II

The progress of medical science and of modern methods of sanitation have thus far proved adequate to prevent major epidemics in this war. In the past, epidemics took a greater toll both among the belligerents and among civilians than did weapons of war. Bubonic plague, cholera and smallpox seem today to belong to a distant past. Minor outbreaks of typhus may be expected among the underfed, vermin infested populations, but these can be readily controlled by methods of delousing, preventive vaccination and general quarantine measures. The most important military medical problem of the present war is malaria.

According to Stitt and Strong,<sup>1</sup> malaria by its prevalence is most important of all diseases in the world today. While the mortality and morbidity caused by this disease cannot be estimated closely, Russell<sup>2</sup> ventures, on such data as are available, that there are not less than three million deaths from malaria and at least three hundred million cases of malarial fevers each year throughout the world. The dispatch of our troops to highly malarial regions creates an immediate as well as a postwar problem. The problem of malarial epidemics is made acute by the global war. Malaria has always been one of the major scourges of the human race, influencing its health, retarding the progress of nations and affecting the course of many civilizations. Malaria was an important factor in the decline of moral and intellectual vigor which took place in Greece between 500 and 300 B. C. In India it is today the major cause of poverty and of lowered physical and intellectual standards.

Control of malaria among troops on many of our tropical frontiers presents a number of difficult problems. The program, according to Simmons,<sup>3</sup> includes such measures as protecting the soldier against mosquito bites, against infection if bitten and against a possibly long and fatal illness if infected. Reliance must be placed on (1) the correct selection of camp sites, (2) the spray killing of adult mosquitoes with pyrethrum extract, (3) chemoprophylaxis with quinine

and atabrine, (4) the use of nets and screens, (5) protective clothing and (6) the organization and instruction of personnel.

The recent advances in malariology involve, according to Russell<sup>2</sup> the development of synthetic antimalarial drugs, the pyrethrum spray killing of the mosquitoes and methods of species eradication of mosquitoes. Today the Japanese control all the cinchona of the Netherlands Indies. With Germany they also control the Dutch stocks of cinchona alkaloids, together with quinine factories. The Allied Nations had to resort, therefore, to the use of American bark in the form of totaquine. The drug in somewhat larger doses is as effective as quinine sulfate. Quinine, hailed for many years as a specific in the treatment of malaria, is not the ideal drug. Plasmochin, a quinoline derivative is effective against gametocytes, especially those of *Plasmodium falciparum*, but is relatively ineffective against the schizonts of the same species. Atabrine, derived from acridine, resembles quinine in its action against all species of schizonts and in its weakness in affecting any of the gametocytes. All three drugs are, however, alike in their inability in a percentage of cases to cure without the occurrence of relapses and in their failure in safe doses to prevent infection by sporozoites. Not one of the three has been found to be a true causal prophylactic, although each in small doses tends to suppress clinical symptoms.

The Q A P treatment—quinine atabrine plasmochin—as endorsed by the Subcommittee on Tropical Diseases of the National Research Council<sup>4</sup> represents an efficient treatment for acute malaria. The role of plasmochin, however, is now being subjected to reevaluation because of its toxicity. Totaquine or quinine sulfate (0.64 Gm.) is given three times daily after meals for two or three days until pyrexia is controlled. This is followed by atabrine (0.1 Gm.) three times daily after meals for five days. After two days of rest from medication, plasmochin (0.01 Gm.) is given three times daily after meals for five days. For mild cases atabrine and plasmochin or quinine and plasmochin combinations are satisfactory.

Russell points to the recent eradication of *Anopheles gambiae* in Brazil as the first accomplishment of this kind at any time in any land. Although costly, the experiment establishes for the first time the possibility that in some future time malaria, if not its vector, may be eradicated from the United States.

The problem of immunity to malaria has been the subject of a recent editorial in *THE JOURNAL*.<sup>5</sup> The malaria therapy of neurosyphilis offered many opportunities for the study of the problem of immunity in malaria. Whether effective serums or vaccines will be produced or whether a new and more effective specific drug will be developed cannot at present be predicted.

<sup>1</sup> Strong, Richard P. Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases, ed. 6 Philadelphia: Blakiston Company, 1942, chapter 1.

<sup>2</sup> Russell, P. F. Malaria and Its Influence on World Health. *Bull. New York Acad. Med.* 19: 599 (Sept.) 1943.

<sup>3</sup> Simmons, J. S. Progress in the Army's Fight Against Malaria. *J. A. M. A.* 120: 30 (Sept. 5) 1942.

<sup>4</sup> Weed, L. H. The Critical Antimalarial Problem and Its Solution. *J. A. M. A.* 120: 1043 (Nov. 28) 1942.

<sup>5</sup> Malaria. *J. A. M. A.* 122: 211 (Sept. 25) 1943.



## DOES AMERICAN MEDICINE NEED A DICTATOR?

### THE WAGNER-MURRAY-DINGELL BILL III

Revolutions often produce dictators who rise by force of personality or leadership but usually only after the revolution has run much of its course. The Wagner-Murray-Dingell Bill proposes to supply the dictator for American medicine even before the revolution begins. Compulsory sickness insurance produces the least evils when control of the actual practice of medicine is placed under the democratic management of medical associations. The quality of the medical service under such systems deteriorates least in proportion to the extent to which the establishment and maintenance of standards and quality of medical practice are confided to medical organizations. The authors of S 1161 have overlooked this lesson as they have many others in the field of medical practice. But they had little apparent medical aid in formulating their blueprint for American medicine.

In the Netherlands and Norway the medical profession resisted the attempts of Nazidom to break down the autonomy of the medical profession in spite of severe persecution. In so doing these physicians followed age long professional tradition. The whole body of physicians acting autonomously and democratically is the only institution that has ever succeeded in creating and enforcing standards of conduct not only in practice but in medical education and the operation of medical institutions.

S 1161 makes a shallow pretense of recognizing this fact by proposing to create a committee containing representatives of the organizations concerned with medical practice. This committee is to be purely "advisory," without powers and with indefinite functions. It is to be appointed by the dictator whom it is supposed to advise. Provisions are not suggested whereby state or local professional bodies may exercise judgment and supervision at the only point where such judgment and supervision can be effective.

While the Surgeon General of the United States Public Health Service is proposed as the dictator, it must be assumed that he will follow the pattern of administrative organizations and appoint subordinates responsible to him alone. Does any one believe he can avoid political considerations in making such appointments? He is to have the power to determine who will be specialists, what specialties they will follow and who will remain general practitioners. In fact, the fate of all phases of medical practice is vested in this dictator.

The framers of the proposed law apparently neglected entirely any consideration of the quality of the medical service to be distributed. More than fifty pages of the bill are given to the details of administration and financial arrangements, not one word is printed as to how the standards of medical practice shall be kept

at their present high stage. Mention is not made of measures that might maintain the steady upward progress of those standards that has been characteristic of the period during which their establishment and maintenance have been entrusted to the medical profession.

In the familiar pattern of advocates of compulsory sickness insurance, attention is focused on the political machinery that will distribute medical service, the quality of the service itself receives no notice. Medical care is a service given by physicians, the ability to diagnose and treat disease and protect the health of the public depends on the qualifications of the physician—on his education and training, his integrity, skill and initiative. The Wagner-Murray-Dingell plan is a blueprint for medical revolution, dealing with the sick and with the physicians who care for them as inanimate units to be moved at a dictator's will.

## THE UTILIZATION OF HEALTH RESORTS FOR MILITARY RECONSTRUCTION

British physicians have found that health resorts are invaluable as centers for reconstruction of those disabled in war. Already in this war United States Army, Navy and Veterans Administration centers for rehabilitation are being established at many health resorts. The United States Army Medical Corps, for example, has established them at the Ashford General Hospital, White Sulphur Springs, W. Va., the Station Hospital, Camp Carson, Colorado Springs, Colo., the Fitzsimons General Hospital, Denver, the Army and Navy General Hospital, Hot Springs, Ark., the Percy Jones General Hospital, Battle Creek, Mich., the Moore General Hospital at Swannanoa (near Asheville), N. C., the Station Hospital at Davis-Monthan Airfield, Tucson, Ariz., and the Miami Army Air Force Hospital at Miami, Fla.

The Bureau of Medicine and Surgery of the United States Navy has established hospitals at Asheville, N. C., Yosemite, Calif., Glenwood Springs, Colo., and Sun Valley, Idaho.

The Veterans Administration, it is said, is contemplating the establishment of hospitals at such health resorts as Saratoga Springs, N. Y., Hot Springs, Salt Lake, Utah, Hot Springs, S. D., Bay Pines, Fla., and Mineral Springs, Texas.

Examples of satisfactory utilization of health resorts for rehabilitation of our wounded soldiers and sailors are to be found at the Army's Ashford General Hospital at White Sulphur Springs, W. Va., and at the Navy's Naval Convalescent Hospital, Glenwood Springs, Colo.

Typical of the reactions of far sighted medical military officers is the pertinent statement recently made

by a colonel in the Army Medical Corps who is commanding officer of one of the larger Army convalescent hospitals. "From my experience in the last war, and as a medical officer since that time I feel that one of the greatest steps which have been taken in this war has been the effort directed toward the rehabilitation of the injured soldier. I firmly believe that the health resort centers which are being used by the Army are playing an ever increasing part in this program."

American health resorts will play this time, an extremely important part in the rehabilitation of those disabled by the war. This is an important step in the right direction.

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### *Current Comment*

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#### MEDICAL AND SOCIAL HISTORIES TO BE SECURED ON SELECTEES

The Selective Service System on October 12 directed local draft boards to gather detailed medical and social histories of registrants classified for induction into the armed forces. Medical field agents attached to each of the country's 6,500 local boards are being appointed to assist. The information gathered will be made available only to examining physicians for the armed services at induction stations. Major Gen. Lewis B. Hershey, director of Selective Service, stated in a bulletin to draft boards that "The Selective Service System and the armed forces want to make certain that the greatest possible care is taken (1) to accept those registrants whose previous medical and social history indicates their ability to adjust themselves under situations of stress, including those who may be termed 'borderline' cases, and (2) to reject those registrants whose condition is such as positively indicates physical or mental breakdown, or failure to adjust themselves to the responsibilities of military service after being inducted." A procedure was also established for the review of the records of men rejected at induction centers or discharged from the armed forces for neuropsychiatric reasons. General Hershey stated that a local board if it is of the opinion that such rejection or discharge was erroneous or the causes for such rejection have ceased to exist, may refer the registrant to the (Selective Service) medical advisory board. A study of 2,500 veterans of this war discharged before August 1942 showed that approximately 40 per cent were discharged because they were suffering from mental and emotional disorders which incapacitated them for military duty, and about 62 per cent of that number became so ill that they had to be hospitalized. General Hershey estimated that approximately 100,000 men will be discharged from the armed forces during this year for "nervous and mental reasons." Under the new program, which General Hershey has termed a medical survey, registrants will be required to fill out two forms—one containing an identity verification

and one detailing the registrant's education. Both forms will be forwarded to state Selective Service directors, who will check the information against state files of persons who have mental diseases and with school authorities. The secondary school systems and state and county health, welfare and social organizations are asked to cooperate.

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#### HOME CARE OF THE TUBERCULOUS

The National Tuberculosis Association has just made available four new pamphlets on "Home Care of Tuberculosis," which should be especially useful in times like these, when the demands on the medical and all of the accessory professions are so great. These pamphlets are directed to the family physician in charge, to the nurses, to the family and to the patient himself. It is recognized that home care is in no sense the equivalent of treatment in a modern sanatorium. However, in times of war it may become the only possible method. The pamphlet for the physician is planned primarily to acquaint him with the nature of the instructions given in the other three pamphlets and also to give him special information regarding tuberculin tests, demonstration of tubercle bacilli and uses of the x-rays. The pamphlet for nurses is devoted primarily to specific instructions regarding nursing care and the protection of the nurse herself. There are also recommended reading lists and answers to questions frequently asked by patients. The pamphlet for the family gives advice regarding preventive methods and also assistance in home nursing. The pamphlet for the patient is most instructive, written in simple language and exceedingly useful. These pamphlets may be obtained from the tuberculosis associations serving in given areas, which obtain the pamphlets at cost from the National Tuberculosis Association.

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#### ARTICLES ON "SPA" THERAPY

In this issue of THE JOURNAL appears the first of a series of articles dealing with the use of health resorts in the treatment of disease. These articles are developed under the sponsorship of the American Medical Association's Committee on American Health Resorts. The material is being prepared by selected authors familiar with the various phases of the subject. This series of articles is particularly timely now. Civilian patients and military casualties alike require medical and hospital care which must be rendered by institutions and professional, technical and other personnel severely restricted under wartime demands for manpower. Every institution suitable for the care of the sick or the convalescent and every therapeutic resource available should be utilized to its utmost efficiency. Spas and spa treatment have had much more extensive attention in Europe than in the United States, yet this country can match every European health resort as to climate and natural characteristics of the waters. In the sharpened focus of wartime needs the Committee on American Health Resorts offers the series of articles beginning this week as a scientific contribution to American medicine and a practical participation in the war effort.

# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## ARMY

### THE SCHICK GENERAL HOSPITAL

The Schick General Hospital, which was formally opened on October 7, is located 3 miles north of Clinton, Iowa. The hospital has a capacity of 1,514 beds and consists of 103 separate structures. The grounds consist of 896 acres of land enclosed by an 8 foot wire fence. There are a chapel, laundry, post exchange, post office, ambulance service, recreational facilities and air conditioned operating rooms. Prior to the formal opening of the hospital there were 2,687 patients admitted (Sept 30, 1943), of whom 674 were operated on. The first patient was admitted on Feb 15, 1943, and on the same day the first surgical operation was performed, on a soldier from this command. On the day of the formal opening there were 1,175 patients in the hospital, representing every overseas theater of operation. The allotment of nurses is 120 and of enlisted men 512. These men are being trained as operating room, x-ray and laboratory technicians as well as ward attendants. The staff of the Schick General Hospital trained the enlisted personnel of the Eighth General Hospital before it was sent overseas and is now training the Ninety-First General Hospital. Major Gen Norman T Kirk, the Surgeon General, has designated the Schick General Hospital as a Neurosurgical Center. The entire project represents an investment of more than \$6,000,000.

The Schick General Hospital was named in honor of Lieut William Rhinehart Schick, first army medical officer to be killed in action during the current war. Lieutenant Schick graduated from the University of Illinois College of Medicine in 1939 and was appointed a first lieutenant, medical corps reserve, April 28, 1941. He was killed when the bomber in which he was flying from the United States to Pearl Harbor was shot down during the raid on Pearl Harbor, Dec 7, 1941.

Following is the medical staff attached to the Schick General Hospital:

Col Dorn F Winn, commanding officer  
Lieut Col Lloyd E Gould, executive officer  
Lieut Col Benjamin M Brinks, chief of medical service  
Capt Wilson C Merriman, executive officer, medical service, and chief, communicable disease section  
Capt Harold B Thale, chief of general medical section  
Capt Harold Shellow, chief of dermatology section  
Capt David W Hilger, chief of neuropsychiatry section  
Capt Lewis J Dimsdale, chief of pulmonary allergy section  
Capt Emanuel M Rappaport, ward officer, neuropsychiatry section  
Capt Ralph W Barris, ward officer, neuropsychiatry section  
1st Lieut Manuel Sill, ward officer, neuropsychiatry section  
Capt Kermit G Dwork, ward officer, officers and women's section  
Capt Harris V Lilga, ward officer, gastrointestinal section  
Capt Max J Klainer, ward officer, cardiovascular section  
1st Lieut David Finkelstein, ward officer, cardiovascular section  
Lieut Col William J Carrington, chief of surgical service and chief, women's section  
Major Moser L Studem, assistant chief of surgical service and chief, officers' section  
Major Don C Robertson, chief of general surgery section  
Capt Willard H Bernhoft, ward officer, general surgery section  
Major Joseph E Milgram, chief of orthopedic section  
Capt Frank H Stelling, ward officer, orthopedic section  
Capt Richard U Peterson, ward officer, orthopedic section  
1st Lieut Rolf Johnson, ward officer, orthopedic section, and ward officer, women's section  
1st Lieut L A Barrow, ward officer, orthopedic section, and ward officer, women's section  
Major Samuel Shenkman, chief of neurosurgery section  
1st Lieut Irving J Speigel, ward officer, neurosurgery section  
Major Edward N Anderson, chief of urology section  
1st Lieut Lloyd L Wells, ward officer, urology section  
Major Francis B Blackmar, chief of E E N T section  
Capt Richard W Garlachs, assistant chief of E E N T section  
Major Daniel R Mishell, chief of septic surgery section

Capt Leo C Harris, ward officer, officers' section, and consultant on thoracic surgery

1st Lieut Solomon Winokur, chief of physical therapy section

Capt Jack Milowsky, chief of anesthesia and operating section

Major Henry Edstrom, chief of x-ray service

Capt Julius Rosenthal, chief of laboratory service

1st Lieut Harney M Cordua, assistant, laboratory service

Capt Alonzo H B Drake, chief of outpatient service

Major Sidney Olans, registrar

Lieut Col I J Frisch, public relations officer

Major E G Johnson, commanding officer, medical detachment, medical department and director of training division

### FOREIGN MAPS WANTED FOR MILITARY USE

The Army Map Service, Corps of Engineers, U S Army, is seeking large scale maps (1 1,000,000 or larger) of areas outside the United States and Canada, road maps, topographic and geological maps, detailed topographic maps, city plans and port plans, as well as guide books and travel folders, gazetteers, postal guides and important atlases, aerial photographs, survey notes and geodetic control data (the more recently issued the better). If any of this material is not available as a gift, it must be specified as such, reproduction will be made and the originals returned to the owner. The Army Map Service does not need United States government issuances and such obvious sources as the National Geographic Society, as this material is already on file. Information concerning available material of this kind should be submitted to the branch office in one's locality.

Chicago Library Branch, Army Map Service, 79 West Monroe Street, Chicago, attention Miss Barbara C Todd, phone Central 3240

New York Library Branch, Army Map Service, 1270 Sixth Avenue, New York City, attention Miss Violet Klippel, phone Circle 6 4250

New Orleans Library Branch, Army Map Service, 900 A Maritime Building, New Orleans, attention Lieut Chris R Ansel, phone Canal 1293

San Francisco Library Branch, Army Map Service, 74 New Montgomery Street, San Francisco, attention Capt Norman F DeCheln, phone EXbrook 2009

### SOLDIER'S MEDAL AWARDED FOR HEROISM AT ALGERIAN BASE

Twenty-two medical officers and enlisted men of the Army Medical Corps and two officers of the Air Corps were recently awarded the Soldier's Medal for outstanding heroism during an explosion of bombs on June 26, 1943 at an Algerian base under the command of Major Gen James H Doolittle, commanding general of the Northwest African Strategic Air Force, according to an announcement made by the War Department, Washington, D C, October 10. When a number of bombs exploded at an ordnance area these officers and enlisted men aided in removing the injured and placing them in ambulances and in checking the spreading flames, in spite of the danger of continued explosion. The citation states: 'The heroic action and valiant work continued until they were forced to withdraw by superior authority. The heroism, valor and courage in the face of great danger reflects credit on themselves and on the armed forces of the United States. The medical officers decorated are Frederick D Koehne, Major, M C Oshland, Iowa, Raymond J Beal, Captain, M C Kansas City, Mo, Milton J Laiden, Captain, M C Philadelphia, Theodore C Papermaster, Captain, M C St Cloud, Minn, Wayne W Warren (dentist), Captain, M C Fort Dodge, Ia, James L Smitherman, First Lieutenant, Air Corp, Oregon Falls.

### FIRST LIEUTENANTS IN NURSE CORPS NOW MAY BE ASSIGNED TO WARD DUTY

The War Department announced on October 14 that members of the Army Nurse Corps now are eligible for more rapid promotion under a new table of organization which makes first lieutenants available for ward duty in addition to second lieutenants. Heretofore nurses in the grade of first lieutenant virtually were limited to duty in the chief nurse's office or were placed in charge of an operating room or of nurses quarters. However, because of the importance of bedside care of wounded and sick, and to give qualified nurses a chance for advancement the new organizational setup was effected. Under it first lieutenants may be put in charge of wards, sections or complete nursing services such as chief of surgical nursing service, chief of medical nursing service, chief of psychiatric section, orthopedic section or of single similar wards. At the same time it was announced that nurses over 45 are not being sent overseas for duty with the armed forces but are being given the opportunity of caring for battle casualties in general hospitals in the United States, to which wounded are being sent for treatment with the least possible delay. It was announced too that nurses who return from a theater of operations and desire further overseas duty may, after six months in the United States, be considered for reassignment overseas provided they are physically qualified.

### AMERICAN MEDICAL SOCIETY IN ENGLAND

At the suggestion of Brig Gen Paul R Hawley, chief surgeon in the European theater of operations, a medical society was organized for the members of the Medical Corps in that theater. The society has been named the American Medical Society, ETO. All officers of the U S Army Medical Corps are automatically made members of the society. The purpose of the organization is to provide a means for an exchange of current professional experience and intelligence of investigative work carried on by the members of the U S Army Medical Corps in this theater. Members of the Medical Corps of the several Allied Nations are invited as guest speakers. Monthly meetings are being held at the various general hospitals with sessions limited to one day. Subjects of interest to all branches of the Medical Corps are presented at each meeting and various problems are demonstrated by medical exhibits in much the same manner as is done at medical meetings held in the United States.

The first meeting, which was held at the 298th General Hospital on June 23, was addressed by General Hawley. At this meeting the following officers were elected: Lieut Col Robert Zollinger, M C, Fifth General Headquarters, president; Lieut Col William F McFee, M C, Second Evacuation Hospital, vice president; Major Clifford Graves, M C, Third Auxiliary Group, secretary-treasurer; Col E J Tracy, M C, Eighth Air Force, member at large; Lieut Col R S Muckenfuss, M C, First General Medical Laboratory, member at large.

Other meetings have been held at the Thirtieth General Hospital and the Second General Hospital.

### ARMY GENERAL HOSPITAL NAMED FOR ARMY NURSE

The War Department announced on October 16 that an army general hospital (the former Chicago Beach Hotel) Chicago, has been named the Ruth M Gardiner General Hospital in memory of the first army nurse confirmed as killed in a theater of operations in this war. Second Lieutenant Gardiner was a member of the Army Nurse Corps attached to a medical squadron of the Army Air Forces and was killed in a plane crash in July 1943 at Nankeah Alaska while serving as an air evacuation nurse. Lieutenant Gardiner graduated with the second class of flight nurses from the School of Air Evacuation Bowman Field Ky on Feb 18, 1943 and left there for evacuation duty with the Eleventh Air Force in Alaska on April 22.

### FIRST FLIGHT NURSE RETURNS FROM COMBAT ZONE

According to the War Department, Second Lieut Henrietta Richardson was the first flight nurse to return to the United States from a combat zone. Serving with an Army Air Forces Air Evacuation Unit in North Africa, she found that "the morale factor is an important part of the flight nurses' job." A former airline stewardess, Lieutenant Richardson was stationed with the twenty-four other flight nurses in her squadron at the Maison Blanche airport near Algiers. Her unit flew shuttle routes from Maison Blanche into Tunisia, Tellerghma and Youks-les-Bains and back to Algiers, Oran and Casablanca. From March 12, 1943 to May 12, 1943 she accumulated 132 hours of combat evacuation flying. Lieutenant Richardson is a graduate of St Vincent's School of Nursing, Los Angeles. She entered the Army Nurse Corps on Sept 14, 1942 and left the United States on Christmas day of that year for overseas assignment.

### SURGEON GENERAL OF BRITISH ARMY FETED

Major Gen Norman T Kirk, surgeon general of the United States Army, gave a dinner on October 12 at the Mayflower Hotel Washington, D C, in honor of Lieut Gen Sir Alexander Hood, visiting surgeon general of the British army. Other distinguished guests who attended the dinner were Rear Admiral Luther Sheldon, Major Gen R W Styer, Major Gen Leroy Lutes, Major Gen Shelley U Marietta, Major Gen George F Lull, Major Gen Albert W Kenner, Major Gen Merritt W Ireland, Brig Gen Hugh J Morgan, Brig Gen Raymond W Bliss, Brig Gen Fred W Rankin, Brig Gen George Dunham, Brig Gen Russell Reynolds, Brig Gen Raymond A Kelsor, Col Arden Freer, Col Tracy S Voorhees, Col Henry C Chenault, Col Arthur B Welsh, Col Frank S Gillespie, Col R C McDonald, Col James R Hudnall, Col Stanhope Bryne-Jones, Col Paul I Robinson, Col Marion F Du Frenne, Col Leonard Rowntree, Col Frank Strong, Col Rex Diveley, Col George R Callender, Col James R McDowell, Col William E Shambora, Col Silas B Hays, Lieut Col Robert John Carpenter, Major C R Durnford, Major Robert S Gearhart, Dr Warren F Draper, assistant surgeon general of the United States Public Health Service, and Norman Davis.

### PHYSICAL DISABILITY DISCHARGES OF THE ARMY

For the twenty month period ended July 31, 1943 discharges from the Army of the United States for physical disability totaled 208,296 men according to an announcement made by the War Department recently. While more than half of these discharges were of a miscellaneous nature, the larger classifications in order were neuropsychiatric, heart disabilities, impairment of vision, tuberculosis and disabilities resulting from wounds. According to statistics from the Office of the Surgeon General, the percentage of disability discharges resulting from neuropsychiatric causes have increased within the twenty month period. Major Gen Norman T Kirk, Surgeon General, stated that "the Army has not granted disability discharges to any men who could be used effectively in the military prosecution of this war."

### MEDICAL CORPS OFFICERS NEEDED FOR SERVICE IN PARACHUTE UNITS

The War Department has announced, according to the *Army and Navy Journal* of October 2 that medical corps officers in company grades and not over 32 years of age are needed for service in parachute units. Volunteers on acceptance will be sent for training to the Parachute School Fort Benning Georgia. Physical standards are those prescribed in section V War Department Circular 155 of 1942.

### EVACUATION HOSPITAL IN ITALY BLOWN DOWN DURING STORM

As a result of a heavy rain and wind storm which leveled every tent in a great field evacuation hospital with the Fifth Army in Italy within five minutes, 1,000 sick or wounded soldiers had to be transferred to a nearby tobacco warehouse, according to an item published in the *Chicago Tribune*, October 13. Lieut. Col. Phil A. Daly of Chicago, who superintended the removal, is director of the hospital staff, most of whose members came from the Michael Reese Hospital, Chicago. Two hundred of the patients most seriously ill were moved to a big barn and hayloft across the field. All this was accomplished in less than two hours. Colonel Daly stated that "It was really a mess, with mud over everything. How we got them all out of there I don't know. If we had planned this it would have taken two days. The storm was almost a tornado. It blew over an x-ray generator." Capt. Philip Marcus of Chicago, a member of the medical staff, said that one operation was finished under the operating table by flashlight after the tent blew down.

### U S ARMY TRANSPORT SHAMROCK (EX AGWILEON) DESIGNATED AS HOSPITAL SHIP

The War Department, Washington, D. C., in General Orders No. 52, states that on Aug. 3, 1943 the United States Army transport *Shamrock* (ex *Agwileon*) was designated as a military hospital ship, in accordance with international practice, as set forth in the provisions of the Hague Convention X of 1907. In the future the United States Army hospital ship *Shamrock* will be operated in accordance with the provisions of applicable treaties. Notification of this designation was delivered through channels to the German, Hungarian, Bulgarian and Rumanian governments on August 12. The ship's master of this and all other United States military hospital ships will at all times maintain sufficient copies of this general order for presentation to any authorized agent of an enemy belligerent who may require it for inspection.

### INDIANA UNIVERSITY MEDICAL CENTER HOSPITAL UNIT ARRIVES IN ENGLAND

According to word recently received at the Indiana University Medical Center, Bloomington, members of the medical division of General Hospital 32, organized and sponsored by the Indiana University Medical Center, have arrived in England following field training at Camp Bowie, Texas. The unit is composed of doctors, dentists and nurses from Indiana, who were inducted at ceremonies held at the Medical Center on May 13, 1942. During the organization of this unit it was planned to include 700 persons, including 120 nurses, but, since the unit was divided after arrival at Camp Bowie, the information received at the Medical Center did not state how many of the original complement were included in the group arriving in England.

### AIR SERVICE COMMAND INSTALLS NEW TYPE X-RAY MACHINE

The latest type, money-saving x-ray machine, equipped with a photoröntgen unit, was recently installed at the Air Service Command, Patterson Field, Fairfield, Ohio. The old style x-ray machine with 14 by 17 inch plates was expensive to operate, while the new machine produces pictures only 5 by 7 over all at a nominal expense. The new machine has film specially mounted on reels requiring a short twist of a dial for a change, the procedure being the same as a roll of film in a camera. A special type tube is used also, which permits constant usage without burning out. This procedure makes it possible to x-ray the entire personnel of the Air Service Command and Patterson Field, 28,000, at the rate of 2,000 weekly. Col. John M. Hargreaves is chief of the medical section of the Air Service Command at Patterson Field.

### FIRST CLASS OF WACS ENTERS ARMY MEDICAL TECHNICIAN SCHOOL

According to the War Department, 145 enlisted women of the Women's Army Corps began training on September 10 at the Army-Navy General Hospital in Hot Springs, Ark., as medical, surgical, x-ray, dental and laboratory technicians to serve with the Army in hospitals in this country and overseas. In addition to the enlisted Wacs, twelve WAC officers also began the course in order to take over future training and administrative staff jobs at the school, thus releasing medical corps men. The course for x-ray, dental and laboratory technicians will last three months, that for medical and surgical technicians, two months.

### PHYSICAL EFFICIENCY AMONG SOLDIER TRAINEES SHOWS IMPROVEMENT

The War Department, Washington, D. C., announced on October 2 an average improvement of 21 per cent in physical efficiency among soldier trainees in the first term of participation in the Army Specialized Training Program. Performances were recorded in seven events among 2,557 trainees at the twelve institutions in which the program had its inception, both at the start of the course and approximately three months later. Gains in various events ranged from 6 to 30 per cent. Trainees devote six hours weekly to physical training.

### ARMY PERSONALS

Col. Crawford F. Sams, former chief surgeon in the Middle East Theater of Operations, has returned to Carlisle Barracks, Pennsylvania, to become director of military art at the Medical Field Service School, according to an announcement by the War Department, September 30. Colonel Sams went overseas late in 1941 to help build bases and establish medical service in the Middle East for the U. S. Army personnel. He was in Tobruk when it was bombed eleven times in twenty-four hours and was stationed for a time at Cairo. Later he was assigned to General Montgomery's British Eighth Army as an observer and was with the group when it was attacked by Marshal Rommel's forces at Gozzala in May 1942. Colonel Sams graduated from Washington University School of Medicine, St. Louis, in 1929. Colonel Sams was assistant department surgeon and for a time acting department surgeon in the Panama Canal Department from 1937 to 1939 and was instructor in logistics and medical service in the Infantry School from 1939 to 1941. During 1935 and 1936 he was director in the Department of Military Art at the Medical Field Service School, the same position to which he has just been assigned. Colonel Sams has been awarded the Order of the British Empire, Legion of Merit and Star of Africa, as well as American Defense ribbons, the American Victory medal from the last war and the Middle East-North African campaign ribbon.

According to the *Franklin (Ind.) Star*, September 23, word was recently received that Capt. Frank P. Albertson, formerly of Trafalgar, Ind., is confined to an evacuation hospital in the South Pacific with injuries received on Guadalcanal, September 3. Captain Albertson, who graduated from the Indiana University School of Medicine, Indianapolis, in 1934, for sixteen months was stationed on various Hawaiian Islands after entering the service but was dispatched by plane on a mission to the South Pacific in July 1943.

According to the *Auburn (Calif.) Journal* of August 28, Col. William H. Smith recently assumed the post of commanding officer of the U. S. Army General Hospital in Auburn, Calif. Colonel Smith graduated from Washington University School of Medicine, St. Louis, in 1905. After graduating from the Army Medical School he was commissioned in the regular army medical corps in 1909. He served with the American expeditionary forces in Vera Cruz in 1914.

Lieut. Col. Loyal Davis, consultant to the Army's chief surgeon, was in Chicago recently on a brief leave after a full year in the European theaters of war.

## NAVY

## STREETS NAMED IN HONOR OF MEDICAL DEPARTMENT PERSONNEL

The Bureau of Medicine and Surgery has named nine streets on the reservation of the new U S Naval Hospital, Dublin, Ga, for medical department personnel killed while on active duty since Dec 7, 1941, according to the *Army and Navy Journal* of September 11.

Gendreau Circle honors the memory of Capt Elphage A M Gendreau (MC) USN who was killed in combat action in the South Pacific on July 21, 1943, Captain Gendreau was force surgeon of the Pacific Fleet Blackwood Drive is named for Comdr James D Blackwood (MC), USN, senior medical officer of the U S S *Imcennes*, which was lost the night of Aug 8-9, 1942 Johnson Drive, Alexander Drive and Crowley Avenue are named for three officers who were killed in action at Pearl Harbor on Dec 7, 1941 They were Comdr Samuel E Johnson (MC) USN, Lieut Comdr Hugh R Alexander (MC), USN, and Lieut Comdr Edward E Crowley (DC), USN.

Evans Avenue will honor Lieut Comdr Edward E Evans (MC), USN who was killed during action in the Solomons on Dec 12 1942 Neff Place will be in memory of Lieut Comdr James B Neff (MC), USN Commander Neff was senior medical officer of the U S S *Jumeau*, which was sunk on Nov 13, 1942 in the South Pacific Trojakowski Avenue and Morrow Place will honor Comdr W C Trojakowski (DC), USN, killed in action in the South Pacific on June 12, 1942, and Lieut (jg) Edna O Morrow, Nurse Corps, U S N, who was killed in an aircraft accident near San Francisco, Jan 21, 1943, while returning from the Pacific war zone.

## NAVY DOCTORS REMOVE LIVE SHELL FROM HIP OF WOUNDED ENLISTED MAN

While standing at his post aboard an American warship in the South Pacific, Allen L Gordon, a fire controlman third class of Rock Island, Ill, was struck below the left chest by a 20 millimeter antiaircraft shell, which pierced his intestine and lodged in his left hip The shell did not explode An emergency operation was performed on board the battleship to repair his intestinal tract Later the sailor was taken ashore and, although the navy hospital at this outpost was still under construction, under the direction of Lieut Comdr Harold W Jacob, formerly on the staff of the Western Pennsylvania Hospital, Pittsburgh, several days were spent in trying to locate the "dud" by x-ray When the shell was located, a steel plate was prepared and the operation was performed in a few minutes by Lieut Comdr Jesse R Griffith and Lieut William C Wycoff, both from the Western Pennsylvania staff in Pittsburgh Although infection set in, Gordon was strong enough eventually to return to the United States, where treatment was continued.

## BASE AND MOBILE OPTICAL UNITS

The Bureau of Medicine and Surgery, Washington, D C, in its weekly release dated October 11, states that a number of optical units have now been organized and equipped by the bureau Its mission is to provide emergency spectacle replacement and repair service, without charge, to all naval personnel in combat areas and other places not accessible to civilian facilities, also to supply urgently needed corrective spectacles to naval personnel under like circumstances There are two types of these units, base and mobile, and both are prepared to provide corrective or replacement lenses sufficiently accurate to meet the needs of combat personnel The base unit will be in a relatively fixed installation, while the mobile unit can be easily transported from place to place Each unit is a component of the Medical Department of the Navy and carries technical personnel, officer and enlisted, selected on the basis

of previous optical service and special training The units will operate under the orders of the commanding officer of the area in the same manner in which naval base hospitals and naval mobile hospitals are now being operated.

## HIGH SPEED FLYING AMBULANCES FOR NAVY AND MARINE CORPS

According to a recent release from the Postwar Aviation Bureau, Chicago, a new high speed flying ambulance for navy and marine corps use, known as the Howard-Nightingale, is a small transport which will carry two badly wounded men in wire stretchers and a crew consisting of pilot, co-pilot and nurse and can operate from bases as far as 200 miles from battle zones It is manufactured by the Howard Aircraft Corporation of Chicago and St Charles, Ill, and is said to have the speed of at least 2½ miles a minute It is capable of landing in almost inaccessible spots, picking up the wounded and carrying them speedily to well equipped hospital units without shock or further injury to broken bones The first of these ambulances are either on their way across the sea or have reached combat zones.

## COMMANDER BARTHOLOMEW W HOGAN RECEIVES SILVER STAR AWARD

The Navy Department, Washington, D C, announced on September 10 the presentation of the Silver Star Medal to Comdr Bartholomew W Hogan (MC), USN, by Secretary of the Navy Frank Knox Commander Hogan's award was accompanied by the following citation:

For conspicuous gallantry and intrepidity in action as Senior Medical Officer of the U S S *Wasp* when that ship was torpedoed by enemy Japanese submarines on Sept 15 1942 With his carrier swept by flaming gasoline and rocked by explosions Commander Hogan despite his own serious wounds worked tirelessly caring for the injured until forced to abandon the stricken ship His outstanding professional skill and heroic devotion to duty throughout these perilous hours were in keeping with the highest traditions of the United States Naval Service.

Commander Hogan, who graduated from Tufts College Medical School, Boston, in 1925, in which year he entered the service, is now on duty at the Bureau of Medicine and Surgery, Washington, D C.

## FIRST WOMAN MEDICAL OFFICER TO BE GIVEN RANK OF LIEUTENANT COMMANDER

Lieut Comdr Catherine Louise McCorry, MC-V(S), (T), USNR, is the first woman medical officer to be given this rank since the Navy has accepted women doctors, according to the Bureau of Medicine and Surgery in its weekly release dated October 4 Lieutenant Commander McCorry graduated from Loyola University School of Medicine, Chicago, in 1930 and has been employed by the department of public health in Illinois as a psychiatrist and internist since completion of her training It is expected that she will be ordered to active duty on or about October 25.

## COMPLETE INSPECTION OF ALL NAVAL CONVALESCENT HOSPITALS

The *Army and Navy Journal* of September 25 states that Rear Admiral Luther Sheldon Jr (MC), USN, assistant chief of the Bureau of Medicine and Surgery and Comdr F J Braceland (MC) USNR neuropsychiatry section, have completed an inspection of all naval convalescent hospitals in the western and southwestern parts of the country As a result of this trip Admiral Sheldon is convinced that with some additional expansion the Medical Department of the Navy is in a position to handle any burden that may be thrown on it by reason of the war in the Pacific.



## MISCELLANEOUS

## WARTIME GRADUATE MEDICAL MEETINGS

The chairman of the committee in charge of Wartime Graduate Medical Meetings has prepared a pamphlet indicating the nature of the organization, the regional committees, the areas of activity, a report of the undertakings of various regional committees, a list of the national faculty and the subjects discussed, and some answers to questions that have been propounded in largest numbers. This manual is exceedingly useful to all those who are participating in this important graduate education. Copies may be obtained by addressing Dr. Edward I. Bortz, 4200 Pine Street, Philadelphia.

## PROMINENT PROFESSORS OF MEDICINE IN ARGENTINA DISMISSED

As a result of the Ramirez government's order that all office holders who signed a recent pro-democratic manifesto be ousted, a number of professors of the highest standing in the universities of Argentina have been affected. Hundreds of medical students are reported to have crowded into the operating theater to hear the world-famed Dr. Bernardo A. Houssay deliver his final lecture, and hundreds of other students were said to have jammed into the final lecture of Prof. Alejandro Ceballos, another well-known Argentinian. Lectures by Dr. Nicolas Romano and Dr. Marino E. Castex at the Hospital Nacional de Clinicas also attracted hundreds of Argentinians, who might otherwise have been unable to demonstrate their opposition to the nation's neutrality and its military government. Ramirez is understood to have stated that, besides being dismissed from public office, these men will not be allowed to leave the country.

## COMPACT X-RAY UNITS FOR AIRCRAFT CARRIERS

Facilities for instant x-ray diagnosis of wounds and injuries are now available to airmen based on many U. S. aircraft carriers on the high seas. These war-tailored x-ray units, developed and manufactured by the Kelley-Koett Manufacturing Company, Covington, Ky., are being installed in the Kaiser-built carriers. The carrier-borne unit includes a "rotary converter" to transform the ship's direct current to alternating current for x-ray uses. Many war plants use this specially designed x-ray equipment to detect flaws in vital metal parts before they are made into tanks, planes and guns. Major Gen. Norman T. Kirk, Surgeon General of the Army, who recently made a personal inspection of the Kelley-Koett Manufacturing Company, commended the workers for meriting the Army-Navy E and said "The x-ray machines you are making are used to salvage men during a time when weapons of destruction are being made for killing."

## MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

The Medical and Surgical Relief Committee of America, with headquarters at 420 Lexington Avenue, New York City, is conducted by a nationwide group of physicians and surgeons to send medical aid to the armed and civilian forces of America and the Allies. In response to a request from the First Group Civil Air Patrol of Cleveland the committee is donating to this unit emergency medical supplies to supplement its minor first aid equipment. Packed in portable cases, the committee's contribution includes sulfonamide drugs, anesthetics, antiseptics, an instrument roll for minor surgery and many other essential medical items. These items will be used in ambulances or transported by airplane directly to the scene of disaster. According to Dr. J. P. Hoguet, medical director of the committee, over \$1,500 has been donated by the committee to civil air patrols. Emergency medical field sets and other supplies have also been sent to C. A. P. units in Falmouth, Mass., Reno, Nev., Beaumont, Texas, and Pascagoula, Miss.

## WOMEN PHYSICIANS NEEDED IN ARMY AND NAVY MEDICAL CORPS

A nationwide campaign will be opened on December 4 by the American Women's Medical Association to stimulate applications by women physicians for commissions in the Army and Navy Medical Corps, according to an item in the *New York Times*, October 5. The drive, which will be under the direction of Dr. Zoe Allison Johnston, Pittsburgh, national president of the association, will start its campaign at the annual meeting of the organization's executive board in Pittsburgh. The medical department of the Navy is reported to have openings in each of three ranks, lieutenant junior grade, lieutenant senior grade and lieutenant commander, and the major demand is for women laboratory physicians, psychiatrists and pathologists. Dr. Eva Carey, president of the Pittsburgh Women's Medical Society, stated that, "While there is no present surplus of women doctors, there is available a valuable supplement to the male contingent."

## SEDATIVES DONATED TO RECUPERATION CENTERS

Four thousand capsules of sedatives have recently been donated to the War Shipping Administration for use in recuperation centers in England and North Africa. Dr. Joseph P. Hoguet, medical director of the Medical and Surgical Relief Committee of America, pointed out that many seamen resting in War Shipping Administration convalescence posts abroad have manned ships loaded with explosives, many more have traveled through waters infested with submarines, and others are survivors of torpedoed merchant vessels. Many of these men are tense from the memory of grim ocean crossings, from the shock of combat or shipwreck and cannot sleep. These mild sedatives will relax strained nerves and ensure them a normal night's rest.

Sixteen large emergency medical field sets consisting of two valise-sized cases for use by doctors for wounded and ill merchant seamen were also donated by the committee. These sets contain drugs, antiseptics, bandages, sutures, syringes, and minor surgery instruments to meet any emergency. They are carefully packed for immediate use, are portable, and can be carried directly to where the casualties are.

## BRIG. GEN. JAMES S. SIMMONS AWARDED SEDGWICK MEDAL

Brig. Gen. James S. Simmons, director, Preventive Medicine Division, Office of the Surgeon General, Washington, D. C., was awarded the William Thompson Sedgwick Memorial Medal during the annual meeting of the American Public Health Association in New York, October 12. The medal is awarded each year for distinguished service in public health. Charles-Edward A. Winslow, Dr. P. H. and winner of the Sedgwick Medal in 1942, presented the award. Brigadier General Simmons graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1915 and entered the medical corps as a first lieutenant in 1916. He has devoted more than a quarter of a century to the upbuilding of public health laboratory service in the military establishment. At the outbreak of the present war, Brigadier General Simmons was entrusted with the organization of a division of preventive medicine in the Office of the Surgeon General.

## PRISONER OF THE JAPANESE

According to a recent item in the *Denver Post*, 1st Lieut. William DeBacker, who was taken prisoner by the Japanese in the Philippine Islands, sent a message to his wife that he is in a prison camp in the Philippines and is well. Lieutenant DeBacker, who practiced medicine in Pueblo, Colo., before entering the service, graduated from the University of Colorado School of Medicine, Denver, in 1940.

## PUBLIC HEALTH UNDER HITLER

NDF of September 3 states that besides the other welfare measures taken by the party of the state, medical help is of great importance to the civilian population after air raids. An important field of activity has thus arisen for the DRK, reports Heudth, oberstfuhrer of the DRK in the periodical *Das Deutsche Rote Kreuz*. In raided areas the Red Cross disposes of thousands of Red Cross nursing auxiliaries who have been trained in first aid and men and women assistants besides nurses working in hospitals. They are always on call for an emergency, mainly for the medical patrols which set out immediately after an air raid.

When heavy destruction is caused among dwellings, doctors' practices are frequently destroyed too, so that medical attention for the sick and injured may be difficult for the first few hours and days after a raid. That is where the DRK patrol service comes in. The Red Cross emergency cars or simple ambulance cars, staffed with a doctor and several Red Cross assistants, cruise through the streets as "mobile ambulances" to give first aid to persons suffering injury during the raid. The seriously injured are often taken to hospitals immediately. Of great value too is the help your neighbor scheme of all members of the Red Cross, who are trained in first aid and who render effective aid to the injured while the raid is still in progress and thus prevent their condition from becoming more serious.

Medical stations have been set up in the big public air raid shelters to attend to the sick and injured. They are mainly staffed with women assistants of the Red Cross. Red Cross personnel also serve on evacuation trains from the moment they leave the raided areas until they arrive in the reception areas. In order to assure on an even wider scale the medical care of the civilian population hit by the air war, there is a continuous flow of fresh forces from the headquarters of the DRK to action stations. As the motorized units, such as the Red Cross emergency cars, busses and ambulances increase, all over the reich persons with special aptitude for such work form special standby units and after a specialized training of several months, are sent to the raided areas. Well timed and generous planning is combined with constant readiness of the Red Cross forces to do their utmost. The sacrifices which this war demands of the civilian population are hard and painful.

Radio Hilversum (Dutch home service) of September 12 states that for the third time since its foundation the Medical Front held a national convention in Utrecht. The first speakers were Dr Keyer, head of the Department of Public Health, and Dr Goette, leader of the Medical Front. After them the leader spoke. From his speech it appeared that some 500 doctors are required to go to Germany and are reluctant to go. Among other things Mussert said "If we consider that it is the duty of every European to fight for the future of Europe, why should those 'gentlemen' be allowed to stand aloof? They are always coming with touching stories about the fate of our workers in Germany. If they are too small minded to help the Germans, why don't they go and help their fellow countrymen in Germany? For this reason I assure you, my comrades, that I shall do everything in my power to send 500 or 1,000 doctors to Germany."

*Algemeen Handelsblad* of July 2 gives the reasons why those doctors who have protested against the recent decrees imposed on them by the reich commissar have been put into concentration camps. The cause was their first letter of protest and not the second.

Measures have been taken by the sicherheitspolizei against the demonstrators, whose conduct must be considered serious. They are now in concentration camps, where they can ponder on the shortcomings of their misdeeds. They are awaiting their punishment. In addition their property will be confiscated in accordance with paragraph 1 of order number 33 of 1940.

"Some of these demonstrating doctors have chosen to disappear. Their surgeries have been sealed by the sicherheitspolizei. This incident also appears to be evidence of the constant collaboration between certain intellectual circles and Orange-Bolshevik messengers, which was proved recently in Amsterdam during the proceedings against the instigators of the attack on the population register.

"It is not at all a question here of the second letter sent to the reich commissar, which the English radio announced recently even before the letter had reached the addressee. In reality a few similar letters arrived only a few days later. This showed that the writers of the letter had been listening to the English broadcasts or had let themselves be guided by a group acting according to instructions from the London emigre clique. For these persons no one will be surprised that such actions will have very unpleasant consequences for the writers concerned."

Reich Health Leader Dr Conti, according to DNB of July 31, has ordered all members of the medical professions, especially doctors, dental surgeons, dentists and nature cure practitioners who use X-ray equipment, to register with the competent reich defense commissioner, who will pass on the details to the office of the chief medical officer. X-ray apparatus and tubes which are not in use at present must be registered by the respective owners. This does not apply to manufacturers and dealers. Any change of ownership after registration must also be reported. Registration must be made not later than September 1.

Gardist, Bratislava, August 8, writes. At the invitation of the Slovak University Students Association, German soldier students from the front who had been seriously injured came to Priestany some days ago. When I spoke with them about the fall of Orel and Catania they expressed neither apprehensions nor doubts but only dislike of journalistic expressions such as "successful disengagement from the enemy" (erfolgreiche Absetzung vom Feinde) or "disguised maneuvers" (maskierte Manöver), which fail to convince.

According to *Der Neue Tag* of August 7 the municipality of Olomouc has built a new emergency hospital in Blasius Square in addition to that already existing in the Neugasse (New Street). The new hospital, which will be for scarlet fever, diphtheria and similar diseases, is a two story building and has the most up to date medical equipment. It is run by a senior doctor assisted by two women doctors. The hospital holds 120 patients and is the largest in northern Moravia.

The *Journal officiel*, August 20, published act number 430, dated July 29, 1943, enforcing the act of Dec 16, 1942 on the premarital medical examination certificate. The prospective husband and wife are from now on both under compulsion to produce a prenuptial certificate not more than one month old, simply stating that the applicant was medically examined without any other indication.

Norwegian nurses are now being hard pressed to "do their duty," which means service at the front, according to *Stockholms-Tidningen* of September 8. The demand for nurses is urgent, especially on the arctic front, and the Germans want Norwegian nurses to take over the whole of the nursing service there.

According to NPD of July 31, German medicine has made the surprising discovery that a number of dangerous blood diseases can be cured by a systematic denial of vitamins to the patient. This new treatment opens up entirely new perspectives to medical science.

Zora of July 23 states that the incidence of spotted typhus this year is double that of last year. The cases are mainly among Gypsies and are in Deli, Orman Rhodopi, Yambol and the new territories. The chief of the Public Health Directorate has formed flying detachments for combating the disease.

According to NPD of September 6, exports of the German pharmaceutical industry will probably increase by 36 per cent in 1943 compared with the previous year. German medical preparations are at present being supplied to thirty-two different countries.

# ORGANIZATION SECTION

## THE VOCATIONAL REHABILITATION ACT AMENDMENTS OF 1943

PREPARED BY THE BUREAU OF LEGAL MEDICINE AND LEGISLATION,  
AMERICAN MEDICAL ASSOCIATION

The President on Oct 9, 1942 sent a special message to the Congress recommending an expanded program for civilian vocational rehabilitation. This recommendation became an actuality with the enactment by the Congress of the Barden-LaFollette bill, so called because of its sponsorship by Representative Barden of North Carolina and Senator LaFollette of Wisconsin. It was approved by the President on July 6, 1943 as Public Law 113, Seventy-Eighth Congress. Now regulations have been promulgated by the Administrator of the Federal Security Agency under which the provisions of the new law will be made effective.<sup>1</sup>

### IN GENERAL

Broadly stated the recently enacted law contemplates a continuation on an expanded basis of the general pattern of a federal-state program for civilian vocational rehabilitation that has been functioning since 1920. An Office of Vocational Rehabilitation has been set up in the Federal Security Agency to administer the program on the federal level. On a state level it will be administered by state boards of vocational education or by state rehabilitation commissions if in existence on July 6 and if such state boards delegate to the commissions the duty of so functioning. If, under the laws of any state, commissions for the blind or other agencies which provide assistance or services for the adult blind are authorized to provide them vocational rehabilitation, then such a procedure will be continued.

The new law places no ceiling on the annual federal sum that can be made available except the most elastic ceiling of "such sums as may be necessary." The term "rehabilitation services" and the term "vocational rehabilitation" are defined to include any services necessary to render a disabled individual fit to engage in a remunerative occupation. Physical restoration of the disabled will constitute a major objective of the expanded program. A state plan to be approvable must provide that vocational rehabilitation will be made available only to classes of employable individuals defined by the Administrator of the Federal Security Agency, including any civil employee of the United States disabled in the performance of his duty and any war disabled civilian whose disability results, without personal misconduct, from disease or injury, or from an aggravation of a preexisting disease or injury, incurred in line of duty while serving at any time after Dec 6, 1941, and prior to the termination of the war.

- 1 In the Aircraft Warning Service, or
- 2 As a member of the Civil Air Patrol, or
- 3 As a member, in accordance with regulations prescribed by the Director of the Office of Civilian Defense, of the United States Citizens' Defense Corps in the protective services in civilian defense, or
- 4 As a registered trainee, taking training for such protective services, or
- 5 As an officer or member of the crew of a vessel owned or chartered by the Maritime Commission or the War Shipping Administration, or operated under charter from such commission or administration.

<sup>1</sup> 8 Fed Reg 14158 (Oct 19, 1943)

### FEDERAL AID

A state plan having been approved by the Federal Security Administrator, the federal contribution will cover (1) the entire state administrative expenses of the program, (2) the entire cost of rehabilitation of war disabled individuals and (3) one half of the cost of the rehabilitation of other disabled persons. If any state is found by the administrator to have substantially exhausted its fund for necessary expenditures in connection with its rehabilitation plan, he may until July 1, 1945 increase the federal amounts payable to the state.

### REMEDIAL TREATMENT OF PHYSICAL HANDICAPS

The House Committee on Education in H Report No 426 had this to say about physical restoration of the disabled in justification of the provisions in the new law providing for such restoration:

With respect to the great inadequacy or complete lack of, necessary physical restoration under practically all programs, with the exception of New Jersey, Connecticut and Wisconsin, your committee found that under the present program anything done in this field was done without any federal contribution. To put it mildly, the states had been encouraged to retrain a person around a disability even where it would be more economical and satisfactory to eliminate the handicap itself. Federal funds are available for half the cost of the retraining approach but no federal funds are at present made available for the more obvious and satisfactory approach.

### And again

Your committee considered most carefully the testimony of witnesses with respect to physical restoration, and drafted provisions which it is believed will permit the provision of such services but at the same time limit such services, both as to scope and as to recipients, so as to avoid any possibility of making the vocational rehabilitation grants available for a state health or medical program.

Physical restoration must be particularly emphasized in speedily placing large numbers in productive employment. The testimony made clear that relatively simple operations are all that are needed to make a great many people available for work. Provision of physical restoration by the states under existing law is not forbidden. It has not been provided in the past because of the limitation of funds and the feeling administratively that expenditures for such restoration were not authorized. Hence the present clarification.

The expanded program contemplates that a state plan will provide (1) corrective surgery or therapeutic treatment necessary to correct or substantially modify a physical condition which is static and constitutes a substantial handicap to employment but is of such a nature that such correction or modification should eliminate or substantially reduce such handicap within a reasonable length of time, (2) necessary hospitalization, in no case to exceed ninety days if federal contribution is to be received, (3) such prosthetic devices as are essential to obtaining or retraining employment.

If these services are furnished only to persons "found to require financial assistance with respect thereto" other than war disabled individuals or civilian employees of the government, the federal government will contribute one half of the cost.

### FINANCIAL NEED OF BENEFICIARY

The regulations issued by the Federal Security Agency point out that the new law does not require a state to condition the acceptance of any individual or the rendition of any service

whatsoever under the plan on the financial need or economic status of the applicant. The state is free to establish and follow its own policies in this respect. A state may not, however, impose a showing of financial need, other than with respect to maintenance on a war disabled civilian or civil employee of the United States. Furthermore, unless a state plan does impose a financial need requirement on a rehabilitant, with the exceptions noted, who is furnished corrective surgery or therapeutic treatment or hospitalization in connection therewith, the state will be required to assume the full expense with respect to such services.

#### FEF SCHEDULE FOR MEDICAL AND SURGICAL TREATMENT

A state plan to be approvable must provide such rules, regulations and standards with respect to expenditures on which federal grants are made available as the Administrator of the Federal Security Agency may find reasonable and necessary, including maximum schedules of fees for surgery, therapeutic treatment, hospitalization, medical examinations and for prosthetic devices.

The new regulations provide that, pending a federal determination of such maximum fees and schedules of fees, a state plan should indicate all fee schedules and all arrangements in existence with individuals, agencies or institutions, public or private, affecting the amounts of fees for such treatment and training. Such fees and costs may not, unless previously federally authorized, exceed those paid for similar services in the state by other public agencies such as workmen's compensation, public health, crippled children, public welfare and similar agencies.

#### FACILITIES MADE AVAILABLE BY FEDERAL GOVERNMENT

Section 5 of the law authorizes the Administrator of the Federal Security Agency to enter into agreements with two or more state vocational boards needing special facilities and services and to furnish such services and facilities on a cost basis. The administrator is authorized to establish the facilities needed.

The new regulations provide that in order to facilitate equitable and effective application of the foregoing authority, state officials should submit as soon as may be convenient comprehensive lists and evaluations of public and private facilities available to the state for rehabilitation purposes and the area feasibly served thereby, indicating fields essential to a well rounded program of vocational rehabilitation with respect to which individual plans cannot be developed by reason of the lack, remoteness or unavailability of facilities.

In addition, it is suggested that each state board should make recommendations to the federal agency as to the means and methods by which the availability and potentially utilizable facilities can be developed through arrangements with other states for the use of such facilities or conversely as to the possibilities for making facilities available to areas in neighboring states in or near to which such facilities may be located or from the use of which adjoining areas might derive substantial benefit.

#### ADVISORY COMMITTEES STATE AND FEDERAL

The regulations provide that a state plan should set up a representative advisory committee. It is recommended that technical committees be formed in the fields of (a) medicine and surgery, (b) education general and vocational, and (c) vocational guidance, employment and placement of individuals. It is further suggested that a general committee be established which is equally representative of management and labor and which will include among others, representatives from the workmen's compensation agency, crippled children's agency, state department of welfare or security commission, civic and service organizations interested in the development of the program, as well as representatives from professional fields. In cases involving administration by an agency for the blind, a state plan may provide for a separate advisory committee in relation to the blind.

The Administrator of the Federal Security Agency has announced the appointment of the following national Rehabilitation Advisory Council to advise the Office of Vocational Rehabilitation in connection with the expanded federal-state program.

Clara M. Andrews, president, National Rehabilitation Association, Tallahassee, Fla.

Dr. Homer Check, executive secretary, Commission for the Blind, Raleigh, N. C.

Dr. A. W. Dent, president, Dillard University, New Orleans.

Dr. Kendall Emerson, managing director, National Tuberculosis Association, New York.

W. I. Faulkes, chairman, State Rehabilitation Advisory Council, Madison, Wis.

Dr. M. F. Irwin, New York Institute for the Instruction of the Blind, New York.

Miss Bell Grove, executive secretary, Cleveland Association for Crippled and Disabled, Cleveland.

Stanwood I. Hanson, assistant vice president, Liberty Mutual Insurance Company, Boston.

Jay Hormel, president, George A. Hormel and Company, Austin, Minn.

F. Jay Howenstine, executive secretary, National Society for Crippled Children, Elkhart, Ohio.

Monsignor John O'Grady, secretary, National Conference of Catholic Charities, Washington, D. C.

Howard Russell, director, American Public Welfare Association, Chicago.

Col. John N. Smith, Jr., director, Institute for the Crippled and Disabled, New York.

Dr. George S. Stevenson, Council on Rehabilitation, American Psychiatric Association, New York.

Dr. George D. Stoddard, state commissioner of education, Albany, N. Y.

Miss Marjorie Taylor, first vice president, National Occupational Therapy Association, Curative Workshop, Milwaukee.

Frank G. Thompson, director, State Department of Registration and Education, Springfield, Ill.

Dr. Philip Wilson, New York Society for Relief of the Ruptured and Crippled, New York.

Miss Catherine Worthingham, president, American Association of Physiotherapy, Leland Stanford University, Palo Alto, Calif.

Miss Betty Wright, American Society for the Hard of Hearing, Washington, D. C.

#### SPECIAL TECHNICAL SUPERVISION, CONSULTANTS

A state plan, the federal regulations suggest, should indicate the arrangements made or that will be made for the competent technical supervision of plan operations in the following respects: medical direction, psychiatric services and training and placement services. If it is not feasible to provide full time staff officials properly qualified from the technical standpoint in these respective fields, a state plan should indicate arrangements for services of properly qualified consultants to be available in the regular course of administration.

#### STATE LEGISLATION

If any state was unable to comply with the conditions of the new federal law on the date of its enactment, such state may nevertheless obtain the benefits of the law until sixty days after the legislature of such state first meets in due course after such date of enactment or until the earliest effective date after such sixty days which could be given in such state to legislation passed within such sixty days to secure the benefits of the federal law, whichever is the later. In the meantime, however, a state must comply with the federal law to the extent possible.

#### DISTRICT OF COLUMBIA

All operations within the District of Columbia pursuant to the new law will be administered by the Division of the Federal Office of Vocational Rehabilitation known as the District of Columbia Rehabilitation Service. All applicable provisions of the new regulations including the formulation by the service and submission for approval of a plan for the District will govern the operations of the service. The service will assume responsibilities with respect to providing rehabilitation services for resident war disabled civilians and employees of the United States disabled while in the performance of duty equivalent to those of the respective states.

## OFFICIAL NOTES

## MEETING OF COMMITTEE ON POST-WAR MEDICAL SERVICE

The Committee on Postwar Medical Service met in Washington, D. C., on October 15. There were present

Dr. Roger I. Fee, chairman	Dr. Alan Gregg
Dr. Irvin Abell	Dr. James M. Mason
Dr. Arthur W. Allen	Rear Admiral Dallas G. Sutton
Lieut. Commander Edward L. Bortz	Dr. James A. Prullin
Dr. Fred A. Collier	Dr. Walter W. Palmer
Dr. Warren F. Draper	Dr. G. Morris Piersol
Dr. Morris Fishbein	Dr. Olin West

The meeting began with an extended discussion of various developments and events since the committee's first meeting on June 5 last, and the bearing such events may have on the scope and plan of the committee's services. Within the advisory function which the committee may discharge vis a vis the Board of Trustees, the following subjects were examined and discussed according to a list prepared by the chairman:

- 1 The appointment of a secretary
- 2 Problems centering around the relocation of physicians
- 3 Aspects of graduate education and specialist training refresher courses, internships, residencies and so on for men now in military service of the United States when they are returned or returning to civilian status
- 4 The problem of serving certain needs of the profession of those foreign countries whose systems of medical education and medical practice will have undergone profound strain by the end of the war
- 5 The extent to which the membership of the committee can appropriately be increased
- 6 The desirability of securing information from physicians now in military service or parallel circumstances as to their views regarding further training and education and the type of positions wanted when their war services draw to a close

The action taken may be summarized as follows:

After the appointment of a secretary, various aspects of the location or relocation of medical officers returning from the war were discussed and a subcommittee of Drs. Allen, Piersol and Gregg (chairman) was appointed to report at the next meeting. In the discussion, emphasis fell on the importance of determining the committee's position in this matter promptly and on the unquestionably complicated nature of fitting physicians to appropriate and satisfactory positions quickly and in several thousands.

A subcommittee consisting of Dr. Palmer, chairman, Dr. Collier and Dr. Blake was appointed to study and report on postwar vocational training periods—internships, residencies and training for the specialties—which affect physicians and medical students. The planning in this direction may involve advice to governmental agencies as well as educational institutions.

The placement of returned physicians in residencies will undoubtedly be at best limited, but so important is it to find the largest possible number of opportunities for young men who went into the service without residencies that the attention of

all medical schools and hospitals is called to this need. In the case of internships the resources are larger, but so will be the demand.

Of cardinal importance in supplying facts for the use of both the aforementioned committees is the collection of information from physicians in service as to what they want in point of internships, residencies, specialist training, other education, salaried positions, locations or changes of location. Dr. Abell was appointed chairman of a subcommittee with Dr. Mason and Dr. West to assist him in taking the steps necessary to secure an adequate idea of the types and number of needs, as they may be ascertained directly and in the near future, for the committee's guidance.

The committee expressed its sympathetic concern with the needs of the medical profession in the invaded countries. In view of present difficulties in securing adequate information and the present inaccessibility of the United States to most of the European doctors most in need, the committee reserved decision on this matter to a later meeting.

Because of the importance of the Veterans' Bureau Services in many phases of postwar medicine, a motion was unanimously approved to invite the director of the Veterans Bureau to designate a representative as a regular member of the committee.

In answer to the letter of inquiry and application for membership from the Association of Hospital Interns, the committee expressed itself as not prepared at the present time to enlarge its membership, especially since some physicians in military service may be added as representative of that group, in addition to Rear Admiral Sutton and General Rankin.

The meeting adjourned at 3 20 p. m.

ALAN GREGG, M.D., Secretary

## THE A. M. A. MARCH

Familiar strains of catchy march music have identified the American Medical Association-National Broadcasting Company network radio programs since they were first dramatized in 1935. This identification, or musical theme, as it is known in radio circles, was written for the program and copyrighted to assure exclusiveness. It has now been expanded into a march<sup>1</sup> and published as a piano solo.

Subject to appropriate arrangements under the copyright laws, this music can be used to identify radio programs by the medical profession locally.

The use of music in conjunction with radio programs, even when it is only an introductory and closing movement of a few bars, helps to identify the program and establish an appropriate mood. The music of the A. M. A. March has a definite and catchy swing in march tempo, but it also expresses the appropriate dignity of the medical profession.

The writing and publication of this music is one of the many indications of the acceptance by radio of dramatized health education programs such as "Your Health," "Medicine in the News," "Doctors at Work" and "Doctors at War."

<sup>1</sup> A. M. A. March, New York, Remick Music Corporation 10 cents

## MEDICAL LEGISLATION

## MEDICAL BILLS IN CONGRESS

**Bills Introduced**—H. Res. 328, introduced by Representative Rogers, Massachusetts, requests the President to furnish the House of Representatives with the following information: (1) the number of beds now available in all hospitals under the jurisdiction of the United States or the District of Columbia, or in private institutions under contract with the United States, and the number and type of patients in such hospitals, (2) the number of beds to be available in hospitals now under construction by the United States, together with the approximate dates on which such hospitals will be placed in service, (3) plans

for future construction of government hospitals and (4) the maximum number of war casualties which it is estimated must be hospitalized at any one time.

H. R. 3272, introduced by Representative Clegg, Massachusetts, proposes to authorize an appropriation of an amount necessary to provide loans to war service persons to enable them to complete their education. H. R. 3460, introduced by Representative Smith, Wisconsin, proposes to enact a Veterans' Health and Education Act of 1943 under which to provide vocational training and college education for veterans of the service in war.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### ALABAMA

**Cancer Program Launched**—A recent appropriation by the state legislature makes possible the inauguration of a state-wide program of cancer control in Alabama. For the first year \$30,000 has been set aside and for the second year \$50,000 to finance the project which will be administered by the state board of health. A cancer control committee has been named by the Medical Association of the State of Alabama to cooperate in the program. The appropriation will enable the active educational program to continue and provides the means of treating indigent patients with cancer who may apply for state aid. According to the state medical journal the program does not anticipate state owned or state operated clinics but will depend on the cooperation of individual hospitals or clinics or private physicians who can group themselves to qualify for receiving state aid patients. Each clinic recognized for such indigent patients will be given such publicity that it will be generally known as a cancer treatment center. All applications for state aid must come through the county health officer must give the details of the patient's lesion and must be accompanied by a certificate of indigence from the county department of public welfare. Arrangements will be made with cancer clinics as to the remuneration to be allowed for services rendered. The financial arrangements will be patterned after other states that have become well established in cancer control work. The state journal points out that there are only two cancer clinics in Alabama at present recognized for this work but that there are a number of groups of physicians and hospitals already treating cancer with excellent results who can be organized along these lines.

### ARIZONA

**Personal**—Dr. Edward S. Godfrey Jr., Albany, state health commissioner of New York, was guest of honor at a dinner, September 22 given by the Maricopa County Medical Society, Phoenix.

**State Society to Publish Journal**—*Arizona Medicine* has been selected as the name for the new journal to be published by the Arizona State Medical Association. It will be a bimonthly publication, the first issue of which is to appear in January. Dr. Frank J. Milloy has been chosen as editor and Dr. Jesse D. Hamer, both of Phoenix, associate editor. The new journal will have an organization section of which Dr. Otto E. Utzinger, Ray, president of the state association will be editor. The *Bulletin* now published by the Arizona group will be discontinued. The decision to publish its own state journal was reached when the group managing *Southwestern Medicine* decided to discontinue it for the duration the last copy to appear in December. This publication has been the official journal for the Southwestern Medical Association, Arizona State Medical Association, El Paso County Medical Society and the New Mexico Medical Society.

### CALIFORNIA

**Changes in Hospital Superintendents**—Dr. Burton A. Adams, medical superintendent of the San Diego County General Hospital for four years, has resigned, effective November 1 newspapers reported.—Dr. Austin U. Miller Porterville has been named superintendent of the Tulare County General Hospital, Tulare.

**Human Plague**—Plague was reported in an 11 year old boy residing on an Indian Reservation in Quartz Valley, Siskiyou County, during the week ended August 28. According to *Public Health Reports* the infection was believed to have been contracted on a hunting trip in the mountains near Fort Jones. One human case of plague was reported in Siskiyou County in November 1942 (terminating fatally on Jan. 10, 1943) and 2 fatal cases were reported in the county in 1941.

**Mussel Poisoning—Four Deaths**—The first cases of mussel poisoning that have occurred in the state since 1939 have appeared in Humboldt and Del Norte counties, according to *California's Health*. Twenty-two persons became ill, 4 of whom died. An annual quarantine is established on mussels along the California coast from May 1 to September 30 of each year.

The establishment of the quarantine is well known and the persons who were taken ill in this outbreak disregarded the quarantine.

**Hearing Conservation Program Started**—Warren H. Gardner, Ph.D., for the past three years consultant in hearing and vision for the Oregon State Board of Health, has been placed in charge of a new hearing conservation program of the state department of public health. Headquarters of Dr. Gardner, whose title is specialist in hearing conservation, will be in San Francisco. The new activity of the state department of public health was set up under recently enacted legislation providing that the department must seek out children who may have hearing handicaps. The program has been placed under the bureau of maternal and child health in order that it may be correlated to the conferences conducted by the bureau where complete physical examinations are given to children of both preschool and school ages. According to *California's Health*, Dr. Gardner has conducted similar activities in Indiana and Iowa. He is president of the American Society for the Hard of Hearing and has recently been made a lay member of the committee on conservation of hearing for the American Academy of Ophthalmology and Otolaryngology.

### COLORADO

**University News**—Dr. James C. Magee, major general, U. S. Army, formerly surgeon general of the U. S. Army, lectured on tropical medicine before the students of the University of Colorado School of Medicine, Denver, recently. General Magee recently returned from a tour of camps in North Africa.

**Club Building for Colorado Physicians in Memory of Dr. Sewall**—The home of Mrs. Isabel J. Sewall, widow of Dr. Henry Sewall, Denver, may be converted into a club building, named for Dr. Sewall, for Colorado physicians and scientists, newspapers reported. Mrs. Sewall's will, filed for probate in the county court, asked that the residence at 1360 Vine Street be used as a club building "with the thought and purpose that this home, so long associated with the name of Dr. Henry Sewall, may continue to be so regarded." Mrs. Sewall left her home to Dr. Cuthbert Powell, Denver, with the request that it be used for the purpose named in the will, according to the *Denver Rocky Mountain News*.

### ILLINOIS

**Another Bicounty Defense Health Unit**—Alexander and Pulaski counties, recently declared "defense zones for public health purposes, on September 1 combined to form the second locally directed bicounty defense zone health department in Illinois, according to the *Illinois Health Messenger*. The new full time agency, set up by the county authorities of the two counties with the war emergency aid of the Illinois Department of Public Health, is under the supervision of Dr. Donaldson F. Rawlings, with offices in Cairo. Dr. Rawlings' position as health officer of the Lawrence County Defense Zone Health Department, Lawrenceville, has been filled by Dr. Luke W. Frame, formerly health officer of Lauderdale County, Tenn. The first bicounty unit was formed by Fulton and McDonough counties of the thirty-two Illinois counties designated as "health defense counties," sixteen of which have developed full time state aided local health services for the year round scientific control of preventable diseases.

### Chicago

**Dr. Gellhorn Goes to Minnesota**—Dr. Ernst Gellhorn, professor of physiology, University of Illinois College of Medicine, has taken over a recent appointment as professor of physiology at the University of Minnesota Medical School, Minneapolis, and head of a special unit in neurophysiology for the study of infantile paralysis that the National Foundation for Infantile Paralysis is sponsoring for Minnesota (THE JOURNAL, July 24, p. 883).

### KANSAS

**Personal**—Dr. Warren F. Bernstorf was recently elected president of the Winfield Board of Education.—Dr. George R. Dean McPherson was appointed a member of the Kansas State Board of Registration and Examination October 6 filling the unexpired term of the late Dr. Omar L. Cox, Iola.—Dr. Ernest J. Beckner, Pratt, has been appointed health officer of Butler County. He succeeds Dr. Samuel N. Mallison.

**Course on Medical Protozoology**—On October 27 a course on medical protozoology opened at the University of Kansas Lawrence to continue to November 2 under the auspices of the University of Kansas Extension Division. The course is available for laboratory technicians in the state and



consists of study and laboratory work on malaria and its three species, *Trypanosoma* and *Leishmania* (the sleeping sickness of Africa and South America), *Endamoeba histolytica*, intestinal flagellates of man and intestinal ciliates and sporozoa. Miss Mary E. Laison, assistant professor of zoology at Kansas, is directing the course.

### KENTUCKY

**Society News**—On October 7 Dr. Aura J. Miller spoke before the Transylvania Medical Society in Louisville on "A Common But Seldom Diagnosed Lung Disease"—Dr. John W. Moore presented "Pregnancy Complicated by Bacterial Endocarditis (case report)" before the Louisville Medico-Chirurgical Society, October 8, and Dr. Harry S. Frazier, "Medical Practice During Wartimes", both are from Louisville.

**Personal**—Dr. Oliver P. Miller has been appointed chief medical officer of the Veterans Administration Facility in Lexington, succeeding Dr. Fletcher L. Trent, who was transferred to a veteran's hospital at Mendota, Wis.—Dr. Leon A. Beardsley, Ithaca, N. Y., has been appointed health officer of Caldwell, Lyon and Crittenden counties, effective August 24.—Dr. Ellsworth H. John, Brownsville, has been appointed in charge of the tri-county health unit of Meade, Breckinridge and Hancock counties, with offices in Hardinsburg.

### LOUISIANA

**Changes at Louisiana**—Recent appointments to the University of Louisiana State University School of Medicine, New Orleans, include that of William L. Williams, Ph.D., New Haven, Conn., to assistant professor of anatomy. Promotions at the medical school include:

Ralph N. Bullif, Ph.D., to assistant professor of anatomy  
Dr. Robert H. Bayley to associate professor of medicine  
Dr. Louis A. Monte to clinical associate professor of medicine  
Dr. Rupert E. Arnell to professor of obstetrics and gynecology

### MAINE

**Naturopath Jailed for Illegal Operation**—Carl E. Ahlquist, a Portland naturopath, in October started serving an eleven months jail sentence after the Maine law court had overruled exceptions filed following his conviction on an illegal operation charge at the January superior court term, newspapers reported. The law court ruled that "the record in this case discloses ample and sufficient evidence to prove beyond a reasonable doubt that the respondent, for a required fee," performed an illicit operation. At the court trial in January Ahlquist was found guilty of the charge by a traverse jury and was sentenced to serve eleven months in jail and pay a \$1,000 fine by Justice Albert Beliveau. In the trial Ahlquist was charged with an illegal operation on a 21 year old woman and county attorney Richard S. Chapman declared the operation had caused the woman to be ill, "so ill that there were grave doubts she would live."

### MICHIGAN

**Treatment for People with Defective Hearing**—With the financial assistance of the Mott Foundation a new service has been added to the health program of Hurley Hospital, Flint, for the treatment of persons with defective hearing. The original work in the treatment of middle ear deafness with radium, particularly in children, was done by Dr. Albert C. Furstenberg, dean, University of Michigan Medical School, Ann Arbor, and his staff. The Mott Foundation has financed the purchase of additional radium for Hurley Hospital and the necessary applicators for the work. The Mott Foundation was established several years ago by Mr. Charles S. Mott, Flint, a vice president of the General Motors Corporation. It sponsors various educational projects and outdoor activities. Within the last three years the foundation has financed a tuberculosis case finding program for all senior high school students in Genesee County, the work being carried on with the photoroentgen unit at Hurley Hospital. There is also a fund for work with crippled children to supplement that provided by the state, a project which is also being carried on at Hurley Hospital.

### MINNESOTA

**New Officers of Northern Minnesota Group**—Dr. Herbert H. Leibold, Parkers Prairie, was elected president of the Northern Minnesota Medical Association at its annual meeting in Duluth, August 29. Dr. Richard Bardon, Duluth, was named vice president and Dr. Richard N. Jones, St. Cloud, was reelected secretary-treasurer. The time and place of the 1944 meeting will be determined at a meeting of the new board early in 1944.

**Hospital Planned at Mayo Clinic**—Plans are under way to construct a 1,200 bed hospital to be operated in conjunction with the Mayo Clinic, Rochester, according to *Hospitals*. The proposed construction will be eighteen stories high and cost \$6,000,000. It will be built in two units, with construction work starting as soon as materials are available. Twenty operating rooms and the same number of recovery rooms will be built into the third floor. Patients' rooms will extend from the fifth to the eighteenth floor. Both operating and patients' rooms will be furnished with equipment for air sterilization by light.

**Corporation Practice Illegal in Minnesota**—Because a corporation cannot practice medicine or dentistry in Minnesota the Midwestern Agricultural Workers' Health Association created to provide health services to migratory agricultural workers who could not obtain the specified services from other sources, will not be able to serve migratory workers in Minnesota. The association was incorporated under the state of Indiana and was to serve all the workers in Ohio, Indiana, Iowa, Illinois, Missouri, Wisconsin, Michigan and Minnesota, the states in which these migratory workers are employed who are imported from Jamaica in accordance with an agreement with the U. S. Department of Agriculture. Dr. Franklin S. Crockett, Lafayette, Ind., was elected president of the board of seven directors, three of whom were to be physicians in good standing in their state medical societies. *Minnesota Medicine*, in reporting the situation, states that other arrangements are under consideration to care for these workers.

### NEW JERSEY

**Society Announces Season's Programs**—The Cumberland County Medical Society opened its 1943 season October 12 with a talk in Bridgeton by Dr. Harry E. Bacon, Philadelphia, on "Diagnosis and Treatment of the More Common Anorectal Affections." Dr. Thaddeus L. Montgomery, Philadelphia, spoke October 21, on "The Diagnosis and General Management of Ovarian Neoplasms." Subsequent meetings will be addressed by:

Dr. John R. Beardsley, San Diego, What Life Teaches a Physician, November 9  
Dr. Abraham I. Rubenstein, Philadelphia, Diabetes Mellitus, Its Treatment December 14  
Dr. Robert A. Matthews, Philadelphia, Common Psychosomatic Problems Encountered in General Practice Feb. 8, 1944  
Dr. William Harvey Perkins, Philadelphia, Medicine in Applied Science, April 11  
Dr. Temple S. Fay, Philadelphia, Neurological Lesions in Children June 13

**John Scott Medal Awarded for Work on Swine Influenza**—Dr. Richard E. Shope, Princeton, N. J., a member of the Rockefeller Institute for Medical Research, has been awarded the John Scott Medal and "premium" of \$1,000 by the city of Philadelphia through its board of directors of City Trusts, for his "discovery of the complex etiology of swine influenza." Dr. Shope graduated at the State University of Iowa College of Medicine, Iowa City, in 1924. He is 41 years of age. Mr. John Scott, chemist of Edinburgh in 1816, bequeathed to the city of Philadelphia the sum of \$4,000, the income of which was to be "laid out in premiums to be distributed among ingenious men and women who made useful inventions." Reports concerning the award indicate that little is known concerning the donor or why he selected Philadelphia. The fund has been managed in turn by the city councils, the Franklin Institute and finally by the directors of City Trusts. It has grown to more than \$100,000.

### NEW YORK

**Lectures on the Biology of Cancer**—A course of practical teaching lectures on the 'Biology of Cancer' was to begin during October for biology teachers in public and private schools and colleges throughout Westchester County. The course will consist of four to six lectures by Clarence R. Hatter, Ph.D., assistant biologist at Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, under the auspices of the research council of the Westchester Cancer Committee.

**Meeting on Tumors**—There are now 179 cancer patients on the ten year survival list of Rochester hospitals according to a report presented by the executive secretary of the New York State Committee of the American Society for the Control of Cancer at a meeting in Rochester, October 5. Seventy one of five new five year survivals were reported bringing the total of five year survivals up to 673. A scientific program was conducted by Dr. Andrew H. Dowdy, associate professor of pathology, University of Rochester School of Medicine and Dentistry, director of the Tumor Clinic of the Strong Memorial Hospital where the meeting was held. Dr. Karl M. Wilk, professor of obstetrics and gynecology, University of Portland, was

of Medicine and Dentistry, reported 5 cases of chorionepithelioma seen in the gynecologic service since the opening of the hospital in 1920, 2 of which have reached the five year survival point. Dr. Clyde A. Herty, associate professor of otorhinolaryngology and bronchoscopes, and Dr. Dowdy presented 8 patients who had been treated with laryngofissure, laryngectomy and irradiation for carcinoma of the larynx. Dr. John M. Swan, Rochester, is executive secretary of the New York State Committee.

# New York City

**Cassius Watson Retires as Medical Director of American T and T**—Dr. Cassius H. Watson for twenty eight years medical director of the American Telephone and Telegraph Company retired on October 1. He has been succeeded by Dr. Melville H. Manson, formerly medical director of the Bell Telephone Laboratories and since 1942 medical director of the New York Telephone Company.

**Hospital Needs Interns**—The Hospital for Joint Diseases announces sixteen places available on its general rotating service for nine months internship. One half of the number appointed may be permitted to continue for another nine months as junior residents, and thereafter one half of the number of junior residents may be continued for another nine months as senior residents. Three interns will begin on April 1, 1944, four on July 1 and four on October 1. Five interns will begin on Jan. 1, 1945. The hospital provides maintenance, uniforms and a stipend of \$15 a month. Applications should be addressed to the director, Hospital for Joint Diseases, 1919 Madison Avenue, New York 35.

**Salvage Potential Manpower Among Tuberculous for War Production**—The New York Tuberculosis and Health Association has expanded its rehabilitation service for the guidance of recovered tuberculosis patients by appointing personnel to project the program, which has for one of its objectives the salvage of potential manpower among the tuberculous for war production. The program includes guidance and counsel to the patient in order that he may find a job consistent with his ability to work and the promotional aspect of rehabilitation. The objective of the latter is to educate medical and employer groups regarding the employment possibilities of former tuberculous patients, the establishment of educational facilities for patients still in hospitals and guidance to hospital personnel in planning or expanding such educational facilities. Bernard S. Coleman, S.B., secretary of the tuberculosis committee of the association, is directing the program.

**American-Soviet Scientific Meeting**—The National Council of American-Soviet Friendship will sponsor a meeting at the Hotel New Yorker and Madison Square Garden November 6-8. The first session Saturday will be on "Planning a Postwar Reconstruction in the U.S.A. and the U.S.S.R." On Sunday panels will be held on "Soviet Science and Technology" and on "Public Health and Wartime Medicine in the U.S.S.R.," the latter panel to be held under the auspices of the American-Soviet Medical Society. The congress sponsored by leading scientists throughout the country, has as its honorary chairmen Dr. Walter B. Cannon, Cambridge Mass., Ernest O. Lawrence, Sc.D., Berkeley Calif., and Gilbert N. Lewis, Ph.D., dean of the College of Chemistry at the University of California, Berkeley. Among the speakers will be:

Leslie C. Dunn, Sc.D., Russian Research in the Biological Sciences, C.T.A. Winslow, Dr. P.H. New Haven, Conn., Public Health in the Soviet Union.

Dr. Vladimir V. Lebedenko, Russian Red Cross representative in the United States, Russian Advances in Military Medicine.

Harold C. Urey, Sc.D., has accepted the chairmanship of the panel on Soviet Science and Technology.

**Two Cents a Day Plan Offered by Hospital Service**—In an effort to bring additional medical care and hospitalization to the lower income group, the Associated Hospital Service of New York plans to introduce a two cents a day plan to supplement the three cents a day plan. Ward accommodations instead of the semiprivate rooms available under the existing program, will account for the difference in price according to the New York Times. Ninety-two hospitals had agreed to give this new service on October 15 but, it was stated, between forty and fifty more were needed before the program could go into operation. Rates to the public will be about 20 per cent lower than those now in effect for an individual; they will be about 56 cents a month and for a family \$1.50. Under the new contract, which has been cleared by the state insurance department, subscribers will be entitled to all ward services including room and board, use of the operating room, x-ray facilities, medication, drugs and dressings. As in the three cents a day plan there will be a twenty-one day benefit period. If necessary, the subscriber will obtain a 50 per cent discount for an additional ninety day hospital stay. To receive these accommoda-

tions the subscriber must be eligible for admission to the ward under the rules of the individual hospitals. The patients who cannot be admitted to the ward will be entitled to the use of a semiprivate room on payment of a small fee to the hospital, the Times reported. Maternity benefits will be provided only under the family contract. These will be limited to \$4 a day for ten days in normal cases. Should complications develop in maternity cases the subscriber will receive full benefits.

**Advances in Medicine**—A series of lectures on the Advances in Medicine will open at Mount Sinai Hospital, November 24, with members of the staff participating. The program is as follows:

Dr. Robert T. Iram, Recent Advances in Endocrine Therapy, November 24.

Dr. Mary I. Susman, Recent Advances in the Diagnosis of Congenital Heart Disease, December 8.

Dr. Gregory Schwartzman, Recent Advances in Bacteriology and Virus Research with Special Reference to Electron Microscopy, December 22.

Dr. Israel S. Wechsler, Recent Advances in Neuropsychiatry with Special Reference to the Electroencephalogram and the Shock Treatment of Psychoses, January 5.

Dr. John H. Garlock, Recent Advances in the Surgical Treatment of Diseases of the Esophagus, January 19.

Dr. Burrill B. Crohn, Recent Advances in Gastritis and Ileitis, February 2.

Dr. Asher Winkelstein, Recent Advances in Ulcerative Colitis, February 2.

Dr. Ira Cohen, Recent Advances in the Diagnosis and Treatment of Intrauterine Lesions, February 16.

Dr. Ralph Colp, Recent Advances in the Surgical Treatment of Gastric Duodenal and Jejunal Ulceration, March 1.

Dr. Arthur M. Fishberg, Recent Advances in Hypertension, March 15.

Dr. Reuben Ottenberg, Recent Advances in Chemotherapy, March 29.

Dr. Louis J. Soffer, Recent Advances in the Physiology of the Thyroid and Adrenal, April 5.

Dr. Paul Klempner, Recent Advances in Cellular Pathology, April 19.

Dr. Nathan Rosenthal, Recent Advances in the Study of the Hemolytic Anemias, April 26.

Dr. Harold Neuhof, Recent Advances in the Problem of Pulmonary Embolization, May 3.

# PENNSYLVANIA

**Physicians Honored**—Four physicians were presented with testimonial certificates indicating the completion of fifty years in practice of medicine at a meeting of the Second Council District of the State Medical Society, Reading, September 8. The physicians are Drs. George C. Webster, Chester; Harvey F. Scholl, Prospect Park; Charles H. Schoff, Media; and George F. Seiberling, Allentown.

**Child Care Centers**—On August 1 six child care centers had been opened in Pennsylvania, one each in Darby, Erie, Williamsport, Rankin, York and Pittsburgh. Supported by federal funds, these centers are designed to provide certain hours of care for children whose ages range from 2 to 14. The centers provide care to children of parents only during "employment rendering service to the community or the nation." Other centers are being developed throughout the state.

**State Assumes Control of Scranton Hospital**—The state of Pennsylvania will direct the Hillside Home and Hospital for Mental Diseases, Clarks Summit, as a state institution in accordance with the recent transfer of control from the Lackawanna County Institution District to the commonwealth newspapers report. The transfer was unsuccessfully opposed by the Lackawanna County commissioners. Governor Edward Martin has appointed new trustees to control the institution and Dr. Emlyn T. Davies, Old Forge, former state representative, has been named acting superintendent.

# Philadelphia

**Annual Alpha Omega Alpha Lecture**—Dr. Russell L. F. Cecil, New York, will present the annual lecture of the Jefferson Chapter of Alpha Omega Alpha at the Jefferson Medical College, November 11, on "Rheumatoid Arthritis."

**Voluntary Contributions Finance Bulletin for Service Men**—Voluntary contributions from individuals, physicians and friends of the University of Pennsylvania Hospital are financing a weekly bulletin mailed each week to former staff members of the hospital serving in the armed services. The bulletin has grown from an initial three issue release to four hundred weekly copies first published in June 1942 running on an average of four mimeographed pages. Originally Dr. Bernard I. Comroe and his wife financed the endeavor but such interest has attached itself to the little paper that others seek to maintain at least one issue. Credit is given to the contributor in each issue. The bulletin contains news concerning the University of Pennsylvania School of Medicine and Hospital including results of scientific work and personal news of men at home and in the service when released by censorship. Dr. Comroe, senior ward physician at the hospital, associate in medicine at the medical school and chief of the medical division of the student health service, prepares the material with the assistance of all voluntary contributors.

## SOUTH CAROLINA

**Personal**—Dr. Dargan Strothci Pope, Columbia, has been appointed a member of the board of trustees of the Medical College of the State of South Carolina, Charleston, to fill the vacancy created by the death of Dr. Thomas H. Pope, Newberry.

**Physician Sentenced on Mail Fraud Charge**—Dr. Benjamin I. Siegel, Rock Hill, was sentenced to three years in federal prison in the closing case of federal court in Rock Hill, September 8, on a charge of using the mails to defraud, according to the *Charlotte Observer*. Dr. Siegel is alleged to have charged the beneficial fund of the Rock Hill Printing and Finishing Company with services to employees. He mailed such bills and received payment also through the mails, the government charged. The physician had first entered a plea of not guilty but later changed his plea to guilty, it was stated.

## TEXAS

**New Health Unit**—A new health department has been set up in Galveston County with headquarters in LaMarque. Dr. Edward M. Baines, formerly of Tampa, Fla., is the new director of health.

**State Psychopathic Hospital Closed Temporarily**—The Galveston State Psychopathic Hospital has been closed temporarily for repairs. Dr. David Wade, acting superintendent, has been assigned to Austin in the office of the state board of control to serve as clinical director of state hospitals.

**Motion Picture Lending Library Established**—The State Medical Association of Texas has established a motion picture lending library. There will be a charge to cover the cost of transportation and handling, and borrowers will be required to pay the costs of damages to films while in their possession. The library now has a number of films which have been lent out by a number of firms for relending purposes.

## UTAH

**Dr. Wintrobe Named Professor of Internal Medicine**—Dr. Maxwell Myer Wintrobe, formerly associate professor at the Johns Hopkins University School of Medicine, Baltimore, has been appointed professor and head of the department of internal medicine, University of Utah School of Medicine, Salt Lake City.

## VIRGINIA

**Portrait of Dr. Leigh**—A portrait of the late Dr. Southgate Leigh, executed by W. S. Harney, was unveiled on June 10 in the staff conference room of the Leigh Memorial Hospital, Norfolk. The portrait was the gift of the Sarah Leigh Nurses' Association. Dr. Leigh, who died on March 5, 1936, founded the hospital in 1903.

**Graduate Course in Otolaryngology**—The eighteenth annual spring graduate course on otolaryngology and ophthalmology will be given at the Gill Memorial Eye, Ear and Throat Hospital, Roanoke, for a week beginning on April 4. The courses are available only to physicians specializing exclusively with the eye, ear, nose and throat.

## GENERAL

**Association for Research in Nervous and Mental Disease**—"Trauma of the Central Nervous System" will be the theme of the annual meeting of the Association for Research in Nervous and Mental Disease at the Waldorf Astoria Hotel, New York, December 17-18. Dr. Jefferson Browder, Brooklyn, is president of the association and Dr. Thomas E. Bamford Jr., 115 East 82d Street, New York 28, secretary-treasurer.

**Ear and Throat Meeting**—The American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery will hold its first annual meeting in New York on November 12 under the presidency of Dr. Romeo A. Luongo. November 12 under the presidency of Dr. Romeo A. Luongo, Philadelphia. A clinic and business meeting will be held at the Manhattan General Hospital and a scientific meeting in the New York Academy of Medicine. The speakers at the latter will include:

Dr. Samuel Fomon, New York, The Role of Plastic Surgery in the Field of Otolaryngology.  
Col. Samuel J. Kopetzky, M. C. A. U. S., subject not announced.  
Dr. Alfred Schattner, New York, Report of Isograph Transplants in Identical Twins.  
Dr. Arthur W. Proetz, St. Louis, Physiology of the Nose.

**College of Chest Physicians**—The American College of Chest Physicians, Southern Chapter, will meet at the Hotel Gibson, Cincinnati, November 16-18, during the session of the Southern Medical Association. Speakers at a luncheon session sponsored by the Ohio State chapter of the college of chest

physicians will be Drs. William A. Hudson and David S. Brachman, Detroit, on "A Study of Rejection for Thoracic Abnormalities." A dinner meeting will be addressed by Dr. J. Rodriguez Pastor, San Juan, P. R., on "The Tuberculosis Problem in Puerto Rico." Other speakers will include:

Dr. Arnold S. Anderson, St. Petersburg, Fla., Chest Diseases in the Aged.  
Dr. Jesse D. Riley, State Sanatorium, Ark., The Relative Importance of the Anatomic and Physiologic Concept in Tuberculosis.  
Lieut. Col. Carl W. Tempel, M. C., U. S. Army, New Growths of the Chest.  
Col. Arden Freer, M. C., U. S. Army, The Occurrence of Pulmonary Tuberculosis in Supposedly Screened Selectees.  
Lieut. Comdr. Dean F. Smiley (MC), U. S. Naval Reserve, Tuberculosis as a Navy Problem.  
Dr. Chester A. Stewart, New Orleans, Tuberculosis Among Children and Young Adults.  
Dr. Curtis A. Graham, St. Louis, The Indications for Total Pneumectomy.  
Drs. Paul H. Holinger and Ralph G. Rigby, Chicago, Bronchoscopic Kodachrome Motion Pictures of Tracheal and Bronchial Tuberculosis.  
Dr. Richard M. Davison, Chicago, Lung Resection in Chronic Pulmonary Diseases.

**Medical Panel Created by Automotive Council**—A medical panel has been created by the Automotive Council for War Production to make available to all automotive companies the experience and knowledge developed in the medical departments of the leading companies, to the end that the whole industry may have the benefit of information available on general or specific questions of industrial health. At its organization meeting, August 25, Dr. John J. Pendergast Jr., medical director, Chrysler Corporation, was elected chairman. Members of the panel, all heads of the medical staffs of their companies, are Drs. Archibald W. George, Packard Motor Car Company (Joseph L. Zemens, alternate), Frank J. Jarzynski, Bohm Aluminum & Brass Manufacturing Corporation, William T. Krebs, Hudson Motor Car Company, Harley L. Krieger, Ford Motor Company (Howard P. Staub, alternate), Clarence H. Kuhlmann, Cleveland Graphite Bronze Company, Clarence D. Selby, General Motors Corporation, and Dr. Pendergast, Chrysler Corporation (Stuart F. Meek, alternate), all of Detroit. Harlan V. Hadley, associate manager of the Council's Manpower Division, is secretary of the group. At present consisting of seven members, the panel is to be expanded to twelve members, with the panel itself nominating and electing new members. The panel has entire freedom to limit or expand its activities, subject only to the provision that such activities must be in the national interest of "expediting the output of armaments for the fighting forces." It is planned to hold four meetings of the panel annually in the hospital offices of the members to discuss and act on medical questions of industry-wide import. It is also planned to maintain the complete anonymity of the source of inquiries and the source of replies to such inquiries. All questions will be addressed to the secretary, Harlan V. Hadley, who will forward them with all signs of identification removed to all members of the panel. Members in turn submit their replies to the secretary, who forwards them, again with all signs of identity removed, on instruction from the chairman, to the member of the panel designated to write a composite report. The composite report is then supplied to the source of the question over the secretary's name and with the name of the doctor who wrote it withheld. The policy will be to answer inquiries on a purely scientific basis rather than from a standpoint of the individual practice of the doctor's company. Another policy will be that the chairman may answer inquiries as to medical standards by citing the standards created by recognized medical groups, when available, with or without modification as each situation requires. This modification principle is shown in the government's standard for the employment of pregnant women. Where the government suggests a minimum of six weeks' leave for the woman before delivery and a minimum of two months' leave after delivery, the panel feels that she should leave her employment on or about the third or fourth month of gestation, depending on her specific condition, and not return until she is three months post partum. Other questions before the panel are the employment of partially disabled war veterans or other physically handicapped persons with dermatitis, the general use of vitamin pills to relieve of overextension resulting from fatigue, preemployment physical examinations and periodic continuing examination of food handlers.

**Report of Rheumatic Fever Conference**—On October 5 and 6 the Children's Bureau of the U. S. Department of Labor held a national conference in Washington, D. C., on rheumatic fever. Since 1939 a portion of the federal health appropriation annually for crippled children's services has been used for the development of state services for children with rheumatic fever and heart disease. Fourteen states have been

such programs in operation and several additional states have completed plans for the development of these services. Attending the conference were representatives from state agencies, members of the Children's Bureau Advisory Committee, experts in the field of clinical investigation pertaining to the problem of rheumatic fever, and representatives of numerous lay and professional organizations concerned with the health and welfare of the rheumatic child. At the opening session of the conference Col Leonard G Rowntree, M R C, chief, Medical Division Selective Service System, pointed out that rheumatic heart disease is responsible for thousands of rejections from the armed forces. Among 13,000,000 men examined over 230,000 were classified as 4 F because of cardiovascular disease. Dr Rowntree estimated on the basis studies made by the National Research Council that nearly half of these cardiovascular defects were caused by rheumatic fever. Brig Gen Hugh J Morgan, A U S, medical consultant, Surgeon General's Office reviewed the current experience in the Army in dealing with the problem of rheumatic fever, indicating that the problem is essentially the same in the Army as in the civilian population. He urged that civilian health authorities follow the lead of the Army in taking vigorous steps to combat this disease. Lieut Comdr Alvin F Coburn (MC), U S Naval Reserve stated that conditions in many training camps are conducive to the development of rheumatic fever.

The prophylactic use of the sulfonamides in the prevention of recurrent attacks of streptococcal infections in rheumatic patients was considered at a round table discussion. Participating in the discussion were Dr Homer F Swift, New York; Commander Coburn; Dr Ann G Kuttner, Boston; Dr Arild E Hansen, Minneapolis; Dr Katharine G Dodge, New York; Major William H Button, M C A U S; Dr Caroline C B Thomas, Baltimore; and Dr Caroline A Chandler, Washington. There was general agreement among the discussers that the sulfonamides have been proved to be effective in the prevention of recurrent attacks of rheumatic fever. Warning was given against the indiscriminate use of these drugs without close medical supervision. The use of the drugs as a prophylactic measure for rheumatic patients should be considered only as an adjunct to a general regimen designed to provide adequate health supervision of the rheumatic child. At other sessions of the conference emphasis was placed on the importance of early diagnosis during the initial attack of the disease; referral of patients to special diagnostic clinics; examination of siblings of rheumatic children; provisions for institutional care during the period of active infection; educational and recreational activities for children confined to bed for long periods of time; special educational services for children with heart disease; and coordination of community facilities and services for the care and management of the rheumatic child. Those attending the conference agreed that rheumatic fever represents an important public health problem in the United States but that facilities and services have not been developed to the point where the needs of children afflicted with this disease are being adequately met. Many members of the conference pointed to the need for further opportunities for local physicians to become more fully acquainted with the disease and with the methods for the care and management of the rheumatic child. It was apparent that the problems of children afflicted with rheumatic fever cannot be met by the services of any single individual or agency for the close cooperation of physicians, nurses, social workers, educators and others engaged in related fields. Dr Thomas Duckett Jones, Boston, in summing up the conference at the closing session called attention to the progress that had been made in many states during the past three years in the care of the rheumatic child through the development of the state programs and pointed to the need for the extension of existing programs and for the development of similar services in other states.

#### LATIN AMERICA

**Cancer Congress**—The Primer Congreso Mexicano de Cancer and Segunda Semana Medica de Occidente will be held in Guadalajara, Jalisco, Mexico, during the first week of November. Among the invited speakers are Dr Charles W Mayo, Rochester; Capt Waltman Walters (MC), U S Naval Reserve; Lieut Col James T Priestley, M C A U S; Dr Howard K Gray, Rochester; Dr Angel H Roffo, Buenos Aires; Drs Luis Parinas and Juan Llambe, Cuba; Dr Jose Gomez Mirquez, Honduras; Dr Robert Gutierrez, New York; Dr Ramon Castroviejo, New York; Dr Charles Pierre L Mathé, San Francisco; Dr Arthur Steindler, Iowa City; Dr Joseph M Hill; Dr Alfred I Folsom; Dr Charles L Martin; Sol Haberman, Ph D; Dr John D Singleton; Dr Howard I

Scott; Dr John V Goode, all of Dallas, Texas; Dr Juan Carlos Orrego, Montevideo, Uruguay; Spencer R Atkinson, D D S, Pasadena, Calif; Ben Robinson, D D S, Baltimore; Dr Julio Fazzio Calmet, Montevideo; Dr Ricerio V Canzani, Buenos Aires; Dr Melvin S Henderson, Rochester; Dr Alejandro Wallace, Los Angeles; Dr Rudolph Matas, New Orleans; Dr Manuel M Garcia, New Orleans; Dr Enrique J Cervantes, New York; Dr Alton Ochsner, New Orleans; Dr Oscar Mercier, Montreal, Canada; Dr Verne C Hunt, Los Angeles; and Carl Voegtlin, Ph D, Washington, D C. Dr Ochsner will represent the American Medical Association at the congress.

## Government Services

### Dr Foard Placed in Charge of Western Public Health District

Dr Fred T Foard, surgeon, U S Public Health Service, has been assigned as medical director for the Western district of the public health service, which includes the states of Idaho, Utah, New Mexico, Colorado and Texas, with central headquarters in Denver.

### Civilian Health Good, Says Report

Statistics of the U S Public Health Service show that the lowest death rate on record, 10.3 per thousand, was recorded in 1942, according to a report released by the Office of War Information. The birth rate was 207 in 1942 as compared with 187 per thousand in 1941. The maternal mortality rate dropped for the thirteenth consecutive year to about three deaths per thousand live births in 1942. Infant mortality also continued to drop. For the first six months of 1943, however, statistics indicate slightly less favorable conditions as reflected by communicable disease reports and by estimated death rates. With the exception of meningococcal meningitis (cerebrospinal fever), poliomyelitis and the dysenteries, the incidence of communicable diseases reported to the public health service during the first half of 1943 is below or approximately the same as that for the corresponding period of 1942. Cerebrospinal meningitis, which began to increase during 1942 and developed into incipient epidemic proportions toward the end of the year, has remained at a high level so far this year in spite of a seasonal decline. Up to the week ended August 14 a total of 13,368 cases had been reported. This is a larger number of cases than has been reported for any entire year since 1914, when collection of these reports was begun. The largest number of cases for any year for that period was 10,551, reported in 1929. The incidence of poliomyelitis is above that of any year since 1934. The total number of cases this year as of August 21 is 4,059, which compares with 1,505 for the same period last year and a five year median of 2,072 cases. In the week ended August 21 the last for which complete figures were available, the total was 747 cases, an increase of 201 cases over the report for the previous week. Chief centers of infantile paralysis are California, Kansas, Illinois and Texas, with cases also in Oklahoma, New York and Connecticut. There has been an increase of dysentery during the first half of the current year. About twice as many cases had been reported up to July 24 as were reported for the same period last year. This increase is probably due in part to the lack of sanitary precautions in eating establishments and carelessness among food handlers. Preliminary figures indicate a low rate in 1943 for typhoid. Up to July 24 only 2,424 cases had been reported in the United States as compared with 3,444 for the same period last year. While preliminary mortality figures through May of this year indicate a slightly less favorable death rate than last year, no significant increase has been recorded. The provisional annual death rate for the first five months of 1943 was 11.2 per thousand of population or 0.31 higher than the rate for the same period in 1942. The death rate for the entire year 1942 was only 10.3 per thousand of population, the lowest on record. The increase in the rate during 1943 apparently is due principally to the excess in death from cardiovascular-renal diseases, although increases in the deaths from some of the childhood diseases and from the cerebrospinal fever have probably also been factors, although less important numerically. According to the report, it is interesting to note that there has been no indication of increased mortality from respiratory tuberculosis in this country since the beginning of the war. In fact the death rate from this cause has been lower than in 1939 and 1940.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Sept. 10, 1943

#### British Medical Students Association

Formation of the British Medical Students Association means that the voice of the medical student is heard for the first time in medical affairs. At first the movement was supported by only a small group of students, but it grew quickly, and within a year the association was requested by the medical planning commission of the British Medical Association to submit a memorandum on medical education. It now has a membership of over eight thousand, almost all the medical schools and teaching hospitals in the British Isles have joined. A congress of students, the first of its kind, was held in December and was attended by five hundred students from medical schools all over the country. A memorandum on medical education, based on evidence submitted by fifteen schools, was drawn up. Among its recommendations were the following: 1. Medical students should be drawn from all sections of the community without reference to financial means or sex. 2. They should have the opportunity of working within a university and not in isolated medical schools, to prevent too early dissociation from other students. 3. Newly qualified doctors should be compelled to serve a period of hospital appointment before license to practice is granted.

Another important memorandum, on student health, has been drawn up by the association. Various schemes have been tried in British universities, but none have proved satisfactory. All students, and particularly medical students, tend to live in unhealthy surroundings. The extension of university hostels and approved lodgings is regarded as the first step in improvement. Routine x-ray examination of the chest is also recommended. Since health is a problem that concerns all students, the British Medical Students Association is cooperating in the formation of this program with the National Union of Students and the British Dental Students Association. A course of eight lectures by eminent authorities on various aspects of the war has been arranged in London.

At nearly all the medical schools meetings have been held to discuss the Beveridge scheme, which on the whole is supported, though there is wide disagreement as to details. A resolution urging the government to implement the Beveridge principles without delay was carried by 34 votes to 3 at a committee meeting.

#### The Army Blood Transfusion Service

The Army Blood Transfusion Service has a panel of 320,000 donors. Of this number between 3,000 and 4,000 have made donations each week for some time. This service operates in an area covering practically the whole of the south of England. Major campaigns to enroll volunteers are conducted six times a year, but minor campaigns are in continuous operation in factories, villages and small towns in a definite cycle of visits. Donations are taken by fifteen mobile teams, each having a medical officer. At headquarters the blood group of each donor is ascertained and recorded. The blood of group O, from the "universal donor," is pooled and used to make fluid plasma, of which 58,932 pints have already been made for military use at home or overseas in temperate climates. For tropical and subtropical countries dried plasma with distilled water for reconstitution is supplied. Whole blood is exported to any theater of war within air distance from England, and blood banks are maintained in important civil and air force centers.

Large insulated boxes with ice inserts keep the blood at 4 C for eight hours. Overseas it is kept in cool mobile refrigerators and distributed to field transfusion units from the base unit. If whole blood remains unused after three or four weeks it is converted into plasma.

All transfusion fluids, including crystalloid solutions, are accompanied by administration apparatus in sterilized tins ready for immediate use. Sets for blood taking are also issued with supplies of dried serum for blood grouping. Special boxes of equipment are issued for the use of military hospitals, field ambulances, troop ships and air borne medical units, to which they are dropped by parachute.

The technical staff of the Army Blood Transfusion Service is under the direction of L. E. H. Whitby. It is drawn almost entirely from the laboratory staff of the Royal College of Surgeons and the Middlesex Hospital. It trains special transfusion units for service overseas and instructs all ranks of the Army Medical Corps in resuscitation work. The British army differs from all others in having a distinct transfusion service with its own source of supply and specially trained mobile resuscitation teams. In every theater of war there is a base transfusion unit, which, linked with the home service, is able to exploit local resources and thus supplement the supplies obtained from home.

#### New Zealand Immigration Admission of European War Orphans

In reply to the suggestion that war orphans should be received in New Zealand, Prime Minister Fraser replied that there could be no argument about the need for more population there. The government's first concern was the rehabilitation of the men fighting overseas, he indicated, but that did not preclude attention to immigration. New Zealand could take her share in helping the homeless children of the world—the government had already discussed with the Polish consul general the question of taking Polish children. Immigration questions would also be taken up with British authorities, the prime minister stated. Many British soldiers in North Africa have indicated their intention to go to New Zealand after the war, and New Zealand wishes as far as possible to keep the country British.

#### American Psychiatrists Entertained

Psychiatrists of the United States and Canadian forces in this country were entertained by the London County Council at Sutton Emergency Hospital. Short papers were read on Rehabilitation of the Neurotic (Dr. Minski), Psychopathic Personalities (Colonel Petrie), Recognition of the Neurotic in the Services (Dr. Slater) and Psychic Treatment in Psychiatry (Dr. Sargant). A demonstration on the electroencephalogram was given by Dr. Hill, a demonstration of electroconvulsive therapy by Dr. Sands, and visits were made to the occupational workshops. Colonel Thompson and Colonel Van Nostrand returned thanks on behalf of the United States and Canadian psychiatrists.

#### Writing on Pigmented Skins

When a skin pencil is used on African natives—for instance to note the administration of morphine—the writing is almost invisible. The same applies to the darker race of India. The Army Medical Department Bulletin reports that an officer in West Africa has overcome the difficulty by means of a thick emulsion prepared from ceresin and zinc oxide powder, such as zinc oxide, mixed in hot water. The emulsion can be conveniently kept in a half ounce bottle from which it can be applied by means of a small pointed stick drawn from the bottle.



### The Work of the American Red Cross in Britain

Mr Norman H Davis, chairman of the American Red Cross, who has come here to confer with Mr Harvey Gibson, American Red Cross commissioner in this country and with service leaders on future plans to meet conditions when the United States forces move into other areas has paid a tribute to the facilities provided for the American forces by various clubs and field and hospital organizations. American Red Cross activities cover operations in the Southwest Pacific, India, North Africa, Iceland and Alaska and will follow as quickly as possible in any new theater of war. In this war Red Cross activities have developed somewhat along new lines, particularly in club and welfare work. In Britain eighty American clubs are already open and seventy others are being formed. They include service clubs which provide the equivalent of homes to Americans on leave in our cities and towns. Other clubs offer all these facilities except sleeping rooms and meals.

Another type of club is the 'clubmobile,' or club on wheels, made from converted omnibuses. It carries American newspapers and magazines, writing materials, American doughnuts, coffee, cigarettes and chewing gum to men on duty in isolated camps and air bases. Each clubmobile is staffed by three American girls and gives performances of the latest phonograph records from loud speakers on the roof. Each is convertible into an ambulance to carry 10 stretcher cases.

To most American army hospitals are assigned welfare services to build up and sustain the morale of patients by providing wholesome relaxation and instruction in hobbies, arts and crafts. As to the Red Cross blood transfusion work, the surgeon general of the United States Army, who was in the Tunis campaign, told Mr Davis that as a result of the use of dried blood plasma the mortality of casualties had been reduced from 15 to 2.5 per cent. About 15,000 people are working for the American Red Cross in Britain, half of these are volunteers, and the large majority are British.

### Ophthalmologic Research at Oxford

The provision and equipment of laboratories, lecture rooms, a library and a museum for ophthalmic research at Oxford University is part of an ambitious scheme to be carried out in connection with the rebuilding of the Oxford Eye Hospital, which will be undertaken at the end of the war. Salaries will be provided for full time and part time research workers, teachers and technicians. The costs of research looking toward the prevention of blindness, improved treatment of eye disease and promotion of a higher standard of visual function throughout the country will be defrayed. An important objective for the proposed department is the discovery of the safest antibacterial drugs for ophthalmic use. The extreme delicacy of the eye is the governing consideration, as all the ordinary antiseptics are poisons and further investigation will need contributions not only from ophthalmologic but from bacteriologic, mycologic and chemical sources. The most promising substance found so far is penicillin, knowledge of which is derived largely from work done in an Oxford laboratory. Statistics show that the risk of failure of vision falls increasingly on those in middle life. In 1941 out of a total blind population of 74,000 in England and Wales 63,000 were persons over the age of 40 years. The cost of the proposed scheme is estimated at \$1,000,000 for which an appeal is being made.

### Library Difficulties After the War

In a letter to the *Lancet* Mr C. C. Barnard, librarian of the London School of Hygiene and Tropical Medicine states that after this war, even more than after the last, libraries will be faced with the problem of filling gaps in their sets of periodicals not only because of their inability to obtain journals from enemy and enemy occupied countries during the war but also because of losses at sea and destruction by air raids over this

country. To prevent an unseemly squabble by libraries for volumes limited in supply, he advocates decisions on a national scale by an impartial body on the allotment of volumes. This should form part of a much larger scheme whereby the present holdings of learned periodicals would be surveyed and the needs of research in the various centers of learning assessed, regard being paid to specialization in various institutions. Interchanges of stock could be arranged to insure complete sets in libraries where they are most needed. The obvious body to undertake this program is the Library Association.

Before the war two such schemes were being prepared—in the fields of German studies and of medicine. Only when this work has been completed will it be possible to compile a satisfactory union catalogue of periodicals in British libraries, which is much needed to supersede the present incomplete World List of Scientific Periodicals.

### The Royal Society of Medicine in Wartime

Notwithstanding the war, the work of the Royal Society of Medicine goes on unimpaired though paper control has, as in the case of all periodicals, reduced the size of the printed proceedings and prevented the publication in them of important papers. Some, however, have appeared in the medical journals. In normal times these papers would have appeared both in the proceedings and in the journals. The membership of the society has reached the highest level ever attained, just over six thousand, and shows an increase of 50 per cent in the last fifteen years. The meetings of the society in the past year have been larger in number and better attended than ever. This is accounted for by the special interest in the topics of war medicine discussed and the large number of guests from the dominion and allied forces, to whom hospitality has been extended. By their contributions the discussions have been greatly enriched, especially by medical officers of the American and Canadian forces. Two distinguished physicians from the United States—Dr Thomas Parran and Dr Hugh Young—and Prof T. A. Jurasz of Poland have been elected honorary fellows. Interallied conferences on military medicine have been arranged for the benefit of the fighting forces. For obvious reasons the discussions will take place in private. Committees of the society are dealing with the subject of interned medical aliens, education in otorhinolaryngology and in collaboration with the Royal Medico-Psychological Society, with the future of psychiatry in all its branches.

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## Marriages

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WILLIAM HAMILTON WALKER, Memphis, Tenn., to Miss Anne Marie Byrne of Salem Mass., at Quonset Point R. I. in August.

WILLIAM HARRISON WILLIAMS JR. Charlotte N. C. to Miss Helen Adeline Wheeler of Boston in Portland, Maine, July 3.

THOMAS ANDREW MURRAH III, to Miss Louise Young Workman, both of Charlotte, N. C., August 14.

CHARLES WAIT LLOYD Rochester, N. Y. to Miss Eva Katherine Machen of Belmont Mass. August 14.

WALLACE W. LINDAHL Gainesville Texas to Miss Roberta Alice Collins of Coleridge, Neb., July 7.

CHARLES M. DRUECK JR. Chicago to Miss Alice Lucille Finch of Iroquois, Ill., September 11.

PHILIP MERTZ Dupont Pa. to Miss Rosalie Levkoff of Columbia, S. C., September 19.

ROBERT W. KING to Miss Dorothy Williamson Sisk both of Fayetteville N. C. July 13.

JOHN C. PIERSON to Mrs. Stella Todd Demorest both of New York September 23.

MATHEW GINSBURG Toledo Ohio to Miss Hazel W. Culp of Los Angeles July 31.



## Deaths

**Ira Solomon Wile** ☉ New York, University of Pennsylvania Department of Medicine, Philadelphia, 1902, formerly lecturer in educational hygiene, New York University and in dietetics and nutrition in the department of dental hygiene at Columbia University, the New School for Social Research, New York University, Hunter College, Columbia University College of Physicians and Surgeons, College of the City of New York and Brooklyn College and for the American Social Hygiene Association, commissioner of education of the city of New York from 1912 to 1918, member of the New York Milk Commission, a founder of the New York school lunch system, Manhattanville Nursery, the National Round Table for Speech Improvement and the Association for Personality Training, of which he was president from 1929 to 1941, a director of the American Birth Control League, member of the advisory council of the Birth Control Clinical Research Bureau and the National Committee on Federal Legislation for Birth Control, member of the American Psychiatric Association, the National Committee for Mental Hygiene, International Committee for Mental Hygiene, American Public Health Association, American Speech Correction Association, Society for the Advancement of Education, American Child Health Association and the American Academy of Political and Social Science, member and in 1932 president of the American Orthopsychiatric Association, specialist certified by the American Board of Psychiatry and Neurology, Inc., associate in pediatrics and formerly assistant clinical pathologist in the dispensary at the Mount Sinai Hospital and clinical pathologist in the children's department of the Vanderbilt Clinic, hospital steward in the Army during the Spanish-American War, author and editor, aged 65, died, October 9, of coronary thrombosis.

**Sidney A. Chalfant** ☉ Pittsburgh, University of Pennsylvania Department of Medicine, Philadelphia, 1901, professor of clinical gynecology at the University of Pittsburgh School of Medicine, specialist certified by the American Board of Obstetrics and Gynecology, Inc., past president and secretary and for many years a member of the board of directors of the Allegheny County Medical Society, member of the American Gynecological Society, fellow and past president of the Pittsburgh Academy of Medicine, fellow of the American College of Surgeons, chief of the gynecologic department of Allegheny General Hospital, instrumental in founding and organizing the Woman's Hospital, where he was president of the board of directors and chairman of the hospital staff, a staff member of the Magee Hospital, formerly on the staffs of Columbia and St. Margaret Memorial hospitals, awarded the honorary degree of doctor of science from Geneva College, Beaver College, Pa., aged 68, died, August 31, of pneumonia.

**George Herbert Taylor** ☉ Maplewood, N. J., New York Homeopathic Medical College and Hospital, 1904, member of the American Academy of Orthopaedic Surgeons, fellow of the American College of Surgeons, attending orthopedic surgeon and chief of fracture service, Orange Memorial Hospital, attending orthopedic surgeon, East Orange General Hospital, Morristown Memorial Hospital and the Essex County Hospital for Contagious Diseases, Belleville, consulting orthopedic surgeon, Children's Country Home, Westfield, Betty Bacharach Home for Afflicted Children, Longport, Montclair Community Hospital, and the New Jersey Orthopaedic Hospital, Orange, aged 61, died, August 25, of heart disease.

**David Yandell Keith** ☉ Louisville, Ky., University of Louisville Medical Department, 1909, member of the American Roentgen Ray Society, American College of Radiology and the American Radium Society, specialist certified by the American Board of Radiology, Inc., on the staffs of the Louisville General, Methodist Deaconess, Kentucky Baptist and the Children's Free hospitals, instructor in surgery at his alma mater from 1909 to 1911, instructor in proctology from 1911 to 1915, instructor in roentgenology from 1916 to 1923, clinical instructor in radiology from 1923 to 1938 and since 1938 clinical associate in radiology, aged 61, died, July 12, of heart disease.

**George Ernest Johnson** ☉ Philadelphia, Medico-Chirurgical College of Philadelphia, 1904, assistant professor of laryngology at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania, specialist certified by the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology, fellow of the American College of Surgeons, chief of the division of communicable diseases for the city department of health from

1934 to 1942, on the visiting staff of the Philadelphia Hospital for Contagious Diseases, served on the staff of St. Agnes Hospital, aged 61, died, August 12, of coronary occlusion.

**Henry Nathaniel Sisco** ☉ Baltimore, George Washington University School of Medicine, Washington, D. C., 1909, member of the Washington State Medical Association, served during World War I, formerly associated with the Indian Service, had been health officer of an Indian reservation in Nespelem, Wash., served as medical superintendent of the Chillicothe Indian School Hospital, Chillicothe, Okla., the Clinton (Okla.) Indian Hospital, Salem Indian School Hospital, Chemawa, Ore., and the Washington (D. C.) Sanitarium, Takoma Park, Md., aged 72, died in the United States Marine Hospital, August 4, of retroperitoneal neuroblastoma.

**Lewis Weimer Elias** ☉ Asheville, N. C., Columbia University College of Physicians and Surgeons, New York, 1903, member and past president of the state board of medical examiners, past president of the Buncombe County Medical Society, served as secretary-treasurer of the North Carolina Pediatric Society, member of the Southern Medical Association, specialist certified by the American Board of Pediatrics, Inc., pediatrician to the Asheville Mission, Aston Park and Norburn hospitals, Asheville, and the Biltmore (N. C.) Hospital, aged 66, died, August 10, of coronary thrombosis.

**John Joseph Finerty**, Derby, N. Y., Niagara University Medical Department, Buffalo, 1888, at one time vice president of the Medical Society of the State of Pennsylvania, formerly brigadier general for the Pennsylvania National Guard, served on the staffs of the Charity Eye, Ear and Throat Hospital and the Sisters Hospital, aged 77, died in Buffalo, September 18, of arteriosclerosis.

**Adrian William Frankow**, West Bend, Wis., Marquette University School of Medicine, Milwaukee, 1934, member of the State Medical Society of Wisconsin, served on the staff of St. Joseph's Hospital, appointed a first lieutenant in the medical corps, Army of the United States, in May 1942 and began extended active duty in June 1942 at Fort George Wright, Wash., a flight surgeon, placed on the inactive list, June 16, 1943, aged 33, died in the Mayo Clinic, Rochester, Minn., August 10, of pulmonary edema.

**Oliver Hubbard Gibbs**, Waldron, Mich., Eclectic Medical Institute, Cincinnati, 1891, aged 84, died, August 15, of coronary occlusion and general arteriosclerosis.

**Louis W. Grosse** ☉ St. Louis, St. Louis University School of Medicine, 1906, served on the staffs of the Lutheran Hospital and Evangelical Deaconess Home and Hospital, aged 58, died, August 20, of heart disease.

**George Jacob Gordon**, Minneapolis, Jefferson Medical College of Philadelphia, 1900, formerly adjunct professor of therapeutics and instructor in clinical obstetrics at the Minneapolis College of Physicians and Surgeons, the medical department of Hamline University, a founder and for many years director of the Talmud Torah Hebrew School, aged 69, died in St. Mary's Hospital, July 26, of coronary thrombosis.

**Andrew Fidelis Gugsell**, Ferdinand, Ind., Kentucky School of Medicine, Louisville, 1907, member of the Indiana State Medical Association, at one time served as postmaster at Jasper, served during World War I, aged 67, died in the Stork Hospital, Huntingburg, August 9, of cerebral hemorrhage.

**Emmette Marvin Guthrie**, Thompson, Ala., Vanderbilt University School of Medicine, Nashville, Tenn., 1905, member of the Medical Association of the State of Alabama, aged 60, died, July 8, of chronic myocarditis, arteriosclerosis and chronic pulmonary tuberculosis.

**William Carleton Harris**, Cincinnati, Miami Medical College, Cincinnati, 1897, member of the Ohio State Medical Association and the American Academy of Ophthalmology and Otolaryngology, on the staffs of the Deaconess and Jewish hospitals, aged 72, died August 12, of heart blood.

**Gustave Hartman** ☉ Lynn, Mass., Jefferson Medical College of Philadelphia, 1904, served during World War I, major in the medical reserve corps of the U. S. Army, not on active duty, aged 66, on the staff of the Union Hospital where he died, August 1, of uremia.

**James Francis Hatfield**, Rossville, Ind., Medical College of Ohio, Cincinnati, 1897, aged 69, died, August 13, of coronary occlusion.

**Manley Hewitt Haynes**, Menahga, Minn., University of Minnesota Medical School, Minneapolis, 1920, served as health officer and deputy coroner, on the staff of the West Hennepin Hospital, aged 54, died August 8, of pneumonia.

**Robert Francis Heatley** \* Toledo, Ohio, University of Michigan Medical School Ann Arbor, 1923, fellow of the American College of Surgeons, served during World War I member of the staffs of Lucas County and Women's and Children's hospitals, aged 47 secretary of the staff and director of the department of obstetrics and gynecology at the Mercy Hospital where he died, August 3 of Bant's disease

**Edmund Bowman Ilyus**, Lancaster Pa Jefferson Medical College of Philadelphia, 1882 aged 83 died August 2 of senility

**Edward Herman Katterhenry**, Indianapolis Gross Medical College, Denver 1897, a captain in the medical department at Camp Custer, Mich, and head of the urology department at the Walter Reed General Hospital Washington D C during World War I aged 69 died in the Veterans Administration Facility, Marion, Ind, August 8, of uremia

**E H Kenimer**, Bishop, Ga Atlanta Medical College 1897, county physician and chairman of the Selective Service Board on the staff of St Mary's and General hospitals Athens aged 70, died, July 8 of heart disease

**Cyrus Kurtz**, Paterson, N J University of Maryland School of Medicine, Baltimore, 1902 also a dentist aged 73, died in the Paterson General Hospital, July 23 of cerebral hemorrhage and arteriosclerosis

**William T Loftin**, Gore, Okla Gate City Medical College Texarkana Ark, 1905 aged 78, died in Tulsa, July 23, of myocarditis

**Charles Holder McArthur**, Rome Ga, Chicago College of Medicine and Surgery 1917 member of the Medical Association of Georgia on the staff of the McCull Hospital, aged 47 died, August 2, of uremia and lung infection

**James Foulhouse McCaleb**, Carlisle, Miss, Medical Department of Tulane University of Louisiana New Orleans, 1891 aged 76 died, July 25, of carcinoma of the intestine

**William Nelson MacChesney**, Evanston Ill Northwestern University Medical School Chicago 1902 at one time on the staffs of the Wesley Memorial Hospital Chicago, and St James Hospital, Chicago Heights aged 67, died in the Illinois Masonic Home, Sullivan, August 18, of Parkinson's disease

**Thomas E McGarity**, Como, Texas (licensed in Texas under the Act of 1907), member of the State Medical Association of Texas served several terms as mayor of Como and as a member of the board of education of the public schools, aged 70 died July 9, of heart disease

**Charles White MacGuire**, Toledo Ohio Toledo Medical College, 1898 also a pharmacist, aged 69 died in Columbus July 29 of heart disease

**Samuel O Marrs**, Chickasha, Okla University of Tennessee Medical Department, Nashville 1893 past president of the Grady County Medical Society, formerly city and county superintendent of public health, at one time secretary of the U S Board of Pension Examiners examiner for the local draft board during World War I, served on the staff of the General Hospital, aged 76, died, August 6 of carcinoma of the liver

**Homer Preston Marsh**, Syracuse N Y, University of the City of New York Medical Department 1891 formerly coroner of Fulton, Oswego County, N Y, served on the staff of the Crouse-Irving Hospital aged 76 died in St Joseph Hospital, July 29, of coronary thrombosis

**George Walworth Mellon**, New York University of Pennsylvania School of Medicine, Philadelphia 1913, had been decorated by Crown Prince Alexander of Serbia for his typhus preventive work among the Serbians served in France during World War I formerly consultant to the city board of health and on the staffs of the New York Skin and Cancer Hospital and the New York Post-Graduate Medical School and Hospital aged 53, died, August 7 of heart disease

**Frank Waldo Merritt** \* Gary, Ind, College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois 1905, fellow of the American College of Surgeons for many years chief medical officer of the Carnegie-Illinois Steel Corporation served during World War I on the staffs of St Mary's Mercy and Methodist hospitals aged 61 died in his summer home in Miller, August 18 of heart disease

**Walter Stevenson Moyer**, Sayre Pa Temple University School of Medicine Philadelphia 1910 member of the Medical Society of the State of Pennsylvania aged 70 died July 18

of peritonitis with multiple abscesses due to diverticulitis of the colon

**Parley Pratt Musser**, Oakland, Calif, College of Physicians and Surgeons Baltimore 1907, at one time bacteriologist for the city of Oakland, aged 69, died, July 20, of cerebral thrombosis

**John P Sellman**, Washington, Ind College of Physicians and Surgeons, Baltimore, 1896, served as medical examiner for the Baltimore and Ohio Railroad, aged 69, died, August 19 of uricemia, pyelitis and cystitis

**Charles S Shoaff**, Volant, Pa, Keokuk (Iowa) Medical College 1895, aged 77, died in the Jameson Memorial Hospital, New Castle, July 13, of nephritis due to benign hypertrophy of the prostate

**Frank Voshell Slaughter**, Philadelphia, Hahnemann Medical College and Hospital of Philadelphia, 1899, aged 78, died in the Women's Homeopathic Hospital, August 27, of heart disease

**James Augustus Smith** \* Philadelphia University of Pennsylvania School of Medicine Philadelphia, 1911 served during World War I, on the courtesy staffs of the Kensington Hospital for Women and the Hahnemann Hospital, aged 55, died in the Presbyterian Hospital, August 11, of coronary occlusion

**Carl Kennedy Struble**, Loveland, Colo, Kansas City University of Physicians and Surgeons, Kansas City, Mo, 1919, aged 69, died in Fremont, Neb, July 30

**Merle O Thoreson**, South St Paul, Minn, University of Minnesota Medical School, Minneapolis, 1930 member of the Minnesota State Medical Association, member of the medical staff of Swift and Company on the staffs of St Luke's St Joseph's and Children's hospitals, St Paul aged 38 died July 17, of coronary occlusion and myocardial fibrosis

#### DIED WHILE IN MILITARY SERVICE

**John Pierce Beeson** \* Lieutenant Colonel, M C, U S Army Kansas City, Mo Washington University School of Medicine St Louis, 1905, School for Flight Surgeons and the Air Service Pilot School, 1921, commissioned a captain in the medical corps of the U S Army in 1920, a major in 1929 and a lieutenant colonel in 1937 during World War I served in France as chief of the surgical staff of an evacuation hospital near Verdun had been in command of the station hospital at Fort Hancock N J, and a hospital at Salina, Kan fellow of the American College of Surgeons aged 59 died in Brownsville Texas, August 1, of coronary occlusion

**John Beegan Byrne**, Njack N Y, Columbia University College of Physicians and Surgeons New York 1933, member of the Medical Society of the State of New York diplomate of the National Board of Medical Examiners, at one time resident on the staff of the New York Reconstruction Home, West Haverstraw, captain in the medical corps Army of the United States, aged 36 died in a station hospital at Newfoundland, August 10, of meningitis

**Stewart Fulton**, Cleveland Rush Medical College Chicago, 1934, formerly resident on the staff of the Fairview Hospital served as medical missionary for the Presbyterian Board of Foreign Missions in India commissioned a first lieutenant in the medical corps Army of the United States May 23 1942 and assigned to the Air Transport Command in New York aged 37 died in the Asiatic area, August 25 of a skull fracture (circumstances unknown)

**Lloyd P Gieringer**, Toledo Ohio University of Cincinnati College of Medicine 1923 formerly a member of the Mercy Hospital commissioned a lieutenant commander in the medical corps of the U S Naval Reserve Oct 31 1942 stationed at the U S Naval Hospital Newport R I, where he died, August 31 of bronchopneumonia aged 45

**John Dendy McBrearty**, Williamston S C Medical College of the State of South Carolina Charleston 1938 commissioned a first lieutenant in the medical reserve corps of the U S Army, Sept 29 1941 and later a captain an aviation medical examiner attached to the anti-submarine command aged 29 died in an airplane accident near Earlton N Y July 22

## Correspondence

### CENSORSHIP OF MEDICAL PERIODICALS

*To the Editor*—In *THE JOURNAL* of May 8, which has just now come to hand, I have read with interest and sympathy the communication of Dr. Houssay protesting against the censorship of medical articles. We in India also have been sufferers in this respect. Although, as far as I know, no issue of *THE JOURNAL* coming to India has until now been censored, since the nonarrival of certain numbers has been ascribed naturally to enemy action, nevertheless one number of the *American Journal of the Medical Sciences* did arrive badly blotted and cut up. Also the April 1943 number of the *Surgical Clinics of North America* has failed entirely to arrive and its publishers have written to say that the fault is censorship in this case. From advertisements appearing elsewhere, I understand that the April issue of the *Surgical Clinics of North America* had a symposium on war surgery. It can only be concluded that American censorship is keeping information from this country which might be of value in India's war effort. It is difficult to understand an attitude that will interfere with the dissemination of medical knowledge under any circumstances. Still less understandable is the keeping of such information from nations which are America's allies in the present struggle.

L. B. CARRUTHERS, M.D.  
Miraj Christian Medical School,  
Miraj, S. M. C.

### "CONTACT, CONTACT-INFECTIVE AND INFECTIVE-ALLERGIC DERMATITIS"

*To the Editor*—I should like to make a few comments on the article by Drs. Stokes, Lee and Johnson entitled "Contact, Contact-Infective and Infective-Allergic Dermatitis" appearing in *THE JOURNAL*, September 25.

A bilateral chronic and recurrent dermatitis of the hands of a physician should be considered to be due to a rubber glove sensitivity until proved otherwise. Dr. Stokes neglected to point out an occasionally important factor—that of localized sensitivity. Localized or regional epidermal sensitivity has long been recognized by dermatologists. An example of this is nail polish dermatitis of the eyelids and face, where patch tests of nail polish may be negative on the arms or back yet be strongly positive when applied to the forehead or side of the neck. In the same manner patch tests of a suspected rubber glove actually causing a dermatitis of the hands may yield a negative test when performed on the back or arm. For this reason rubber glove dermatitis of the hands has been missed in some physicians and the dermatitis considered to be soap and water dermatitis or an eczematoid dermatophytid. The latter may be the case especially when a coexisting dermatitis of the feet due to rubber or rubber cement of the shoes is considered to be due to dermatophytosis.

I wish to recommend strongly that every physician with a suspected rubber glove dermatitis be tested on the hands. This may be done by patch tests, but I have found the simplest method to be that of wearing a cotton glove with a small hole cut out of the back under the rubber glove. If the patient is sensitive, a small patch of dermatitis corresponding to the hole in the back of the cotton glove will appear.

The wearing of Neoprene or rubber gloves to which the patient is not sensitive may not end his troubles, for he may come into contact with innumerable other rubber articles. I

have one patient, a woman, who, while working in the processing department of a synthetic rubber plant, became sensitive to the synthetic rubber with a resulting dermatitis of the hands and forearms. After recovery she obtained work as a secretary. A short time thereafter a troublesome dermatitis appeared on her hands. Patch tests of a rubber typewriter eraser, rubber typewriter key pads, a rubber covered adjustment knob on the typewriter, a rubber finger protector and the rubber telephone receiver all gave strongly positive reactions.

C. RUSSELL ANDERSON, M.D., Los Angeles

### DOCTORS AS "SOFT TOUCH" FOR NARCOTIC ADDICTS

*To the Editor*—Because of the shortage of narcotic drugs in the illicit traffic, drug addicts are calling on members of the medical profession looking for a "soft touch." This is the addict's term for a doctor who will write a narcotic prescription after listening to a plausible tale. Hundreds of such cases are coming to our attention.

A drug addict goes into a doctor's office and simulates a bad cough. He tells the doctor that the only thing that will help him is a drug, the name of which he has on a slip of paper. He shows the doctor this slip of paper, on which the word Dilaudid is written. He takes a chance that the doctor is unaware of the fact that this drug is a derivative of morphine. It is surprising how many doctors follow the addict's suggestion and write a prescription for Dilaudid.

In another racket the physician is imposed on in a rather unusual manner and generally writes morphine prescriptions for quantities ranging from thirty to eighty  $\frac{1}{4}$  grain tablets. The addict calls on a physician and says his wife is in the care of a nurse and enroute by train to join him, that his wife is in a very serious physical condition, necessitating the use of morphine. He says that the doctor has been highly recommended and that he wants him to take care of his wife on her arrival, place her in a hospital and perform an operation if necessary. The addict offers a retainer. He then alleges that his wife has just stopped off in a nearby city and is unable to proceed by train until a supply of morphine is obtained, that the nurse telephoned him that his wife's supply is exhausted. The physician writes a prescription for morphine, which the addict claims he will send to his wife by air mail. In some cases the doctor has been taken in by this story to the extent that he has retained a room in a hospital for a week until he realizes that he has been victimized.

When addicts find a notice of a doctor's death in an obituary column they sometimes call on the bereaved widow on the day following the death alleging that they are narcotic inspectors and have come to take charge of the doctor's morphine stock.

Pharmacists are being deluged with forged narcotic prescriptions. Blank pads are stolen from doctors' desks by addicts. Several times we have referred to numerous thefts of physicians' bags containing narcotics. A doctor's bag left in a parked automobile near a hospital is invariably stolen by a drug addict.

Physicians are being imposed on with increased frequency. I know they are extremely busy during this emergency. They should be warned to be on guard when a stranger tries to induce them to write a narcotic prescription. Many of the drug addicts today tell us that they are obtaining narcotics to ease their craving by going to various physicians and simulating some serious physical ailment.

H. J. ASH GEP, Washington, D. C.  
Commissioner of Narcotics

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Oct 23 page 504

#### BOARDS OF MEDICAL EXAMINERS

- ALABAMA Montgomery June 20 22 Sec Dr B F Austin 519 Dexter Ave Montgomery
- ARKANSAS \* Medical Nov 34 Sec Dr D L Owens Harrison Electric Little Rock Nov 4 Sec C H Young 1415 Main St Little Rock
- CONNECTICUT \* Written Hartford Nov 9 10 Endorsement New Haven Nov 23 Sec to the Board Dr Creighton Barker 258 Church St New Haven Homeopathic Derby, Nov 9 Sec Dr Joseph H Evans 1488 Chapel St New Haven
- DELAWARE Written Dover Jan 11 13 Endorsement Dover, Jan 18 Sec Medical Council of Delaware Dr Joseph S McDaniel 229 S State St Dover
- DISTRICT OF COLUMBIA \* Washington Nov 8 9 Sec Commission on Licensure Dr G C Ruhland 6150 E Municipal Bldg Washington
- FLORIDA \* Jacksonville Nov 22 23 Sec Dr William M Rowlett Box 786, Tampa
- GEORGIA October or November Sec State Examining Boards, Mr R C Coleman 111 State Capitol Atlanta
- IDaho Boise Jan 11 Dir Bureau of Occupational Licenses Mrs Lela D Painter 355 State Capitol Bldg Boise
- IOWA \* Iowa City Dec 27 29 Dir Division of Licensure and Registration Mr H W Grefe Capitol Bldg Des Moines
- KANSAS Kansas City Feb 23 Sec Dr J F Hassig, 905 N Seventh St Kansas City
- KENTUCKY Louisville Dec 6 8 Sec, Dr Philip E Blackerby, 620 S Third St Louisville
- LOUISIANA New Orleans Dec 21 23 Sec Dr R B Harrison, 1507 Hibernia Bank Bldg New Orleans
- MAINE Portland Nov 9 10 Sec, Dr Adam P Leighton 192 State St Portland
- MARYLAND Medical Baltimore Dec 14 17 Sec Dr J T O Mara, 1215 Cathedral St Baltimore Homeopathic Baltimore Dec 14-15 Sec Dr J A Evans 612 W 40th St Baltimore
- MASSACHUSETTS Boston Nov 16 19 Sec Board of Registration in Medicine Dr H Q Gallupe 413 F State House Boston
- MISSOURI St Louis Nov 15 17 Sec State Board of Health Dr James Stewart State Capitol Bldg Jefferson City
- NEVADA Endorsement Carson City Nov 1 Sec Dr G H Ross 215 Carson St Carson City
- NEW HAMPSHIRE Concord March 9 10 Sec Board of Registration in Medicine Dr D G Smith State House Concord
- NORTH CAROLINA December Sec Dr W D James Hamlet
- NORTH DAKOTA Grand Forks Jan 4 7 Sec Dr G M Williamson 4½ S Third St Grand Forks
- OHIO Written Columbus Dec 13 15 Sec Dr H M Platter 21 W Broad St, Columbus
- OKLAHOMA \* Oklahoma City Dec 27 29 Sec Dr J D Osborn Jr Frederick
- PENNSYLVANIA Philadelphia and Pittsburgh January Act Sec Bureau of Professional Licensing Department of Public Instruction Mrs Marguerite G Steiner 358 Education Bldg Harrisburg
- SOUTH CAROLINA Charleston, Dec 20 22 Sec Dr N B Heyward, 1329 Blanding St, Columbia
- SOUTH DAKOTA \* Pierre Jan 18 19 Dir Medical Licensure State Board of Health Dr Gilbert Cottam Pierre
- VERMONT Purlington Dec 16 18 Sec Dr F J Lawless Richford
- VIRGINIA Richmond Dec 14 17 Sec Dr J W Preston 30½ Franklin Road Roanoke
- WISCONSIN \* Madison Dec 13 15 Sec Dr C A Dawson Tremont Bldg River Falls

\* Basic Science Certificate required

#### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

- FLORIDA DeLand Nov 6 Sec Dr John F Conn John B Stetson University DeLand
- NEW MEXICO Feb 7 Sec Miss Pia Joerger State Capitol, Santa Fe
- OKLAHOMA Oklahoma City Nov 29 Sec Dr J D Osborn Jr, Frederick
- RHODE ISLAND Providence Nov 17 Chief Division of Examiners Mr Thomas B Casey 366 State Office Building Providence
- SOUTH DAKOTA Vermillion, December Sec Dr G M Evans Yankton
- TENNESSEE Nashville and Memphis Dec 10 11 Sec Dr O W Hyman 874 Union Ave Memphis
- WISCONSIN Milwaukee Dec 4 Sec Prof Robert A Bauer 152 W Wisconsin Ave Milwaukee

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Legality of the Corporate Practice of Medicine**—The Bartron Clinic was organized in 1929 as a corporation for profit and, in general, it operated in South Dakota a hospital and clinic and supplied medical and surgical services and necessary drugs to persons availing themselves of its services. In carrying on its activities it acted, to all practical purposes, only through licensed physicians and surgeons and nurses in its employ. Each employee seemed to have confined his or her activities to fields in which he or she was licensed to practice. The corporation had 750 shares of capital stock, all but 28 of which were owned by duly licensed physicians connected with the activities of the corporation. Admittedly the corporation was not licensed to practice medicine and surgery nor to operate a pharmacy in South Dakota. In 1933 and in succeeding years until 1938, when it ceased to do business, the corporation contracted on an annual basis with Codington County, S D, to furnish necessary hospitalization medical and hospital services and medicine to the poor of the county for whom it was the duty of the county to provide. Subsequent to the time when the corporation ceased to do business three cases involving the contracts between the corporation and the county were instituted. In one case a claim was filed with the county commissioners for compensation for medicines supplied to county indigents. Another case originated as a claim for the recovery of compensation for medical and surgical services rendered by the corporation. The third case originated as an action by the county to recover monies paid from 1933 on to the corporation for medical and surgical services and medicines furnished to the county indigents by the corporation. The judgments in the lower court in these cases were adverse to the corporation. On appeal, the Supreme Court of South Dakota disposed in a single opinion of the issues presented in the 3 cases.

To sustain the judgments of the trial court the county contended, first, that under the medical practice act of South Dakota the corporate practice of medicine was illegal and a corporation could neither recover nor retain compensation for acts in violation of that act. In the exercise of the police powers of the state, said the Supreme Court, the legislature can prohibit corporations from engaging in the business of supplying for gain the services of licensed physicians. The question here is whether or not the South Dakota medical practice act evidences an intent on the part of the legislature to do so. Section 7717, Compiled Laws, 1919 (a section of the medical practice act), provides a penalty for 'any person who shall practice medicine in this state without having obtained a license. Assigning to the word 'practice' the broad significance of common usage, and applying also the statutory rule that "person" also includes a corporation, the corporation, functioning through licensed physician employees acting within the scope of their authorized powers has practiced medicine and surgery in apparent violation of the act unless a different legislative intent is plainly revealed elsewhere in the act. The most cursory analysis of the medical practice act reveals that it was motivated by a purpose to bring a high standard of character and competence to the diagnosis and treatment of human ailments and to prevent the quack and the unfit from ministering unto the ills of mankind. To accomplish these purposes a system of licensure was set up based on personal qualifications including age character schooling training and professional conduct and a penal provision was added to the act to deter the unfit from treating patients. It will be further noted that throughout the act the legislature has dealt with the functions of natural persons and has ignored their legal relationships. Although the act by the power it grants in sections

7710 and 7711, *ibid*, to revoke a license to practice, seeks to regulate the practice of licentiates by stating as a cause for revocation "unprofessional conduct" and enumerating certain types of conduct that are embraced in the term, it is significant that there is not there included within such an enumeration of prohibited conduct practice for gain as the employee of an unlicensed individual or corporation. The conclusion seemed irresistible to the court that by the medical practice act the legislature intended to prevent unlicensed persons from the actual diagnosis and treatment of human ills but did not intend to prevent unlicensed persons from engaging in the business of supplying the services of licensed practitioners. The prevention of corporate practice the court accordingly held, was not in the contemplation of the legislature when it enacted the medical practice act, and the corporation here involved, in contracting with the county, did not bargain to do that which is prohibited by the medical practice act.

To sustain the judgments adverse to the corporation, the county next contended that the practice of medicine by a corporation through the agency of employees who are licensed to practice medicine is illegal because it is against public policy or public interest and a corporation so practicing is not entitled to recover or retain compensation for its illegal acts. Public policy, said the court, is that principle of law which holds that no person can lawfully do that which has a tendency to be injurious to the public or to be against the public good. 17 C. J. S. 563. When conduct opposed to the public interest is made the subject of a bargain, the courts ordinarily refuse to accord a party thereto a remedy predicated thereon. Restatement, Law of Contracts, sec. 598. The subject of the practice of the learned professions by a corporation has been under consideration by the courts in a variety of actions and proceedings involving the practice of law, dentistry and medicine. See annotations in 73 A. L. R. 1327 and 103 A. L. R. 1240. While decision has rarely turned on the naked issue of public policy, those courts, by dictum at least, indicate a current of opinion, to which there are but few dissentients, that the corporate practice of the learned professions contravenes the public interest and is contrary to public policy. After discussing the variety of reasons assigned therefor, the court concluded that the corporate practice of any of the learned professions of law, medicine or dentistry would tend to debase those professions and that corporate practice would have a tendency to blight the character or lower the standards of professional practice and would be in contravention to the public aspirations so clearly reflected in the licensing statutes, which, with their emphasis on character and professional conduct on the part of licentiates, evidence a fixed public desire not only to foster but to develop and reinforce the basic attributes of the professional servants of the public. The court was of the opinion that the practice of the learned professions by a corporation organized for profit, even though it functioned through duly licensed physician employees, tended to debase the profession and consequently was in contravention of the public interest and was against public policy. The contracts, the court held, between the corporation and the county with respect to the rendering of medical and surgical services were illegal and the corporation can recover nothing for the services it rendered under those contracts.

The court next considered the legality of the contracts between the corporation and the county under which the corporation undertook to supply medicines and drugs to the county poor. The corporation was not licensed to practice pharmacy, but the medicines involved were prescribed by physician employees of the corporation in the course of the practice of medicine. The pharmacy practice act provides that nothing therein contained shall apply to the business of any physician or prevent him from supplying to his patients such articles as may seem to him proper. Session Laws, 1933, chapter 163. The pharmacy practice act, said the court, clearly intended to

exclude the practice of medicine from its regulatory effects. However, while thus removing the subject matter of these contracts from the scope of the pharmacy practice act, the act did not authorize the sale of medicines by a physician in any other manner than as an incident of the practice of his profession. Medication is but an integral part of the services a physician performs in treating human ailments, and the right to furnish medicine rests on the right to treat disease. It follows then, that, if it is against public policy for the corporation to engage in the practice of medicine, all of the incidents of that practice by the corporation, including medication, are contrary to public policy. The court accordingly held that that contract between the corporation and the county under which the corporation undertook to supply medicines to the county poor was illegal and that the corporation could recover nothing for its acts thereunder.

The court next considered the right of the county to recover sums previously paid to the corporation for medical and surgical services and medicines supplied to the county by the corporation. The county, said the court, while it seeks to recover the payments made to the corporation for those services and supplies, endeavors to retain the benefit of the valuable professional services and medicines it has received. It predicates its right to a refund of such payments on the theory that the bargains under which such payments were made were against public policy. It contends that it may appropriate these benefits and recover its payments. Obviously, the claim of the county is inequitable. Manifestly, justice will not be done if the county is permitted to recover its payments and retain the valuable benefits it received under the illegal contract. Had it not received the benefits of the services of the duly licensed employees of the corporation it would have been compelled to expend public funds for like services elsewhere. In procuring the needed services public policy was violated. The subject matter of the contract was not vicious in itself, and no moral turpitude was involved. The public interest is adequately and effectively protected by the obligations of a judicial policy under which the courts refuse to lend themselves to that which is against public interest. Considerations based on natural justice may be permitted to mold the judgment in this particular case without withdrawing any public safeguard or striking down any provision adopted to protect the county or its taxpayers. In our opinion, no circumstance warrants or supports a contention that, according to the ties of natural justice or for reasons based on public policy, the corporation should be obligated under the circumstances to refund to the county the monies paid to the corporation for valuable services and supplies rendered to the county. The court accordingly reversed the judgment of the trial court and held, in effect, that the corporation might retain the monies paid to it by the county — *Bartron v Codrington County (two cases) and Codrington County v Bartron (Bartron, Intervenor)*, 2 N. W. (2d) 337, (S. D., 1942).

## Society Proceedings

### COMING MEETINGS

- American Society of Anesthetists, New York, Dec. 9. Dr. McKinnie I. Phelps, 745 Fifth Ave., New York 22, Acting Secretary.
- Central Society for Clinical Research, Chicago, Nov. 5. Dr. Carl A. Moore, 602 South Euclid Ave., St. Louis, Secretary.
- Pacific Coast Society of Obstetrics and Gynecology, San Francisco, Nov. 4-5. Dr. T. Floyd Bell, 431 Thirtieth St., Oakland, Calif., Secretary.
- Radiological Society of North America, Chicago, Nov. 29-Dec. 3. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.
- Seaboard Medical Association, Richmond, Va., Nov. 30-Dec. 2. Dr. Clarence P. Jones, 3117 West Avenue, New Port, Va., Secretary.
- Southern Surgical Association, New Orleans, Dec. 7-9. Dr. Al. A. Ochsner, 1430 Tulane Ave., New Orleans, Secretary.
- Southern Medical Association, Cincinnati, November 16-18. Mr. C. I. Loranz, Empire Building, Birmingham, Alabama, Secretary.

## Current Medical Literature

## AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 16 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk ( \*) are abstracted below.

### American Journal of Clinical Pathology, Baltimore 13 383-440 (Aug.) 1943

Cephalin Cholesterol Flocculation Test in Liver Disease R. Y. Yarden and B. J. Weiland—p. 383

\*Transfusion Therapy of Acute Hemolytic Anemia of Newborn A. S. Wiener and I. B. Wexler—p. 395

Cerebral Injuries by Mechanical Violence S. A. Levinson—p. 402

Thallium Poisoning III Clinical Toxicology of Thallium A. O. Gettler and L. Weiss—p. 422

**Transfusion in Acute Hemolytic Anemia of the Newborn**—Wiener and Wexler state that in the typical case of acute hemolytic anemia of the newborn the mother is Rh negative, the father is Rh positive and the fetus is Rh positive, the latter having inherited the factor from the father. Owing perhaps to some defect in the placenta, some of the fetal blood escapes into the maternal circulation, and in sensitive mothers this stimulates the production of anti-Rh isoantibodies. Since the normal placenta is permeable to antibodies, the anti-Rh isoantibodies then filter back through the placenta into the fetal circulation and give rise to the disease. In the past, infants with acute hemolytic anemia were treated by repeated transfusions with varying results. The theory of Levine et al. makes possible a more rational transfusion therapy. Whole maternal blood should not be used because in this way additional isoantibodies may be transferred to the infant and thus prolong the disease. For the same reason the baby should not be permitted to nurse as antibodies may be transferred through the colostrum and milk. Also the father or any Rh positive donor should not be used, since the erythrocytes of such donors are susceptible to the action of the anti-Rh antibodies. The most suitable donor is a normal Rh negative individual, because his cells are not sensitive to the action of the antibodies and his serum contains no anti-Rh isoantibodies. The authors describe 8 cases of acute hemolytic anemia of the newborn recently treated by them. The disease is a treacherous one in that the baby may appear normal at birth and yet develop an abrupt hemolytic crisis which may cause death from anoxemia in a short time. As soon as the diagnosis is made or even suspected, arrangements should be made for immediate transfusion with Rh negative blood. Only intravenous transfusions are effective. Though transfusions in infants are technically difficult, in trained hands the procedure is carried out with ease with the aid of a small, short bevel 22 gage needle, using a scalp vein. In infants whose scalp veins are poorly developed or concealed by edema a suitable vein can as a rule be found by making an incision anterior and superior to the medial malleolus or by incising the antecubital fossa. The authors mention atypical cases due to sensitization to factors other than Rh or due to multiple sensitization. They suggest transfusion with washed mother's erythrocytes suspended in compatible plasma.

### American Journal of Hygiene, Baltimore

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Statistical Significance of Negative Stool Examination in Diagnosis of Amebiasis W. G. Swartz and R. J. Hammerstrom—p. 1

Past Hospital Experience of Surviving Population Eastern Health District Baltimore 1926-1935 Clara E. Councell—p. 8

Epidemiology of Scarlet Fever F. F. Schwenker, J. H. Janney and J. E. Gordon—p. 27

Role of Intestinal Phase of Trichina Infection in Establishment of Immunity to Retention H. Roth—p. 99

### American Journal of Medical Sciences, Philadelphia

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\*Studies on Transmissibility of Malaria by Plasma Transfusions E. L. Lozner and L. R. Newhouser—p. 141

Action of Specific Stimulators on Hemopoietic System T. R. Miller and D. L. Turner—p. 146

Sickling Trait in White Adult Associated with Hemolytic Anemia, Endocarditis and Malignancy L. Greenwald, J. B. Spielholz and J. Litwinski—p. 158

Maintenance of Sedimentation Rate as Test for Malignant Disease I. Apter, F. Hull and C. C. Adams—p. 168

\*Prognosis of Untreated Patent Ductus Arteriosus and Results of Surgical Intervention Clinical Series of 50 Cases and Analysis of 139 Operations M. J. Shapiro and A. Keys—p. 174

\*Clinical Significance of Hyperventilation Role of Hyperventilation in Production, Diagnosis and Treatment of Certain Anxiety Symptoms I. A. Stead Jr. and J. V. Warren—p. 183

Modified Christie Method for Residual Air Measurements R. A. Izzo and H. Chuadi—p. 190

Diabetes and Weather W. F. Petersen—p. 197

Preclinical Genitourinary Tuberculosis G. E. Kenny, S. E. Cohen and L. Bauer—p. 204

\*Studies on 2 Sulfamido-4 Methyl Pyrimidine (Sulfamerazine Sulfamethyldiazine) in Man III Treatment of Meningococcal Meningitis W. I. Geffer, S. B. Rose, A. H. Domm and H. F. Flippin—p. 211

\*Id. IV Treatment of Pneumococcal Pneumonia H. F. Flippin, W. I. Geffer, A. H. Domm and J. H. Clark—p. 216

Tissue Culture Studies on Cytotoxicity of Bactericidal Agents III Cytotoxic and Antibacterial Activity of Gramicidin and Penicillin Comparison with Other Germicides W. E. Herrell and Dorothy Heilman—p. 221

Protruded Intervertebral Disk and Hypertrophied Ligamentum Flavum Criteria for Diagnosis and Indications for Operation with Analysis of 50 Surgically Treated Cases J. C. Yaskin and A. S. Tornay—p. 227

Effect of Glucose Administration in Diabetic Acidosis H. F. Root and T. M. Carpenter—p. 234

Correlation of Intravenous Hippuric Acid Test of Liver Function with Body Size M. M. Scurry and H. Field Jr.—p. 243

Comparison of Techniques for Differential Counting of Bone Marrow Cells (Guinea Pig) R. D. Epstein and Edna H. Tompkins—p. 249

Ophthalmology Toxic Effects of Sulfonamides on Eyes H. P. Wagener—p. 261

**Transmissibility of Malaria by Plasma Transfusions**—Lozner and Newhouser report the results of thirty-five administrations of plasma prepared from donors with active malaria and preserved by different techniques for varying lengths of time. The donors were patients with active therapeutic quartan and estivoautumnal malaria. The 35 recipients were patients with dementia paralytica or other central nervous system disease in which malaria was either indicated or not contraindicated. No transmission of malaria was observed in twenty administrations of thawed plasma which had been "shell" frozen in a solidified carbon dioxide-alcohol bath. In three administrations of restored plasma which had been dried from the frozen state no transmission took place. In two administrations of plasma preserved in the liquid state for one day there was one definite transmission and one probable transmission. In five administrations of plasma preserved in the liquid state for one week there was one doubtful transmission. In five administrations of plasma preserved in the liquid state for two weeks no transmissions were recorded. The likelihood of transmission of malaria by any plasma program regardless of type of preservation used is practically nonexistent.

**Patent Ductus Arteriosus**—Shapiro and Keys investigated the longevity and cause of death in untreated and surgically treated patients with patent ductus arteriosus. Diagnosis of patent ductus arteriosus can be made with much certainty. The great majority of patients with this defect suffer no serious disability or restriction of activity during most of their lives, but their life expectancy is greatly shortened by the defect. Ligation of the uninfected ductus can be made with a mortality of less than 10 per cent. Ligation of the ductus in the presence of subacute bacterial endarteritis offers an even chance of survival in the face of practically certain death without ligation. The danger of development of subacute bacterial endarteritis after successful ligation cannot be properly estimated. Six case histories are cited which illustrate arguments for and against ligation. An analysis is presented of the results of one hundred and forty operations for ligation of the duct. The majority of patients with patency of the ductus arteriosus should be submitted to ligation after careful clinical studies have been made on them. Ligation should be attempted immediately if subacute bacterial endarteritis develops. Ten patients with uninfected patent ductus arteriosus have been operated on.



by Wangensteen at the University of Minnesota Hospital, the last 8 cases with complete success. None have manifested a recurrence of signs indicating recanalization.

**Clinical Significance of Hyperventilation**—According to Stead and Warren, respiration is controlled by both reflex and chemical mechanisms. Afferent stimuli from any organ in the body or from an emotional content of thought may cause the pulmonary ventilation to be increased beyond the level required by the body metabolism. This reflex increase in respiration furnishes the physiologic basis for many of the symptoms of the psychoneurotic patient. The patient may be conscious of the hyperventilation and complain primarily of dyspnea or he may complain of any of the resultant symptoms, not being aware of the increased pulmonary ventilation. The authors give several illustrative case reports. Voluntary hyperventilation in normal subjects produces a disturbance in cerebral metabolism. Usually faintness or giddiness is followed by numbness and tingling about the mouth and extremities, the hands become cold, and if the patient is standing he may faint. Prolonged hyperventilation may produce symptoms of tetany. Any of the cerebral symptoms produced by voluntary hyperventilation may appear in the anxious patient who unknowingly hyperventilates. Production of these symptoms by voluntary overbreathing not only is of diagnostic aid but is useful in demonstrating to the patient that his symptoms have a physiologic rather than a pathologic basis. At times the hyperventilation itself may be noted by the patient and may appear as a symptom, particularly in patients with heart disease without congestive failure or in patients who fear heart disease. Observation of the effects of voluntary hyperventilation should be a routine procedure in the examination of (1) patients complaining of fainting, giddiness or a far away feeling and (2) patients with breathlessness, particularly those with heart disease without evidence of congestive failure.

**Sulfamerazine in Meningococcic Meningitis**—Sulfamerazine is one of several methyl homologues of sulfadiazine. Geffer and his associates used sulfamerazine for meningococcic meningitis during an epidemic of that disease in Philadelphia in the past winter. They report observations on 45 cases. The initial dose was always given intravenously as sulfamerazine sodium (5 per cent solution in sterile distilled water), adults receiving 3 Gm and children 1 to 2 Gm. This dose was immediately followed by sulfamerazine orally, adults receiving 1 Gm every four hours and children receiving 0.25 Gm to 1 Gm every six hours. Delirious or comatose patients were given the drug by nasal tube until they were capable of taking medication by mouth. Sulfamerazine was continued until the patient appeared entirely well clinically. In the successfully treated group the average total dose of the drug for adults was 56.4 Gm, given over an average period of 9.5 days, the children received an average total dose of 19.3 Gm over an average period of 8.6 days. Five of the patients were given intravenous antimeningococcus serum in addition to sulfamerazine. Determinations of the amount of free drug in the blood were made at frequent intervals. Three deaths occurred in this series, a mortality of 6.7 per cent. This is to be compared with the 57.5 per cent mortality occurring in 40 cases of this disease at the Philadelphia General Hospital during 1935, 1936 and 1937, and with the 40 per cent in 50 cases reported in 1942. The results also compare favorably with those in which sulfadiazine was employed (12.5 per cent mortality). Clinical improvement with return of mental clarity occurred in 70 per cent of the patients within forty-eight hours. The average time observed for the return to normal temperature was 5.2 days. Toxic reactions attributable to sulfamerazine, occurring in each instance after the fifth day of treatment, were noted in 11 patients.

**Sulfamerazine in Pneumococcic Pneumonia**—Flippin and his collaborators compare the response to sulfamerazine of 80 pneumonia patients with that of a control series of 80 adult patients treated with sulfadiazine. Mortality in the two groups showed no significant difference (sulfamerazine 7.5 per cent, sulfadiazine 10 per cent). Sulfamerazine tended to lower the temperature somewhat more rapidly than did sulfadiazine, however, the duration of chemotherapy and the incidence of

complications were essentially the same for the two groups. The incidence of toxic reactions was low and comparable for both sulfamerazine and sulfadiazine. No serious reactions were encountered with either drug. The fact that toxic reactions were less frequent among these pneumonia patients than among those receiving sulfamerazine for meningitis is explained by the fact that medication was of shorter duration. The group treated with sulfamerazine showed higher plasma concentration of free drug than did the group receiving larger or equivalent amounts of sulfadiazine.

### American Journal of Psychiatry, New York

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## American Journal of Tropical Medicine, Baltimore

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- Recent Distribution of Endemic Yellow Fever in Central America and Neighboring Countries. H. W. Kumm and P. J. Crawford—p. 421
- \*Employment of Rickettsial Vaccine for Antigen in Diagnostic Complement Fixation Test. I. H. K. Reynolds and M. Pollard—p. 433
- Report on Species of Anopheles in British Curia. C. O. Bruce, T. D. Knigin, S. F. Yolles and A. I. Graham Jr.—p. 437
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- Preliminary Observations on Inheritance of Susceptibility to Malaria Infection as Character of Anopheles Quadrimaculatus Say. M. F. Boyd and J. C. Kucell—p. 451
- Studies on Effectiveness of Phenothiazine in Human Nematode Infections. H. Most—p. 459
- Note on New Transparent Cage for Collecting and Feeding Mosquitoes. S. F. Yolles and T. D. Knigin—p. 465

**Rickettsial Vaccine as Antigen in Complement Fixation Test**—According to Reynolds and Pollard the Weil-Felix reaction lacks specificity in the diagnosis of rickettsial infections, while the complement fixation test is rather specific in differentiating them. The complement fixation test uses antigens prepared from infected chick embryos. The commercially prepared typhus vaccine is similarly manufactured from infected chick embryos. The authors found that a commercially processed typhus vaccine is satisfactory for fixing complement with epidemic typhus antiserum. Its specificity was supported by negative results with the following heterologous specific antisera: Rocky Mountain spotted fever rickettsia, Proteus OX 19, Eberthella typhosa, Salmonella typhi murium, Salmonella paratyphi, Salmonella schottmülleri, Salmonella pullorum, Salmonella enteritidis, Salmonella paratyphenteriae, Salmonella abortus-equinus, Pasteurella tularensis, Vibrio comma, Brucella abortus, Brucella melitensis, Trypanosoma equiperdum and Trypanosoma cruzi. Of 89 positive Wassermann and Kahn serums tested, one induced a 3 plus fixation with both the commercial purified antigen and the typhus vaccine. This one case gave a history suggestive of a typhus like disease several years prior to the test. Thirty-two persons were given three subcutaneous injections of commercially prepared typhus vaccine of 1 cc each at weekly intervals. On the twelfth day following the last inoculation blood serums were collected from all of them and tested with both antigens. None demonstrated evidence of complement fixing bodies for typhus. Apparently the chick embryo menstuum in which the Rickettsiae were growing failed to induce homologous complement fixing bodies in persons injected with it. The absence of complement fixing antibodies does not necessarily imply a lack of immunity, it does demonstrate that the vaccination procedure will not result in the development of a false positive reaction.

## American Review of Tuberculosis, New York

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- Chemistry of Lipids of Tubercle Bacilli. L. V. Investigation of Tuberculous Lung Tissue. R. J. Anderson, R. E. Reeves, M. M. Creighton and W. C. Iothrop—p. 65
- \*Culturing of Tubercle Bacilli from Human Spleen, Liver and Kidney. C. E. Woodruff, Ruby G. Kelly and Mary A. Leaming—p. 76
- Unusual Mycobacterium Isolated from Sputum of Man Suffering from Pulmonary Disease of Long Duration. W. H. Feldman, R. Davies, H. E. Moses and W. Andberg—p. 82
- Treatment of Tuberculous Tracheobronchitis. R. Davies—p. 94
- \*Hemorrhage in Pulmonary Tuberculosis. G. R. Minor—p. 109
- Some Aspects of Tuberculosis in Switzerland at Present Time. F. Homberger—p. 115

**Culturing of Tubercle Bacilli from Human Spleen, Liver and Kidney**—Woodruff and his co-workers took cultures of human necropsy material in order to determine the number of tubercle bacilli per gram of tissue in spleen, liver and kidney. In a large majority of the cases cultures of the spleen were found positive for tubercle bacilli. A smaller proportion of liver cultures and even fewer of the kidney cultures were positive. A rather close correlation was found to exist between positive culture and microscopically demonstrable tubercles in the same organ. A high bacterial count was associated with the type rather than the number of tubercles the

highest counts being found in those organs which had caseous miliary tubercles. The number of tubercle bacilli found per gram of splenic tissue was nearly always greater than the number of bacilli in liver and kidney. The only exceptions were cases with extensive tuberculous enteritis or other abdominal tuberculosis. In these cases the liver contained more tubercle bacilli than the spleen.

**Hemorrhage in Pulmonary Tuberculosis**—Minor collected data for this study from the records of 1,000 sanatorium patients. He found that hemorrhages occurred in 24.3 per cent. The average size of hemorrhage was 5 ounces (150 cc). Forty per cent of hemorrhages eventually recurred. In 60 cases the first remarkable symptom was hemoptysis. Seventy per cent of cases with a history of hemorrhage before the diagnosis were properly diagnosed by the local physician when he was consulted. However 13 per cent were misdiagnosed. Most tuberculous patients who have a hemorrhage have a cavitation visible on x-ray examination, 83.4 per cent of this series had a positive sputum. Trauma to the chest, strenuous exercise, mechanical disturbance of the lungs and, in females, the menstrual period are definite precipitating factors. Small hemorrhages often occur from early lesions at the height of the catarrhal and toxic symptoms, which probably signify softening. These are not usually serious and may in the long run be beneficial if they call attention to an undiagnosed tuberculosis. However larger hemorrhages which occur in chronic ulcerative tuberculosis, while rarely immediately fatal, are accompanied by many unpleasant and dangerous possibilities. Of the twelve deaths which occurred in the Blue Ridge Sanatorium of Charlottesville, Va., after hemoptysis it was felt that five were directly or indirectly the result of the hemorrhage.

## Annals of Internal Medicine, Lancaster, Pa

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- Studies of Urinary Pigments in Pellagra and Other Pathologic States. I. Clinical Observations. C. J. Watson and J. A. Layne—p. 183
- \*Dupuytren's Contracture as Sequel to Coronary Artery Disease and Myocardial Infarction. K. C. Kehl—p. 213
- \*Cardiovascular Syphilis. Approach to Early Clinical Recognition and Early Treatment. M. Dressler and M. Silverman—p. 224
- Lipid Metabolism in Relation to Xanthoma Diabeticorum with Recommendation for New Nomenclature. J. Garb—p. 241
- Incidence of Acute and Subacute Bacterial Endocarditis in Rheumatic Heart Disease. R. Gelfman—p. 253
- Concerning Infectivity of Saliva in Human Rabies. S. E. Sulkin and C. G. Harford—p. 256
- Pulmonary Tuberculosis of Insane. J. R. Bialock and J. B. Funkhouser—p. 263
- Combined Electrocardiography, Stethography and Cardioscopy in Early Diagnosis of Heart Disease. W. M. Bartlett and J. B. Carter—p. 271
- \*Syndrome of Rupture of Aortic Aneurysm into Pulmonary Artery. Review of Literature with Report of 2 Cases. R. E. Nicholson—p. 286
- Traumatic Heart Disease. Clinical Study of 250 Cases of Non-penetrating Chest Injuries and Their Relation to Cardiac Disability. H. Arenberg—p. 326

**Dupuytren's Contracture as Sequel to Coronary Artery Disease**—Kehl reports 6 cases of Dupuytren's contracture as a sequel to coronary occlusion. The palmar changes in the cases presented by Kehl appear to be typical of Dupuytren's contracture in its various stages. Three cases progressed to the stage of contracture and in no case was regression noted. Pain, stiffness, swelling, livid discoloration, numbness, tingling and abnormal skin temperature of the hands may be associated with the palmar changes. The etiology and pathogenesis are not understood but irritation of the sympathetic ganglions may assume an important etiologic role.

**Early Recognition of Cardiovascular Syphilis**—Dressler and Silverman report studies in 1,270 cases of proved syphilis which were referred for cardiovascular checkup. There were 390 cases of cardiovascular syphilis and 304 of these were diagnosed as uncomplicated syphilitic aortitis. The authors answer in the affirmative the question whether a clinical diagnosis of uncomplicated aortitis is impossible in the presence of a normal sized aorta. They establish the following criteria for clinical diagnosis in patients 40 years of age or younger: 1. The presence of a characteristic aortic second sound which may be described as tambour, drumlike, tympanic or hollow and is usually heard over the second or third right sternal space and sometimes over the fourth space. 2. The presence of a

systolic murmur over the aortic area (second, third or fourth right sternal space, over the sternum, the third left sternal space or in more than one of these areas). A systolic murmur has been heard in many instances over the mitral area. 3 The presence of suprasternal (episternal) pulsations. This sign indicates elongation and dilatation of the aortic arch. 4 The presence of increased retromanubrial dullness in the second intercostal space. This sign is of value only when the aortitis is far advanced and there is a widening of the aorta. 5 The presence of hypertension is a diagnostic aid. Both systolic and diastolic pressures are elevated. 6 Corroboration of the clinical findings by the use of fluoroscopy and roentgenography to demonstrate the presence or absence of a widened aorta. All patients with cardiovascular syphilis should be started with a preparatory course of bismuth compounds and iodides before arsenical therapy is attempted. This course should consist of at least ten to twelve intramuscular injections of bismuth subsalicylate in oil (0.1 to 0.2 Gm.) at weekly intervals followed by a similar course of neosphenamine (0.1 Gm.) or mapharsen (0.01 Gm.), the dosage being gradually increased. With the exception of cases of uncomplicated syphilitic aortitis, the dose should not exceed 0.3 Gm. of neosphenamine or 0.03 Gm. of mapharsen in any cardiac condition. Arsphenamine should never be used in the treatment of cardiovascular syphilis. The treatment should be continuous for at least two years. The serologic reaction should have no bearing on the length and type of treatment. If sufficiently improved, the patient is given a rest period of six months and asked to return for a cardiovascular checkup. If the patient has developed aortic insufficiency or aneurysm treatment must be more conservative. The preliminary bismuth and iodide therapy is started, but the arsenicals must be used with caution and in many instances they should be avoided. The life expectancy of patients with uncomplicated syphilitic aortitis who receive early and adequate treatment is a normal lifetime, whereas for patients who show complicated cardiovascular syphilis it ranges from about one to ten years.

#### Rupture of Aortic Aneurysm into Pulmonary Artery

—Nicholson stresses that the rarity of rupture of an aortic aneurysm into the pulmonary artery is unusual in view of the close anatomic relationship between the two vessels and the great frequency of aneurysm of the thoracic aorta. Only 81 instances have been mentioned in the literature. This low incidence may be explained on the basis of pinpoint communications between the great vessels, oversight on the part of the pathologist and failure to appreciate the condition clinically. Over a thirty year period only 2 instances were observed at the Charity Hospital of Louisiana in New Orleans. One occurred in a 39 year old woman who survived five months after rupture, and the other in a 40 year old man whose duration of life following rupture was six days. Both instances were diagnosed correctly prior to death. The author reviews the incidence of clinical manifestations which might serve for recognition of the syndrome. The history reveals a sudden onset with severe stabbing pain or a sense of oppression in the precordial area with or without radiation, usually following physical exertion and succeeded by pronounced and increasing dyspnea. The subjective signs are definite and increasing shortness of breath, progressive swelling of the lower extremities and trunk, rasping cough with expectoration or hemoptysis and bluish discoloration of the face and extremities, pallor may be the alternative. The objective signs are an intense thrill in the second to third left interspace occurring during systole or continuous throughout the cardiac cycle, humming "machine-like" murmur, heard best to the left of the sternum in the second or third interspaces, continuous throughout the systolic and diastolic phase and crescendo-decrescendo in character, being more intense during systole, evidence of aneurysm of the aorta increasing dyspnea usually reaching the extent of orthopnea, cyanosis of the lips, face or extremities or distinct pallor of the same areas, edema of the lower extremities and trunk progressing to anasarca, the hemodynamic phenomena of aortic regurgitation (Corrigan's pulse, increased cardiac rate, capillary pulsation, Duroziez's sign), roentgenographic evidence of aneurysmal dilatation of the aorta, prominent and enlarged pulmonary conus and probable enlargement of the heart, electrocardiographic

indications of a nonspecific character but usually indicative of a sinus tachycardia, right axis deviation, and lowering, inversion or diphasicity of the T waves in the standard and precordial leads.

#### Annals of Surgery, Philadelphia

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- Address of President Importance of Fundamentals in Surgical Education V. C. David—p. 161  
 \*Study of Prevention of Infection in Contaminated Accidental Wounds, Compound Fractures and Burns F. L. Meleney—p. 171  
 Basic Principles in Treatment of Thermal Burns A. O. Whipple—p. 187  
 Gelatin as Plasma Substitute, with Particular Reference to Experimental Hemorrhage and Burn Shock W. M. Parkins, C. E. Koop, C. Riegel, H. M. Vars and J. S. Lockwood—p. 193  
 \*Problems of Protein Nutrition in Burned Patients F. H. L. Taylor, S. M. Levenson, C. S. Davidson, N. C. Browder and C. C. Lund—p. 215  
 \*Amino Acids, Serum and Plasma in Replacement Therapy of Fatal Shock Due to Repeated Hemorrhage Experimental Study R. Elman and C. E. Jischer—p. 225  
 \*Traumatic Shock Experimental Study Including Evidence Against Capillary Leakage Hypothesis J. Fine, A. M. Seligman and H. A. Frank—p. 238  
 Role of Nervous System in Shock D. B. Phemister—p. 256  
 Surgical Gut (Catgut) Tubing Fluid as Tissue Irritant C. L. Dunham and H. P. Jenkins—p. 269  
 Hydrocarbon Content of Nonboilable Surgical Gut Tubing Fluids A. E. Sidwell Jr—p. 285  
 Irritant Properties of Tubing Fluids as Factor in Tissue Reactions Observed with Surgical Gut (Catgut) H. P. Jenkins and C. L. Dunham—p. 288  
 Surgical Principles Opposed to "Rule of Thumb" in Treatment of Compound Fractures C. R. Murray—p. 305  
 Medical Treatment of Hematogenous Osteomyelitis D. E. Robertson—p. 318

**Prevention of Infection in Contaminated Accidental Wounds**—Meleney summarizes records from 1,500 cases which include 682 wounds of the soft parts, 471 compound fractures and 347 burns. Studies had been carried out by a number of different units to establish the effect of the sulfonamides on accidental wounds. There was no evidence that either sulfamidamide or equal parts of sulfamidamide and sulfadiazine locally or sulfadiazine generally with or without the local use of drugs have cut down the incidence of local infection in wounds of the soft parts. It is true, however, that the incidence of septicemia or of death is extremely low in this series and it may be stated that the spread of infection from the local site has been minimized. The combined local and general use of sulfonamides alone has not lowered the incidence of local infection in compound fractures. Although there were only 2 patients who died as a result of infection, and these yielded no positive blood cultures, a fair number of patients needed secondary surgical procedures because of wound infection. The infection rate in burns is very disturbing, particularly in the deep second and third degree cases. There is evidence that there may be greater or less absorption of the drugs from burned surfaces according to the vehicle in which the sulfonamide drugs are contained. The ideal vehicle has not been found. Many are being tried. The local drug action may be inhibited while the general effect may be obtained from local applications. There were only two burn deaths in which infection played an important part and these were so extensive that death might have occurred without infection. In both local and general sulfonamide treatment was administered. The author concludes that the sulfonamides minimize the general spread of infections and cut down the incidence of septicemia and death. There is no evidence that they lessen the incidence of local infection.

**Protein Nutrition in Burned Patients**—Taylor and his associates studied the problem of protein metabolism in burned patients. Hypoproteinemia occurred frequently in a series of 63 patients. In some, hypoproteinemia was fugitive and was probably associated with early loss of plasma. In other it persisted but later responded to high protein diets or 3000 calories which contained from 100 to 125 Gm. of protein per day and were supplemented with 25 to 30 Gm. of brewers yeast and other vitamin supplements. Other patients did not respond to such diets or could not ingest them. This group was composed of the most severely burned and in them the hypoproteinemia became progressive and often reached the fatal level. A detailed study of nitrogen metabolism has been reported on a patient with a burn of 55 per cent of his body surface.

Similar studies have been made on 9 other patients. In severely burned patients there appears to be an excessive loss of nitrogen into the urine in addition to large losses of nitrogen by exudation from the burned surface and an increased nitrogen demand for the building of new tissue. Studies on the patient revealed that nitrogen balance determinations based on urine and stool analyses together with known nitrogen intake cannot reveal the considerable nitrogen loss from the burned surface and the demand for building new tissue. On a high protein diet alone this patient developed a protein deficit of 2000 Gm. The patient's edema increased and it was not until a total nitrogen retention estimated at over 6000 Gm of protein had been obtained that the edema was completely relieved and good nutrition obtained. At least 6000 Gm of protein was required over and above that indicated by balance studies. In some severely burned patients positive nitrogen balances will be found impossible to maintain from diets alone. In such an event forced alimentation by intubation or by the intravenous administration of amino acids should be attempted as soon as possible. Such protein deficits cannot be replaced by whole blood or plasma transfusions, since it would be necessary to administer 120 liters of plasma to accomplish the equivalent of the supplementary alimentation given. At present the only satisfactory way is forced alimentation by intubation and amino acid administration by vein with proper precautions.

**Amino Acids, Serums and Plasma in Replacement Therapy of Fatal Shock**—Elman and Lischer describe hemorrhage in which replacement of the lost blood by an amino acid mixture seemed to have a beneficial effect. The approach has been biochemical rather than physical or physiologic. This is emphasized because amino acid mixtures cannot be regarded as blood substitutes since they lack the colloidal properties of blood plasma. The value of such injections must depend on the ability of the body to use amino acids to synthesize plasma proteins rapidly or for nutritive or other metabolic purposes. It is theoretically possible for injected amino acids to be made into plasma proteins rapidly and thus act as an indirect substitute or supplement to plasma. The liver is the key organ in this process. Fatal surgical shock in unanesthetized dogs followed bleeding 10 cc per kilogram of body weight every hour, the mean survival time being 36 hours. There was a progressive fall in the blood pressure in the red cell volume and in plasma albumin and globulin in all experiments. If the blood removed each time was immediately replaced by the same volume of various solutions, significant differences were observed as follows. The survival time was unchanged with dextrose in saline solution, was increased to 42 hours with pure amino acids and was increased to 515 with hydrolyzed protein. With citrated plasma or serum survival time was but 45 and 46 hours, whereas with heparinized plasma it was 60 hours. The fall in blood pressure was greater with citrated plasma and serum than with heparinized plasma, whereas hydrolyzed protein produced less hypotension than dextrose. Study of the changes in red cell volume and in plasma proteins gives some indication that the amino acids of hydrolyzed protein were converted into plasma albumin. Microscopic study of the liver suggests that protein is lost from the hepatic cytoplasm in hemorrhage and that injecting hydrolyzed protein replenishes this loss as compared with experiments in which dextrose was used. It may be inferred that in shock due to repeated hemorrhage a solution containing amino acids and peptides of hydrolyzed protein has a beneficial influence as compared with dextrose and that heparinized is far superior to citrated plasma.

**Traumatic Shock**—Tine and his co-workers report a study on the capillary leakage hypothesis in shock utilizing radioactively tagged plasma proteins. By tagging the plasma protein molecule with a radioactive element and introducing such plasma protein into the blood stream a label is provided by which to identify the movement of plasma proteins. In order to obtain as physiologic a preparation as possible, radioactive cystine was synthesized from radioactive sulfur (eighty day half life) and was fed to plasma protein deficient dogs, which incorporated the cystine into their own plasma proteins. Plasma protein removed from these dogs was then administered to normal dogs and to dogs shocked by hemorrhage and its rate

of escape from the circulation determined. Plasma proteins tagged with radioactive isotopes ( $S^{35}$ ,  $Br^{82}$ ,  $I^{131}$ ) were used to study the capillary leakage hypothesis in hemorrhagic, tourniquet and burn shock. No evidence of leakage due to a change in the permeability of the general capillary bed was found. Tagged plasma proteins escaped into areas of injury in considerable amounts but not into untraumatized areas. There is no evidence to show that the general capillary bed becomes more permeable to plasma proteins or plasma in the late or irreversible phase of shock. Data obtained by the use of radioactively tagged red cells injected intravenously combined with tissue analyses for hemoglobin and tagged red cell content indicate that about one fifth of the capillary blood becomes stagnant or trapped out of active circulation as the shock phase deepens. The progressive decline in shock is not due to a fall in plasma volume but to a fall in the volume of actively circulating plasma. The blood content per gram of tissue is not more and is generally the same, or less in shock than it is in normal dogs. The therapeutic problem in shock after adequate replacement of lost blood or plasma has failed is one of restoring volume and velocity flow through capillaries before the integrity of vital tissue processes is lost.

### Archives of Neurology and Psychiatry, Chicago

50 111-232 (Aug) 1943

- Electroencephalographic Classification of Epileptic Patients and Control Subjects. F. A. Gibbs, E. L. Gibbs and W. G. Lennox—p. 111  
Anterior Chordotomy. Further Observations on Physiologic Results and Optimum Manner of Performance. O. R. Hyndman and J. Wolkin—p. 129  
Metabolic Studies on Epileptic Patients Receiving Azosulfamide and Phenobarbital. M. E. Cohen, F. S. Coombs, S. Cobb and J. H. Talbot—p. 149  
Mineral Constituents in Blood Serum and Cells of Schizophrenic Patients. Distribution of Sodium, Potassium, Calcium, Magnesium, Inorganic Phosphorus and Chloride. S. Katzenelbogen and Rebecca Snyder—p. 162  
Measurement of Intellectual Functions in Acute Stage of Head Injury. J. Ruesch and B. F. Moore—p. 165  
Histogenesis of Early Lesions of Multiple Sclerosis. II. Acute Multiple Sclerosis. I. M. Scheinker—p. 171  
Electrical Excitation of Cerebral Cortex. Description of New Stimulator. W. F. Rahn, Jr. and J. E. Scarff—p. 183  
Special Hospital in Time of War. W. Penfield and W. V. Cone—p. 193

**Azosulfamide and Phenobarbital in Epilepsy**—According to Cohen and his associates, azosulfamide has been demonstrated to exhibit anticonvulsant action in patients with epilepsy. Associated with the anticonvulsant effect, alterations in the concentration of chemical constituents of the serum were described. These included a decrease in the carbon dioxide content of the serum, a decrease in the carbon dioxide combining power of the serum and an elevation in serum chlorides. The authors investigated the nature of the metabolic changes associated with ingestion of azosulfamide and with phenobarbital, a drug with anticonvulsant properties. Administration of azosulfamide is accompanied by a decrease in the carbon dioxide content and the carbon dioxide tension of the serum. The decreased carbon dioxide content and the lowered carbon dioxide tension of serum accompany the anticonvulsant effect. The anticonvulsant effect of both azosulfamide and phenobarbital coincides with a positive potassium balance. Ammonium chloride produces the same degree of 'acidosis' as does azosulfamide without alteration of potassium exchange and does not have an anticonvulsant effect. Phenobarbital produces no 'acidosis' but a positive potassium balance and has an anticonvulsant effect. This suggests that 'acidosis' is not necessarily the crucial factor in anticonvulsant action.

### Archives of Physical Therapy, Chicago

24 449-512 (Aug) 1943

- Influence of Kenny Concept of Acute Poliomyelitis on Physical Treatment Throughout All Stages of Disease. R. L. Bennett—p. 453  
Analysis of Treatment of Infantile Paralysis. With Comments on the Kenny System. A. M. Rechtman—p. 461  
Future of Rehabilitation. T. C. Foster—p. 472  
Effect of Therapeutically Administered Carbon Dioxide Inhalation on Respiration in Pulmonary Tuberculosis. A. L. Banyai and G. H. Jurgens—p. 475  
Control of Peripheral Circulation. Review of Physiologic Literature. K. Harpuder—p. 481  
Physical Therapy of Peripheral Vascular Disease. H. Warshawsky and Mary W. Dempsey—p. 487

## California and Western Medicine, San Francisco

59 105-154 (Aug.) 1943

- Rheumatic Fever Its Incidence in Southwestern States S J McClendon—p 114  
Disposition of Substandard Military Personnel W P Corr—p 116  
Women in Industry Study of 135 Women Working as Riveters in Aircraft Industries W C Bradbury and C B S Evans—p 119  
\*Cancer of Uterus Vaginal Smear in Its Diagnosis H F Traut and G N Papanicolaou—p 121  
Malignant Tumor of Breast F G Motley and D A Harwood—p 123

**Vaginal Smear in Diagnosis of Uterine Cancer**—Papanicolaou discovered in the course of routine studies of human vaginal smears not only that the normal cells were shed but that many pathologic cells could be found, among them those of cancer. Papanicolaou and Traut studied thousands of vaginal smears in an attempt to determine the incidence of cancer cells in the vaginal smear as related to the incidence of malignant disease in the uterus as demonstrable by clinical methods and biopsy technique. The malignant epithelial cells exfoliate from the surface of neoplastic growths much as do normal cells. They float downward into the vaginal fornix, where they accumulate and become mixed with normal cells of epithelial and blood origin, as well as with mucus, bacteria, parasites and cellular debris. The rate of exfoliation of malignant cells seems to be dependent on the rate of growth of the neoplasm and its size. Meticulous scrutiny of the stained smear preparations is an important essential. The vaginal smear presumptive diagnosis should be substantiated by biopsy. The value of the vaginal smear in the diagnosis of cancer of the uterus is that it can be applied to larger numbers of women because of its simplicity and ease of application. The vaginal smear may be made without trauma and thus the danger of dissemination by way of open lymphatics is avoided. The authors found in the course of several thousand examinations 193 instances of carcinoma of the uterus—about 126 lesions involving the cervix and of both the squamous and the adenocarcinomatous types, the remaining 67 were carcinomas of the fundus. The smear showed the presence of cancer of the cervix in all but 13 per cent of instances when it was demonstrable by biopsy. Thirteen instances of adenocarcinoma were revealed for the first time by the vaginal smear when no other clinical procedure had sufficed to make the diagnosis. Some of these were early lesions.

## Canadian Journal of Public Health, Toronto

34 347-392 (Aug.) 1943

- The Blind in Canada F S Burke—p 347  
\*Immunization Against Influenza A R Hare J Morgan Jocelyn Jackson and Dorothy M Stamatis—p 353  
Canada and Tropical Disease J L Little—p 360  
Family Roster Service in Lamont Health District H Siemens—p 364  
Errors in Calculation of Nutritive Value of Food Intake III Comparison of Calculated and Determined Amounts of Iron Constance M Young and E W McHenry—p 367

**Immunization Against Influenza A**—Hare and his associates state that a vaccine made by concentrating the virus in allantoic fluid according to the method of Hare, McClelland and Morgan is strongly antigenic and that the serum taken after immunization has a high titer as measured by the agglutinin inhibition test. The levels reached are as high as those reached by patients convalescing from the disease. But whether the immunization had conferred actual immunity cannot be answered until an immunized population is subjected to an epidemic. A higher antibody level is obtained with a concentrated vaccine than with allantoic fluid which has been untreated. There was a possibility that a soluble antigen which may have been present in allantoic fluid but is removed when the vaccine is made might have been of importance. Whether one or two doses of vaccine should be given is a moot point because the increase in antibody level was in general lower when two doses were given than with only one. The reasons for this are not apparent other than the possibility that there may have been a negative phase in Wright's sense of the term. The use of the concentrated vaccine is not as yet practicable when large numbers are to be immunized. The actual process of concentration is not difficult, but the yield is small. Little more than 7 or 8 cc of fluid can be collected from each egg and if this is concentrated ten times it follows that less than 1 cc of

completed vaccine can be obtained from each egg. Unconcentrated vaccine was definitely a less powerful antigenic stimulus than the concentrated, some subjects having scarcely any rise in titer. Should the vaccine doses confer immunity, the problem would be one of production.

## Cancer Research, Baltimore

3 569-648 (Sept.) 1943

- Infection of Turkeys and Guinea Fowls by Rous Sarcoma Virus and Accompanying Variations of Virus F Duran Reznals—p 569  
Growth of Chicken Sarcoma Virus in Chick Embryo in Absence of Neoplasia J J Milford and F Duran Reznals—p 578  
Studies on Rous Sarcoma Cells Cultivated in Vitro II Morphologic Properties of Rous Sarcoma Cells E Tenenbaum and L Doljanski—p 585  
Further Observations on Skin Carcinogenesis by Single Application of 20 Methylcholanthrene W L Simpson and W Cramer—p 604  
Carcinogenic Activity of Some New Derivatives of Aromatic Hydrocarbons I Compounds Related to Chrysene C E Dunlap and S Warren—p 606  
Reported Production of Tumors by Normal Liver Cells of Mice Bearing Tumors Produced by Methylcholanthrene L Dmochowski—p 608  
Effect of Temperature on Ultraviolet Carcinogenesis with Wavelength 2,800-3,400 Å J A Bain H P Rusch and B E Kline—p 610  
Growth and Regression of Frog Kidney Carcinoma Transplanted into Tails of Permanent and Normal Tadpoles R Briggs and R Grant—p 613  
Tissue Metabolism Studies on Bone Marrow Consideration in Relation to Tumor Metabolism C O Warren—p 621

## Experimental Medicine and Surgery, Brooklyn

1 229-308 (Aug.) 1943

- Croton Oil Shock B Kisch and H Koster—p 229  
Hemioctet Readings of Normal Dogs B Kisch and E Strauss—p 230  
Action of Sodium Thiosulfate on Blood I Litwinski L I Boyd and L Greenwald—p 252  
Effect of Sulfonamides on Cerebral and Neuromuscular Actions D I Nischt—p 260  
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On Specificity of Procaine Esterase B Kisch—p 278  
Experimental Studies on Functional Murmurs and Extra Sounds of Heart A A Lusada and H Mautner—p 282  
Gelatin Infusion in Hemorrhagic Shock Martha Janota H Necheles R E Weston A Weissman and S O Levinson—p 298

## Journal of Nutrition, Philadelphia

26 105-218 (Aug.) 1943

- Effect of Severe Calcium Deficiency on Pregnancy and Lactation in Rat Muriel D D Boelter and D M Greenberg—p 105  
\*Digestion of Whole Wheat and White Breads in Human Stomach H H Rostorfer, C D Kochukun and I R Murlin—p 123  
Effect of Sodium Chloride on Disposition of Injected Glucose in Strain of Rats G Sayers M Sivers and J M Orten—p 139  
Effect of Vitamin D on Calcium Retentions Hughina Mekay Mary B Patton Martha S Pittman Genevieve Stearns and N Fadelblute—p 153  
Effects of Pantothenic Acid and Inositol Added to Whole Wheat Bread on Excretion Time Digestion and Absorption in Upper Gastrointestinal Tract of Dogs C G Blum F W Heggeness and E S Nasset—p 161  
Further Consideration of Effect of Altitude on Basal Metabolism Study on Young Women Residents of Denver R C Lewis Alberta Hoff and Anna Marie Duval—p 173  
Study of Availability of Iron in Enriched Bread H R Street—p 187  
Prevention of Perosis and Dermatitis in Turkey Poultry H Patrick R V Boucher R A Dutcher and H C Knudsen—p 197  
Studies on Nutritional Requirements of Rhesus Monkeys H A Wu Huan A F Kasmussen Jr C A Elchjem and I F Clark—p 205

**Digestion of Bread in Human Stomach**—Pekel wheat bread made from flour containing all of the wheat kernel except the outer epidermis weighing less than 2 per cent was studied by Rostorfer and his collaborators in comparison with several other breads in experiments on gastric digestion in 6 human subjects. Samples drawn from the stomach by the Roberts tube one hour after eating were analyzed for total and free acidity, total solids, pepsin, total and free reducing sugar, and total and soluble nitrogen. Correction for time lost in sampling and for free reducing substance and soluble nitrogen in the breads made possible the calculation of rate of carbohydrate and protein gastric digestion. It was found that small extra amount of pantothenic acid (100 mg. of the other B factor) contained in high vitamin breads had no effect on digestion at least as great as that of the synthetic calcium salt of the acid.



does, one an hour before the test meal and the other eight to ten hours before. Another important observation was with respect to the digestion of starch in breads. The use of high vitamin yeast seems to bring the digestibility of whole wheat bread up to that of white bread. This appears to offer a clue to the preparation of a "successful" whole wheat bread, but the improvement is yet applies only to digestion of "hydrolyzable carbohydrate." Possibly the addition of nonfat milk solids would increase protein digestion (in the stomach) also to the level of that of ordinary white bread. Further experiments are necessary to clarify questions involved in the production of a wholly acceptable whole (98 per cent) wheat bread. In the gastric digests of the whole wheat bread the average pepsin content was approximately 40 per cent greater (Mett tube measurement) than in those of the two white breads. The peptogenic value of whole wheat bread, therefore, is not to blame for lower rates of protein digestion, and such error is results from the small amount of (soluble) nitrogen in the pepsin does not invalidate but rather gives emphasis to the slower rate of gastric digestion of the whole wheat product. The vital economic value of whole wheat as food for man is not touched by these facts, for the over all digestion is sufficiently high to produce a large net saving not only of protein but also of calories from the wheat for human consumption. It appears plausible that the slower rate of digestion of whole wheat in the human stomach as compared with white bread is responsible at least in part for the relative unacceptability of the former by the general public.

### Journal of Pediatrics, St Louis

23 131-250 (Aug.) 1943

- Determination of Bone Age in Children. Method Based on Study of 1129 White Children. L. A. Lurie, S. Levy and M. L. Lurie—p. 131
- Feet of Normal Children. Study of Lateral X-Ray of Weight Bearing Foot. M. Robinson, Margaret Johnston and Margaret Anderson—p. 141
- Significance of Widal Reaction in Enteric Diseases of Children. M. Greenberg—p. 150
- Meningococcemia. N. Silverthorne—p. 155
- Postrubella Encephalomyelitis. Report of Cases in Detroit and Review of Literature. F. J. Margolis, J. L. Wilson and F. H. Top—p. 158
- Effects of Poliomyelitis Virus on Urinary Bladder of Rabbits. J. A. Toomey, J. D. Pilcher and P. T. Rossman—p. 166
- \*Attempts to Recover Poliomyelitis Virus from Fruit, Well Water, Chicken Cords and Dog Stools. J. A. Toomey, W. S. Takacs and Linda A. Tischer—p. 168
- \*Attempts to Isolate Poliomyelitis Virus from Urine. J. A. Toomey, Linda A. Tischer and W. S. Takacs—p. 172
- Mediastinal Emphysema and Pneumothorax Following Tracheotomy. Report of 4 Cases. G. B. Forbes and G. W. Salmon—p. 175
- Hemophilus Influenzae Type B Laryngitis with Bacteremia. Report of 4 Cases. P. G. Du Bois and C. A. Aldrich—p. 184
- Sudden Death in Infants Due to Pneumonia. J. M. Adams—p. 189
- Wheat Germ Oil (Vitamin E) in Treatment of Congenital Nonobstructive Hydrocephalus. S. Stone—p. 194
- Chemical and Enzymic Studies of Duodenal Contents of Infants. L. Kajdi and W. C. Davison—p. 204
- Idiosyncrasy to Metallic Mercury, with Special Reference to Amalgam Fillings in Teeth. M. H. Bass—p. 215
- Congenital Pulmonary Cysts. Report of Infant Treated by Lobectomy with Recovery. C. C. Fischer, F. Tropea Jr. and C. P. Bailey—p. 219
- Streamlined Infant Feeding. Feeding Routine Utilizing Earlier Addition of Solid Foods and Fewer Feedings. N. W. Clein—p. 224

**Attempts to Recover Poliomyelitis Virus**—Toomey and his associates attempted to recover poliomyelitis virus from fruit (washings), well water, stools from sick dogs and cords from paralyzed chickens found in vicinities where human poliomyelitis had occurred. Although the virus may have been present in the specimens tested, its existence could not be demonstrated when either the eastern cotton rat or the Macaca mulatta monkey was used as the test animal.

**Attempts to Isolate Poliomyelitis Virus from Urine**—Toomey and his collaborators tried to demonstrate the virus of poliomyelitis in the urine of patients with bladder paralysis. Their attempt was a failure when the monkey was used as the test animal, even though such specimens were obtained at an optimal time, that is, coincident with the onset of the paralysis. Urine obtained post mortem from the bladders of poliomyelitis patients was tested for the presence of the virus on eastern cotton rats. These tests also gave negative results.

### Journal of Thoracic Surgery, St Louis

12 503-606 (Aug.) 1943

- Bronchogenic Cysts of Mediastinum with Report of 3 Cases. W. F. Adams and T. F. Thornton—p. 503
- Decompression of Heart in Severe Scrophulous. Report of Case. C. R. Irm and R. D. McClure—p. 517
- Surgical Anatomy of Bronchi and Vessels. J. Miskell and C. M. Cornell—p. 526
- Preliminary Phrenic Nerve Inhibition in Thoracic Surgery. J. Arce and M. M. Brer—p. 544
- Accessory Pulmonary Artery Probably Arising from Abdominal Aorta. J. Arce—p. 548
- Operation Performed in One Stage with Inhalation Anesthesia for Hydatid Cysts of Lung Free of Adhesions. A. Ceballos—p. 551
- Experiments in Intracardiac Surgery. II. Intracardiac Visualization. D. I. Harken and Evelyn M. Glidden—p. 566
- Postoperative Disturbances of Respiratory Mobility. I. Hoffbauer—p. 573
- Artificial Pneumothorax. Nonstatistical Analysis of Major Factors Involved in Its Proper Management. T. N. Rafferty—p. 578
- Major Surgery in Amyloidosis. J. M. Beardsley—p. 590
- Putrid Empyema. I. Kross—p. 601

### Journal of Urology, Baltimore

50 1-122 (July) 1943

- Management of Hydronephrosis Due to Ureteropelvic Obstruction. Preliminary Report. R. B. Henline and J. H. Menning—p. 1
- Renal Ectopia. Report of 2 Cases with New Method of X-Raying Pelvic Ectopia. N. S. Scarcello—p. 25
- Primary Actinomycosis of Kidney. Case Report. D. L. Cohen—p. 29
- Results of Surgical Treatment of Diffuse Glomerular Nephritis. C. L. Onell and I. Diaz Munoz—p. 34
- Transversal (Suprapubic) Closure of Vesicovaginal Fistula. W. Valm—p. 40
- Review of Primary Carcinoma of Ureter. Presenting 2 Cases. W. W. Scott—p. 45
- Synthetic Hydrocarbon for Relief of Ureteral Spasm. H. G. Lund and T. G. Zingal—p. 65
- Report of Case of Bilharziasis. J. C. Burt, C. M. Lane and J. L. Hamilton—p. 68
- \*Absorption of Protein from Urinary Bladder. L. H. Baretz, M. Harten and M. Walzer—p. 71
- Clinical Study of Obstructive Bladder Disease Using Free Tests. V. F. Marshall and Ellory Endicott—p. 76
- \*Postmortem Findings in Carcinoma of Prostate Following Castration and Diethylstilbestrol Therapy. Case Report with Autopsy and Postmortem Tissue Acid Phosphatase Studies. G. G. Gilbert and G. Margolis—p. 82
- Paravesical Appendicular Abscess with Report of an Unusual Case of an Old Appendicular Abscess with Symptoms of Prostatism. J. A. Lazarus—p. 95
- Further Modification of Foley and Alcock Foley Retention and Hemostatic Catheters. M. Wolf—p. 100
- Mixed Leiomyoma and Lymphangioma of Epididymis. S. Malisoff and M. Helsen—p. 104
- Formation of Urinary Calculi. H. K. Lassen—p. 110
- Simple Aid for Testicular Biopsy. N. C. Schlossmann—p. 121

**Absorption of Protein from Urinary Bladder**—Baretz and his associates state that various dyes, anesthetics, drugs, urea and urinary constituents are absorbed from the urinary bladder of man, dog, cat, guinea pig and rabbit. In the present study a direct immunologic technique has been used to study the absorption of protein from the urinary bladder. Specific excitation of a passively sensitized cutaneous site was induced by oral administration of the related antigen. Studies with this method revealed that the absorption of unaltered protein occurred with physiologic regularity following oral, intraduodenal and rectal administrations of the protein and on introduction of the protein into the cervix and vagina. Experiments are described which demonstrate that absorption of traces of unaltered protein from the urinary bladder does occur. The choice of cottonseed as the antigen to be studied was determined by the availability of a serum which was particularly suitable for this purpose. This sensitizing serum was obtained from a patient with a high degree of cutaneous sensitivity to cottonseed. The uniformly positive results obtained with this simple immunologic technique in monkeys and in man clearly establish the fact that detectable traces of protein are absorbed from the urinary bladder. This organ must therefore be considered as a possible site of absorption of allergenic substances introduced into the bladder for therapeutic or diagnostic purposes. Such traces of absorbed protein are more than sufficient to produce severe reactions in individuals who are sensitive to the allergen employed. In contrast to previously reported techniques which depended on chemical tests and on delayed immunologic responses to the introduced protein the technique herein described permits almost immediate detection of the entrance of the protein into the circulation.



**Postmortem Findings in Carcinoma of Prostate**—Gilbert and Maigolis report a case of carcinoma of the prostate treated by transurethral resection, castration and diethylstilbestrol. This case is quite similar to the reported cases of delayed failure following castration for prostatic carcinoma. There was a temporary phase of improvement during which there was relief from pain, a decrease in the size and degree of induration of the prostate, and regression of lung metastases. This was followed by a period in which the tumor was refractive to diethylstilbestrol therapy, progressed rapidly and yet remained clinically quiescent in the prostate and in the lungs. The serum acid and alkaline phosphatase values in this case roughly paralleled the course of the disease.

### New York State Journal of Medicine, New York

43 1375-1470 (Aug 1) 1943

- Physical Therapy in Peripheral Nerve Injuries R Kovacs—p 1403  
Sulfonamide Therapy of Ocular Infections P Thygeson and W Stone Jr—p 1409  
Problem of Self Esteem in Psychotherapy L R Wolberg—p 1415  
Psychiatry in General Hospital C P Oberndorf—p 1420  
Treatment of Angina Pectoris by Testosterone Propionate—L H Sigler and J Tulgry—p 1424  
Intracranial Arteriography with Rapidly Excreted Iodine Compound (Diodrast) J L Pool and S Alexander—p 1429

43 1471-1566 (Aug 15) 1943

- Danger of Cutaneous Reactions to Sulfonamides Report of 2 Cases of Bullous Eruption Following Use of Sulfanilamide, One of Which Resembled Pemphigus Vulgaris D Bloom—p 1499  
Tropical Diseases—Postwar Health Problem T T Mackie—p 1509  
New Developments in Infantile Paralysis D W Gudakunst—p 1514  
Vaginal Antisepsis During Labor H W Mayes—p 1518  
Care of Soft Tissue Injuries T Young—p 1521  
Birth of Medical Education in Upstate New York T W Clarke—p 1527  
Unusual Case of Undulant Fever with Postoperative Pyrexia M H Morris—p 1538

### Surgery, St Louis

14 157-320 (Aug) 1943

- Nonoperative Treatment of Cardiac Tamponade Resulting from Wounds of Heart A Block and M M Ravitch—p 157  
Nonpenetrating Abdominal Trauma E C Kelly—p 163  
Therapy of Shock in Experimental Animals with Serum Protein Solutions E E Muirhead, C T Ashworth, L A Kregel and J M Hill—p 171  
\*Clinical Experience with Thrombin as a Hemostatic Agent R T Tidrick, W H Seegers and E D Warner—p 191  
Metabolic Studies in Patients with Cancer of Gastrointestinal Tract P E Rekers, G T Piek and C P Rhoads—p 197  
\*Unilateral Decapsulation of Kidney for Transfusion Oliguria S C Flo and H W Cummings—p 216  
Urinary Retention Following Combined Abdominoperineal Resection F A Coller and P F Eastman—p 223  
Tissue Reactions to Medicaments Used in Local Treatment of Burns M F Maun, R C Schneider, M A Pilling and J W Hirshfeld—p 229  
Relationship of Acute Anemia to Wound Healing Experimental Study E L Besser and J L Ehrenhaft—p 239  
Malignant Neoplasms of Spleen Review of Literature and Report of Case of Primary Lymphosarcoma (Reticulum Cell Type) P F Hausmann and F W Gaarde—p 246  
Cure in Treatment of Tetanus Case Report S C Cullen and C S Quinn—p 256  
Cure for Improvement of Abdominal Muscle Relaxation During Inhalation Anesthesia Report on 131 Cases S C Cullen—p 261  
Preliminary Observations Concerning Paravertebral Injection of Sympathetic System in Hypertension H G Schwartz and T Findley—p 267  
Traumatic Rupture of Duodenum With Case Report J Sarnoff and B H Oremland—p 272  
Traumatic Chylothorax Case Treated with Intravenous Chyle E Schlug and J Ransohoff—p 278  
\*Carcinoma of Parathyroid Gland K A Meyer and A B Ragins—p 282  
Arteriovenous Fistula of Common Femoral Vessels with Extreme Dilatation of External Iliac Vein Report of Case J R Watson and R B Miller—p 296  
Leg Ulcers as Complication of Caisson Disease S T Glasser—p 302  
New Simple and Rapid Method for Hernial Sac Ligation R Lich Jr and R B Samson—p 306

**Thrombin as Hemostatic Agent**—Tidrick and his co-workers present a summary of clinical results obtained with the preparation "thrombin topical." Each vial contains approximately 10,000 units (the thrombin unit is defined as the amount required to clot 1 cc of standard fibrinogen solution in fifteen seconds). Thrombin has been employed in over 225 cases in fifteen of the University Hospitals of Iowa City. The largest group consisted of 102 cases in which thrombin was used to control

operative bleeding from donor skin graft sites. In 27 cases thrombin has been employed in the control of operative bleeding from cancellous or cortical bone. Thrombin was used also during cholecystectomy, in the Rammstedt pyloroplasty procedure, to control oozing from mastectomy skin flaps, following biopsy or traumatic wounds in cases of blood dyscrasia, in delayed postoperative bleeding, and in miscellaneous cases of soft tissue bleeding. The use of sulfonamide drugs in the wound is not a contraindication to the simultaneous use of thrombin, nor do the drugs interfere with the hemostatic action of the thrombin preparation. Thrombin provides a useful adjunct to surgical technique. Oozing of blood from capillaries and small venules can be checked promptly whenever the bleeding surfaces are accessible. Even in the case of small arteries application of thrombin is often effective, particularly if digital pressure can be applied to the bleeding points momentarily in order to permit the clot to become firmly anchored in the tissue. There has been no evidence that the thrombin produced local irritation or that patients for whom the preparation was used repeatedly became hypersensitive to it. None of the patients showed evidence of untoward effects from absorption of the thrombin or from local thrombosis of vessels.

**Unilateral Decapsulation of Kidney for Transfusion Oliguria**—Flo and Cummings report a case of post-transfusion reaction which was apparently cured by unilateral decapsulation of a kidney. Since the condition was becoming progressively worse and spontaneous recovery was despaired of, they felt that a unilateral decapsulation would do less harm than a bilateral one. If a unilateral decapsulation will break the vicious chain of events, this is the procedure of choice, especially in view of the damage to the kidney such an operation must entail.

**Carcinoma of Parathyroid Gland**—Meyer and Ragins present a detailed account of a case of carcinoma of the thyroid gland with postmortem observations. There was only a temporary improvement in the objective and subjective symptoms following extirpation of the tumor mass some twenty-six months before death. Eight months after the operation the subjective symptoms reappeared, and a year later the fibrocystic changes of the bone became progressively worse, despite x-ray irradiation to tumor mass and bone. This was followed by a number of pathologic fractures. Six weeks before death the serum phosphorus rose to 10 mg, indicating renal decompensation. The postmortem examination revealed a recurrent carcinoma of the parathyroid gland with metastasis to the peritracheal, subclavicular and perijugular lymph nodes, the lungs and the right kidney, generalized osteitis, fibrosis cystica of the bones, bilateral nephrolithiasis, bilateral chronic ascending pyelonephritis, left pyonephrosis with atrophy of the renal cortex and nephrocalcinosis.

### Virginia Medical Monthly, Richmond

70 433-484 (Sept) 1943

- Infants of Diabetic Mothers Priscilla White—p 436  
Pregnancy and Diabetes W R Jordan—p 441  
Treatment of Ureteral Calculi A I Dodson and H C Lee—p 444  
Problem of the Civilian Maladjusted D C Wilson—p 449  
Treatment of Eclampsia with Veratrum Viride J M Whitfield—p 452  
\*Hookworm Disease T R Littlejohn—p 455  
Hepatic Function in Acute Cholangitis Case Report A Bloom—p 457

**Hookworm Disease**—Littlejohn shows that some cases of hookworm disease are mistaken for other disorders such as peptic ulcer or appendicitis, and unjustifiable operations are performed. He reviews a number of case histories in which hookworm would probably not have been discovered had it not been for making simple routine laboratory examination. He stresses that all patients with chronic pain in the upper abdomen, especially with an increase of the eosinophil count, should be examined for hookworm ova. The thymol treatment is the least toxic and the most effective.

### West Virginia Medical Journal, Charleston

39 265-296 (Aug) 1943

- Epidemic Keratoconjunctivitis F A Gambrige—p 265  
Diagnosis and Treatment of Nasal Sinus Disease in Pediatric Patients H M Goodyear—p 270  
Penicillin and Other Mold Derivatives G A Jett—p 272  
Abdominal Pregnancy Report of Case A P Hill—p 277

# FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## Australian J. Exper. Biol. and M. Science, Adelaide 21 55-132 (June) 1943

- Changes in Influenza Virus Associated with Adaptation to Passage in Chick Embryos. F. M. Burnet and D. M. K. Bull.—p. 55  
Titration of Antibody Against Influenza Viruses by Allantoic Inoculation of Developing Chick Embryo. I. M. Burnet and W. I. B. Beveridge.—p. 71  
Studies on *Clostridium Oedematis* Group. I. H. and O. Antikemic Analysis. A. W. Turner and Catharine F. Eales.—p. 79  
Studies in Physiology of Host-Parasite Relations. 4. Some Effects of Tomato Spotted Wilt on Growth. B. J. Grieve.—p. 89  
Hemagglutination by Viruses. Range of Susceptible Cells with Special Reference to Agglutination by Vaccinia Virus. L. L. Clark and F. P. O. Nagler.—p. 103  
Incubation Period of Eggs of *Halotendipes Deceptor* Tucker (Acetivora) at Different Temperatures. J. Davidson and D. C. Swan.—p. 107  
Germinating Seeds as Source of Vitamin C in Human Nutrition. I. Ascorbic and Dehydroascorbic Acid Contents of Several Varieties of Seeds Germinating Under Standard Conditions for Varying Periods of Time. J. W. H. Lugg and R. A. Weller.—p. 111  
Nervous Distemper in Dogs. Pathologic and Experimental Study with Some Reference to Demyelinating Diseases in General. F. W. Hurst, Barbara Tennent Coole and P. Melin.—p. 115  
Antibacterial Substances Produced by Molds. 3. Detection and Estimation of Antibacterial Activity in Vitro. Nancy Atkinson.—p. 127

## British Journal of Experimental Pathology, London 24 81-132 (June) 1943

- Protective Properties of Alpha Antitoxin and Theta Antihemolysin Occurring in *Clostridium Welchii* Type A Antiserum. D. G. Evans.—p. 81  
Examination of Relationship Between Bacteriostatic Activity and Normal Reduction Potentials of Substituted Quinones. J. E. Page and F. A. Robinson.—p. 89  
Fixation of Foreign Material in Inflamed Tissue with Especial Reference to Action of *Clostridium Welchii* Toxin and Antitoxin. A. A. Miles and E. M. Miles.—p. 95  
Helvolic Acid, an Antibiotic Produced by *Aspergillus Fumigatus* Mut. Helvolic Acid. E. Chaim, H. W. Florey, M. A. Jennings and T. I. Williams.—p. 108  
Note on Crystallography of Helvolic Acid and Methyl Ester of Helvolic Acid. D. M. Crowfoot and B. W. Low.—p. 120  
Serologic Specificity of Autoantibody in Atypical Pneumonia. J. C. Turner and E. B. Jackson.—p. 121  
Some Investigations on Nature of Resistance of Inbred Line of Fowls to Development of Rous No. 1 Sarcoma. J. G. Carr.—p. 127

**Serologic Specificity of Autoantibody in Atypical Pneumonia.**—The existence of a relationship between atypical pneumonia and the cold agglutinins was pointed out by Turner in an earlier report. More recently a comprehensive investigation of the behavior of the cold agglutinins in a variety of infectious diseases revealed the aspect which seemed to be the key to its clinical and immunologic significance. This was the demonstration that the titer of cold agglutinins for the human erythrocyte rises in atypical pneumonia during the second week after the onset of respiratory symptoms in the fashion of specific immune antibodies. Abnormal amounts of cold agglutinin developed in more than 90 per cent of a group of cases of atypical pneumonia seen in the British Isles during the winter of 1942-1943. Thus, even though the infectious agent in this disease remains unknown except in the negative sense that it is probably not bacterial, a simple serologic principle for the delineation and classification of a current type of respiratory disease has been laid down. The authors examined the cold agglutinin of atypical pneumonia for serologic specificity by the methods of selective absorption and titration of activity on the erythrocytes of several species. It was found that the agglutinin has the properties of autoantibody and reacts equally with cells representing all four major human blood groups. When isolated by absorption the autoagglutinin exhibits a limited action on the erythrocytes of lower animals, having appreciable effect on rabbit cells only. It is suggested that this specificity may be explained by the existence of a heterogenic antigen shared by man and rabbit.

## Glasgow Medical Journal 22 1-32 (July) 1943

- Genesis of Human Voice. J. Donald.—p. 1  
Knee Injuries in the Army. J. C. Alexander.—p. 12  
Primary Thrombosis of Axillary Vein. Report of 3 Cases. A. L. Hall.—p. 16

## Guy's Hospital Reports, London

91 111-170 (Nos. 3 and 4) 1942

- Observations on Anatomy of Bronchial Tree with Special Reference to Surgery of Lung Abscess. R. C. Brock.—p. 111  
Bronchial Emphysema and Posture in Relation to Lung Abscess. R. C. Brock, F. Hodgkiss and H. O. Jones.—p. 131  
Level of Interlobar Fissures of Lungs. R. C. Brock.—p. 140  
Rectal Pain. J. A. Ryle.—p. 147  
Leiomyoma of Stomach with Report of Case. N. L. Eckhoff.—p. 153  
Note on Syme's Amputation with Report of Case of Forty Years' Duration. F. R. Kilpatrick.—p. 157  
Case of Squamous Cell Carcinoma of Ovary. R. E. Rowell.—p. 163

## Lancet, London

2 147-178 (Aug. 7) 1943

- Shock Producing Factor(s) from Stripped Muscle. I. Isolation and Biologic Properties. H. A. Green.—p. 147  
Id. II. Fractionation, Chemical Properties and Effective Doses. Martin Bielschowsky and H. A. Green.—p. 153  
Serial Spinal Anesthesia. J. A. Lee.—p. 156  
Dogs as Source of Leptospirosis Infection in Man. A. D. Gardner.—p. 157  
Sudden Senecence. R. Greene and A. S. Paterson.—p. 158  
Purpura of Skin. Review of 500 Cases. E. Davis.—p. 160  
Emergency Treatment of Smashed In Face. Value of Tracheotomy and Laryngotomy. D. H. Patey and E. W. Riches.—p. 161

**Emergency Treatment of Smashed In Face.**—According to Patey and Riches the smashed in face resulting from a severe blunt external force is emerging as a clinical entity. With the motor car and airplane as common agents in its production it is essentially an injury of modern civilization. The duties of the emergency surgeon in these cases are to deal with hemorrhage and gross soft tissue and bony damage to inspect the eyes and, if necessary, to secure the cooperation of the ophthalmic surgeon, to be on the lookout for any suggestion of cerebrospinal rhinorrhea and to administer prophylactic sulfonamides. Anesthesia of the patient with smashed in face presents difficulties. Inhalation anesthesia through a facial mask is difficult not only because of the facial injuries but because of the blood which is constantly running into the pharynx and leading to coughing and partial obstruction. If the patient is anesthetized past the stage of the cough reflex he tends to aspirate the blood into his lungs and may drown in his own blood. In this event the patient can be saved from death by asphyxia only by a rapid tracheotomy. Intravenous anesthesia might be thought to solve the difficulties, but asphyxial symptoms have been known to develop so quickly after intravenous injection that the patient's life was saved only by a rapid plunge laryngotomy. The author suggests that the initial emergency treatment of the severe types of smashed in face should be tracheotomy or laryngotomy under local anesthesia. Once an opening into the air passages has been made the anesthetic problem becomes easy, the danger of death from asphyxia is averted, and the reduction in cyanosis from the establishment of a free airway may by itself result in cessation of much of the hemorrhage.

## South African Medical Journal, Cape Town

17 167-182 (June 12) 1943

- South African Native Health and Medical Service. H. S. Gear.—p. 167  
Outbreaks of Dysentery at Military Hospital in South Africa. M. H. Finlayson.—p. 173  
Improved Technique for Vi Agglutination. A. Piper, Clarice G. Crocker and Janet Todd.—p. 175  
Case of Dysgerminoma of Ovary. J. Black and O. S. Hevins.—p. 177  
Epidemiologic Observations on Outbreak of Tick Relapsing Fever in Northern Transvaal. D. Ordman.—p. 180

**Dysentery in South Africa.**—Finlayson reports that shortly after the opening of a military hospital cases of gas troenteritis were observed among the patients and staff. There were two clinical types—the one type in which the patient passed from three to twenty liquid stools in twenty-four hours and after about twenty-four to forty-eight hours appeared to recover completely, the second type in which the attack was usually ushered in by violent vomiting and frequent loose stools persisting for seven or eight days. The latter type did not occur among bed patients but was noted among the staff and convalescent patients who were not confined to the hospital premises. The microscopic appearance of the stools made possible a diagnosis of bacillary dysentery long before the causative organisms were isolated. The stool examinations were

carried out by the methods described by Finlayson in 1941. It was observed that although *Bacterium sonnei* was isolated from outbreaks of dysentery occurring among the staff and from sporadic cases occurring among convalescent patients who were allowed leave from the hospital, this organism was not once isolated among patients confined to bed. In all bed patients who acquired a dysenteric infection at the hospital the organism isolated was identified as of the *Bacterium flexneri* group. The results of examinations of various foodstuffs were all negative. Since epidemiologic data pointed to milk as a possible vehicle of infection, it was examined and on four occasions bacilli with the characters of *B. flexneri* were isolated. Instructions were issued for all milk to be boiled. In spite of these instructions, cases of dysentery from which *B. flexneri* was isolated continued to occur among the bed patients. It was noted that these cases were occurring only among persons whose diet contained a high proportion of cream which was neither pasteurized nor boiled. The use of cream was prohibited, and since then no case of dysentery has occurred. Bevan in 1941 had shown that the chief cause of infantile mortality in South Africa is "infantile diarrhea." There is no doubt that this condition is a dysentery. The importance of boiling all milk unless pasteurized cannot be overemphasized. The average South African native looks on a mild dysentery as being more beneficial than otherwise. As the bulk of the milk supplies is handled by natives it is not difficult to conceive how milk can be infected by a milk handler who may be a carrier of dysentery bacilli.

### Schweizerische medizinische Wochenschrift, Basel

72 1429-1456 (Dec 26) 1942 Partial Index

- Reading of Roentgenograms W Jaeger—p 1429  
Corpus Luteum and Vitamin E in Imminent and Habitual Abortion F Ludwig—p 1431  
Gastricorrhea and Corpus Luteum C Müller—p 1433  
Acute Yellow Atrophy of Liver During Childhood O Geiser—p 1434  
Desert Sore A L Vischer—p 1436  
Technic of Blood Transfusion and Intravenous Drip in Infants and Small Children Margrit Esser—p 1438

**Desert Sore**—Vischer states that desert sore, or "Gallipoli sore," observed during the first world war in British troops in Palestine and at the Dardanelles, was seen by him recently among German and Italian prisoners of war in Egypt. These pyodermic sores resemble somewhat varicose crural ulcers except that they are found not only on the legs but also on the knees, hands, arms and the head. The sores are usually initiated by insect bites or scratches and begin as papules which become fairly large blisters containing first a yellowish and later a turbid secretion. When these blisters burst, slowly growing and profusely secreting ulcers form. The healing process is extremely slow. The sores occur chiefly during the summer, when insects are most annoying. The fact that lack of water in the desert prevents the cleansing of the sweat saturated skin is probably a factor. Troops whose general condition has been impaired by great exertion and desert heat seem to be especially subject. The native Arabs and native Libyan soldiers are free from them, they are somewhat less frequent in Italian than in German and British soldiers. The bacteriologic examination of the ulcers reveals chiefly staphylococci and streptococci and occasionally diphtheria bacilli. The diphtherically infected ulcer has a dirty gray coating and occurs as a rule only when pharyngeal diphtheria exists among the troops. Diphtherial ulcers are followed by paralysis, sometimes two or three weeks after healing. Immobilization of the involved area promotes healing of the sore. Prompt attention to small epithelial lesions prevents them. In South Africa desert sore is known under the term "veldt sore." Other terms for it are barcoo lot or septic sore.

### Bol de la Asoc Med de Puerto Rico, Santurce

35 215-252 (June) 1943 Partial Index

- Modified Friedman's Test for Pregnancy Preliminary Report R F Stokes and J E Ortiz—p 215  
Vogt-Koyanagi's Syndrome L J Montalvo Durand—p 218

**Vogt-Koyanagi's Syndrome**—According to Montalvo Durand this syndrome is rare. The most important symptoms are nontraumatic bilateral uveitis, premature graying, alopecia, symmetrical vitiligo, especially on the hands, wrists and feet and dysacusia. The cause is unknown. Japan is the place of

greatest incidence. The disease develops most frequently in persons between 30 and 40. Syphilis and tuberculosis have a certain contributory significance in the development of the disease.

### Klinische Wochenschrift, Berlin

21 425-444 (May 9) 1942 Partial Index

- \* Administration of Vitamin K in Hepatic Function Test L Armentano and I Geher—p 425  
Effect of Mannitol on Liver G Sabatini and D Gigante—p 429  
Toxic Effect of Extracts from Posterior Lobe of Hypophysis E Werle, O Koch and H Voss—p 431  
Biologic Mode of Reaction of Serosa Epithelium K Niessing—p 432  
Preliminary Report of Results of Pulmonary Function Test in Bechterew's Disease W Zens and F Peters—p 435  
Importance of Carbonic Acid in Blood Coagulation F Widenbauer and Ch Reichel—p 436

**Administration of Vitamin K in Hepatic Function Test**—Armentano and Geher used Koller's vitamin K test as a test of hepatic function. In the majority of cases of obstructive jaundice the prothrombin time was restored to normal within twenty-four hours after administration of vitamin K. There were isolated cases in which the normal value could be obtained only after repeated administration of vitamin K in the course of three days. Normal values in hepatocellular jaundice, provided the prothrombin values are very low, may be obtained only after all symptoms of the disease have disappeared. Existence of a severe hepatocellular icterus is suggested when prolonged prothrombin time is not restored to normal by one to three vitamin K injections (30 mg for each of them). Low prothrombin levels were not demonstrated in all of the cases with partial obstruction of the common bile duct. In obstruction by stones associated with cholangitis the prolonged prothrombin time can be restored to normal by methenamine injections, which result in liberation of vitamin K following the destruction of colon bacilli. In cases with cardiac decompensation and enlarged liver low prothrombin values are found which were spontaneously increased with restitution of compensation. Failure to restore compensation by administration of vitamin K may signify the presence of a beginning cirrhosis. A true picture of the prothrombin amount is revealed on determination of the prothrombin curve. That is particularly demonstrated in chronic hepatocellular icterus. Prothrombin values below 20 per cent are not always associated with spontaneous hemorrhages. These may be caused not only by lack of prothrombin but also by the increased permeability of capillaries. The prothrombin time was demonstrated to be normal in cases of symptomatic hemophilia and in all cases of hemorrhagic diathesis with the exception of 1 case of thrombopenic purpura. The shortest prothrombin time was found in a case of hemophilia. The prognostic value of the vitamin K test in liver disease is emphasized. Recovery occurred in all cases with normal prothrombin time and in cases in which prothrombin time was readily restored to normal by vitamin K administration. Yellow atrophy of the liver was suspected in a case with a low prothrombin level. Clinical signs of the condition became manifest somewhat later.

### Medicina Española, Valencia

6 375-500 (April) 1943 Partial Index

- \* Parathyroprival Tetany J A Lamelas, Dyz Prieto, Rabago—p 377  
Postarthritic Static Defects I Carrera Ioranzo—p 399  
Menopausal Psychosis D T Alcobér—p 394  
Deficiencies Caused by Medical Diets T Cerviá—p 400  
Infantile Kalz Azar, Antimony and Reticuloendothelial System I Barrios—p 412  
Late Results of Radium Therapy of Cancer of Uterus S Monnecor Torro—p 446  
Hemiparesis Caused by Lesion of Posterior Cerebral Artery L Arqu Girones—p 456  
"Stuka" Treatment of Bleorrhagia P Navarro Sala—p 460

**Parathyroprival Tetany**—Lamelas and his collaborators review the etiology and pathogenesis of parathyroprival tetany and report 2 cases which occurred among 87 persons operated on for goiter. The incidence of postoperative tetany, as reported by other surgeons, varies between 0.5 and 3.4 per cent. The authors evaluate treatment with parathyroid injection and dihydrotachysterol, with vitamin D in the form of calciferol and with calcium. In mild cases a lactovegetarian diet is sufficient, in severe cases and during attack parathyroid injection or dihydrotachysterol should be employed.

## Book Notices

**Stuttering: Significant Theories and Therapies** By Eugene F. Hahn. Foreword by Sara Stinchfield Hawn. Cloth. Price \$2.15. Pp. 177. Stanford University Press. London: Oxford University Press, 1943.

This is an important book. The author has achieved a number of desirable ends in his compilation of the various theories of and therapies for stuttering. He has selected almost all the authorities in the field of speech pathology, including eight from abroad and to assure the complete accuracy of his data he has had them either write their own digests of their respective points of view or edit the digests which he prepared. It is not within the province of a reviewer to go into the merits of the different theories and therapies discussed. However, a few examples of the diverse procedures employed in treating stutters—loud sighs, release of the adduction action of the vocal cords, thought training exercises 'breath chewing', psychoanalysis, building up visualization, building up a one lead dominance, voluntary stuttering, acquiring 'skill in controlling the form and duration of the stuttering reaction'—influencing the disturbed metabolic mechanism of the stutterer—will give the reader some idea of the confusion which exists in the field. The twenty-five digests are clearly and concisely written and in toto, present an excellent summary of all the important theories on stuttering. An appendix and an index complete the book. In the appendix the author stresses the advisability of employing a variety of therapeutic measures in the treatment of the stutterer and gives in detail a number of clinical procedures which he and others have found useful. Thus the book offers much valuable material to the teacher or clinician who wishes to correlate theory and practice. This volume should be required background reading for all who are interested in the stutterer's problem. In fact, the authorities whose theories are presented in the book should have it on their must list. Comparative study is an important step toward clarification.

**These Mysterious Rays: A Nontechnical Discussion of the Uses of X Rays and Radium Chiefly in Medicine** By Alan J. Hart, M.D., M.Sc. (Med.). Cloth. Price \$2.75. Pp. 218 with 28 illustrations. New York & London: Harper & Brothers, 1943.

No doubt many radiologists have wished they might write a popular book on x-rays which would be acceptable to the medical profession and provide attractive reading for the public. The author has succeeded enviably well in combining skill in writing with a vision born of long experience to produce a highly readable and dependable book on radiology for popular consumption. It sets forth important facts regarding diagnostic and therapeutic radiology in nearly nontechnical language. The author has succeeded in taking much of the mystery out of the topic by the use of a clever conversational style. There is a general discussion on the employment of the x-rays and radium in medicine and a general review of the problem of cancer, the use of ultraviolet radiation and the application of x-rays and radium in industry and certain medicolegal topics. Practical advice is given concerning cancer quacks and commercial x-ray laboratories. The author has done radiology a great service in providing this convenient and useful volume. It would be a valuable and popular addition to the literature on the waiting room table in any radiologist's office.

**Medical Parasitology: A Laboratory Manual** By J. Jacques Letcwin, B.Sc., M.S., M.D., Associate Professor of Parasitology, Middlesex University School of Medicine, Waltham, Mass. Third edition. Paper. Pp. 130 with 62 illustrations. Waltham, Mass.: The Author, 1943.

This loose leaf booklet is printed as a guide to a twenty hour course in parasitology for medical students. Numerous blank pages are interspersed for lecture and laboratory notes. Sixty-two illustrations accompany the directions for laboratory exercises. Morphologic details and parasites of little or no medical importance receive undue emphasis. Instead greater stress could well have been given to the life cycles and methods of diagnosis of the important parasites. It is unlikely that this manual will be of much value to any students other than those taking the particular course for which the directions were written.

**A Workbook of Elementary Pharmacology and Therapeutics (Including Drugs and Solutions)** By Luella C. Smith, R.N., B.S., Instructor in Science, Methodist Hospital, Indianapolis. Second edition. Paper. Price \$2. Pp. 700. St. Louis: C.V. Mosby Company, 1943.

This embryonic manual gives a sad impression of grade and high school education. That so much drill in simple arithmetic is needed is a sad commentary. The book has 300 pages, of which 184 are occupied with such diversions as churning  $\frac{1}{4}$  to percentage or answering "How much 10 per cent sodium bicarbonate is needed to make a quart of 5 per cent?" Ignorance of simple arithmetic has been found also in pharmacy, in dentistry and in medicine. Yet the demands for entrance would qualify for a university president. Since the book deals with remedies and their administration, one may wonder why there is no suggestion of how to stimulate better scholarship in the grade and high school, such as the elimination of coddling devices and the introduction of means of promoting toil, sweat and study.

Teachers in all schools are aware of the deficiencies in the students, and to give credit where due we think that the training, though quite deficient, is better than in the past and is improving. The author recognizes the student's deficiency and instead of useless fault finding sets out to correct it.

The book is divided into thirty-eight chapters or exercises, very elementary, yet important. Addition, subtraction, simple fractions, multiplication, division, improper fractions and similar grade school work is reviewed. More pertinent is the work on weights and measures, and the relationship of the metric and apothecary systems.

Because some doctors write prescriptions in Latin, she gives a list of abbreviations and their meaning but the connection between the abbreviation and the Latin words is a void, and the whole devoid of anything educational.

Medical men are to blame for much of this nonsense. And strange to say, medical men who best know Latin use it least. They have the good sense to keep dark the fact that if they are Latin scholars it usually is at the expense of less knowledge of medicine and pharmacology.

The greatest service of this work book is in illustrating defects in our whole system of education. The author sees students as they are, not as their qualifications state. Recognizing their deficiencies, she applies the treatment that is indicated. Students who are deficient in simple arithmetic are not likely to benefit from lectures on the pH of solutions or in logarithmic variations.

Under the present conditions this quite elementary book may be used as a review by students in the basic medical sciences. One or two weeks might be spent on it as a review, with profit. If more time is needed, the students are hopelessly incurable.

The content of Pharmacology and Therapeutics is too meager to deserve the title. The U.S.P., N.F., N.N.R. and Useful Drugs are given as references.

**Communicable Diseases for Nurses** By Albert C. Bowler, A.B., M.S., M.D., Head of the Department of Communicable Diseases and Clinical Professor of Medicine, University of Southern California, Los Angeles and Edith B. Piant, R.N., Director of Nursing, Los Angeles County Hospital with the assistance of Wilton L. Halverson, M.D., D.P.H., State Director of Public Health for California. Fifth edition. Cloth. Price \$3. Pp. 792 with 83 illustrations. Philadelphia & London: W.B. Saunders Company, 1943.

Although the book is intended primarily for the nurse its scope should make it useful also for the medical student and practicing physician. Nursing procedures are given in detail and all the common communicable diseases are presented concisely with references at the close of each chapter. Many additional infections less often encountered in this country but now of special interest because of war conditions receive attention. There are chapters concerning yellow fever, malaria, dengue, plague, cholera and typhus. Of the total fifty-seven chapters fifty-one relate to different diseases. Among the others is an excellent discussion of the sulfonamides in this edition. Numerous illustrations and fever charts are of added value and a glossary of medical terms will be convenient for the student. Any one interested in communicable diseases will appreciate the authors' work and the manner in which it is presented by the publishers.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES OR THE "JOURNAL," WHICH IS THE SOLE PROPERTY OF THE AMERICAN JOURNAL OF PHYSIOLOGY AND ANATOMY. THE EDITOR OF THE JOURNAL WILL NOT BE RESPONSIBLE FOR THE CONTENTS OF THE ANSWERS. THE EDITOR OF THE JOURNAL WILL NOT BE RESPONSIBLE FOR THE CONTENTS OF THE ANSWERS.

### HEADACHES ASSOCIATED WITH PREGNANCY AND ENDOCRINE THERAPY

**To the Editor**—A white married woman aged 32 has complained of frequent headaches for the past ten years. These attacks have had no definite association with the menstrual flow as to the time of their occurrence. The sinuses were found to be involved at one time, but she shows no disease of present that can be demonstrated by x-ray or physical examination. There has been slight hypotension and a basal metabolic rate of minus 10 has been obtained on two occasions. During two pregnancies there has been complete relief from headache after the third to fourth month. These did not return until a month or so following delivery in each instance. This suggested the possibility that relief might be obtained by the use of endocrine therapy, but I have been somewhat uncertain which would be the best preparation to employ. Fairly immediate relief of the individual attacks is obtained by the use of small injections of ergotamine tartrate.

Major, M. C., A. U. S.

**ANSWER**—The fact that an illness is relieved during pregnancy does not necessarily imply that endocrine preparations will relieve the illness during the nonpregnant state. During gestation there is a pronounced and progressive increase in the amount of estrogen in the circulating blood and in the urine throughout the entire ten months. In addition there is a precipitous increase in the amount of gonadotropic hormone during the first two months of pregnancy, a gradual drop during mid-pregnancy and then another moderate increase toward the end of pregnancy. The available commercial preparations of pituitary are in general unsatisfactory. Of the estrogens there are many excellent and potent products. However the administration of even large amounts of estrogen has failed to relieve women of ailments which spontaneously remain in abeyance during pregnancy. Such therapy has been tried for women afflicted with migraine, asthma and other conditions which were troublesome in the nonpregnant state but absent during gestation. Unfortunately the results have not been satisfactory.

A diametrically opposite type of treatment has also been tried. Some women with migraine who were free of the affliction during one or more pregnancies have been castrated by roentgen therapy in the hope that elimination of ovarian function would cure the migraine. The results have been disappointing.

### TACHYCARDIA, TUBERCULOSIS AND ALTITUDE

**To the Editor**—A man aged 32 with moderately advanced bilateral pulmonary tuberculosis has been at complete bed rest for the past two years. His pulse on waking is 78-84, it regularly increases to 102-106 during the day, and if he sits up in bed in the evening it goes to 116-120. A few extra systoles are present but no murmurs or cardiac enlargement, the red count is 5,600,000, white count 8,000, hemoglobin 103 per cent, blood pressure 118/85, maximum daily temperature 99.6 F. According to a tuberculosis specialist his tuberculosis is "insufficient to account for the tachycardia and may be due to a slight degree of hyperthyroidism." Blood cholesterol is normal. The patient desires to continue his treatment in Colorado or New Mexico and wishes to live in one of three towns situated at 4,900, 5,900 or 6,400 feet altitude. To reach the first would necessitate passing through (by train) elevations as great as 8,000 feet. His present altitude is 1,000 feet. Should his journey be broken to allow him to adjust to the increasing elevation and if so how often and for how long should each stopover be?

M. D., Oklahoma

**ANSWER**—Under the circumstances there need not be undue concern regarding the change of altitude. The patient may go direct to his destination. There will be no doubt a slight increase in the symptoms for a short while, but an adjustment will soon occur as it has with the thousands of other tuberculous patients who have made a similar change in altitude over the last fifty years. It would seem highly desirable that the diagnosis should be cleared before any move is made. Hyperthyroidism should be found if present. The same may be said with respect to severe cardiac or other common conditions.

The whole process, however, may be only tuberculosis. It is well to bear in mind that with all the facilities available one cannot see all tubercle-bearing tissue in the body and that sometimes small pulmonary lesions may be associated with extensive hilar lymph node and extrathoracic involvement. As long as symptoms are present the patient should receive treatment in anticipation of the healing of "occult" lesions even if the visible lesions have disappeared.

### PROPYLENE GLYCOL NOT BACTERICIDAL IN CIGARET SMOKE

**To the Editor**—Because glycerin is more important in making explosives than in keeping tobacco moist, the humectant now used in many cigarettes is diethylene glycol or a derivative thereof. As propylene has been shown to be of value in keeping down the bacterial content of air, is it likely that its use in cigaret tobacco might be similarly effective in the upper respiratory tract?

M. D., Massachusetts

**ANSWER**—The vaporization of propylene or any other glycol in a burning cigaret would have no effect on bacteria in the respiratory tract for the reason that propylene glycol is not bactericidal in dilutions of less than approximately 50 per cent. The reason propylene glycol vapor is bactericidal in such minute concentrations in the air is that the molecules of the glycol striking the small bacteria-containing droplet quickly build up a concentration of glycol within the droplet of 50 to 80 per cent. To produce such a concentration of propylene glycol in the fluid on the surface of the respiratory mucosa would require a relatively enormous amount of glycol—much more than could be inhaled even by breathing a fog of this substance.

### CORONARY HEART DISEASE IN PAINTER AND LEAD IN TISSUES

**To the Editor**—A white man aged 36 was suddenly seized with severe precordial distress. Physical examination did not reveal any abnormal findings. The pain was diffusely spread over the left side of the chest and was not helped by hypodermic morphine and papaverine. He died suddenly about four hours after the onset of the angina. At times when the pain was not so severe, his blood pressure was taken and was found to be 150/110 mm of mercury. Questioning was limited but it did reveal that he had been a painter for sixteen years and during the past few years had been troubled frequently by diffuse headaches. At autopsy a severe degree of atherosclerosis of the coronary vessels was found. At one point this sclerosis almost occluded the right coronary artery 1.5 cm from its origin. Microscopic study did not reveal any significant degeneration in the heart, kidneys, liver or brain. However, chemical analysis of the various organs for quantitative lead revealed the following values:

	Mg per 100 Gc
Liver	0.61
Vertebra	3.16
Brain	0.197
Blood	0.043
Intestinal contents	0.517

The problem which presents itself is to determine, if possible, the relationship between the increased amounts of lead present in his tissues, his occupation and the coronary sclerosis and coronary spasm. Did the post-mortem findings prove or disprove the question of occupational disease?

M. D., New York

**ANSWER**—This man died probably as the result of a rather extensive degree of coronary heart disease. In all probability he would have had angina pectoris on effort before his death if he had exerted himself, quite likely he did have angina pectoris.

It is improbable that his occupation as a painter and the lead found in his various tissues had any direct relationship to his coronary heart disease. Only rarely indeed is a history of exposure to lead found in patients with angina pectoris and coronary heart disease even at his age, and it is uncommon for young painters to have angina pectoris. Lead does not actually predispose to arteriosclerosis. Dr. Joseph Aub in his monograph on lead, pages 71 and 72, refers to a painter who was killed while at work by a fall and who showed much the same concentration of lead in his tissues: liver 0.68, skeleton 7.16, brain 0.22 mg per hundred cubic centimeters. He had always been well and there had been no symptoms.

Dr. Aub has commented on the concentrations of lead in the case presented in this query. He thinks that the concentrations are not high enough to justify the diagnosis of active lead poisoning, being simply representative of a painter who has absorbed some lead.

### SUDDEN DEATH AND ANESTHESIA

**To the Editor**—On page 1215 of The Journal of Aug. 21, 1943, the statement is made that "apnoea or depletion of carbon dioxide can cause death only through the failure of breathing." On the contrary, such apnoea as is caused by irregular ether anesthesia as in the case under discussion is generally due to failure of the circulation. I demonstrated this in many papers in the American Journal of Physiology and some in The Journal which are summarized with full references in my book "Adventures in Respiration: Modes of Asphyxiation and Methods of Resuscitation," published by Williams & Wilkins Company, Baltimore, 1938.

If that patient had been treated with carbon dioxide and oxygen she would almost certainly be alive today.

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## DISORDERS AND LESIONS OF THE MALE URETHRA

### OFFICE PROCEDURES

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Disorders of the male urethra are the cause of many disturbing symptoms. They are due chiefly to inflammatory conditions, obstructions and hyperemia or hyperesthesia. These disorders manifest themselves chiefly as abnormal discharges, urinary irritation and sexual disturbances. Inflammation and obstructions are intimately related. By this is meant localized inflammatory processes tending to produce fibrosis and obstructions in the areas so affected. It is equally true that obstructed areas in the urethra, whether congenital or acquired, tend to harbor infection. Each tends to perpetuate the other, inflammation produces fibrosis and obstructions, which in turn hinder the cure of infected areas. Considerable judgment is required at times, especially in chronic recurrent inflammation, to determine the correct plan of treatment. Formerly it was deemed inadvisable to dilate inflamed areas in the urethra even though an obstruction was known to be present and keeping up the inflammation, since the advent of sulfonamide compounds, however, with their remarkable germicidal qualities this view has undergone a decided change. The danger of bringing about the complications formerly feared by dilating obstructed areas no longer obtains, at least in those cases in which the infection is well controlled by one of the sulfonamide drugs. In consequence now the vicious circle often may be broken by dilating the obstructions which tend to keep up the infection. It naturally goes without saying that the instrumental dilation should be done with care and at first should be limited to the anterior urethra, furthermore, it should be carried out during the time in which the sulfonamide drug is being administered.

These rather radical views would not be advised had we not been impressed repeatedly with the manner in which urethral infections disappear when treated simultaneously with the dilation of obstructions and the administration of sulfonamide drugs.

### GONORRHEA

It is recognized that many urologists do not treat venereal diseases. The treatment of gonorrhea, however, is an office procedure which merits careful consideration of those who do treat it.

In the treatment of gonorrhea we recognize three groups: (1) those in whom the discharge has not been present for more than forty-eight hours, (2) those in whom the discharge has been present for more than forty-eight hours, (3) those in whom the discharge is chronic or recurrent and perhaps with complications.

*Acute Gonorrhea, When the Discharge Has Been Present for Less Than Forty-Eight Hours*—If the infection is of recent origin with the usual incubation period, and if the discharge has not been present for more than two days, a high percentage of prompt cures may be obtained by the combined use of sulfathiazole orally and a 5 per cent solution of mild protein silver sealed in the anterior urethra once a day for four days. The sulfathiazole should be administered in doses of 1.5 Gm each, four times a day for the first two days, then 1 Gm four times daily for the next two days. The 5 per cent solution of mild protein silver should be freshly prepared each day. The patient urinates, the meatus is washed, and 1.5 cc of the solution is injected into the urethra and retained with clamps. Collodion is applied with a camel's hair brush to the meatus and surrounding glans penis. The most satisfactory clamps are those used in laboratories for holding test tubes. When the collodion has dried, the clamps are removed. A condom is then placed over the penis and the patient is instructed to postpone urinating for four hours if possible. Straining efforts which might cause the solution to escape should be avoided. U S P collodion (nonflexible) should be used. The treatment is administered once a day for four days. During this time the sulfathiazole is continued as described.

All treatment is discontinued after the fourth day. Careful observation is then begun. If there is no return of discharge within a week the patient is permitted to make a test with alcoholic beverages if he so desires. If, for another week, no discharge appears, a urethral sound is introduced as a further provocative test. If this procedure does not cause a return of discharge or cloudiness of the first glass of urine treatment is still omitted but the patient is observed from time to time for four weeks longer, during which additional sounds are introduced into the urethra. If at the end of this time there is no discharge and the urine is clear the patient is told that he is well. So far we have not seen a recurrence when these tests were negative.

Let us again emphasize the fact that this plan of treatment is not employed for patients whose discharge has



been present for more than forty-eight hours or when the incubation period was not within the normal limits.

The prospect for a prompt cure is less favorable when coitus has occurred during the incubation period or when urethral strictures are present.

*When the Discharge Has Been Present for More Than Forty-Eight Hours.*—Under these circumstances the chances are about 80 to 90 per cent that a cure may be effected within two weeks or less by sulfathiazole. This, of course, implies that the patient can tolerate the sulfonamide drug in doses of 1 Gm. three or four times a day, preferably after meals and after a glass of milk at bedtime. For those who cannot take the recommended dose of sulfathiazole the amount may be reduced and yet may be effective. Here supplementary measures such as the usual urethral irrigations and injections should be employed. In spite of such routine care there will be a percentage of failures which require additional measures. What these shall be naturally depends on the extent of the failure and its most likely cause or causes. If it seems that the gonococcus appears to be of the resistant type, a change to sulfadiazine or to sulpyridine may at times be of value. If these are not effective in controlling the infection, mild routine measures should be patiently used until it seems safe to ascertain whether or not there is an obstruction or a pocketed area in the anterior urethra acting as a retarding factor. Of course, such instrumentation should never be undertaken when there is a complication such as coarctitis, proctitis, seminal vesiculitis or epididymitis.

*Chronic or Recurrent Gonorrhea.*—This requires unhurried efforts to ascertain the factors which retard the elimination of the infection.

Probably the commonest causes of failure to obtain reasonable satisfactory cures with sulfathiazole are stopping the drug too soon and pocketed infection in the glands of Littre or at urethral strictures.

*Prognosis.*—The time required to cure a patient with acute gonorrhea varies with (a) the promptness with which treatment is started, (b) the type of treatment employed and (c) the response to treatment.

The quickest cures are obtained with the combined use of sulfathiazole and mild protein silver sealed in the anterior urethra. This plan should be employed only when the patient reports for treatment within two days after the urethral discharge appears. After the infection has become well established, uncertainties as to the time for eradication are increased. They concern the tolerance of sulfathiazole, urethral strictures, the development of complications, the existence of pocketed areas in which the micro-organisms may have become entrenched and to drug resisting qualities developed by the gonococci.

The danger of infection being carried to the eyes by accidental transference is slight, but patients should be warned of the possibility and urged to exercise care in preventing such infection. Complications such as epididymitis and prostatitis are much less frequently seen in patients who are treated with sulfonamide drugs than in those who do not or cannot take them. Dosage at four hour intervals is recommended, as the blood concentration is kept more constant thereby.

Ambulatory patients who are taking sulfonamide drugs should be warned of the possibility of nausea and dizziness. Particularly should this be called to the

attention of airplane pilots, railway engineers, bus drivers and persons similarly employed. Drug fever is seen occasionally, it promptly disappears with the omission of the drug and forcing of fluids. Skin rashes are not uncommon and may take many forms. Acute agranulocytosis and hemolytic anemia are rare, when suspected blood counts and hemoglobin determinations should be made promptly and the drug discontinued if a definite decrease of red or white cells is noted.

#### NONSPECIFIC URETHRITIS

In the great majority of cases nonspecific urethritis is due to an obstruction at the meatus or in the urethra or to infection in pocketed areas such as in the glands of Littre or Cowper's gland, the prostate or the seminal vesicle. A small meatus or a stricture of the urethra tends to cause extension of infection into pocketed areas or "dugouts" from which its eradication requires a higher degree of immunity or a greater germicidal effect from medical measures than is required if the infection is limited to smooth mucosa.

For many years our most satisfactory treatment of nonspecific urethritis has been by meatotomy, when the meatus is small and by the dilation of strictures when they are present. No longer are astringent injections or irrigations employed. More prompt and more lasting benefit is obtained by establishing a normal caliber of the urethra and less frequently by electrical coagulation of infected glands of Littre. Of course attention is given to the prostate and seminal vesicles when needed. Endoscopic treatments are not used except when the other measures have failed, they usually are needed only when the glands of Littre harbor gonococci. In addition to these measures sulfonamide drugs, preferably sulfathiazole, are simultaneously employed.

Poor kidney function and obstructive lesions of the urinary tract are contraindications to the administration of large doses of sulfonamide drugs. If such lesions are suspected, or if large dosage is contemplated renal functional tests should precede the administration of sulfathiazole.

#### MEATOTOMY

Adequate diagnosis and treatment of urethral disorders is not feasible through a small urethral meatus. By a small meatus is meant one which will not admit a 26 F. bulb. In such cases meatotomy is necessary for diagnosis as well as for treatment of the usual urethral disorders such as chronic recurrent urethritis, deep urethral irritation and strictures.

Enlargement of the urethral meatus is accomplished with little discomfort by incision after the injection of 1 per cent solution of procaine hydrochloride into the tissue between the meatus and the frenum. After the meatus is incised to 30 F., as indicated by a bulbous bougie, the urethra should be tested for strictures by the introduction of bulbs. A sound one size smaller than the largest bulbous bougie which would pass through the anterior urethra is then introduced through the deep urethra. The sound is removed, and to the incised area at the meatus Monsell's solution is applied with a cotton swab. This stops bleeding and lessens the discomfort when the urine is voided. The patient is instructed to introduce a glass rod such as is attached to the stopper of germicidal solutions, about  $\frac{1}{2}$  or  $\frac{3}{4}$  inch into the urethra and press downward to prevent the cut surfaces from growing together. This

procedure is carried out by the patient every night for about ten days until the mucosa has covered the incised surface. Meatotomy thus carried out affords excellent results.

#### URETHRAL STRICTURES

Strictures of the urethra, bottle necks in this urinary passageway, are of common occurrence. They may be congenital, acquired or both. The scope of this paper does not permit a discussion of the various types of strictures or of the details of the inflammatory changes and chemical or traumatic injuries which produce the required fibrotic narrowing of the urethra. It seems more desirable to discuss the ill defined symptoms and management of strictures amenable to office treatment.

The recognition of a narrow point in the urethra is so easy and so important that even the most casual examination, unless the urethra is acutely or subacutely inflamed, should include the introduction of bulbous bougies into the anterior urethra. In no other manner can it be known that the urethra is normal in caliber. Sounds are not of value in the diagnosis of urethral strictures, and the symptoms may be wholly misleading. Obstructions of fairly large caliber may be associated with and causing a chronic "gleet" discharge which will not clear up until after the stricture has been dilated. The same may be said of low backache and of postpubic or pelvic discomfort. Itching along the urethra or in the perineum results more frequently from urethral strictures than from all the other causes. Frequency in urination, "nervousness" and sexual disturbances are not uncommon symptoms of urethral strictures. The rather surprising thing about all these vague symptoms of urethral strictures is that they do not vary in proportion to the narrowness of the stricture.

While strictures of medium and large caliber may be attended by a chronic or recurrent urethral discharge, strictures of small caliber may not cause any abnormal secretion. Retention of urine, partial or complete, after exposure to cold, sexual excess, alcoholic excess or voluntary retention beyond the usual time may result from strictures of fairly large caliber.

Periurethral abscess, fistula and urinary extravasation may arise from neglect of strictures or from false passages produced by instrumentation.

Following transurethral resections of the prostate strictures of the urethra which previously had given little trouble are quite likely to require dilation. This should be started about ten days after the resection.

The treatment of strictures should always begin with a meatotomy when the meatus will not admit a 26 F bulb.

*Gradual Dilation of Urethral Strictures*—Treatment by gradual dilation is the method of choice in the management of urethral strictures. The dilation should be so gradual that at no treatment is the trauma sufficient to require repair by scar tissue. Dilation with sounds is safer than with the Kollmann dilator. Gentleness and care in the passage of urethral sounds are of prime importance. The hurried passage of a sound increases both pain and the likelihood of making false passages. For patients who are unusually nervous or whose urethras are very sensitive, anesthetic jelly injected into the urethra and gently pressed into its deeper part reduces decidedly the pain caused by

urethral instrumentation. After the injection of the anesthetic jelly a clamp is placed near the meatus and the jelly allowed to remain in the urethra for about five minutes. K-Y jelly is then injected into the urethra and the sound slowly passed. If the stricture will not admit a 22 F sound it is preferable to use a Phillips tapering bougie. If this cannot be passed, an effort should be made to introduce a filiform, woven or whalebone. What plan to follow in case success attends this procedure depends on the difficulty experienced and on whether or not the urethra is sufficiently dilated to permit voiding urine. If one is in doubt, the filiform may be tied in the urethra, where it may be allowed to remain for several days. Patients nearly always void satisfactorily around such retained filiforms. Subsequent dilations are likely to be easy if no false passages are made. Whether hospitalization of the patient and an operative procedure should be carried out must be determined by a consideration of the patient's general condition and by local complications such as fistulous tracts or abscesses.

#### DISORDERS OF THE DEEP URETHRA

Acute inflammation of the deep urethra is readily recognized by the painful symptoms referable to this area, frequency in voiding and pus in the last part of the urine. In such inflammation the prostate gland inevitably also is involved. Sulfonamide drugs now control infection of this part of the urethra most of the time so well that little more than these drugs, hot baths and palliative measures are required. Attention to the prostate, however, is indispensable in the management of inflammation of this area.

It is mainly with chronic disorders of the deep urethra that this discussion will deal. Here is the meeting point of the urinary and sexual tracts in the male. It is not surprising, therefore, to find in this region disorders causing bed wetting in childhood, masturbation in youth, inflammatory processes and sexual disturbances in adult life and urinary obstruction in old age.

Among the lesions commonly seen in the prostatic urethra are papillomas, cysts, bullous edema, diverticula, false passages, varicose veins, angiomas, bands, bars, valves, fibrous contractions, urethritis and other abnormalities of the verumontanum, elongation or distortion produced by hypertrophy of the prostate gland and abnormalities which result from transurethral resection of vesical neck obstructions.

These lesions are readily recognized when seen through the McCarthy panendoscope. Hyperemia and hypersensitive conditions, which are the commonest of the deep urethral disorders, are readily detected by the passage of urethral sounds. Nearly all sexual disturbances arise from endocrine deficiencies and from lesions of the verumontanum while practically all obstructions are found back of it.

Failure to recognize the disorders of this vulnerable part of man's anatomy is due largely to failure to suspect them as being associated with the more or less ill defined symptoms produced.

Hyperemia and hyperesthesia of the deep urethra respond so well to treatment with sounds and instillations of 1 or 2 per cent solution of silver nitrate that more elaborate diagnostic measures than response to treatment are not required. If later this tentative diagnosis is shown to be inadequate urethroscopic studies

may then be made with less discomfort than if preliminary dilation with sounds and instillations had not been employed.

The cutting current is generally used for correcting gross lesions of the deep urethra, congenital or acquired such as valves, bands and fibrous contractions. The coagulation current is used for small papillomas, cysts and varicosities.

*The Verumontanum*—As the verumontanum is a very sensitive part of the prostatic urethra and is pressed on by muscular contractions of this area disturbances of the verumontanum result in a variety of urinary and sexual symptoms. Unless suspected as the cause of these symptoms the sensitive verumontanum may not be regarded as their cause. The anatomic position of the verumontanum made it inaccessible for observation with the ordinary cystoscope and it was not until the advent of the close vision cystourethroscope that accurate observation and studies of this area were made. Even today lesions of the verumontanum and the utricle are recognized less frequently by urologists than are the common bladder and renal disorders.

The pathologic changes most frequently noted are hyperemia, hyperesthesia, adhesions, cysts, neoplasms and strictures of the ejaculatory ducts. Associated with some disorders of the verumontanum are urethral obstructions and chronic prostatitis.

The symptoms of disorders of the verumontanum are postpubic or deep perineal itching, discomfort or pain, urinary frequency, nervousness or sexual symptoms such as premature emissions or impotence. Enuresis and excessive or prolonged masturbation in boys should suggest the possibility of an abnormal condition of the deep urethra or verumontanum as a causative factor. Occasionally persistent miction may result from infection in the utricle.

The most common condition caused by abnormalities of the verumontanum is sexual "neurosis" or sexual "neurasthenia." This is often associated with a mental disturbance or "nervousness" all out of proportion to the pathologic process causing it. And we say "causing it" advisedly for the reason that the symptoms disappear almost directly in proportion to the correction of the abnormalities of the verumontanum.

Unfortunately disorders in the prostatic urethra are not characterized by lesions always discernible by cystourethroscopic study. They are made just as obvious, however, by appropriate remedial measures. The cure of the multitude of ill defined complaints is quite as convincing as urethroscopic studies could be. By this is not meant that adequate studies should not be made but rather that, at times, and not infrequently, appropriate treatment with sounds and medication to the prostatic urethra will correct symptoms not assignable to any lesion sufficiently gross to recognize endoscopically.

Appropriate treatment of hyperemia and hyperesthesia of the verumontanum consists in correction of etiologic factors such as prolonged "necking" without sexual gratification, masturbation, withdrawal before emission and other such abnormal habits.

The urethra should also receive corrective treatment for abnormalities such as a small meatus and stricture if present. Even though no stricture is found, sounds should be introduced about once a week and allowed to remain in the urethra for about ten minutes. These tend to lessen the deep urethral hyperesthesia and

hyperemia and are of value whether or not urethral strictures are present. In three or four weeks the sound should be followed by an instillation of 2 cc of 1 per cent silver nitrate. In subsequent treatments the strength of the instillation should be increased gradually to about 2 per cent.

After tolerance to these treatments has been acquired and if symptoms still persist, cystourethroscopy should be made at which time adhesive bands, cysts or polypoid growths should be corrected by the high frequency fulgurating current or with cystoscopic scissors. This is not the procedure to be employed for hyperemia or hyperesthesia of the verumontanum. Instead at a later treatment silver nitrate in a concentrated form is applied directly to the verumontanum through an endoscope. This is not done until tolerance of the deep urethra to instrumentation has been obtained by the introduction of sounds and by the instillations of silver nitrate. Application of concentrated silver nitrate (20 per cent) is facilitated by the use of an endoscope with rounded edges not requiring an obturator. Observation is thus permitted as the endoscope is introduced. When the verumontanum comes into view the applications may be made without undue fumbling or trauma. For many years we have found that the discomfort incident to the application of concentrated silver nitrate to the verumontanum and deep urethra is greatly lessened by first applying a 50 per cent solution of phenol. This application is followed by a dry applicator and then the application of silver nitrate is made. When preceded by suitable preparatory treatments these applications are rendered comparatively free from pain, both immediate and late. They are likely to be followed by frequency in voiding for three to twelve hours and occasionally by terminal hematuria. These mildly disturbing reactions however are unimportant when compared to the benefit derived from the treatments. It is our impression that the applications of silver nitrate to the verumontanum is decidedly preferable to coagulation of this area with the high frequency current.

Let it again be emphasized that these applications should not be employed until after tolerance to deep urethral instrumentation has been induced by sounds and instillations of 1 and 2 per cent solutions of silver nitrate.

*Vesical Neck Contracture*—Following transurethral resection, contracture of the vesical neck has been observed not infrequently. This obstruction is in the form of an iris diaphragm-like fibrous ring at the internal urethral opening. Patients with this condition have symptoms of deep urethral irritation and slowing down of the stream after an apparent excellent immediate result. This diaphragm-like contraction is of fibrous tissue and is more likely to occur in patients following resection of small fibrous prostates than in those with adenomatous obstructions, also when the resection is carried too deeply in the floor at the region of the internal sphincter. For many years it has been our practice to do cystourethroscopies after transurethral resections. These examinations are made from two to four months after the resection. When fibrous contractures are observed we customarily use cystoscopic scissors to incise this fibrous tissue. Little pain is occasioned by this procedure and relief usually is immediate. Weekly dilation of the posterior urethra

with the Kollmann dilator is employed to prevent the recurrence of the contraction as healing takes place.

Mild incontinence has been noted occasionally following transurethral resection. This condition varies from a slight weakness of the external sphincter which allows a few drops of urine to leak when straining or coughing to a real incontinence. Examination through the panendoscope reveals damage to the sphincter usually in the form of a small cavity or area of destruction on one side of and slightly anterior to the verumontanum. Light fulguration with the high frequency current directly over this area causes fibrous tissue formation which contracts the gap in the sphincter muscle and improves continence. Additional light fulguration at five to six week intervals may be needed to bring about complete continence. These treatments are usually carried out in the office since only light fulguration is needed.

#### BACKACHE

Low backache in the male responds remarkably well to urethral dilation and massage of the prostate gland. Just why such results should occur we cannot say. Strange as it may seem, relief of low backache and pelvic discomfort often follows prostatic massage and the introduction of sounds even when the prostatic secretion shows few or no pus cells and strictures of the urethra are not detectable. Among the patients with low backache who come to urologists, 50 per cent or more will respond to prostatic massage and the appropriate use of sounds and instillations of 2 cc of 1 or 2 per cent solution of silver nitrate into the deep urethra.

#### ENURESIS

Unless bed wetting is caused by some definite condition such as a cord lesion, vesical neck obstruction with residual urine or from a stone in the bladder the most dependable treatment is dilation of the urethra with sounds or bougies. As with adults, meatotomy should be done when the meatus is small. This plan of treatment is employed both for boys and for girls. The dilations are administered once a week and are usually the only treatment needed. The bed wetting usually stops after from one to ten treatments.

Occasionally in boys instillations of 1 or 2 per cent solutions of silver nitrate into the deep urethra after each treatment with the sound will be required. In boys 1 or 2 per cent solution of Intracaine is injected into the urethra before the sounds are introduced. This does not completely relieve the discomfort, but with gentleness, a few pennies and 'Popeye or football talk' the treatments nearly always may be carried out satisfactorily.

#### SUMMARY

Chronic urethral inflammations and irritations are most frequently associated with causative obstructions. Success in treatment often depends on the treatment of the inflammation simultaneously with dilation of strictures.

Disorders and lesions of the deep urethra are the cause of many of man's ill defined and disturbing complaints, especially those which concern pelvic discomfort, urinary symptoms and sexual impotence.

When employed with reasonable judgment and a fair degree of skill treatment of lesions of the prostatic urethra usually respond satisfactorily.

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## DYSURIA AND NOCTURIA IN THE PRESENCE OF NORMAL URINE IN THE FEMALE

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Recently we reviewed a series of 600 case histories in the female, our object at that time being to evaluate all etiologic factors that were directly or indirectly responsible for bladder symptoms. We were impressed with the unusually large number of urethral caruncles and made them the subject of a special report recently published. Probably as a result of that publication we were asked to continue our studies of the remaining cases of that series and report our findings in only those cases in which, although bladder symptoms were present there was an absence of pyuria. To conform with this request we rechecked the histories of that series and eliminated 86 cases in which upper urinary tract involvement and obvious bladder disease such as tumors and stones were the basic etiologic factors in the production of bladder symptoms. This left 312 cases, in 160 of which pyuria and urinary tract infection were present and in 152 infection was absent. The latter group will be the subject of this report. We will briefly discuss some of the more common lesions found to be the causative factors in the production of bladder symptoms and will discuss in detail our methods of examination and refer briefly to therapeutic measures.

This review brought out two points of interest with which we are certain all urologists will agree. First there is an apparent lack of interest shown in these bladder cases by the medical profession. Treatment is too often on a "pay as you go plan," and seldom is there any attempt at a local or physical examination. Second, when these patients after many years of suffering consult a urologist they expect him to have the knowledge also of the following specialists: dentist, gynecologist, internist, laryngologist, neurologist, orthopedist and proctologist.

We must face the cold fact that these patients come to us for relief. They are suffering with 'sick bladders' and usually have been either inadequately, excessively or unnecessarily treated. It is our duty, not only to give them the benefit of our experience as urologists but to utilize our full knowledge of all specialties. We must not turn them away as being neurotic until that diagnosis is definitely established.

We try to impress on our medical students the necessity of obtaining an accurate history of all previous ailments with special reference to all bladder symptoms, previous operations (abdominal or pelvic), focal infections, menstrual cycles, personal habits such as food, drink and medication and even the type of cigarettes used. We must bear in mind during this inquiry that we are dealing with a strange individual in a strange environment, pessimistic as to our ability to give relief, nervous with anticipation of probable painful instrumentation and that foremost in her mind is the possibility that she may have a cancer.

## METHOD OF EXAMINATION

When this patient has finished the story of her symptoms and if we have been alert many more pertinent facts can be elicited from her with some of the following interrogations: Do you have this frequency both day and night? Do you get any relief following urination? Is your pain before, during or after urination? Do you have "loss of urine"? Is this loss more pronounced when you are on your feet or while in bed or noted more during exertion, coughing or sneezing? Are your bladder symptoms aggravated during your menstrual periods? Do you have local discomfort while walking or when sitting? The replies to these and other interrogations will frequently assist us in our examination. We cannot gain the confidence or cooperation of the patient unless we sincerely regard her as an ill, suffering human being.

Our routine method of examination is as follows: The patient is given to an intelligent, sympathetic nurse who places her flat on the x-ray examination table legs over the end, with her feet resting on a stool and her abdomen exposed. By this method we obtain satisfactory relaxation for palpation with special reference to localized or general pain or abnormalities; we can inspect for operative scars and if so desired can elevate or lower the table for general physical examination, including teeth, tonsils and x-rays. She is next placed in the lithotomy position and prepared for inspection of the external genitalia and urinary meatus. Urethral caruncles are one of the most frequent causes of symptoms, and in this position any of the various types located on the external urinary orifice can be easily identified. The examining physician must not be misled with a negative finding externally. It has been our experience that there are many caruncles located immediately behind a small caliber rigid meatus. In our series this "intraurethral" type is more prevalent than the external type and can easily be overlooked unless the following technique is used routinely. Insert in the meatus a small cotton swab saturated with a 10 per cent cocaine solution and allow it to remain five minutes. Then by gentle traction on the swab the intraurethral caruncle if present, can be pulled forward to the external orifice and its size, shape and location in the meatus can be noted. In several instances the contracted meatus necessitated dilation before the growth could be demonstrated on the inner surface of the urethral mucosa immediately behind the dilated orifice.

If a caruncle of either type is discovered regardless of its size or location, we rarely attempt further examination at this time unless we are dealing with an extremely cooperative patient. Hospitalization with proper environment is advised. We administer a light anesthetic, frequently low spinal so that a more satisfactory study of this tumor can be made. It is to be borne in mind that a urethral caruncle is a potential obstruction at the urinary outlet with the possible sequence of edema, stasis, infection of the urine and back pressure. With these sequelae as a possibility it is advisable that before any type of treatment is applied to the caruncle the patient should have the benefit of a complete study, not only of the urethra and bladder, but in most cases of the upper urinary tract as well.

## RESULTS OF EXAMINATION

In our reported series of 202 cases of urethral caruncle the following findings in the urinary tract were noted:

Urethral strictures were present in 8 cases. The strictures were located immediately adjacent to the caruncles, and all these patients gave histories of previous applications of cauterizing solutions.

Urethritis was present in 81 cases, which showed varying degrees of easily recognizable urethral inflammation.

In 54 cases of cysts at the vesical orifice cystic degeneration of the mucosa of the vesical orifice was easily demonstrated.

In 111 cases the bladder urine showed infection, both acute and chronic.

In 20 cases the bladder was contracted to a capacity of less than 6 ounces (178 cc).

In 2 cases interstitial cystitis was found and in 2 cases bilateral pyelonephritis.

As a result of the frequency with which involvement of the urinary tract above the caruncle was demonstrated in this series we conclude not only that urethral caruncles should be regarded as an important etiologic factor in the production of bladder symptoms but that in many cases they act as true obstructions to the urinary outflow and produce the complications of urinary obstruction.

In the routine of eliminating caruncles or other disease at the meatal orifice we have also noted abnormal changes of the labia and surrounding structures, including the anal orifice. There were 3 patients with uncontrolled advanced diabetes who showed edema and excoriations of the external labia. Although much valuable information can be obtained by a thorough inspection of the perineum in the multipara, the examination should include palpation of the rectovaginal partition with the gloved finger of one hand in the rectum and the examining finger of the other hand in the vagina. Frequently one can demonstrate perineal relaxations that visually have not been evident.

There were 5 cases in this series in which the bladder symptoms were the result of a partial procidentia caused by a relaxed perineum.

By separating the labia one can easily observe changes in the character of the mucous membrane of the lower vaginal wall, at the same time the presence or absence of any abnormal vaginal discharge can be detected. If such discharge is present microscopic examination is of course indicated. There were 5 cases in this series in which *Trichomonas vaginalis* was demonstrated and was the only causative factor in the production of bladder symptoms.

Pathologic change in and around the rectum should also be noted as it may be the sole cause of the production of bladder symptoms. Hemorrhoids have been commonly noted in our findings but in most cases have been disregarded, for we believe that they are usually the result of urinary straining and not the cause of urinary symptoms. There were 2 young women who came to us with very troublesome bladder symptoms in whom our examination was entirely negative except for the presence of hemorrhoids. Both of these obtained complete relief following appropriate treatment of the hemorrhoids.

External examination should be completed by a thorough and complete bimanual pelvic examination, and it is this portion of the examination which we believe to be of extreme importance. If not thoroughly satisfied with our findings we always request the assistance and advice of a gynecologist. This examination must determine the relative importance of relaxations of the anterior vaginal wall (cystoceles) and demonstrable abnormalities of the pelvic organs, either in size or in position, for the only manifestation of many of these conditions may be in the bladder symptoms they reflexly produce.

It is a fact acceptable to most urologists that the female urethra harbors numerous organisms, the so-called *fossa triangularis* being the chief offender. In view of that fact, one may be subjected to adverse criticism for passing a catheter through an infected urethra in order that a specimen of bladder urine may be obtained. We are certain that, if this procedure is carried out aseptically and without trauma and is preceded by proper cleansing of the external genitalia, no untoward results will follow. While all urologists recognize the extreme importance of having a catheterized specimen of urine for microscopic examination, its importance is seldom recognized by other members of the profession. In this series all patients were catheterized during our routine examination. We use graduated steel female catheters with aseptic technique, and our records show that we have no cause for regret in a single case.

Regarding this matter of acute inflammation, suppose we have a patient with a symptomatic bladder, pus, blood and organisms in the urine, and from those findings realize that we are dealing with an acute inflammation of the bladder of unknown cause. We are now faced with the question: Shall the investigation be continued with further instrumentation in this acutely inflamed bladder, or shall it be given temporary rest with internal medication, forced fluids, sedatives and so on?

#### TREATMENT

Bearing in mind surgical principles in treating inflammatory lesions in other organs of the body, our experience has been to let such a bladder alone temporarily unless an emergency condition demands further investigation. The patient's bladder is symptomatically ill, and she should be placed in a hospital, where she can be under supervision. Should circumstances not permit hospitalization, she is told that she has an inflammation of the bladder and we do not think it advisable to proceed further at this time.

Rest in bed is advised, at least 8 or 10 glasses of water in the twenty-four hour period, a soft diet, with special instructions to eliminate all fruit juices. The patient is given twenty-eight tablets of  $7\frac{1}{2}$  grain (0.5 Gm.) sulfathiazole and instructed to take one tablet after meals and at bedtime. In prescribing this drug we tell her that it can be used for only a limited time and is not a cure but will probably relieve her acute symptoms. She is instructed to return at the end of one week. The majority of patients after following this plan of procedure return sufficiently improved to justify us in continuing the bladder investigation. For patients showing little or no improvement we immediately demand hospitalization.

Visualization of the interior of the bladder by cystoscopy was done in each of the 152 cases. Frequently a combination of two or more etiologic factors was found in the same case, such as pelvic abnormality and urethral cysts, or intramural cystitis. In the statistical portion of our report each condition will be discussed separately, and consequently some of these cases will appear in more than one group.

One of the common causes of bladder symptoms encountered in this series was cystic degeneration of the mucosa of the vesical orifice. This condition was noted in 70 cases. For the sake of simplicity and for want of a more appropriate term we will refer to this condition as "cysts." These cysts can be described as appearing in a variety of forms and may be classified as single or multiple, bullous or pedunculated. In several cases the two types were observed in the same individual.

The bullous type was encountered in 26 cases and appeared as superficial, rounded elevations beneath a thin urethral mucosa, which was more or less distorted by associated edema and congestion and resulted in the formation of folds of mucous membrane with intervening clefts. It is interesting to note that in 16 of these cases not only was the urine negative for infection but there was no residual urine. In the remaining 10 cases varying amounts of residual urine were found. The cystoscopic findings in the 44 cases in which the pedunculated type predominated presented an entirely different picture. In several patients the cysts were located inside the vesical orifice adjacent to the trigone and in others they were found in the urethra just outside the sphincter. Such cysts may be either single or multiple and appear to have a short pedicle and a uniform circumference and terminate in the form of a rounded knob protruding into the vesical orifice. They are covered with a very thin, colorless mucous membrane, and small vessels can be visualized coursing through their entire length from the mucosa to the apex. In none of the cases of the pedunculated type was there found to be residual urine.

Urinary symptoms varied in different individuals, though frequency was recorded in all, and in most cases, particularly those in which there was no residual urine, frequency was aggravated while the patient was on her feet. In the cases with varying amounts of residual urine there were the additional symptoms of burning, straining and occasionally hematuria. Three of the cases of the bullous type gave a history of urinary retention.

A personal experience during our examination of 1 of our earlier cases in this series is worthy of mention as it clearly proves the necessity of a thorough and complete examination in all cases of this type. The urinary history was suggestive of some type of bladder disturbance, but a catheterized specimen of urine was found to be negative chemically and microscopically. Following a careful examination including a very satisfactory visualization of the bladder, trigone and vesical orifice, no evidence of abnormalities was discovered. As the patient was very cooperative we introduced a urethroscope to the sphincteric margin and limited the inflow of fluid in order to visualize the vesical orifice before distention. Much to our surprise several pedunculated cysts were washed through the sphincter.



and were easily identified. We heartily recommend this procedure.

The cause of cysts at the vesical orifice has never been definitely proved. It may be purely coincidence, but a review of the 70 cases disclosed that there had been previous pelvic surgery in 48, and sufficient pathologic change was discovered in the remaining 22 cases to cause us to believe that any condition that will produce an alteration of the normal blood stream supplying the vesical orifice should be given consideration as an etiologic factor in the production of cystic degeneration of the mucosa of the vesical orifice.

In our early experience selected patients with these lesions were treated in the office. However, our most satisfactory and permanent results have been obtained when the patient was hospitalized. With light anesthesia, preferably low spinal, the lesions are treated by direct application under vision with the high frequency spark, it being necessary not only to cauterize the base of the protruding cyst, but to cauterize gently all of the mucosa of the vesical orifice. We believe that this additional procedure not only will frequently prevent recurrences but will destroy certain cysts that are still submucoid in type and are not sufficiently far advanced to be visible during cystoscopy. It, of course, is advisable to refer the patient to a gynecologist for correction of any pelvic abnormalities. In our introductory remarks we suggested that the successful urologist is one who not only is qualified to practice his own rather limited specialty but is one who should be thoroughly familiar with the basic principles practiced in other related fields of medicine. We are prompted to emphasize these remarks after reviewing the findings in a series of 72 cases in which pelvic disease was demonstrated for most of the complaints so definitely directed our attention to the bladder that the possibility of fibroids and ovarian cysts being present was entirely overlooked. We cannot emphasize that fact too strongly.

It is far from our thoughts to trespass on the field of gynecology, but as urologists we must be prepared to make a satisfactory pelvic examination and as urologic teachers we should impress on our students the necessity of making such an examination in the cases of the type included in this series.

Each of these 72 patients complained of frequency of urination, especially severe during the day, following exertion and usually relieved by reclining. Burning and pain were also present in 50 of the cases. There was considerable difficulty in urination in 10 cases and retention in 6. When the bladder was distended in 35 cases it was noted that the normal contour was altered by filling defects, many of which were demonstrated with cystograms. Cystoscopy was accomplished in 3 cases with great difficulty and was not particularly satisfactory because of distortion of the urethra and bladder as the result of small impacted fibroids in the anterior surface of the uterine wall. Cysts of the bullous type were encountered at the vesical orifice in 10 cases and the normal contour of the trigone was definitely altered, both elevated and distorted, in 12 cases.

In several cases there was definite prominence of the veins of the bladder mucosa immediately inside the vesical orifice. These at times were so prominent as

to be true varicosities. All of this series of 72 patients were referred to gynecologists, who corrected the pelvic disease.

#### POSTOPERATIVE OBSERVATIONS

With the cooperation of the gynecologist we were fortunate in having the privilege of following many of these patients postoperatively, for many of them required rather careful postoperative care of the bladder.

All surgeons have their individual methods of handling postoperative bladder retention, and for many years we followed the custom of catheterization as indicated. Many patients developed bladder infections, so we altered that technique and now use the following procedure. The bladder is not disturbed after the operation until the patient complains of discomfort with an inability to void. In the meantime we use the hospital routine of all psychologic procedures, and if results are not obtained by these methods the patients are catheterized by an experienced nurse and the bladder is irrigated at the time with a weak solution of silver nitrate. Many patients become mentally perturbed because of this urinary complication, but they are assured that it is a common occurrence after surgery. After the initial catheterization we wait a reasonable length of time and if the patient is unable to void we introduce a number 18 French wing-tipped, self-retaining catheter permitting the urine to drain continuously in a sterile receptacle. The bladders are irrigated at least three times daily with 2 ounces (60 cc.) of sulfanilamide solution, sulfonamide drugs are given by mouth or intravenously as indicated. The catheter is removed on the third or fourth postoperative day. By this method we have obtained very satisfactory results.

We have been fortunate in being able to reexamine 10 of the aforementioned 12 patients within a year after surgery. The cystoscopic findings of all 10 showed that the trigone had returned to its normal condition, the varicosities had been obliterated in 8, but in 2 cases their appearance remained unchanged, though with improvement in bladder symptoms. From the 10 cases of recorded cysts the cystoscopic picture was unchanged, though the urinary symptoms were improved. Eight of these patients were later treated with very satisfactory urinary results. The 2 remaining patients refused treatment on the ground that the urinary results were satisfactory.

Pathologic examination in this series revealed 17 fibroids, 7 complete and 5 partial procidentias, 20 malpositions of the uterus, 3 unilateral ovarian cysts, 2 hypertrophied cervixes, 1 bilateral pyosalpinx, 2 calcifications of the uterus and 15 cystoceles with associated lesions.

The immediate postoperative results in the series were gratifying. Some of the patients returned in later years with what they thought was a recurrence of their original trouble, but examination proved the lesion to be inflammatory with an occasional bladder contracture. They obtained relief by routine office treatment, including bladder dilation.

#### COMMENT

In briefly commenting on this series, we feel that we can safely state that if any organ or organs in the female pelvis become deranged, either functionally

or pathologically, interfering with the normal bladder function, the bladder will signify this interference with a symptomatic response such as frequency, straining, burning or retention of urine.

In reviewing 23 cases of Hunter ulcers or interstitial cystitis as a primary cause of bladder symptoms we found that in all cases there was a history of chronicity with alternating periods of severe and mild symptoms with the fear that a cancer was present.

The cause is unknown but we have long been impressed with one factor namely that the urine of these patients practically always has a high  $pH$ . Possibly rather than a local condition of the bladder mucosa this pathologic change may be a local manifestation of some general metabolic irregularity.

In this series the symptom of frequency predominated and in most cases was associated with burning and suprapubic pain, but immediate relief of all symptoms was obtained after miction. We recorded clear urines in 18 cases pus and organisms in 5.

On cystoscopy, all these bladders had reduced capacities. The bladder mucosae showed a very mild congestion with either single or multiple areas of intense inflammatory reaction, and these areas were not confined to any special location and seldom to true, destructive ulceration. Overdistention of the bladder (irrespective of the capacity) is almost always followed by hematuria. All these cases were recorded in our early experience, and we followed treatment outlined at that time with only temporary results. In later cases not recorded in the series our best symptomatic results have been obtained with the use of solutions of silver nitrate in increasing strengths, depending on the patient's tolerance, and with gradual dilation of the bladder by the gravity method. We also give these patients large doses of acidifiers, as we believe that it is more than a coincidence that they respond to therapy much better when we are able to keep the urinary  $pH$  at a point lower than 6.

These patients must fully appreciate that while intramural cystitis is an extremely troublesome condition it does not place their lives in jeopardy. They must also thoroughly understand that the treatment is entirely symptomatic and that the severity of the symptoms may vary from time to time.

We have a group of 8 cases in another series in which the specific irritating effect of certain chemicals on the vesical neck has been amply demonstrated. This irritation is manifested by the bladder with the symptom of frequency of urination. Frequently the offending agent is one of the volatile oils, the port of entry being either by the lungs or by the gastrointestinal tract.

Several years ago we were confronted with a diagnostic problem by a woman whose only complaint was frequency of urination of several weeks' duration. As she described the symptom, it was more noted during the day. She presented ample medical evidence that eliminated all objective pathologic change. In summary, our detailed urologic findings were entirely negative and the urine was clear. In the meantime one of us discovered that she was an excessive cigaret smoker. In a joking way it was suggested that she change brands, which she did and all urinary symptoms disappeared within forty-eight hours.

The remaining 7 patients all gave histories of excessive cigaret smoking with symptoms of frequency of two weeks to three months' duration, negative physical and urologic findings with clear urines, and all relieved within sixty-four hours of changing brands of cigarets.

The eighth patient gave a history of acute bronchitis of four days' duration with sudden onset of frequency day and night—negative urologic findings with clear urine. Examination of a prescription she was taking noted "menthol" as an ingredient. Bearing in mind our experience with the aforementioned 7 cases we suggested changing the prescription and eliminating the menthol. Urinary relief was obtained within twenty-four hours.

One patient with complaints similar to those in the foregoing series had symptoms of frequency which were noted at night and gave a history of taking large doses of barbiturates. With a finding of clear urine it was suggested that she eliminate or change the drug and no detailed examination was made. The patient reported one week later that her symptoms had disappeared.

Another group similar to the foregoing is one in which the subjective symptom is accompanied by an excessive excretion of phosphates or phosphaturia following ingestion of alkalis or citrus fruit juice. Sixteen cases are recorded in this series, all with the same history of frequency of urination day and night, with an average duration of symptoms of two weeks and average weight 165 pounds (75 Kg). The first patient to report demanded hospitalization for a complete physical and urologic examination. The physical findings were unimportant relative to her symptoms and the first urine examination was negative clinically and microscopically. Detailed urologic examination elicited negative findings. We reviewed her history and she admitted that she had been treating with "a fly by night quack," a specialist in dietetics who guaranteed loss of poundage by limiting her diet to an intake of 4 quarts of orange juice daily in addition to his "secret medical formula." Regulation of her diet immediately relieved her symptoms. It is needless to add she was the urologic "guinea pig" for the remaining patients who reported later with the same story and also a factor to add to our urologic oddities that can be classed as primary bladder symptom producers with the finding of negative urine.

#### CONCLUSIONS

As in other fields of medicine pronounced pathologic disturbances in the bladder are often easy to recognize. It is the milder and less obvious conditions which tax the ingenuity and resourcefulness of the doctor. Many times although the pathologic alteration is not great the functional derangement may be most severe and distressing to the patient. Dysuria often falls into this category, and the cause of the disturbance can be found only by a sympathetic approach to the patient's problem, by attention to detail in the matter of careful and complete history taking and examination and by the use of methods of treatment which have proved their value.

Our experiences in this field demonstrate how varied the causes of dysuria may be and how they can be discovered only by careful study and examination.

5 West Fourth Street

## PROSTATITIS AND SEMINAL VESICULITIS ACUTE AND CHRONIC

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Infection of the prostate and seminal vesicles may present a clinical picture varying from that of an acutely ill patient to that of one who is unaware of a smoldering infection. The symptoms and diagnosis of an acute infection of the prostate present little difficulty, but the insidious onset and absence of symptoms pointing to the urinary tract in many chronic infections may fail to attract the patient's or physician's attention to the prostate as the source of infection. Although usually not dangerous to life, chronic prostatic infections may cause suffering and inconvenience out of all proportion to the actual extent of the disease.

Chronic prostatic infections occur with greater frequency than is generally believed. Hinman<sup>1</sup> states that 35 per cent of all adult males have infected prostates. They occur more frequently in middle life—that is, between the ages of 30 and 50. The manifestations may be so capricious with no symptoms referable to the prostate that it becomes a matter of chance during routine examination to discover the prostate as the source of infection. A cardinal principle of surgery is violated in treating these patients by massaging an infected area yet much clinical evidence has accumulated to justify such treatment since most patients may thus be relieved of their infection.

### ETIOLOGY

Acute prostatitis and seminal vesiculitis usually develop from an active infection in the posterior urethra. This infection may arise from an acute urethritis, may be secondary to an infection of the upper urinary tract with infected urine, may be metastatic or may result from a general pyemia. The offending organism may be the gonococcus, but any other pyogenic bacteria can produce an acute prostatic infection. An abscess may develop or the process may subside, giving place to an ordinary chronic infection.

Chronic prostatic infections, in most instances, are not caused by the gonococcus. Kretschmer,<sup>2</sup> in a study of 1,000 cases of chronic prostatitis, identified the gonococcus as the offending organism in only 24. Gram-positive cocci are frequently mistaken for gonococci both in urethral and in prostatic smears and a diagnosis of gonorrhea is erroneously made. Gonococci should be searched for with extreme care before the diagnosis of gonorrhea is made. It is unfortunate that patients as well as many practitioners are of the opinion that chronic prostatitis is preponderantly due to, or the result of, gonorrheal urethritis. This point of view is regrettable since it does an injustice to many patients suffering from chronic prostatitis.

Undoubtedly a certain percentage of cases of chronic prostatic infection result from gonorrhea, even though the gonococcus cannot be demonstrated in the prostatic secretion. Other bacteria are found in the strippings from the prostate, and the role of pre-existing gonorrhea

must remain uncertain. A large percentage of these patients give no history of gonorrhea, and the origin of the infection must be sought for elsewhere. Kretschmer,<sup>2</sup> in a study of the cultures from 407 patients with chronic prostatic infection, found colon bacilli and staphylococci to be the most frequent organisms. This corresponds with the findings of Hill<sup>3</sup> and many other observers. Frequently more than one type of organism is found in the prostatic secretion. In a series of 170 cultures 60 contained two or more organisms, while 22 failed to reveal any bacteria.

In a certain number of cases, chronic prostatitis is the result, or aftermath, of an attack of acute prostatitis. As the acute infection subsides, the prostate remains infected and requires treatment to eradicate the infection completely. Even after an abscess has run its course by absorption or rupture or has been relieved by operation, a certain amount of infection of the prostate usually remains, as may be demonstrated by a careful examination of the strippings.

The prostate may become infected from direct extension of an acute urethritis, the bacteria entering the gland by way of the prostatic ducts. This is the usual method of involvement of the prostate from gonorrhea or from a nonspecific urethritis.



Fig. 1—Pyelogram showing moderate hydronephrosis and pylonephritis discovered in a patient presenting symptoms of chronic prostatitis.

**Distant Foci of Infection**—It is a well recognized clinical fact not only that chronic prostatitis may be the focus of infection which produces metastatic disease in remote parts of the body but that the prostate may itself be infected from foci in other parts of the body. It is accepted by most urologists that the prostate may become infected from the teeth, tonsils, intestinal tract, respiratory tract, furuncles and other sources.

The method by which these bacteria reach the prostate has not been proved. Many urologists believe that

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<sup>1</sup> Hinman, Frank. *The Principles and Practice of Urology*, Philadelphia, W. B. Saunders Company, 1936.  
<sup>2</sup> Kretschmer, H. L., Berkey, H. A., Heckel, N. J., and Ockuly, E. A. *Chronic Prostatitis: A Critical Review of 1,000 Cases*, Illinois M. J. 71: 152-161 (Feb.) 1937.

<sup>3</sup> Kretschmer, H. L. *Medical Management of Chronic Prostatitis*, Wisconsin M. J. 38: 363 (May) 1939.  
<sup>4</sup> Young, H. H., and Davis, D. C. *Practice of Urology*, Philadelphia, W. B. Saunders Company, 1936, vol. 1, p. 162.

the organisms enter the blood stream and are carried to the prostate directly. Others visualize these absorbed bacteria from various foci entering the blood stream, to be excreted from the kidney, then, during their passage from the kidney through the bladder, some bacteria



Fig. 2.—Pyelogram of same patient as in figure 1 after treatment with urinary antiseptics and dilation of the ureter

lodge in the prostatic ducts, eventually to produce a prostatic infection. There is some evidence to substantiate this theory. It has been shown that pyogenic bacteria may be excreted by the kidney without producing pus or other evidence of infection in the urinary tract in the absence of obstruction. Tuberculosis frequently involves the kidney primarily, then invades the prostate, seminal vesicles and epididymides as the bacteria pass to the bladder in the urine and are voided. If tubercle bacilli follow this sequence, it is argued, why should not other bacteria do likewise? Hill<sup>4</sup> has shown the frequency with which the same bacteria are found in the urine as are found in the prostatic secretion both by smear and by culture. This suggests that bacteria excreted through the kidneys may be the source of the organisms producing prostatic infections.

This mode of infection is further suggested by patients presenting symptoms of chronic prostatitis who actually have demonstrable infection in one or both kidneys. Usually the renal infection may be suspected by the finding of pus in the first, second and third glasses of voided urine. However, in some instances the second and third glasses of voided urine may be macroscopically clear and the presence of infection in these specimens may be overlooked. In other instances the infection may be absent in some specimens only to appear at a subsequent urine examination. Such a typical case was seen recently. A policeman presented symptoms of chronic prostatitis. His voided urine showed a few pus cells and shreds in the first specimen, but the second and third glasses were normal. On occasional subsequent visits each glass of voided urine showed pus cells. There were no symptoms

referred to his kidneys. After about six weeks of treatment by prostatic massage without complete relief a thorough urologic investigation was carried out. This revealed a moderate infection in his right kidney with some hydronephrosis. The same type of bacteria was cultured from both the kidney and the prostatic stripings (fig. 1). Adequate treatment directed to this kidney restored it to normal, as evidenced by a pyelogram (fig. 2) and functional tests. With subsequent treatment of his prostate by massage the prostatic secretion became entirely free from infection. It is difficult to evaluate the sequence of events in this case. Whether the kidney infection antedated the prostatic infection or was secondary to it cannot be stated with certainty. However, one should be constantly aware of the possibility that some other focus in the urinary tract may be responsible for failure to obtain results in the treatment of a prostatic infection. Such a focus may constantly reinfest a prostate even during the course of its treatment.

A case of renal tuberculosis may be erroneously diagnosed and treated as a case of chronic prostatitis. Another recent patient had been thus treated, and only a thorough examination revealed the primary source of his infection to be in the kidney (fig. 3). It is true that his prostate was infected, but this local infection was evidently secondary to the renal lesion.

These cases are cited to suggest the possibility of the urinary tract being the means by which bacteria may



Fig. 3.—Pyelogram revealing renal tuberculosis in a patient presenting symptoms of chronic prostatitis for which he had been treated

reach the prostate. Slight recurring attacks of pyelonephritis may go unrecognized or be passed off by the patient as a 'cold in the bladder.' Subsequent chronic prostatic infections may result from these renal lesions as the bacteria are voided in the urine and a few remain in the prostatic urethra to produce an inflammation.

**Sexual Factors**—Much has been written on the relationship of sexual abuses to chronic prostatitis. Horseback or bicycle riding, alcohol, sexual overindulgence, withdrawal, prolonged sexual excitement, masturbation and prolonging the sexual act have all been considered factors in the production of chronic prostatitis. Undoubtedly, each may be a predisposing factor by causing congestion of the prostate. However, congestion alone will not produce an infected prostate. Bacteria must invade the gland in some manner. Such sexual irregularities may logically be considered to produce a fertile field for the growth of bacteria once they have invaded the prostate. The path of the invading organism is uncertain, but the frequent contact of this congested gland with voided urine may result in the deposition of pathogenic organisms and the production of a prostatic infection.

#### PATHOLOGY

"Acute prostatitis begins as an acute inflammation of the prostatic ducts and acini and of the overlying posterior urethral mucosa." The seminal vesicles usually also become involved. The infection may subside or it may invade the stroma around the acini, coalesce and form a prostatic abscess.

Chronic prostatitis presents a similar involvement of the prostatic ducts and acini but is less acute in its onset and runs a more protracted course. The virulence of the invading organism is not so pronounced and the prostatic ducts are less likely to be occluded early in the infection. The stroma may be invaded and, if uninterrupted by treatment, this invasion may finally progress to the formation of prostatic sclerosis. Hyams<sup>5</sup> failed to find inflammation of the seminal vesicles without similar involvement of the prostate, yet prostatic infection does occur without either seminal vesicle being affected. It therefore must be uncommon for the seminal vesicle to be the focus of an infection in the absence of prostatic disease.

#### SYMPTOMS

Acute prostatitis is ushered in by severe urinary distress. The voided urine is cloudy from pus since an accompanying urethritis and cystitis are usually present. Urethral discharge may be profuse or absent, depending on the drainage from the prostatic ducts. Pain, fever, chills and frequent, difficult urination are present in varying degrees. Complete urinary retention may occur and, when it does, is suggestive of the formation of an abscess.

The symptoms of chronic prostatitis and seminal vesiculitis may not so readily attract attention to the affected area. In many instances, attention is directed to the prostate by the history and urinary symptoms, on the other hand, the absence of urinary symptoms and findings may fail to suggest a prostatic infection. In general, the subjective symptoms may be divided into three groups: (1) predominantly urinary symptoms, (2) symptoms, resulting from chronic prostatic infection, referable not to the prostate or urinary tract but to distant parts of the body and (3) some form of sexual dysfunction.

Patients with predominantly urinary symptoms (group 1) comprise the largest number. The symptoms immediately attract attention to the urinary tract

as the source of the infection. A mild urethral discharge may be the only presenting symptom of chronic prostatitis, and these patients are fearful that they have contracted gonorrhea. The urethral discharge is frequently caused by an infected prostate or seminal vesicle spilling some of its organisms into the urethra, to produce a urethritis. A careful microscopic examination of such a urethral discharge is imperative before one is justified in making a diagnosis of gonorrhea. The character of this discharge is extremely variable, but the discharge is usually less in quantity and more "sticky" or thinner than that present in gonorrheal urethritis. Such a discharge is found in almost 40 per cent of cases. Frequency of urination is often present and suggests the posterior urethritis so frequently encountered in prostatic infections. Any type of urinary symptoms may be present in chronic prostatitis, but none are pathognomonic of the disease. The intimate relationship of the prostate to the bladder neck would lead one to expect an infection of the gland to produce urinary symptoms. These may be quite severe, very mild or entirely absent. Pain of varying degree may also be present in the prostate. It is usually mild although at times it is described as really severe. Pain caused by the prostate may be referred to the perineum, urethra, penis or rectum and may be aggravated by sitting on a hard chair. Relief may occasionally be obtained by crossing the knees or by making pressure on the perineum.

In group 2 are patients who may be classified as having a "silent prostate" since no symptoms are referable to the urinary tract or the prostate, yet the prostate and seminal vesicles may be the foci of infection for some distant lesion. Among the common lesions for which the prostatic infection may be responsible are arthritis, bursitis, myositis, neuritis and iritis. When seeking for foci of infection, the prostate and seminal vesicles should be considered as routinely as the teeth, tonsils or sinuses. Early recognition of such a focus before irreparable damage has been done is important. Pain from prostatic infection is usually referred to the lower lumbar region or perineum but may occur anywhere in the pelvic region or down the legs. These vague symptoms are so common that one should routinely examine the prostate as a possible source of infection in patients manifesting them.

These indefinite pains may be so slight that the patient may be unaware that he is not quite normal. He may attribute them to "rheumatism" or a "strain" and it is astonishing how long these discomforts will be endured before the patient seeks advice as to the real cause of his trouble. The effect on the nervous system may become quite definite and true neuroses may make their appearance. The patient becomes restless, complains of lack of concentration and may feel that he is becoming prematurely senile. His anxiety as to the future and the constant feeling of ill health may provoke other varied symptoms. Gastrointestinal manifestations may appear, and "dyspepsia" or flatulence may be prominent. Unfortunately in many of these cases there is nothing either in the history or in the symptoms to suggest a chronic prostatic infection as the cause of the disturbances.

Symptoms of sexual dysfunction (group 3) are fairly common, but in view of the fact that the prostate is a sexual gland, and considering the prevalence of prostatic infections, it is remarkable that sexual symptoms

<sup>5</sup> Keyes, E. L. *Urology*, New York, D. Appleton & Co., 1928.  
<sup>6</sup> Hyams, J. A., Kramer, S. E., and McCarthy, J. F. *The Seminal Vesicles and the Ejaculatory Ducts*, J. A. M. A. 98: 691-696 (Feb. 27) 1932.

are not more frequent and severe than they are. Undoubtedly some sexual disorders are caused or aggravated by chronic prostatitis, since treatment of the prostate occasionally results in considerable benefit of the sexual symptoms. However, so many factors are involved in most sexual dysfunctions that it is difficult to evaluate the primary cause. Certainly one should investigate the prostate carefully and attempt to rid it of any infection. According to Kretschmer,<sup>7</sup> premature ejaculations, loss of desire and weak erections are most commonly complained of by patients manifesting chronic prostatic infections.

#### DIAGNOSIS

In acute prostatitis and seminal vesiculitis any manipulation by rectum must be gentle, and massage and stripping are contraindicated. The history usually gives presumptive evidence of an acute infection and urinary symptoms are referable to the seminal tract. Acute febrile reactions depend on the severity of the attack. The urine, even when voided in three glasses, is usually cloudy from pus. Careful rectal palpation will reveal a swollen, hot tense prostate. Instrumentation should be avoided until the acute symptoms have subsided, but repeated gentle palpation of the prostate may be necessary for the diagnosis of prostatic abscess.

The diagnosis of chronic prostatitis is based on the findings of rectal examination and the microscopic examination of expressed prostatic fluid. The voided urine frequently contains shreds and occasionally some pus, although it may be entirely normal. The history may not give any evidence of a prostatic infection, and careful rectal palpation with repeated massages may be necessary to obtain pus in the prostatic fluid. The first gentle prostatic massage may express the fluid from those ducts which are uninfected, and the strippings may appear normal under the microscope. The infected ducts may be temporarily occluded by pus and debris, and two or three or even four examinations, at three to five day intervals, may be required to obtain strippings from all the prostatic ducts. Thus one may be uncertain of the presence of pus in the prostatic fluid obtained from a single examination. Although some urologists do not agree, Hinman<sup>1</sup> states that "the trauma of three repeated prostatic examinations (on alternate days) will not in itself cause the appearance of pus in the secretion if infection is absent at the start." These repeated examinations may stir up a latent or hidden focus which might otherwise be missed.

Many different positions for the patient to assume for palpation or massage of the prostate have been recommended. I myself prefer to have the patient kneel on a table, with the buttocks extended and the head down to a level with the knees. With the patient in this position the physician may palpate the prostate and seminal vesicles more completely, with less pain to the patient. The gloved finger, well lubricated, should be inserted very slowly past the rectal sphincter. When this careful procedure is followed, the patient will be less likely to draw away from the examiner, and he will be extremely grateful for one's gentleness. The shock of suddenly dilating the rectal sphincter may be much greater than that of massaging the prostate.

Often there is a decided discrepancy between the gross palpable changes in the prostate and the degree of infection manifested in the strippings. The examining finger may detect no gross change in the size or consistency of the prostate, yet it may be infected.

More frequently the prostate is one or more of the following enlarged, irregular in outline, nodular, boggy, indurated, with an occasional area of softness, and surrounded by adhesions from periprostatic inflammation. Normally the two lateral lobes, which are palpable by rectum, should be smooth on the surface, firm in consistency with a dividing median sulcus and freely movable from side to side. Each lobe should be about the size of the distal phalanx of the thumb.

The normal fluid expressed from the prostate is opalescent, slightly alkaline to litmus, filled with minute, translucent, lecithin bodies (somewhat smaller than red blood cells) and contains some epithelial cells, a few corpora amylacea, often spermatozoa and less than 10 leukocytes per high power field. One should not be misled in obtaining a normal secretion on first examination, particularly if rectal palpation gives evidence of an abnormal prostate.

The diagnosis of chronic prostatitis is established with the finding of an increased number of leukocytes in the prostatic strippings, particularly if they are seen in clumps. It is usual for the quantity of lecithin bodies to be decreased in the presence of many pus cells and, as improvement occurs, the leukocytes decrease in number and the lecithin bodies increase. Brunet and his associates<sup>7</sup> suggest the use of the peroxidase stain for prostatic secretions. This stain readily differentiates granular cells and lymphocytes from polymorphonuclear leukocytes. Trattner<sup>8</sup> has recently devised a "partition catheter" for the purpose of temporarily excluding the prostatic urethra from the distal urethra and the bladder. Between these two inflated bulbs are openings in the catheter which may be injected with a contrast medium to visualize the prostatic ducts by x-ray, or antiseptic solutions may be forcibly injected through them into the deep recesses in the prostate. He urges extreme care in the use of this catheter, since these solutions may be forced into the blood stream or into the ejaculatory ducts to produce epididymitis.

It should again be stressed that the prostate deserves to be considered a possible focus of infection just as much as the teeth or tonsils. The prostate is more likely to be overlooked when urinary symptoms are not present and the voided urine is normal. Every physician is aware that the small, buried tonsil is as dangerous a focus of infection as the huge tonsil with infected follicles. The prostate too may be harboring an infection which may be absorbed by the blood stream, and yet none of the infected material escapes through the prostatic ducts to produce urinary symptoms and give evidence of infection in the voided urine. Every practitioner should make proper examination of the prostate a routine procedure when searching for a focus of infection.

#### COMPLICATIONS

The mere finding of an abnormal prostate by rectal palpation and pus in the strippings from it, should not conclude an investigation. Although the diagnosis of chronic prostatitis is thus established, one should seek the cause of the infection and attempt to eliminate factors which may prevent its ready response to treatment. Response to local treatment should not be expected,

7 Brunet W. M. Shaw N. D. Reinhardt C. H. and Andav L. J. Chronic Prostatitis. A Clinical Review of 100 Cases in Which the Fresh and Peroxidase Stained Secretions Were Studied. *Virginia M. Monthly* 69: 619-625 (Nov.) 1942.

8 Trattner B. R. The Introduction of Solution into the Tubulo-alveolar System of the Prostate Gland. *J. Urol.* 45: 710 (Dec.) 1942.



when the prostate is being constantly infected from an infected tooth or tonsil unless the source of the infection is first eliminated. Neither will a prostate respond to local treatment when a posterior urethritis, urethral stricture, cystitis or renal infection is present without adequate treatment of the complicating condition.

In the presence of an acute or a subacute infection of the prostate it is unwise to examine the remainder of the urinary tract. Even in the presence of chronic prostatitis it frequently is better to treat this infection for a reasonable time before resorting to a more thorough study of the urinary tract. However, one should not persist with local treatment when satisfactory response is not obtained without seeking for some coexisting complication. In fact such complications are so common that many urologists prefer to consider chronic prostatitis as a symptom of a secondary infection from some focus the finding and elimination of which is essential to adequate and permanent relief. To discover the origin of such a primary infection often requires diligent and persistent search but the problem should constantly be before one while treating chronic prostatic infections.

Besides the teeth and tonsils the intestinal tract, gall-bladder, cutaneous infections or perirectal infections may be the source of an infected prostate. Within the urinary tract almost any infective process may produce a prostatic infection and prevent the response of the latter to treatment. Among the more common causes are urethral strictures (often of large caliber) lesions of the urethra, chronic urethritis, urinary retention from hyperplasia or a fibrous bladder neck, vesical diverticula, prostatic calculi, chronic renal infections, tuberculosis, diabetes and syphilis. Careful observation of the voided urine should be made on each visit, preferably in two or three glasses. Evidence of infection in the second and third glass is suggestive of an infection of the upper urinary tract yet such evidence may not be obtained at all times, as is the case when an intermittent pyelonephritis is present. A test for residual urine should be made from time to time. In short, when symptoms of chronic prostatitis are not relieved and the strippings do not show definite improvement within six weeks after a biweekly course of prostatic massage has been instituted, one should carefully search the urinary tract for a reason why the response has not been satisfactory. To persist with massage for prolonged periods is rarely necessary and suggests that a focus of infection may have been overlooked.

Failure to establish normal sexual hygiene may interfere with the improvement in chronic prostatic infections. On the other hand, the most careful and diligent search may fail to reveal the source of the infection in chronic prostatitis.

Before the diagnosis of chronic prostatitis can be properly established, it is necessary to rule out other lesions of the prostate. A tuberculous prostate usually presents an irregular nodular surface to palpation. It is almost always secondary to tuberculosis elsewhere in the urogenital tract, and careful search may reveal tubercle bacilli in the urine or, less frequently, in the prostatic strippings. Prostatic calculi may be suspected by palpating crepitation within the prostate and can be confirmed by x-ray examination. Advanced carcinoma of the prostate presents a stony hard induration. Early

carcinoma is also hard but may be limited to a small pea sized area readily palpated at rectal examination. These conditions should be ruled out, if possible, before treatment is undertaken. A hard nodule in the prostate may require surgical perineal exposure with biopsy to confirm the diagnosis.

#### TREATMENT

*Acute Prostatitis*—The treatment of acute prostatitis is by heat and protection from trauma and that of subacute and chronic prostatitis by prostatic massage. The sulfonamides are often helpful in either condition but cannot be relied on to the exclusion of local treatment.

Acute prostatitis whatever the cause, is best treated by complete bed rest for all febrile cases and the avoidance of foods which irritate the urinary tract. Sexual excitation should be avoided and all local treatment such as urethral or bladder irrigations and rectal manipulation should be discontinued. Heat is beneficial and may be obtained by hot sitz baths by the application of heat directly to the prostate, by rectal irrigations or by electric prostatic heaters or diathermy. The Bransford Lewis electric device has given satisfactory results. Herring<sup>9</sup> advocates diathermy with proper orificial electrodes as the method which will obtain the greatest elevation of local temperature to the prostate. The bowels should be kept well open to avoid the pressure of a hard stool against the prostate. Only the most gentle palpation should be done to diagnose the development of a prostatic abscess. The sulfonamides are usually very effective in relieving acute prostatitis. Sulfathiazole if tolerated usually is most effective when given in 1 Gm. doses every four hours, together with sufficient alkalis such as sodium bicarbonate. The urinary output should be measured and maintained at a minimum of 1,500 cc. daily. Sulfonamide medication should rarely be given for more than ten days, and blood studies should be made if prolonged treatment becomes necessary. Following the subsidence of acute symptoms local treatment may be carefully instituted.

*Chronic Prostatitis*—The treatment of chronic prostatitis revolves around the principle of establishing adequate drainage of the infected prostatic ducts. In some instances this is readily accomplished, in others it is difficult to attain, while in cases presenting pronounced sclerotic changes the establishment of drainage of all the infected areas may be impossible with any type of local treatment.

*Local Treatment*—Once the diagnosis of chronic prostatitis has been established massage of the prostate by the rectum is the most important single measure to be employed in its treatment. Although massage of an infected area may seem unphysiologic, urologists have achieved considerable success in the systematic treatment of these infections. This method of treatment is universally adopted by all urologists, yet some difference of opinion exists as to the frequency with which such massage should be carried out. As a rule we massage the prostate twice a week, and as the amount of pus diminishes the treatments are given less frequently.

The first object of prostatic massage is to increase the blood supply to the prostate and in this way aid in carrying away infection and stimulating absorption. The second purpose is to evacuate pus, bacteria and

<sup>9</sup> Herring, J. B. Heat Producing Appliances. Their Comparative Value in the Treatment of Prostatic Infection. *California & West Med.* 45: 140 (Aug.) 1936.

debris from the prostatic ducts. Too frequent or too vigorous massages may defeat these purposes and may even produce an acute infection in the prostate or epididymides.

Some urologists prefer to massage the seminal vesicles and prostate before the patient voids his urine, after which the urine flushes the prostatic fluid from the urethra. Others instil an antiseptic solution into the bladder and posterior urethra after prostatic massage with the expectation that some of the solution may find its way into the emptied prostatic ducts. Still others instil an antiseptic solution into the bladder through a catheter before massaging the prostate, hoping thereby to prevent the expressed infected material from infecting the bladder or urethra. Although each method may have some advantage in certain instances, voiding after massage is satisfactory in most cases.

Massage of both the seminal vesicles and the prostate should always be performed together. With the patient kneeling in the knee-chest position, the gloved index finger well lubricated is gently and slowly inserted into the rectum as far as is possible. Pressure is begun above the prostate on one side as the finger is withdrawn to the prostate. This is repeated several times and followed by the same procedure over the other vesicle. The finger is then brought down to the prostate and several strokes are made over the gland on either side from the uppermost part of the prostate downward and toward the midline. The massage is concluded by several strokes over the midline to express the fluid from the main ducts into the urethra. The prostatic fluid appears at the urethral meatus and is collected on a glass slide for examination. While gentleness is imperative during the first few massages, more firm pressure may be required in those cases which fail to respond to treatment.

The next most important element in the local treatment of chronic prostatitis is the search for and treatment of urethral stricture. This is particularly necessary if symptoms of a chronic urethritis are present. The great frequency with which prostatitis is associated with urethral stricture should lead one to search for both lesions in every patient. Often the treatment of either the urethral stricture or the prostatic infection is continued without searching for its associated lesion. Urethral dilation is never undertaken in an acute urethritis, but in the presence of a few shreds and pus cells in the urine the passage of sounds is very beneficial. Even when a definite stricture cannot be found, dilations will serve to promote better drainage from the prostatic ducts. It is preferable to pass but one sound at a single treatment and not repeat the procedure more than once a week. Too enthusiastic treatment may produce complications and retard the favorable progress of the disease. If care is used in the passage of urethral instruments, any subsequent increase in symptoms may be considered to result from the activating of a dormant infection in the urethra or prostate and not to be caused by the passage of a sterile instrument into the bladder. Increase in the urethral discharge may follow instrumentation of the urethra, or chills, fever and sweats may supervene from stirring up a smoldering infection in the genital tract.

The value of urethral dilations is commonly seen in chronic prostatic infections with symptoms of posterior urethritis. Recently a patient had been treated by

prostatic massage twice weekly for six weeks. His symptoms failed to subside and he was relieved only after the passage of sounds. Furthermore, his prostatic infection began to improve more promptly after his urethral dilations.

Many methods have been advocated for applying heat to chronic prostatic infections. When symptoms are severe, considerable relief may be obtained from local heat. An electric pad or hot water bottle applied to the perineum is helpful. Hot rectal douches are advocated by some but are rarely required in chronic infections of the prostate. Various prostatic heaters and electric devices have their advocates and are helpful in some cases. However, Herring<sup>10</sup> has shown that most of these commonly used methods fail to produce heat in the prostate. Although symptoms are frequently improved by the application of local heat, the actual benefit to an infected prostate is problematic.

The use of strong solutions and astringents has fallen into disrepute. Vaccines have seldom, if ever, added anything of value to the treatment of these cases.

The treatment of chronic prostatitis by intraprostatic injections has been advocated by Grant<sup>10</sup> in recent years. The prostate is injected with a needle inserted through the perineum and guided by a finger in the rectum. Various antiseptic and sclerosing solutions have been used with reported success. However, O'Connor<sup>11</sup> in an experimental study showed that any solution thus injected produced a sclerosis and left infected areas in the prostate with their normal drainage ducts occluded. This method of treatment also has few advocates.

The use of the sulfonamides has been helpful in eradicating the infection from the prostate in certain cases. When fibrosis is present within the prostate, any blood borne medication, such as the sulfonamides, will likely prove to be of little if any benefit. It is my practice to give sulfathiazole (1 Gm. four times daily for ten days) in these cases while prostatic massage is being carried out. If no benefit results in that time, it will rarely be helpful to continue the medication. I believe it is also desirable to administer one of the sulfonamides for twenty-four hours before and after urethral dilations. Whether this benefits the local infection is doubtful, but it should reduce the incidence of epididymitis. Actually, epididymitis from prostatic and urethral infections is becoming rare.

Other complications in the urinary tract besides urethral stricture may prevent one from obtaining a satisfactory response from local treatment to the prostate. A narrow meatus demands a meatotomy so that adequate urethral dilation may be carried out. Urethroscopic examination may reveal local infected crypts along the urethra which may cause urinary symptoms with shreds and pus in the urine. Polyps or granulation tissue are frequently found in the posterior urethra. Prostatic calculi may be present and unsuspected from rectal palpation and may require x-ray examination for their detection. Fibrosis or even a prostatic bar may interfere with adequate drainage from the prostatic ducts. A superimposed hyperplasia of the prostate may act in a similar manner. Tuberculosis, diabetes or syphilis may prevent a favorable response.

10. Grant, Oswald. Treatment of Prostatitis by Injection. *J. Urol.* 29: 749-753 (June) 1933.

11. O'Connor, A. J. and Ladd, R. I. Intraprostatic Injection. *J. A. M. A.* 107: 1185-1188 (Oct. 10) 1936.

to local treatment. Finally, any infection in the kidneys, ureter or bladder may re infect the prostate, so that local treatment will not suffice to cure the prostatic infection. While it is true that most of these infections are readily suspected from pus in the second or third glass of voided urine, the infection may be so mild as to escape the examiner's attention unless a careful microscopic study of each glass of voided urine is performed. Renal symptoms are frequently entirely lacking. Pyelonephritis may occur intermittently in such a mild form as to escape notice by the patient or physician, yet enough bacteria may be excreted in the urine to re infect the prostate. Such bacteria may even be excreted without the presence of pus in the urine, and stains or cultures of the urine are necessary for their detection. Their intermittent excretion may require careful study to evaluate their significance. When such doubt exists a complete urologic study is indicated.

The prostate may become infected from a distant focus of infection. Cabot<sup>12</sup> believes that 95 per cent of such cases are secondary to infections in the teeth and tonsils. Acute upper respiratory or intestinal infections may also produce a prostatic infection. If the original focus is discovered and removed, the prostatic infection will then become the primary focus of infection, but if the prostatic infection is treated without removing the original focus, the response to treatment will be slow and recurrences likely. In treating such cases, the elimination of the original focus, followed by adequate treatment of the prostate, is indicated.

Severe local and distant reactions may occur following massage of a prostate which is the seat of a focal infective prostatitis. When following prostatic massage an exacerbation of symptoms occurs in a case of arthritis, iritis, neuritis and the like, it is suggestive evidence that the prostatic infection is responsible for the distant lesion. Very gentle massage should be carried out for the first few treatments, since vigorous treatment may occasion such a severe general and focal reaction that irreparable damage may result. These reactions are probably due to specific toxins forced into the blood of a patient already sensitive to them.

Chronic prostatitis is frequently present in patients presenting symptoms of sexual dysfunction. The role that this infection plays in the production of these symptoms is not thoroughly established. Certainly treatment of such infections is followed by improvement in symptoms in some cases, while in others there fails to be any response. The complexity of symptoms and the multitude of causes for such disturbances call for a thorough study of the individual case and the institution of appropriate treatment. When a diseased prostate is discovered, it should be treated in order to eliminate at least one factor in the production of sexual symptoms. Glandular therapy, encouragement and psychotherapy are other forms of treatment which may be beneficial.

**General Treatment**—Patients with chronic prostatitis are usually urged to avoid highly seasoned foods, spices and strong alcoholic drinks, since these may irritate the urinary tract. I have not been convinced of the necessity for such restrictions except for moderation in alcoholic beverages. The patient should be urged to drink substantial amounts of fluids. The bowels should

move at least once a day to prevent congestion around the prostate from impacted fecal contents.

Advice concerning sexual relations should depend on the severity of the infection. It is often wise to avoid sexual excitement when symptoms are moderately acute, yet regular sexual habits should be urged when the symptoms have begun to respond to treatment. Irregular sexual practices and overindulgence should be avoided. Massage may take the place of sexual hygiene in the early stages of treatment, but is at best a poor substitute for it. The quantity of prostatic fluid expressed by massage is much less than is contained in a normal ejaculate. Normal intercourse should aid in the treatment of nonspecific prostatitis and should be permitted while massage is being carried out.

The sulfonamides are helpful in the treatment of certain cases of chronic prostatitis but should not be used to the exclusion of local treatment. Prolonged use of these drugs will not aid in the treatment and may prevent a normal response from being obtained by massage. Recently a patient had been taking sulfonamides for two months and his symptoms and prostatic secretion were becoming progressively worse. His blood count showed 3 800 000 red blood cells and 3 700 white blood cells with 70 per cent lymphocytes. Discontinuance of the drug caused a prompt return of his blood count to normal and subsequent improvement in his infection.

#### PROGNOSIS

The response to treatment in chronic prostatitis and seminal vesiculitis may be slow, and the patience of both the patient and the physician may be taxed to the utmost. Persistent massage may be required for long periods but should be spaced with vacations from treatment. The goal should be the elimination of pus from the prostatic strippings. In general, the outlook in the treatment of these patients is good, provided the cooperation of the patient can be maintained. It is better to discuss the possibility of prolonged treatment with the patient at the outset so that discouragement may be avoided at a later period.

The prognosis in chronic prostatitis depends largely on the cause and the degree to which the infection has progressed. If the cause can be ascertained and corrected and the prostate is soft and boggy, the outlook should be good. If the origin of the infection is vague and the infection has progressed to the formation of considerable scar tissue in the prostate or to the development of a fibrous bar or prostatic calculi, conservative treatment will likely not eliminate the infection.

One should constantly seek the origin of the infection, whether it is from an acute local infection or a distant focus, since elimination of such an area materially alters the prognosis. In many instances this is difficult to ascertain and study of the patient may be required for some time to arrive at a conclusion. In some cases careful diligent search for the cause may be unavailing. Repeated urine examinations may lead one to a suspected source of infection.

If the prostate has been the seat of prolonged inflammatory changes, it will probably not return to normal. However, treatment and periodic observations may keep the infection to a minimum and prevent the recurrence of symptoms. When careful complete search for complications fails to disclose any contributing factor to the cause or continuance of a prostatic infection and

<sup>12</sup> Cabot, Hugh. *Modern Urology*, Philadelphia, Lea & Febiger, 1936, vol. 1.

when repeated courses of prostatic massage fail to eliminate pus cells from the strippings completely and when definite symptoms referable to the prostate are absent local treatment should be discontinued. If sufficient damage to the prostate has occurred such as the production of fibrosis at the vesical orifice or symptom producing prostatic calculi surgery may be indicated.

In focal infective prostatitis the prognosis depends mainly on the finding and elimination of the original focus of infection following which local treatment to the prostate should clear up the infection in most instances.

Brunet and his associates recently reported the results of treatment in 100 cases of chronic prostatitis. In 60 cases there was complete relief, with return to normal of the prostatic secretion. In another 24 the symptoms were relieved but the prostatic strippings still contained some pus. In the remaining 16 clinical improvement was not noted, but these patients all complained of some sexual dysfunction. These were not further analyzed but at least this percentage of cures should be obtained.

The outlook for patients with sexual dysfunction is difficult to evaluate. A multitude of factors may be responsible for the symptoms complained of by these patients. Although chronic prostatitis may be a factor, there are almost invariably other factors of even greater importance to evaluate and treat. Among these may be mentioned hypotension, low metabolic rate and vitamin deficiency. Psychotherapy is frequently indicated, and this treatment may often be intelligently performed by the urologist.

#### SUMMARY

1 Chronic prostatic infections are of common occurrence and by far the greatest percentage of cases are not caused by gonorrhea. Infection in the prostate occurs more frequently from a distant focus of infection or from some nonspecific infection in the urinary tract. Lack of sexual hygiene may be a predisposing factor in the development of a prostatic infection.

2 Urinary and genital symptoms frequently attract attention to the prostate as the source of the infection. In many instances chronic prostatitis presents no local or urinary symptoms, and attention is not attracted to the prostate. A careful prostatic examination is required to determine that the prostate is a focus of infection for symptoms elsewhere in the body.

3 The diagnosis of chronic prostatitis is made by rectal palpation and the finding of pus in the expressed prostatic secretion by microscopic examination.

4 The origin of the infection should be carefully sought for and eliminated. Prostatic massage with general hygiene together with sulfonamide therapy, will usually eradicate the infection, although prolonged treatment may be required.

5 Complications in the urinary tract are common and should also be treated to obtain the best results from local treatment to the prostate. Among the most frequent are urethral stricture, posterior urethritis and mild chronic renal infection.

6 Infection of the prostate is so common and the prostate is so often the seat of a focus of infection that routine examination of this gland should be undertaken as frequently as that of the teeth and tonsils.

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## INDICATIONS FOR VISUAL EXAMINATION OF LOWER URINARY TRACT

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Those of the profession who have personally undergone what in the vernacular of our trade, is termed a "cystoscopic examination," appreciate that, like the holy bonds of matrimony, it is not something to be undertaken lightly. The question is too frequently asked "Can my patient stand a cystoscopic examination?" because it is not appreciated that when such an examination is made by a trained, skilful and experienced operator, even as an office procedure, it can give valuable information obtainable in no other way and without serious discomfort or untoward aftermath. If attempted by the untrained and heavy handed, the after-effects may be slow in disappearing and the experience long remembered with horror. The narratives of patients who have undergone this modern form of torture are so distressing that after a "referring doctor" has listened to one or two he naturally becomes reluctant to subject others to such an examination unless the indications render the procedure imperative. This is regrettable, because valuable information regarding developing pathologic changes may be unnecessarily delayed. Because of this hesitancy to refer patients for a visual examination of their lower urinary tract, it is important for the general practitioner to be familiar not only with the indications that warrant cystoscopy but to know clinical conditions in which visual examination of the lower urinary tract is not only unnecessary but absolutely contraindicated. For under certain conditions the passage of a rigid instrument, such as a cystoscope, into the lower urinary tract might result in trauma and subsequent infection of serious moment.

The examiner who expects all his patients to fit a single cystoscope is to be censured. Such expectation might have been excusable a generation ago, but today, with ample equipment available, there is no excuse for one to endeavor to pass a large caliber instrument through a small caliber urethra. The dilation of urethras by sounds in order to make them fit cystoscopes, instead of using cystoscopes of suitable size, has caused much of the dread of this form of clinical investigation. Moreover, different cystoscopes are designed for different types of work, and the examiner who is not capable of utilizing the proper instrument handicaps himself and may, by being thus handicapped, fail to obtain the information most desired. The cystoscope is a highly specialized instrument, it is not a "combination tool" of general utility. The examiner who has limited himself to the use of only a single type of cystoscope not alone handicaps his ability properly to observe but, by attempting to use instruments unsuited to their purpose, causes trauma through the unnecessary prolongation of the procedure. Such injury is not alone painful at the time of its infliction but may result in prolonged suffering. An examiner who compels his patient to lie on the table, with a rigid instrument like a cystoscope in his urethra, while the roentgenologist gets him into position for pyelography, belongs to the horse and buggy era of his

specialty. As soon as ureteral catheters are passed, the cystoscope should be withdrawn immediately. The soft ureteral catheters traversing the urethra will cause no trauma, while a rigid steel tube left in any longer than is absolutely necessary simply prolongs injury and discomfort. The shadow of a cystoscope in the bladder on an x-ray film is the trademark of an inefficient examiner.

Exposure of the genitalia during visualization of the lower urinary tract is an embarrassment to which the patient should not be subjected. It may be avoided by proper and simple draping as follows. The female patient is placed on the table in the lithotomy position; her legs are covered by leggings which reach to the thighs and the external genitalia are cleansed with 'green soap' and warm water and wiped dry. Two sterile towels are draped over the inner surface of the thighs so as to overlap slightly at the vulva and a third towel is placed crosswise on the lower part of the abdomen. The nurse separates the labia with the edges of the overlapping towels just long enough to permit the introduction of the instrument after which the towels naturally fall together.

#### THE ANESTHETIC

To reduce the discomfort of cystoscopy, the choice of anesthesia is naturally of importance. To carry out the procedure painlessly insures better cooperation on the part of the patient and assists in the acquisition of reliable information. It is comparatively easy to examine the interior of the bladder successfully when the patient is relaxed and free from pain. To do so with a struggling, straining suffering person is wellnigh impossible. In the female patient a cotton applicator dipped in 10 per cent solution of cocaine and placed in the urethra for five or ten minutes, before the passage of instruments, has become a routine procedure. Yet in so simple a procedure—usually left to a nurse—differences in the results may be obtained. If the swab is too large for the urethral meatus and not lubricated, its vigorous insertion by a careless nurse may cause acute discomfort. To carry out the procedure properly, topical application of some of the 10 per cent solution should first be applied to the meatus, then the swab, well lubricated as well as saturated with the 10 per cent cocaine solution, should be gently inserted for a short distance into the urethra. When a few minutes have elapsed a second swab should be inserted still farther. If this procedure is followed out, little discomfort will result when the cystoscope is passed. If, in addition, a few cubic centimeters of one of the cocaine derivatives is injected into the bladder in order to anesthetize the trigone, the entire procedure loses most of its discomfort. For such use procaine hydrochloride is useless. The fact that it has no effect on mucous surfaces is frequently overlooked. The dangers associated with the use of cocaine are apt to be exaggerated but they should not be disregarded. It is well to remember that its anesthetic action, when applied to mucous surfaces, is greater than any of its allies. Its rapid deterioration in solution and the formation of toxic substances make the injection of any stock solution into as highly absorbable an area as the posterior urethra highly dangerous. When cocaine is used, it should therefore be made up fresh for each patient. The dissolving of two  $2\frac{1}{4}$  grain (0.15 Gm.) tablets in an ounce (30 cc.) of sterile water immediately before injection into the male urethra has proved in many thousands of cases to produce the most

efficient local anesthetic. When this is injected, any excessive amount of hydrostatic pressure or the too rapid injection of the solution should be assiduously avoided. As soon as the urethra is well dilated a penis clamp is applied, after which the meatus, as in the female, may be treated with a swab dipped in a 10 per cent solution. When the urethra has been recently traumatized, as by the passage of sounds or other instruments and in all cases in which there is any question of idiosyncrasy for the drug, one of the cocaine allies may be used. These have the advantage over cocaine that they do not lose their anesthetic power on boiling and so are easier to sterilize. They do not deteriorate and become toxic when left in stock solution and are therefore more readily available. The most frequently used of such solutions at present are 2 per cent solution of Intracaine and a 4 per cent solution of metycaine. Diathane is also very efficient as a local anesthetic but immediately after injection it produces a burning sensation which is most annoying.

When excessive irritability of the urethra and bladder mucosa has not resulted from either acute or chronic infections as in tuberculosis such anesthetics will render skilled examinations of the lower urinary tract practically painless. If the office affords facilities for recovery from complete narcosis, of course no anesthetic is as satisfactory for such work as pentothal sodium. If it is administered by slow and constant intravenous injection in just sufficient amount to keep the patient unconscious, his recovery from the narcosis may be so rapid as to permit him to leave the examining table as well as the office as an ambulatory patient. In such a case it is imperative to have relatives or friends accompany him. The fortifying of pentothal anesthesia by pentobarbital sodium or morphine is contraindicated. It only prolongs the time the patient is incapacitated and adds nothing to the anesthesia. Moreover, by prolonging the patient's inability to cooperate it makes the taking of clear pyelograms difficult.

Because of the disadvantages of having the patient unconscious and unable to cooperate, some urologists prefer to use caudal anesthesia in small enough doses so that the patient is ambulatory after a short period of recovery. The inability of some patients to regain the full use of their lower extremities for a more extended period is the chief objection to this type of anesthesia, as is the occasional occurrence of a rather sharp drop in blood pressure following its application. For the greater number of male patients instillation anesthesia as described is the most generally employed not because it is the most efficient, but because it is the most rapid and easy of application.

#### PRESENCE OF INFECTION

A microscopic examination of the catheterized urine in the female furnishes the chief indication for or against visual examination of the lower urinary tract. If the urine is highly infected, containing considerable numbers of pus cells, it should be stained by the Gram method as a matter of routine to determine what types of organisms are present. Nothing is so likely to cause a patient to be severely ill with chills and high fever as cystoscopy in the presence of infection, especially if it is acute and trauma results from the passage of instruments or the overdistention of the bladder or renal pelves. Therefore, before instrumental examination is undertaken in either sex the type of infecting organism should be ascertained by stain and culture and every

effort made to render the urine bacteriostatic, at least to the specific organisms before proceeding to investigate the damage they have caused. The general habit of subjecting patients to cystoscopy before undertaking to render their urine bactericidal explains to a large extent the dread of the examination so many have developed because of its delayed febrile reactions.

If the history and physical findings as well as the examination of the urine indicate that one is dealing with a tuberculous infection, the experienced urologist will realize at once that the examination will probably be exceedingly painful unless precautions are taken. Few inflammations are more painful than a bladder mucosa irritated by tuberculous toxins. With such patients it is always preferable to employ the most efficient anesthesia. This is done, not alone to lessen the suffering of the patient, but to aid the examination. To permit satisfactory examination of a diseased bladder its owner must be free of pain. The attempts to examine inflamed and infected lower urinary tracts without adequate anesthesia is responsible for more mistaken diagnoses than any other single factor.

To infect a normal urinary tract it is necessary to traumatize it. Experiments have shown that its exposure to bacteria without trauma will not cause infection. One is inclined to conclude that the passage of instruments is the most common cause of trauma. True it is a common cause, it should be avoided by first filling the urethra with a suitable lubricant or lubricating the instrument most thoroughly and passing it with great care and gentleness. A more frequent cause of trauma is the overdistention of the bladder resulting in spasm. The instrument may be passed with skill but when the bladder is filled beyond comfort trauma is produced, which in the presence of infection will be followed inevitably by fever and chills. When the examiner has discovered a pathologic process in the urinary tract, nothing but added trauma is gained by long continued gazing at it. Once the lesion is observed, the examination is concluded as far as diagnosis is concerned. Such observation should require at the most but a few minutes. The report of cystoscopy consuming from fifteen to thirty minutes' duration reflects the inexperience of the examiner and in no way indicates his thoroughness or efficiency.

#### X-RAY EXAMINATION

It is being more and more generally recognized that many pathologic conditions of the lower urinary tract formerly believed to require visualization for their proper examination can now be as accurately diagnosed by other means. I refer particularly to prostatic obstruction. All cystoscopic instruments are rigid instruments, and all enlargements of the prostate render the passage of such rigid instruments a possible source of trauma. An x-ray film of the lower urinary tract will determine the presence or absence of stones in the bladder or prostate. The injection of the bladder with air or an opaque medium will betray the presence or absence of diverticula and the extent of trabeculation the prostatic obstruction has produced. The examiner's finger in the rectum, in most cases will reveal the type of enlargement and its gross extent. A soft rubber catheter will determine the amount of residual urine present. There thus remains little or nothing to be added from cystoscopy. The urologist who is dependent on the cystoscope to determine what method of treatment is best to employ for the relief of prostatic obstruction is apt to increase the obstruction by his instrumentation

so much that complete urinary retention frequently results. He is then faced with undertaking surgical measures in an area needlessly injured and infected and thus increasing the risk of postoperative febrile reaction, if not more serious complications. When residual urine is present, only trauma is necessary to add secondary infection, an unhappy prelude to any form of surgery. Probably in no condition has instrumentation been more painful and uselessly employed or yielded less worthwhile information than in routine cystoscopy of the elderly male with urinary obstruction the result of prostatic hypertrophy.

#### SUPPLEMENTARY INFORMATION

With the advent of intravenous urography, it seemed for a time that the need of instrumental examinations, particularly the passage of ureteral catheters, would be greatly curtailed. This has not proved to be the case. The unsuspected pathologic condition that has been revealed by the general use of intravenous pyelography has made evident the need for much supplementary information. This can be obtained only by the ureteral catheterization and the visual examination of the lower urinary tract. To attempt to diagnose and undertake treatment of a pathologic condition in the urinary tract simply by evidence obtained from intravenous urography is a responsibility that no wise or conscientious urologist much less a general practitioner, should care to assume. Unless all possible information from all possible sources is at hand, both diagnosis and treatment are of doubtful validity.

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#### ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. BALLENGER, McDONALD AND  
COLTMAN, DRs. McKIM, SMITH AND RUSH  
DR. HENIINE AND DR. BUMPUS

DR. MEREDITH F. CAMPBELL, New York. It was gratifying that Drs. Ballenger, McDonald and Coleman in their discussion of the sulfonamide treatment of gonorrhea of urethritis did not belabor us with considerations of the sulfonamide blood level. It was observed in the Urology Department of the College Clinic of New York University College of Medicine that practically all patients with gonococcal infection did as well on 2 Gm. as on 4 Gm. a day of a sulfonamide compound. Subsequent experience continues to bear this out. They emphasized the importance of the small external meatus in the genesis and perpetuation of a chronic urethral discharge, which may or may not be bacterial. A small meatus, with or without faulty sexual hygiene will engender prostatitis, the clinical manifestations of which usually cause the diagnosis of nongonorrheal or nonspecific urethritis to be made. I was especially pleased that the authors placed a satisfactory meatal caliber of the normal adult at 26 F. rather than smaller. The abnormally small meatus in the young is generally so congenitally and in most instances is overlooked unless complicating ulceration with or without incrustation and scab formation and hematuria attracts clinical attention. Wide meatotomy and the maintenance of a wide open orifice rather than salves and ointments is the indicated treatment. Following meatotomy it is my practice periodically and progressively to dilate the incised orifice with steel sounds rather than to rely on domestic improvisations of the patient. Our experience in the treatment of well over a thousand enuretic children subscribes to the authors' statements regarding this condition. Granted that the syndrome commonly designated clinically as enuresis is a functional problem in 95 per cent of children is generally directed against the mother and in most instances responds to psychotherapy, gold stars and the like in all cases not responding in three to four months of intensive medical treatment or psychotherapy a thorough urologic examination should be carried out. About 1 in 7 of these children cannot empty his bladder completely.



intravenous therapy with arsenical compounds, gave support to the theory that pinta was a type of spirochetosis.

The strongly positive serologic reactions encountered led some clinicians to believe, despite the contention of Fox<sup>4</sup> to the contrary, that pinta was related to both trambesia and syphilis. Several investigators found additional evidence indicating a relationship between pinta and syphilis. Thonnard-Neumann, Camacho, Moya and Brewster<sup>5</sup> and later Pardo-Castello and Ferrer<sup>6</sup> and Saenz, Grau Triana and Alfonso Armenteros<sup>7</sup> observed cardiovascular lesions such as aortitis, aneurysm, aortic regurgitation and enlargement of the heart. Saenz, Grau Triana and Alfonso Armenteros discovered changes in the spinal fluid resembling those associated with cerebrospinal syphilis (an increased content of globulin, a syphilitic colloidal gold curve and positive Wassermann, Kahn and McMichael reactions). Clinical manifestations of syphilis of the central nervous system were absent. In 1938 Grau Triana and Alfonso Armenteros discovered the causative spirochete in lymph from the cutaneous lesions, in the lymphatic glands and in the tissues. The discovery was confirmed two days later by Pardo-Castello. The organism was indistinguishable morphologically from the spirochete of trambesia and that of syphilis.

In 1939 all doubt as to the relationship of pinta to trambesia and to syphilis was dispelled when Leon y Blanco<sup>8</sup> published the results of his classic and heroic experiments on pinta in Mexico and Cuba. Pardo-Castello translated the reports and summarized them.

The experiments were performed on four different groups of patients, the first of which included Leon y Blanco himself. He gave himself and 17 Mexican volunteers intracutaneous inoculations of material from Mexican patients with typical pinta. Four Cuban subjects in Havana were inoculated with material from Mexican and Cuban patients.

Leon y Blanco proved that the achromic stage of Pinta, which to that time had been the only manifestation recognized, is in reality the tertiary or late dyschromic stage. He found that the initial lesion is always a closed papule that never ulcerates. It usually appears on the extremities, most often on the legs, but occasionally is found on the face or the neck. For several months this type of lesion remains the only manifestation of the disease and several may be present at once.

After five months or more signs of dissemination appear in the form of multiple macules or papules that grow and spread peripherally for several inches, just as do the initial lesions. In the course of several weeks circinate plaques are formed, the secondary lesions, which Leon y Blanco called pintids but which are popularly known in Mexico as empeines. These may be smooth or scaly. The initial lesions finally become part of the disseminated secondary manifestations and cannot be distinguished from them.

The lesions which usually are superficial are sometimes infiltrated, but they never ulcerate or produce a break in the epidermis. The earlier ones are faintly

pink, but they soon darken according to the amount of pigment and the congestion in the affected skin. In white patients the lesions are pink, red or brown, while in the dark races they are purple, blue, slate colored or black. Scaly lesions may have a dusty, ashen appearance, and the scales are usually adherent and powdery. When the scales are large the patches resemble the lesions of psoriasis, trichophytosis, lichen planus or eczema. Groups of pintids coalesce to form larger plaques.

In some cases the lesions involve only a small area, and in others they cover the greater part of the cutaneous surface. Usually, however, they are found on the extremities and bony prominences especially on areas not covered by clothing. After several months, when the pintids pass into the chronic stage, they tend to be symmetrically arranged especially on the hands and feet. Old lesions have a tendency to show slight central involution, indicated by a lighter color or even achromia. The border then appears darker and advances on the normal skin requiring several months or a year to reach a diameter of from 1 to 2 inches. They frequently have a well margined and sometimes polycyclic border.

According to Pardo-Castello and Ferrer<sup>6</sup> the differentiation of pintids from the lesions of leprosy and other inflammatory dermatoses may be difficult. However, the presence of normal sensation for pain and temperature in pinta and the easy demonstration of *T. carateum* in the lesions distinguish the disease from leprosy.

During the secondary stage of the disease, which may last a year or longer, the Wassermann and Kahn reactions are positive in only 60 per cent of the cases. The general health is never affected. The spirochete is easily demonstrated by dark field examination in lymph extracted from the lesions. Discrete enlargement of the lymph nodes has been reported and spirochetes have been recovered from them. Saenz, Grau Triana and Alfonso Armenteros<sup>7</sup> reported superficial enlargement of the lymph nodes in the inguinal region, of the epitrochlea and of the biceps muscle.

The secondary stage lasts from several months to more than a year. Then the lesions become dyschromic, producing the clinical picture of the late form of the disease so well known in Ecuador, Colombia, Cuba, Mexico and Venezuela. The lesions are symmetrically arranged usually on the extremities, and consist of alternating areas of depigmentation and hyperpigmentation. The resulting clinical picture is that of vitiligo. Cases in which there is symmetrical arrangement of dyschromic lesions on the face and trunk occur in all the countries mentioned except Cuba.

The pigmented lesions of the third stage are coffee color, slate blue or jet black according to the darkness of the normal skin. In white persons they are light brown. They may be localized on one extremity or on a hand and a foot on opposite sides. Follicular keratoses and areas of desquamation have been reported. The amount of desquamation varies in different persons and on different areas but the scales are usually branny and adherent. Atrophy of the skin in the achromic areas may occur in patients whose disease is of long duration.

Pardo-Castello and Ferrer<sup>6</sup> reported involvement of the mucous membranes. One of their patients had a triangular area of hyperpigmentation on the dorsum of the tongue, and another had patches of stippled pigmentation on the inside of the cheeks and on the palate.

4 Fox, Howard. Mal del Pinta as Observed in Mexico. Its Relation to Carate, read at the eighth International Dermatological Congress Copenhagen, 1930.

5 Thonnard-Neumann, E., Camacho, Moya, J., and Brewster, K. C. Is Carate (Pinta) a Dermatomyiasis? in Nineteenth Annual Report of the Medical Department of the United Fruit Company, New York, United Fruit Company, 1930, pp. 101-106.

6 Pardo-Castello, V., and Ferrer, Ismael. Pinta, Mal del Pinta Carate, Arch. Dermat. & Syph. 45: 843 (May) 1942.

7 Saenz, Brulio, Grau Triana, Juan, and Alfonso Armenteros, J. Pinta in Cuba, Arch. Dermat. & Syph. 41: 463 (March) 1940.

8 Leon y Blanco, F., cited by Pardo-Castello and Ferrer<sup>6</sup>.

It is in the late stage of the disease that the previously mentioned complications—hypertension, cardiovascular lesions and changes in the spinal fluid—are observed. Thonnard-Neumann, Camacho Moya and Brewster<sup>5</sup> reported cardiovascular changes in 80 per cent, Saenz, Grau Trina and Alfonso Armenteros<sup>6</sup> in 23.3 per cent and Pardo-Castello and Ferrer<sup>7</sup> in 64.5 per cent of patients with pinta. Changes in the spinal fluid were observed by Saenz, Grau Trina and Alfonso Armenteros in 10 per cent and by Pardo-Castello and Ferrer in 52.1 per cent. Pardo-Castello and Ferrer observed 8 patients with hypertension in 5 of whom no aortic changes were demonstrable. The Wassermann and Kahn reactions of all the patients were strongly positive in this stage. Lymph from the affected areas, except those which are old, atrophic and burned out, is rich in spirochetes. The vitiligoid areas vary in color from milk white to ashen gray to yellowish white.

In the Cuban form the cutaneous lesions are not so regular or so prominent as in other forms. In most of the Cuban and in many of the Mexican patients the initial lesions and the early disseminated manifestations are slight and transient and may be overlooked. Dyschromic areas in which depigmentation alternates with slate blue hyperpigmentation are observed on the dorsal surfaces of the hands and feet, on the forearms and on the legs. The face, trunk, abdomen and thighs are usually free from lesions.

Diffuse or punctate palmar and plantar hyperkeratoses with or without fissures, which are characteristic of Cuban pinta, are absent in the Mexican form. Such hyperkeratoses never affect the dorsal surfaces of the hands and feet. They begin as slate blue hyperpigmented spots and simultaneously enlarge peripherally and increase in number. In time keratoses may entirely cover the palms and soles. According to Gonzalez Herrejon, dyschromic changes of the palms are rare in Mexican pinta. The terminal stage is represented by achromic vitiligoid areas. Symmetrical depigmented triangles on the flexor surfaces of the wrists, which are a common feature of Cuban pinta, also occur in Mexican pinta. Pardo-Castello expressed the opinion that the more limited character of the chronic form of Cuban pinta is undoubtedly the result of constitutional factors and not of differences in the etiologic agent.

Leon y Blanco's second group of patients consisted of 3 Mexicans known to have syphilis. He inoculated them intracutaneously with material taken from Mexicans with pinta and containing the causative spirochete. Numerous disseminated cutaneous lesions, or pintids, developed in all 3 subjects. Inoculation of another person with lymph from their lesions resulted in the development of pinta but not of syphilis. These experiments established the individuality of pinta as a type of spirochetosis and also proved that patients with active syphilis are susceptible to pinta.

The third group consisted of 3 patients who had had pinta but had been treated with and apparently cured by arsenical preparations administered intravenously. Intracutaneous inoculation with material containing *T. carateum* resulted in the development of an initial lesion but no disseminated lesions, or pintids, appeared. The fourth group, 5 patients with active late dyschromic lesions of pinta, were inoculated with similar material intracutaneously and were observed for forty-nine days but no initial lesion developed.

The last two experiments established that reinfection with *T. carateum* is only partially successful in the early stages of pinta, that patients with late dyschromic lesions cannot be reinfected and that an attack of pinta confers immunity. By means of similar experiments carried out in Cuba, Leon y Blanco proved that Mexican and Cuban pinta are the same disease.

With regard to the mode of transmission of pinta, Pardo-Castello and Ferrer<sup>7</sup> stated that infection probably results from local contact with affected persons, since experimental inoculations can be made through minute and superficial abrasions of the skin. When one recalls that Leon y Blanco found *T. carateum* in the sweat of the surface of the affected skin of his patients, it is not surprising that the disease should be spread by simple contact. No case has been reported in which pinta was of venereal origin.

Pardo-Castello and Ferrer stated that only 12 per cent of their Cuban patients were white persons, most of the remaining 88 per cent being Negroes. In Colombia, Mexico and Venezuela the majority of the patients were Indians or mestizos, the latter being the most frequent sufferers. In Mexico children were frequently affected, but Pardo-Castello and Ferrer did not find any in whom the disease was of congenital origin. Their youngest Cuban patient was 23 years old, but they stated that their colleagues had had patients who were only 10.

The histopathologic changes of the late lesions of pinta, which are the best known and which in the main were shown by our sections, have been described by Ochotorena,<sup>9</sup> Gonzalez Herrejon and Pallares<sup>10</sup> and Pardo-Castello and Ferrer.<sup>7</sup> They consist of atrophy of the epidermis, absence of pigment in the basal layer, huge accumulations of melanophores in the upper part of the corium, alternate or continuous bandlike infiltration in the papillary and subpapillary layers and, when there is hyperkeratosis, accumulation of horny material in the atrophied epidermis. Extracellular grams of pigment may be present in and between the cells of the infiltrate. In the vitiligoid patches there are atrophy of the epidermis, absence of the papillae, complete absence of pigment and sclerosis of the connective tissue. These changes represent the final atrophic and cicatricial stage of cutaneous pinta.

The treatment of pinta is similar to the treatment of frambesia and of syphilis. Gratz<sup>11</sup> of Colombia was the first to call attention to the use of compounds of mercury and of arsenic for pinta. Arsenical preparations administered intravenously and bismuth and mercury compounds administered intramuscularly are specific. However, as in the treatment of frambesia and of syphilis, the arsenical compounds are the more rapidly effective. Mexican and Cuban dermatologists have found that the effect of treatment on the serologic reactions was not so good as the rapid involution of the cutaneous lesions had led them to expect. The Wassermann and Kahn reactions of many of their patients remained persistently positive in spite of the most intensive and prolonged treatment. The serologic reactions of some patients became negative but only slowly. Our limited experience with pinta in 3 patients coincides with the foregoing observations.

9 Ochotorena I. Estudios histológicos y micológicos acerca del mal del pinto. Mexico: Departamento de Salubridad, 1929.

10 Gonzalez Herrejon S and Pallares M. cited by Pardo-Castello and Ferrer.<sup>7</sup>

11 Gratz R M. cited by Holcomb R C. Pinta a Treponemato: A Review of the Literature. U S Nav M Bull 40: 517 (July) 1942.

The pathogenicity of *T. carateum*, according to Pardo-Castello, is much less than that of *Treponema pallidum*, and pinta is therefore much less dangerous than syphilis. However, because of the persistence of positive serologic reactions in the absence of active lesions and especially because of the high incidence of cardiovascular complications, the treatment of pinta should be continued until the serologic reactions are negative. When these reactions remain positive in spite of intense and prolonged therapy with compounds of arsenic and of the heavy metals, fever therapy or treatment with nonspecific proteins followed by therapy with heavy metals is worthy of consideration.

Pardo-Castello and his associates studied the histories and examined the histopathologic sections and photographs of our patients and agreed that in cases 2 and 3 the disease was exactly the same as the Cuban form of pinta. In case 1 the type was that seen in Mexico, Colombia, Ecuador and Venezuela. Unfortunately, because of an oversight, the diffuse bluish areas on the inner sides of the thighs, the slate colored hyperpigmentation on the cheeks and the mottled areas on the flexor surfaces of the elbows and the lower thirds of the arms in case 1 were not photographed in detail. By the time the error was discovered, the lesions had been cured by intravenous injections of an arsenic preparation and intramuscular injections of a bismuth

derivative in the vicinity of the plaques. The surrounding skin had retained its normal light brown sheen.

The patient stated that in the areas of depigmentation on her body there had been, years before, hyperpigmented lesions similar to those on the malar eminences.

The skin on the inner sides of the breasts, on the submammary and lower sternal areas, on the entire abdomen, on the flexor and lateral surfaces of the thighs and on the lower lumbar and sacral regions presented a strikingly mottled appearance, the result of contrast between large vitiligo areas and normal light brown skin. Pinhead sized to pea sized vitiligo areas were present over the lateral surfaces of the neck and the entire dorsal surface of the trunk. The flexor surface of the lower third of each upper arm and of the upper third of each forearm had a finely reticulated appearance due to the presence of partially depigmented, faintly outlined vitiligo areas the same size as those on the neck and the trunk and peculiar, sharply outlined and slightly elevated bluish black pinhead sized areas on a background of normal skin. There were a few isolated partially or completely depigmented lesions ranging in size from that of a pea to that of a dime (18 mm) on the dorsal surfaces of the hands, on the lateral and flexor surfaces of the legs and on the lateral surfaces of the ankle joints but not on the dorsal surfaces of the feet. The palms and soles were free from dyschromic changes.

An area the color of diluted laundry bluing and level with the skin was present on the inner side of each thigh from the genitocrural region almost to the knee. The hyperpigmentation extended around to the extensor surface of the thigh for several inches. Two intensely pruritic black stippled lesions were situated midway between the scapulas. They were elevated about 3 mm and were the size and shape of lima beans, resembling the lesions of psoriasis.

The results of additional antisyphilitic therapy were striking. Two months after treatment with neoarsphenamine had been instituted, the hyperpigmentation on the thighs as well as that on the malar eminences had disappeared. An additional three months of combined treatment with bismuth and arsenic caused complete involution of the psoriasiform lesions and the reticulated areas on the arms. Before treatment was given in our clinic dark field examination, impregnation of the tissues with silver, examination of stained smear preparations and inoculation experiments on animals all failed to reveal the presence of spirochetes. Study of the spinal fluid and cardiovascular and neurologic examinations revealed no abnormalities.

The Wassermann and Kahn reactions of the blood were both strongly positive Dec 17, 1940 and April 7, 1941. Sept 15, 1941 and April 7, 1942 the Wassermann reaction of the blood was negative, but the Kahn reaction was still strongly positive.

Biopsy of a depigmented area on a hip revealed the following microscopic changes. The epidermis showed pronounced hyperkeratosis. The rete pegs were reduced to small protrusions in some areas and were absent entirely in others. In the papillary part of the corium was a band of perivascular round cell infiltration. The blood vessels were dilated, the intima in some being edematous and in others proliferated to such an extent that the lumens were almost occluded. Except for a few melanoblasts, pigment was absent in the basal layer. A few chromatophores were visible in the subpapillary layer. Biopsy of one of the hyperpigmented lesions in the interscapular region revealed hyperkeratosis of the stratum corneum. The rete was slightly atrophic, the rete pegs being reduced in many places to small protrusions. Moderate perivascular round cell infiltration was visible in the papillary portion of the corium. The lymph spaces and the blood vessels were moderately dilated. The intima of the vessels showed slight edema, and in many capillaries proliferation of the intima was of a degree leading to almost complete occlusion. Pigment was present in the basal cell layer of the rete and in the stratum spinosum. Chromatophores and granules of free pigment were present in the subpapillary layer of the corium.

**CASE 2**—An obese Negro woman aged 51 entered the dermatologic department of Michael Reese Hospital on May 12, 1940 complaining of pains in the arms, hands and knees, edema of the ankles, dyspnea on exertion and severe pruritus of the palms and of the dorsal surfaces of the hands, including the fingers.

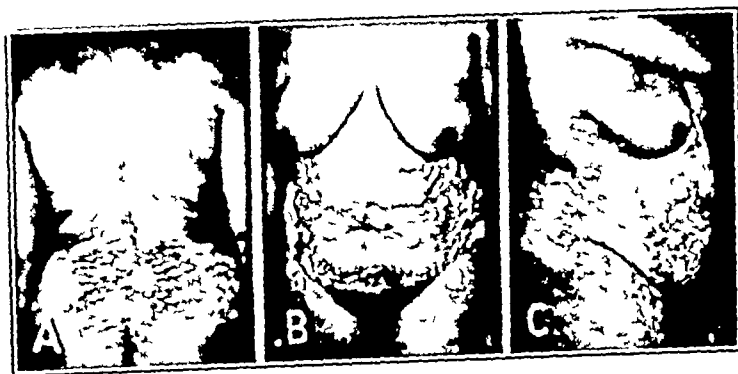


Fig. 1 (case 1)—A vitiligo lesions on lower lumbar, gluteal and sacral regions. B with superimposed light brown areas of normal skin. C on the right side of the patient's body.

preparation. At the time my associates and I performed our inoculation experiments on animals we did not yet know that *T. carateum* is extremely susceptible to the action of the compounds of arsenic and of bismuth. It is impossible to demonstrate it in patients twenty-four hours after one injection of a bismuth or an arsenical compound.

#### REPORT OF CASES

**CASE 1**—A well nourished woman of 51 entered the dermatologic department of Michael Reese Hospital on Dec 17, 1940 complaining of generalized pruritus and "white spots" on the skin.

She was born in St. Catharines, Ont., of mixed parentage, her father was Cherokee Indian and French and her mother Blackhawk Indian and Negro. At the age of 3 months she was taken to Pittsburgh, where she lived until 1939, when she moved to Chicago.

During the preceding six months she had been given two courses of treatment with bismuth salicylate, although a history of syphilitic infection had not been obtained.

At the time of admission to our clinic, in addition to the cutaneous lesions, the patient was suffering from severe asthma. There was no adenopathy.

On the malar eminences were cutaneous lesions in the form of peculiar bluish black, fairly sharply margined plaques about the size of a half-dollar (30 mm) and elevated about 2 mm. Numerous pinhead sized lesions of the same color and elevation but more sharply delimited were present in the imme-

The patient was born in Louisiana and lived there until 1939, when she moved to Chicago. In the preceding seven years she had had seven abortions each of which occurred spontaneously in the fourth month. She had received one course of treatment with neosphenamine and bismuth salicylate before entering our clinic.

In addition to obesity and the cutaneous lesions she had advanced dental caries and infectious arthritis. There was no adenopathy.

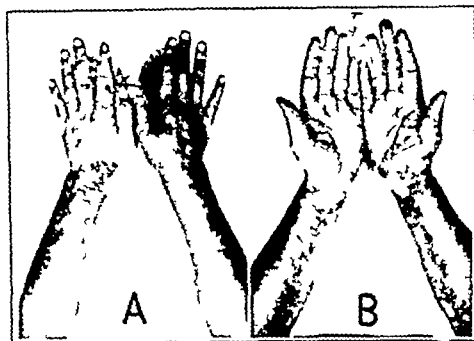


Fig 2 (case 2)—Deep black hyperpigmented plaque characteristic of *pinta*. *A* extending from the dorsal surface of the left wrist joint to involve half of the dorsal surface of the forearm. Depigmentation of the entire dorsal surface of the left hand and parts of the dorsal surface of the thumb and fifth finger of the right hand. *B* continuation of the plaque on the flexor surface of the left forearm. Characteristic triangular areas of leukoderma on the flexor surfaces of the wrists.

The skin on the dorsal surfaces of the left hand, including the fingers, showed depigmentation which extended several inches above the wrist joint. Rests of normal black skin of various sizes and irregular outline were superimposed on the vitiligo areas. These areas were rough and resembled the surface of a fine mesh nutmeg grater.

The depigmented area on the back of the left hand was sharply demarcated above the wrist joint by the lower border of a black plaque, 3 mm thick, which extended from the dorsal surface around to the flexor surface of the forearm, to end several inches above the wrist in a vitiligo area shaped like an inverted V. A deep black, sharply outlined plaque 3 mm thick extended upward from the depigmented area near the dorsal surface of the wrist, involved half of the extensor surface of the left forearm and wound around the middle of the forearm to end in a similar plaque which involved half of the flexor surface and was bounded distally by the V shaped vitiligo area at the wrist.

The lesions on the palms were of two types, hyperkeratotic and macular. The hyperkeratotic lesions were black, slightly scaly, elevated and almost the size of a dime. The macular lesions were deep brown, about the size of a pea and sharply outlined. A partially depigmented area was present on the medial surface of the fifth finger of the right hand at the first metacarpophalangeal articulation. The lesion extended laterally and proximally for about an inch and wound around to the flexor surface of the forearm to end at the wrist in a vitiligo area shaped like an inverted V. An identical area was present on the dorsal surface of the thumb at the first phalangeal articulation.

The patient stated that all of the depigmented areas had been preceded by plaques of the same color and thickness as those on the left forearm. These had been present for many years. Hyperpigmentation had been noticed first in 1919 but depigmentation had not appeared until 1939.

When the patient was admitted to the clinic the Wassermann and Kahn reactions of the blood were strongly positive and they remained strongly positive until Dec 15, 1942 in spite of continuous treatment with arsenical compounds given intravenously and bismuth compounds given intramuscularly. After that date they were consistently negative.

The cutaneous response to therapy was more rapid. The pruritus of the hands disappeared after a few injections of neosphenamine. After six weeks of therapy the roughness of the dorsal surfaces of the hands was replaced by superficial

atrophy. The black plaques on the left arm disappeared after three months of therapy and the hyperkeratotic and the macular lesions of the palms after two months.

Study of the spinal fluid and neurologic and cardiovascular examinations failed to reveal any pathologic changes. Ophthalmologic examination revealed corneal opacities, which were especially pronounced in the outer segments. Spirochetes could not be demonstrated by dark field examination, impregnation of the tissues with silver, study of stained smear preparations or inoculation experiments on animals. (The testes of rabbits were inoculated with tissue from the hyperpigmented and the depigmented lesions.)

Biopsy of a totally depigmented area at the left hypothenar eminence revealed a hyperkeratotic and definitely atrophic epidermis entirely without pigment. The pathologic changes in the corium were restricted to the pars papillaris and consisted of dilatation of the capillaries and lymph spaces, edema of the connective tissue and round cell infiltration of perivascular distribution. The reticular portion of the corium showed slight edema, and round cells were distributed between the connective tissue bundles. The capillaries and the larger and smaller vessels showed edema and desquamation of the intima. In some of the vessels intimal proliferation had advanced to such a degree that they were almost occluded.

Biopsy of a hyperpigmented patch on the flexor surface of the left forearm revealed pronounced hyperkeratosis with preservation of the stratum granulosum. The rete malpighii showed progressive atrophy, which in some areas was far advanced. Considerable round cell infiltration was present in the subpapillary portion of the corium, which also showed advanced edema and destruction of the connective tissue bundles. The lymph spaces and blood vessels were dilated and edematous, and there was desquamation of the intima. The vessels in the reticular portion of the corium showed intimal proliferation of a degree sufficient to bring about almost complete occlusion of the lumens. The basal layer of the epidermis and the papillary portion of the corium were virtually packed with pigment in melanoblasts and chromatophores and with coarse granules lying between the connective tissue bundles.

CASE 3—An obese Negro aged 50 entered the dermatologic clinic of the Michael Reese Hospital on May 2, 1939, referred

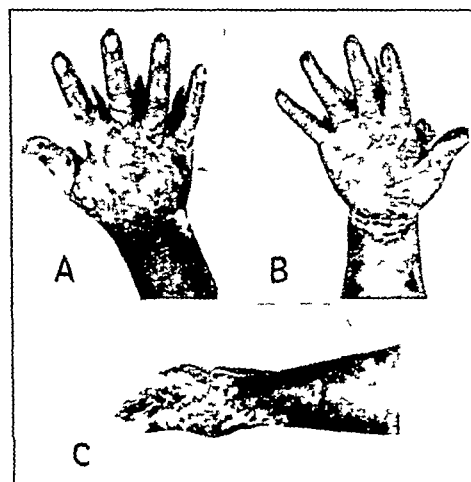


Fig 3 (case 3)—*A* vitiligo lesions on the dorsal surface of the right hand including the fingers. *B* dyschromia of the palm and volar surfaces of the fingers of the right hand. Characteristic triangular area of leukoderma at the wrist. *C* dorsolateral view of the right hand showing continuation of the vitiligo area to the forearm to end on the flexor surface in the characteristic triangular area of leukoderma.

from the surgical department because of positive serologic reactions and headache and vertigo of six months duration.

The patient was born in Alabama and lived there until 1939 when he moved to Chicago. There was no history of syphilitic infection although the Wassermann and Kahn reactions of the blood were both strongly positive on a number of occasions. Adenopathy was not present.

The patient was referred for examination to the medical department, which reported enlargement of the aorta, accentuation of the second aortic sound and a systolic murmur at the apex. The blood pressure was 188 systolic and 114 diastolic. Neurologic examination and examination of the spinal fluid revealed no evidence of disease of the central nervous system.

On May 2 the clinician who first saw the patient observed a black, sharply outlined dollar sized (38 mm) hyperpigmented patch 5 mm thick on the flexor surface of the right wrist extending 1 cm into the palm. There was a juxta-articular node on the dorsal surface of the second phalangeal articulation of the fifth finger of the same hand. A second node was present in the suprapitellar region of the right leg. The patient stated that these nodes had been present for six years.

The patient had already received three courses of treatment with bismuth subcitrate and by the time we saw him on May 9, 1940 the hyperpigmented patch at the wrist and the juxta-articular nodes had disappeared.

The dorsal surfaces of the right hand including the fingers, had a mottled appearance resulting from contrast between irregularly outlined vitiloid patches and normal black skin. The depigmentation extended from the dorsal surface of the metacarpophalangeal articulation of the thumb and from the dorsomedial surface of the forearm to end in a V-shaped vitiloid area terminating several inches above the wrist joint.

The palm was studded with coal black sharply outlined, hyperkeratotic slightly scaly lesions about the size of a pea, with irregularly outlined depigmented areas and with irregularly outlined dark brown lesions ranging in size from that of a dime to that of a pea. When first seen the depigmented lesions on the dorsal surfaces of the hand including the fingers, were of a peculiar pinkish color and so rough that they resembled a fine mesh nutmeg grater.

The patient in 1927 had first noticed black hyperpigmented areas on the fingers and hand at the sites where the vitiloid areas later appeared. The hyperpigmented patch on the flexor surface of the forearm was also present at that time. Depigmentation appeared in 1930. The hyperkeratotic lesions disappeared after three months of combined therapy with compounds of arsenic and bismuth, and the depigmented areas became perfectly smooth, ivory white and atrophic. On Nov. 20, 1941, the last time the patient visited the clinic the Wassermann and Kahn reactions of the blood were still strongly positive.

Biopsy of a depigmented area on the flexor surface of the right wrist revealed pronounced hyperkeratosis, atrophy of the rete, absence of pigment in the epidermis and round cell infiltration which extended to the basal cell layer throughout the section and was especially prominent in the papillary layer of the corium. The small capillaries in the infiltrated portion of the papillary layer were dilated, and their intima showed desquamation. The intima of the larger capillaries in the papillary layer and of the vessels throughout the reticular layer of the corium showed proliferative changes. In many instances these were so extensive that the lumens of some vessels were materially narrowed and of others occluded.

On Aug. 8, 1942 the patient was admitted to the medical service of Michael Reese Hospital acutely ill. The clinical diagnosis was arteriosclerotic heart disease, malignant nephrosclerosis and uremia, and he died on August 24. Dr. Otto Saphir, who performed the autopsy, failed to find any evidence of syphilis but reported general arteriosclerosis, old pyelonephritis in arteriosclerotic kidneys, hypertrophy and dilatation of the heart, chronic passive hyperemia of the lungs, liver, kidneys and spleen, bilateral bronchopneumonia of the lower lobes, a small aneurysm of the right coronary artery and old bilateral fibrous pleuritis.

All 3 patients maintained that they had never had sexual relations or shared living quarters with persons who had lived in the tropics or who had had lesions resembling theirs.

104 South Michigan Avenue

## THE CONTROL OF AN OUTBREAK OF BACILLARY DYSENTERY WITH SULFONAMIDES

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Bacillary dysentery continues to be a problem in crowded institutions, army camps and orphanages. The difficulty of control has been pointed out by many authors.<sup>1</sup> In former years treatment of the cases was purely symptomatic and control of the infection could be obtained only by isolation and quarantine or by permitting the outbreak to run its course after it had attacked a large percentage of the susceptible. Since the introduction of the sulfonamides, favorable reports of treatment of cases of bacillary dysentery with these drugs have appeared in the literature.<sup>2</sup> Of late the less soluble drugs, particularly sulfaguanidine and succinylsulfathiazole, have had a considerable vogue. Theo-

TABLE 1—Cases and Carriers According to Location in the Building

Floor	Population		Age	Cases		Carriers	Cases and Carriers with Positive Stool Cultures
	Boys	Girls		Stools Positive	Stools Negative		
Second	10	14	13.4	10	14	0	10
Third	0	49	5.11	3	1	17	20
Fourth	40	0	5.11	8	1	20	28
Fifth	22	0	4.7	12	1	13	25
Total	72	63		33	17		83
	145			50	50		83

retically there should be an advantage in the use of these drugs, since the concentration of the drug in the intestinal tract is higher than with the more readily absorbable ones.

### OUTBREAK

We had an opportunity recently to test the value of the sulfonamides in the control of an outbreak of bacillary dysentery, Sonne type. The outbreak occurred in an orphan asylum housed in a well constructed five story building. There was a total of 145 white children being cared for in the building at the time of the investigation, and these were divided into four groups, one each on the second, third, fourth and fifth floors. While the children are kept in their respective quarters they visit one another, eat together in the dining room and mingle at play and school. Some of the children

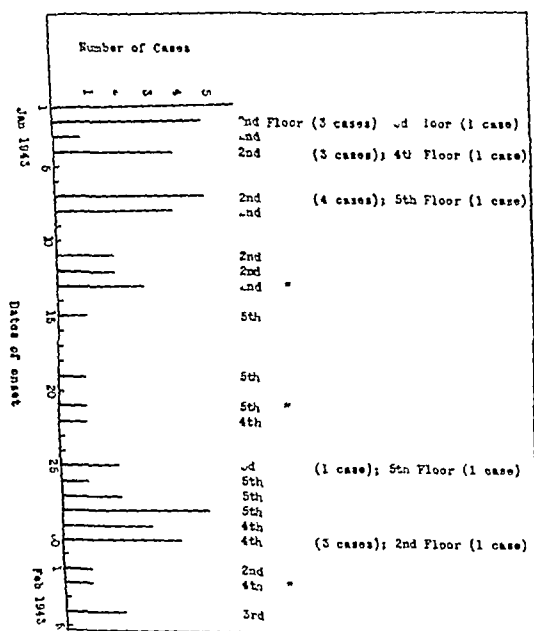
From the Israel Orphan Asylum, New York City. Dr. Morris Greenberg, epidemiologist of the New York City Department of Health, gave assistance and counsel. All the laboratory work was performed for us in the enteric fever laboratory of the New York City Department of Health, and Miss Carolyn Oldenbush rendered assistance. Miss Charlotte Rosenzweig, nurse in charge at the Israel Orphan Asylum was cooperative and helpful.

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2. Abente Haedo, F., and Rodriguez Devincenzi, A. Sulfonamide Compounds in Bacillary Dysentery, *Arch. urug. de med. cir. y especialid.* 21: 115-127 (Aug.) 1942. Marshall, E. K., Jr., Bratton, A. C., Edwards, Lydia B., and Walker, Ethel. Sulfanilylguanidine in Treatment of Acute Bacillary Dysentery in Children, *Bull. Johns Hopkins Hosp.* 68: 94-111 (Jan.) 1941. Paulley, J. W. Treatment of Bacillary Dysentery in Middle East, *Lancet* 2: 592-594 (Nov. 21) 1942. Smyth, Finkelstein, Gould, Koppr, and Leeder.<sup>1</sup>

receive instruction in the building, others, the older ones, attend a public school across the street. There were no cases of diarrhea or dysentery in this public school.

On Dec 16 1942 S H a boy aged 11 of the fourth floor group who had been in the institution since 1939 became ill with diarrhea which persisted for about three days. No cultures of his stool were made. On Jan 4 1943 this child again became ill with vomiting fever and diarrhea. A stool specimen was submitted to a private laboratory on January 8 and was reported as positive for dysentery bacilli.

On January 2 4 children on the second floor became ill with symptoms of vomiting fever and diarrhea. They had been in the institution for at least three months. Other children on this floor developed similar symptoms and by January 13 all the 24 children on this floor had become ill. The disease spread to the other floors. On January 2 a case occurred on the



Cases by dates of onset and location in building

third floor and 3 other children later became ill on this floor. From January 4 to February 2, 9 cases occurred on the fourth floor, and from January 15 to January 28 12 cases developed on the fifth floor. A total of 50 children became ill between January 2 and February 4. The onsets are shown in the chart.

An investigation was begun toward the end of January. All new admissions were discontinued. The sick children were isolated, and stool specimens were obtained from all children in the institution as well as from all adults employed there. At least 3 specimens were cultured from each child. Those with positive specimens were not released until three successive specimens taken not less than forty-eight hours apart were reported as negative by the laboratory. A final survey was made of all the children by cultures inoculated directly from a rectal smear, before the institution was permitted to reopen.

Table 1 shows the distribution of the cases in the institution, as well as the results of the culture survey. It will be noted from the table that there were 33 boys and 17 girls affected and that 33 of the 50 children or 66 per cent had *Bacterium sonnei* in their stools.

**Bacteriologic Examination**—Stool specimens were received in the laboratory in paper containers on the same morning that they were passed, usually within one to three hours. They were plated with a heavy inoculum on SS agar, and streakings were also made on plates of MacConkey and bismuth sulfite. Bismuth

TABLE 2—Treatment of Bacteriologically Positive Cases and Carriers According to Drug Administered

Floor	Sulfa thiazole	Sulfa diazine	Sulfa guanidine	Succinyl sulfa thiazole	Total
Second	10				10
Third		11	9		20
Fourth	11	2	9	6	28
Fifth			4	21	25
Total	21	13	22	27	83

sulfite plates were examined after incubation for forty-eight hours. MacConkey and SS agar plates were examined after incubation for twenty to twenty-four hours and suspected colonies fished on to Krumwiede's triple sugar medium and incubated for sixteen to twenty hours. Colonies giving *Shigella* reactions were fished and tested with type specific antisera. Inoculations into sugar tubes were made only at the beginning of the study. Later cultures were classified by means of agglutination reactions with type specific antisera only.

A total of 715 cultures were made from the 145 children. None of the specimens from the adults were positive, and they are therefore omitted from consideration in this study. Specimens from 83 children were positive for *B. sonnei*. Of these, 33 were from children who were ill or had recently recovered, and 50 were from symptomless carriers. Their distribution in the building is shown in table 1.

An attempt was made at first to isolate all children with positive stools as they were discovered. However, facilities were lacking for the isolation of so many and it was therefore decided to use the sulfonamides in an attempt to control the outbreak. Four of the sulfonamides were employed: sulfathiazole and sulfa-

TABLE 3—Bacteriologically Positive Children Not Cleared After One Course of Treatment

Name	Date of Positive Stool Before Administration of Drug	Drug Administered and Number of Days	Date of Positive Stool After Administration of Drug	Further Treatment
J G	2/2	Sulfathiazole 6	2/24	Sulfaguanidine 2/20 23
H B	2/4	Sulfathiazole 4	2/22	Sulfadiazine 2/24 27
M S	2/4	Sulfathiazole 4	2/22	Sulfadiazine 2/24 27
F W	2/4	Sulfaguanidine 4	2/22	Sulfadiazine 2/24 27
J S	2/12	Sulfaguanidine 4	2/18	Succinylsulfa thiazole 2/20 23
R G	1/20	Succinylsulfa thiazole 6	2/22	Sulfathiazole 2/24 27
R P	2/1	Succinylsulfa thiazole 6	2/24	Sulfadiazine 2/27 27
L W	2/24	Sulfadiazine 3	3/1	Sulfathiazole 3/4 7
	2/1	Sulfaguanidine 6	2/11	Sulfadiazine 2/17 20
	2/10	Sulfadiazine 2	3/1	Sulfathiazole 3/4 7

diazine in doses of 1 gram per pound of body weight and sulfaguanidine and succinylsulfathiazole in doses of 2 grains per pound of body weight. The drugs were administered to all children with positive stools. No selection was made in the children treated with the different sulfonamides. The nurse was instructed to give the four drugs in rotation to numerically equal groups of patients. This was fairly well carried out except that sulfadiazine was given to a smaller than



average group, as is indicated in table 2. The children were kept on the drugs for an average of four days. Some received it for only three days and others for as long as six days. Of the 83 cases and carriers all but 8 failed to show B sooner in their stools following treatment. Of the 8 whose stools were positive after treatment 3 had received sulfathiazole, 3 sulfaguandine and 2 succinylsulfathiazole. All were again treated with a different sulfonamide, 6 cleared up while 2 required a third course of treatment (table 3).

*Clinical Findings*—The cases were mild and no deaths occurred. Diarrhea lasted between two and four days. The stools contained mucus and blood. Temperatures in most cases ranged between 100 and 101 F., but in a few cases the temperature at onset was between 103 and 104 F. Abdominal cramps and vomiting occurred during the first twenty-four hours only. Blood counts were done on all patients and varied between 7,500 and 10,000 white blood cells per cubic millimeter. The polymorphonuclear leukocytes ranged between 65 and 72 per cent. Urine specimens were all normal.

All children were followed with frequent blood counts and urine examinations while receiving the drugs. No blood was found in any of the urinary specimens and no significant reductions in the number of red and white blood cells or in the percentage of granular blood cells. Two children developed a red macular rash, one after four days of treatment with sulfathiazole and the other after three days of sulfadiazine administration. The rash disappeared within twenty-four hours after the drug was discontinued.

#### COMMENT

The sulfonamides appeared to be quite effective in the control of the outbreak. In the dosages and for the periods given no advantages could be claimed for one over the other of the four drugs used. As noted, sulfathiazole and sulfaguandine failed in 3 cases, each used respectively for six, four and four consecutive days, and succinylsulfathiazole failed in 2 cases in which it was given for four days. Sulfadiazine failed in 2 cases in which it was substituted for a period of three days for another drug which had failed (table 3).

An interesting feature of the bacteriologic examinations was the total inhibition of growth of all intestinal organisms on the mediums used as a result of the administration of the sulfonamides. This occurred in 80 per cent of all children treated with sulfathiazole, 70 per cent of those treated with sulfadiazine, 63 per cent of those treated with succinylsulfathiazole and 36 per cent of all treated with sulfaguandine. We are unable to say how soon after administration of the drug growth was inhibited or how long the inhibition lasted, since we did not take daily cultures. Some idea may be obtained, however, from the following examples:

1 Five children had positive stool cultures on February 2. Sulfathiazole was administered from February 4 to February 10. Stool cultures on February 8, 11 and 15 gave no growth. On February 24 stool cultures gave growths of *Escherichia coli*.

2 A child's stool was positive on February 5. He was treated with sulfadiazine from February 7 to February 10. Stool cultures on February 11 and 15 gave no growth. Stool culture on February 24 gave a growth of *E. coli*.

3 A positive culture was obtained from a child's stool on February 4. He was treated with succinylsulfathiazole from February 6 to February 10. On February 11 the culture of the stool gave no growth. On February 15 there was a growth of *E. coli*.

4 A child's stool was positive on February 22. She received sulfaguandine from February 24 to February 27. Stool cultures on March 1 and March 8 gave no growth. On March 10 a stool culture gave a growth of *E. coli*.

#### SUMMARY

1 An outbreak of Sonne dysentery involving 50 children occurred in an orphanage with a total census of 145. Bacteriologic survey disclosed 83 children with positive stool cultures.

2 The administration of sulfathiazole and sulfadiazine in doses of 1 grain and sulfaguandine and succinylsulfathiazole in doses of 2 grains per pound of body weight for an average of four days cleared 90 per cent of the children with positive stools. The remaining 10 per cent were cleared with one or two additional courses of treatment.

3 The administration of the drugs caused complete inhibition of growth of intestinal bacteria for a time in 80 per cent of all children treated with sulfathiazole, 70 per cent of those treated with sulfadiazine, 63 per cent of those treated with succinylsulfathiazole and 37 per cent of all treated with sulfaguandine.

15 West Eighty-First Street—317 East Seventeenth Street

### Clinical Notes, Suggestions and New Instruments

#### COLD AUTOHEMAGGLUTININS FOLLOWING ATYPICAL PNEUMONIA PRODUCING THE CLINICAL PICTURE OF ACROCYANOSIS

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The phenomenon of autoagglutination and autohemolysis has often been described in paroxysmal hemoglobinuria, which is sometimes encountered in congenital syphilis. In 1937 McCombs and McElroy<sup>1</sup> in a review of the available literature reported that autoagglutination had been observed in hemolytic icterus, trypanosomiasis, severe anemias and liver disease, occasionally in pneumonia and also in apparently normal persons. It has likewise been reported in cases of hemolytic anemia associated with sulfanilamide therapy<sup>2</sup> and acute hemolytic anemia due to lead poisoning.<sup>3</sup> Wiener<sup>4</sup> in his recently revised book on "Blood Groups and Transfusions" expressed the thought that the phenomenon must not be too rare because he himself had observed at least a dozen instances of autoagglutination occurring at room temperature.

In February 1943 Peterson, Ham and Finland<sup>5</sup> reported finding a high incidence of cold agglutinins (autohemagglutinins) which appeared at low temperatures in the blood serum of patients with primary atypical pneumonia. In this report they suggested that the demonstration of cold agglutinins might possibly serve as a useful test for such atypical pneumonias.

Since atypical pneumonia has been prevalent in the armed forces during the past winter and, owing to the fact that we

From the Laboratory and Medical Services Station Hospital U. S. Army Air Base, Lincoln, Neb.  
1 McCombs, R. P. and McElroy, J. S. Reversible Autohemagglutination with Peripheral Vascular Symptoms. *Arch. Int. Med.* 59: 107-117 (Jan.) 1937.

2 York, W. Autoagglutination of Red Blood Cells in Trypanosomiasis. *Ann. Trop. Med. & Parasitol.* 4: 529-552, 1910.

3 Antopol, William. Applebaum, Irving and Goldman, Lester, cited by Reisner, E. H. Jr. and Kalkstein, Mennasch. *Am. J. M. Sc.* 207: 313-322 (March) 1942.

4 Gray, Irving. Greenfield, Irving, and Lederer, Max, cited by Reisner and Kalkstein.<sup>5</sup>

5 Wiener, A. S. Blood Groups and Transfusion, Springfield, Ill. Charles C. Thomas, Publisher, 1943.

6 Peterson, O. L., Ham, T. H. and Finland, Maxwell. Cold Agglutinins (Autohemagglutinins) in Primary Atypical Pneumonia. *Science* 97: 167-168 (Feb. 12) 1943.

have recently observed a striking instance in which autoagglutinins were active even at room temperature and produced vascular changes suggesting the clinical picture of acrocyanosis, it seemed worth while to report the following case

#### REPORT OF CASE

Corporal F., aged 38, was seen in the outpatient clinic of the Station Hospital because his barrack mates observed that his nose, ears, and hands were a deep purple (fig 1). He himself discovered that this phenomenon occurred only after he was exposed to cold.

He had suffered with a respiratory infection in March 1943, at which time a large number of patients with atypical pneumonia were being hospitalized at this air base. He was quite sick for about three days with cough and fever and did not recover from the cough and generalized malaise for about two weeks. The vascular phenomenon previously mentioned appeared for the first time, to his knowledge, about one month after the original onset of his symptoms. This soldier is much above the average in intelligence, and his statement, therefore, that this was the first time he had ever noted this condition



Fig 1—Patient after exposure to cold showing cyanotic discoloration of face and outer edge of auricular cartilage

seemed credible. No other member of his family was similarly affected. Prior to entering the armed services he was an accountant, and his military duties have been entirely clerical.

The clinical picture of acrocyanosis could be reproduced at will by exposing him to cold. After he returned to room temperature about fifteen minutes was required for the abnormal discoloration to disappear.

Capillaroscopy was made of the nailfolds of the patient's fingers. It was found that the capillaries reacted more or less normally to considerable variations in temperature, except for moderate ballooning of the summit of the loops when the hand was cyanotic. Not all capillaries in the field showed the latter phenomenon, and it was interpreted as being due to reversible intravascular autoagglutination. Thermocouple readings of hand skin temperatures before, during and after chilling varied but slightly from similar readings on normal controls. When an attempt was made to do a routine red cell count on the patient with the diluting fluid at room temperature, prompt agglutination of massive character took place in the hemocytometer pipet. However, when the diluting fluid was warmed a little above body temperature the agglutination was found to be completely reversible and a smooth even suspension of red

cells was obtained. Moreover, prompt agglutination could be produced again and again in hanging drop suspensions by repeated warming and chilling. The patient's blood was of group O. When the serum was separated from the clot it had the property of agglutinating not only the patient's own washed red cells but also the washed cells of normal group O



Fig 2—Section under high power magnification showing patient's washed red cells and serum after warming. Hanging drop preparation. No agglutination.

persons (figs 2, 3 and 4). After repeated chilling of the patient on numerous occasions, no hemoglobin was found at any time in his urine. Furthermore, the "acid hemolysis test" for exclusion of paroxysmal hemoglobinuria was entirely negative. The complete "acid hemolysis test" as described by Ham was carried out with the patient's red cells and the red cells of a known normal control with identical results.

Protein determinations showed a total serum protein of 6.4 per cent, albumin 4.9 per cent and globulin 1.5 per cent. The autoagglutinins were readily absorbable by the patient's own red cells and by red cells of normal group O persons. The autoagglutinins were active in dilutions up to 1:5,000. Moreover, these autoagglutinins could be recovered in saline solution from the washed agglutinated red cell masses and were found to be active again for group O red cells.

A careful physical examination and other laboratory studies for liver diseases, syphilis and other conditions in which cold agglutinins have previously been described were entirely negative. His blood picture was normal, and the only blood abnor-

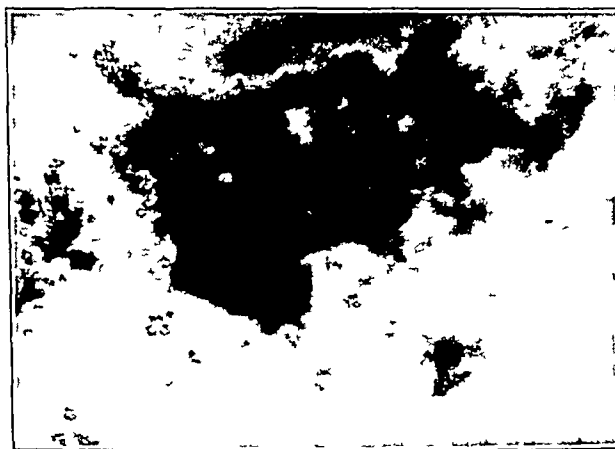


Fig 3—Section under high power magnification showing agglutination of patient's washed red cells by his own serum after cooling. Hanging drop preparation.

malities that we could discover were the presence of these so-called cold autohemagglutinins, which were present even at room temperature, and an extraordinary rapid sedimentation rate when the cell suspension was placed in the ice box whereas the rate was normal when the suspensions were warmed.

## COMMENT AND CONCLUSIONS

We believe that when the patient was chilled the autohemagglutinins in his blood serum produced reversible intravascular agglutination. We further believe that this intravascular agglutination rather than an underlying structural or neurologic vascular disease produced the clinical picture of acrocyanosis.

Although cases exhibiting Raynaud like phenomena associated with reversible autohemagglutination and paroxysmal hemoglobinuria have been described by McCombs and McIlroy,<sup>8</sup> by Ernest and Gardner,<sup>9</sup> by Wiener, and by others, our case is unique in that there is no associated paroxysmal hemoglobinuria, a negative Donath-Landsteiner test and a negative Ham test for acid hemolysis. Davidsohn<sup>10</sup> studied a patient with a condition resembling Raynaud's disease whose serum agglutinated her own cells at ice box temperature and at 22 C. Davidsohn does not mention whether this patient had paroxysmal hemoglobinuria or a positive Donath-Landsteiner test; unfortunately we have been unable to obtain any further information on this point. Peterson, Ham and Finland<sup>11</sup> mentioned phlebotomiasis and pulmonary emboli complicating a few of their

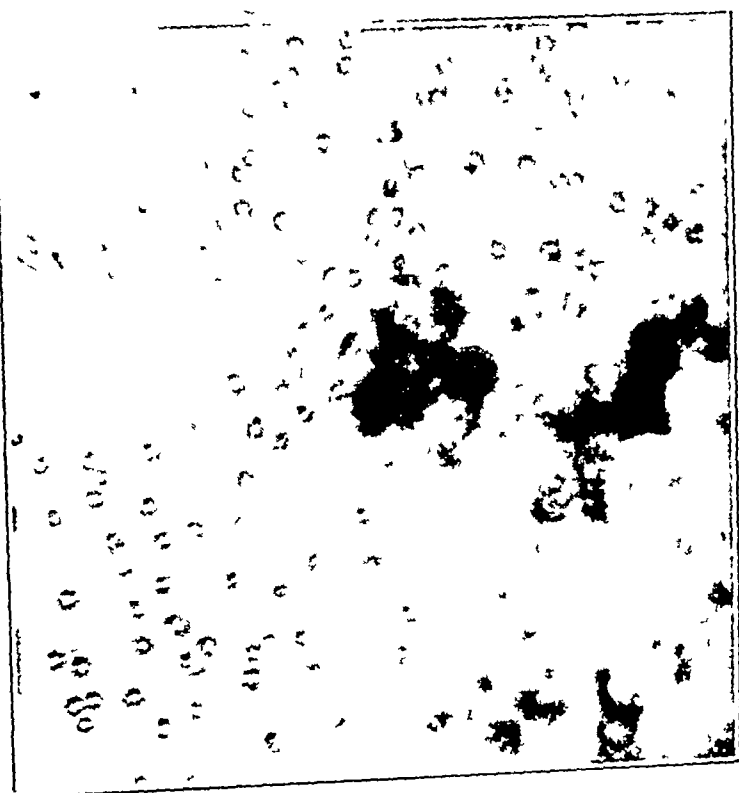


FIG. 4—Section under high power magnification demonstrating agglutination with patient's serum and washed red cells of a normal person of the same blood type. Chilled hanging drop preparation.

cases of virus pneumonia associated with autohemagglutinins but they noted no examples of vascular phenomena similar to those in this case.

With the possible exception of the case reported by Davidsohn,<sup>10</sup> the clinical picture of acrocyanosis has not to our knowledge been described before in connection with the isolated phenomenon of autohemagglutinins without autohemolysis. It may be that, with the higher incidence of atypical pneumonia producing autohemagglutinins, more cases will be observed. In conclusion, one cannot help but wonder whether one of the reasons for the wide variation in the descriptions of the underlying structural, pathologic, vascular changes recorded for acrocyanosis might not have had as their basis the fact that no true underlying pathologic condition existed aside from the possible presence of autohemagglutinins, which had not been observed or whose presence had not been properly interpreted. Moreover, the possible hazard in using convalescent blood, plasma or serum from persons who have recovered from atypical pneumonia should be in mind.

## THE RILEY OF ACUTE PLEURITIC PAIN BY INTERCOSTAL NERVE BLOCK

HARRY J. PRICE, M.D., ATLANTA, GA

Pain of pleural origin causes the physician great concern in the treatment of pneumothorax and pulmonary infarction. It is often persistent, agonizing and exhausting. The rapid, shallow respiration which results from it does not aerate the lungs sufficiently and may promote atelectasis. Furthermore, it is the pain itself which brings the patient to the physician. Rapid relief of this pain gives the patient great confidence in the doctor. The variety of procedures suggested for the relief of pleural pain has emphasized the obstinacy of the problem. Counterirritation, adhesive strapping, the use of opiates, artificial pneumothorax and local injection of the pleura and subcutaneous tissues with procaine hydrochloride each has had its advocates.

My purpose in this report is to describe a procedure of relieving pleural pain by inducing intercostal nerve block with procaine hydrochloride. This method is simple and effective, often producing permanent relief of the pleural pain associated with pneumothorax. It allows relatively free motion of the thoracic wall and so favors adequate aeration of the lungs, affording protection against the complication of atelectasis. Drainage of the involved area of the lung is promoted, for coughing is rendered nearly painless. This is an added advantage in the occasional patient from whom it is difficult to secure a specimen of sputum. Cumbersome chest binders and adhesive tape are avoided.

## METHOD

The nerves to be injected are those corresponding to the intercostal spaces over which definite tenderness can be elicited by slight pressure. The injection is made most conveniently in the posterior axillary line or anterior to this. However, in instances in which the hyperesthesia is located more posteriorly, injection can be made in the midscapular line. A procaine hydrochloride wheel is first made in the overlying skin. A 20 to 21 gage needle is then introduced through the anesthetized area of skin until contact is made with the outer border of the rib immediately above the selected space. The periosteum is anesthetized with a few minims of procaine hydrochloride after which the needle point is carried down to the inferior margin of the rib, where it falls into the groove occupied by the intercostal nerve and vessels. At this point traction is exerted on the plunger until the operator is certain that the needle has not entered a vessel. If no blood is drawn, the nerve is then infiltrated with 2 cc of a 1 per cent solution of procaine hydrochloride.

## REPORT OF CASES

CASE 1—A white man aged 38 was admitted to the hospital with pneumococcal pneumonia of five days duration. A sharp, radiating pain had been present in the right lower quadrant of the chest for seventy-two hours. There was a pronounced increase in the respiratory rate as well as an inability to cough deeply. Infiltration of the fourth, fifth and sixth right intercostal nerves gave prompt and complete relief of pain without recurrence. Shortly after the injection was completed the patient fell asleep, this being his first rest since the onset of the pain.

CASE 2—A white man aged 60 with pneumonia involving the lower lobe of the right lung and associated severe pleuritic pain had the fifth and sixth right intercostal nerves blocked. There was cessation of pain with permanent relief and the patient was able to sleep.

CASE 3—A white man aged 66 with perforated peptic ulcer and right subdiaphragmatic abscess complicated by pneumonia involving the lower lobe of the right lung had severe pleural pain over the right lower lateral and anterior thoracic wall. There were hyperesthesia and muscular spasm over the right upper abdominal quadrant and pain on respiration in this region. Intercostal block of the lower six thoracic nerves on the right promptly relieved the thoracic pain and the abdominal pain that was produced by respiration, but abdominal tenderness and spasm persisted.

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8 Ernest, A. C., and Gardner, W. J. The Effect on Splenic Nerve Resection and Sympathetic Ganglionectomy in a Case of Paroxysmal Hemoglobinuria. J. Clin. Investigation 14: 799-805 (Nov.) 1935.  
9 Davidsohn, Israel. Irregular Isoagglutinins. J. A. M. A. 120: 1288-1292 (Dec. 19) 1942.

CASE 4—A Negro man aged 63 had extremely severe right-sided pleural pain with limitation of respiration, resulting from an infarct of the lower lobe of the right lung. Pain and hyperesthesia extended down over the abdomen as far as the inguinal ligament. Procaine block of the lower six intercostal nerves on the right brought immediate complete and permanent relief of the pain.

CASE 5—A Negro man aged 35, after seven days of complete consolidation of the right lung, developed severe pleuritic pain over the anterior and lateral right thoracic wall. The pain radiated to the umbilicus and over the right upper abdominal quadrant. Intercostal block of the right fourth, fifth, seventh and eighth nerves relieved the pain permanently.

CASE 6—A Negro man aged 20 with atypical pneumonia had intense right-sided pleurisy of eighteen hours' duration. Injection of the seventh and eighth right intercostal nerves gave complete and permanent relief.

CASE 7—A Negro man aged 25 with atypical pneumonia, atelectasis of the lower lobe of the right lung, displacement of the mediastinum, pronounced increase in respiratory rate and a moderate degree of cyanosis had for twenty-four hours complained of severe pleuritic pain occurring laterally and anteriorly over both walls of the chest. Bilateral intercostal block of the ninth, tenth and eleventh nerves produced immediate relief with clearing of the cyanosis and a sharp drop in the respiratory rate. Eighteen hours later the pain recurred on the left but prompt reinjection of the nerves abolished his symptoms permanently.

CASE 8—A Negro woman aged 24 complained bitterly of pleuritic pain associated with pneumonia involving the lower lobe of the right lung. The pain had been intense for thirty-six hours. Infiltration of the seventh, eighth and ninth right intercostal nerves caused immediate cessation of pain, and the patient was able to sleep.

CASE 9—A Negro man aged 27 entered the hospital with severe bilateral pain in the chest, aggravated by coughing on deep inspiration. He had pneumonia of the lower lobe of the right lung and pleurisy on the left, as evidenced by an audible friction rub. Accompanying the process there was a definite increase in respiratory rate. The patient was unable to raise any sputum. The ninth, tenth and eleventh intercostal nerves were blocked bilaterally with complete and permanent relief of pain, a drop in the respiratory rate and definite mental changes, as shown by lack of anxiety and the ability to sleep. After the block the patient was able to cough without pain and a specimen of sputum was easily obtained.

CASE 10—A Negro youth aged 15 was admitted to the hospital with pneumonia of the middle and lower lobes of the right lung. Eight hours prior to admission he had severe pleuritic pain. Immediately on admission to the hospital block of the right eighth and ninth intercostal nerves gave immediate and permanent relief of pain.

CASE 11—A Negro man aged 30 had pneumonia involving the lower lobe of the left lung, accompanied by severe pleuritic pain, hyperesthesia over a wide area, increased respiratory rate and inability to cough. Procaine block of the lower seven intercostal nerves on the left reduced the respiratory rate, abolished the pain and hyperesthesia, and rendered coughing less painful. This made it possible for the patient to obtain rest and sleep, which had not been accomplished since onset of the pneumonia.

CASE 12—A Negro youth aged 17 with pneumonia involving the lower lobe of the right lung and associated pleural pain of severe nature had the right seventh, eighth, ninth and tenth intercostal nerves blocked, with immediate and complete relief of the pleural pain.

CASE 13—A Negro man aged 39 with pneumonia of the middle and lower lobes of the right lung and agonizing pleural pain of fourteen hours' duration had the right sixth intercostal nerve blocked, with relief of pain for about ten minutes. The pain recurred over the lower three nerves, which were again injected. There was complete disappearance of the pain. Twenty

minutes later the pain recurred but was of much less severity than on previous occasions. At this point the patient was given morphine sulfate  $\frac{1}{4}$  grain (0.011 Gm.) and in a short time was asleep. There was no recurrence of the pain after the patient awakened.

CASE 14—A Negro woman aged 49 entered the hospital with pneumonia of the middle and lower lobes of the right lung and pleuritic pain of eight hours' duration. Injection of the right seventh, eighth and ninth intercostal nerves produced immediate and permanent relief of the pain.

#### COMMENT

Thirteen patients who had pneumonia and a fourteenth who had pulmonary infarction were suffering with severe lancinating pleural pain aggravated by cough and deep inspiration. All but 3 of those with pneumonia had audible friction rubs. The respiratory rate was definitely increased. Six patients had pain referred to an upper abdominal quadrant and the periumbilical region. In the patient with pulmonary infarction the pain extended 2 fingerbreadths below the inguinal ligament. The pain of each of these patients was relieved by intercostal nerve block within five to ten minutes after the injection was completed. Pain recurred in only 2 patients. In the first the pain returned eighteen hours after the initial block. Reinjection of the nerves produced permanent and complete relief from the pain. In the second the pain reappeared ten minutes after the first injection. Reinfiltration of the nerves provided complete relief for twenty minutes, but the pain again recurred in about one half of the area supplied by the blocked nerves. The patient was given morphine  $\frac{1}{4}$  grain (0.011 Gm.), shortly after which he fell asleep and the pain did not recur on awakening. The majority of the patients had considerable tachypnea, and in these the character of respiration was materially altered following intercostal block. It became deeper, slower and more regular, with obliteration of the respiratory grunt.

The immediate relief of the pain after procaine block was to be expected. However the prolonged disappearance of the pain came as a distinct surprise. At first it was thought to be a mere coincidence, but later it became clear that prolonged relief of pleural pain was the usual result of intercostal nerve block. The anesthetic effect of the procaine lasted only a short time. Therefore, prolonged anesthesia could not account for the permanent disappearance of the pain. The increase in depth of respiration was striking in all cases as soon as the pain was completely abolished, and it may be that the increased motion of the parietal pleura was in some way connected with the permanent relief of pain. Recent studies have demonstrated that prolonged relief of pain from a sprained ankle may result from the combination of local anesthesia and motion.<sup>1</sup> As in the case of pleural pain, the disappearance of pain in the ankle persists long after the anesthetic effect of the procaine has worn off.

Other authors have injected procaine hydrochloride for relief of pleural pain. Weiss and Davis<sup>2</sup> recommended subcutaneous infiltration of the hyperesthetic skin. Schmur<sup>3</sup> advised local infiltration of the pleura. Both of these methods are successful if the area of hyperesthesia is well localized, but they are not practical when the pain is widespread. The method of intercostal block described here has proved infinitely more simple and time saving for me.

#### SUMMARY

In a series of 14 consecutive cases severe pleural pain was relieved effectively by intercostal nerve block. The resultant improvement in the general condition of the patients was striking. Anxiety disappeared and most patients fell asleep shortly after the procedure was completed. For some this was the first rest in many hours.

50 Armstrong Street

1 McMaster, Paul E. Treatment of Ankle Sprain. Observations in More Than Five Hundred Cases. *J. A. M. A.* 122: 639 (July) 1943.

2 Weiss, Soma and Davis, David. The Significance of the Afferent Impulses from the Skin in the Mechanism of Visceral Pain. *Am. J. M. Sc.* 176: 517 (Oct.) 1928.

3 Schmur, Sidney. Deep Injection of Novocaine for the Relief of Pleural Pain. *Ann. Int. Med.* 13: 845 (July) 1939.

# UNIVERSAL O BLOOD TRANSFUSION COMBINATION OF POOLED PLASMA AND O CELLS

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Metropolitan Hospital

The importance of blood grouping first demonstrated by Landsteiner, opened the way for transfusion as a safe therapeutic measure. By cross matching, the occasional reactions due to incompatibility of bloods were avoided.

The use of universal blood donors was first described by Ottenberg<sup>1</sup> in 1911. Since then, especially because of objections raised by Coca<sup>2</sup>, Hesse<sup>3</sup> and others,<sup>4</sup> the indiscriminate use of the universal donor has been condemned by many. The presence of agglutinins in a titer higher than 1:16 is considered unsafe. The serum of the universal donor has an increased titer in 3 per cent of donors according to Coca and in a larger percentage according to Hesse (a titer of 1:32 or over in 12 per cent against A cells and 32 per cent against B cells). The desire to curb the indiscriminate use of the universal donor has resulted in a sanitary code regulation in New York State, January 1941, prohibiting the use of universal O donors unless the isoeagglutinins are of low titer by actual titration. Witelsky, Klendshoj and Swanson<sup>5</sup> suggested that isoeagglutinins anti A and anti B may be neutralized by the addition of their homologous antigens to O blood in order to make it safer for universal donor transfusions. On the other hand many, including Rosenthal and Vogel<sup>6</sup> in a series of 819 cases, found no higher incidence of reactions than with homologous blood. However, universal donors were used only in urgent cases, and cross matching was usually done.

In order to overcome the reactions from this type transfusion, it has occurred to me that the use of pooled plasma with O cells would constitute a safer universal blood. Since O cells contain no agglutinogens nothing is to be feared from their use, provided proper typing is performed. Again, since the incidence of reactions from pooled plasma has been minimal (about 1 per cent), one may dismiss plasma as a source of unusual reactions. The combination of O cells with pooled plasma should make the ideal universal blood.

Obviously this procedure applies only to institutions with blood banks. On collection, after typing and Kohn testing the bloods are centrifuged. Plasma is pooled from at least eight donors. Either the freshly pooled plasma can be added to the cells of type O (or other types if large pools are obtained), or stored, banked pooled plasma, the titer of which has been determined, may be added to the cells. The pooling diminishes the titer of the isoeagglutinins mainly by dilution and to some extent also through neutralization of the isoeagglutinins by group substances in solution. In either event there is no waste of red cells, since they are conserved with or in pooled plasma. In this way no typing of the recipient or cross matching would be necessary at any time when this combination of O cells and pooled plasma is used.

If the bank has sufficient donations of O cells these may be used with pooled plasma for whole blood transfusions or the cells may be used in saline or dextrose suspensions. Likewise the A, B and AB cells may be used if necessary in their respective blood groups if there is an insufficient supply of

O cells. Additional O cells may be obtained from the Red Cross blood centers. At the expiration of the allotted time—seventy-two hours by some groups or seven to ten days or longer by others—the unused blood will yield pooled plasma for further use.

## SUMMARY

The combination of O cells with pooled plasma constitutes an ideal and safer and economical medium of universal blood, because of dilution of agglutinins, than the indiscriminate use of ordinary universal O blood.

14 Tenth Avenue

## PHOSPHATIS IN THE THERAPY OF CHEMICAL BURNS

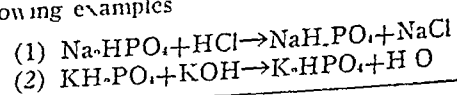
EDWARD POSER, M.D., AND ERWIN HAAS, PH.D., CHICAGO

The use of a phosphate buffer for the treatment of burns caused by acidic or basic substances is suggested by the following considerations. The customary therapy of chemical burns has definite disadvantages, particularly when such sensitive tissues as the cornea are involved. In order to achieve rapid and penetrating neutralization of acids and bases, high concentrations of the antidote are required. This prerequisite for successful therapy is not fulfilled by the commonly used reagents, since they can be applied only in dilute solutions because of their unphysiologic nature.

As a further requirement for effective treatment it is essential to maintain the hydrogen ion concentration of the antidote at a physiologic level. The following examples illustrate that the aforementioned requirements are not at all satisfied by the therapeutic agents in general use. A 5 per cent solution of acetic acid, recommended in textbooks for the treatment of burns caused by strong alkali, has a  $pH$  of about 2, whereas a 5 per cent solution of sodium bicarbonate, used heretofore for neutralizing acid burns, has a  $pH$  of 9. As the physiologic  $pH$  is approximately 7, it becomes evident that in the first case the hydrogen ion concentration is a hundred thousand times too high while in the second case it is a hundred times too low. Such deviations from biologically compatible limits are bound to result in harmful effects, especially in the treatment of delicate tissues as those of the eye.

In the past, chemical burns due to acids or bases required different antidotes. Therefore a knowledge of the chemistry of the toxic agent and a history supplied by the patient were indispensable. Since the immediate neutralization of the injurious chemical is the most important feature of the treatment, designed to reduce to a minimum penetration of the tissues, valuable time may have been lost in gathering the information mentioned. Future surgical or medical care may never restore what could have been saved by adequate, immediate treatment.

The phosphate buffer recommended here for the neutralization of chemical burns is prepared by dissolving 70 Gm of monobasic potassium phosphate,  $KH_2PO_4$ , and 180 Gm of dibasic sodium phosphate,  $Na_2HPO_4 \cdot 12H_2O$  in 850 cc of water. The concentration of the solution thus obtained is molar with respect to phosphate, but as the phosphates are physiologically occurring substances they can be safely employed in such high concentrations. Thereby prompt neutralization of the offending chemical is insured without introducing new complications, at the same time limiting the degree of burn and the corresponding amount of scarring that usually results. The phosphate solution is neutral,  $pH = 7$ , and, owing to its buffering action, the hydrogen ion concentration will always remain in the physiologic range. The fact that it can be used equally well for the neutralization of either acids or bases is demonstrated by the following examples:



From the George Herbert Jones Chemical Laboratory of the University of Chicago.  
The Rockefeller Foundation has contributed to the support of the project in which this work developed.

Dr. Linn J. Boyd, Director of Medicine, Metropolitan Hospital and New York Medical College, Flower Fifth Avenue Hospital, and Dr. Louis Greenwald, in charge of hematology, assisted in the preparation of this paper.

1. Ottenberg, Reuben. Studies in Isoagglutination, *J. Exper. Med.* **13** 425, 1911.
2. Coca, A. F. Selection of Donors for Blood Transfusion, *Am. J. Technol.* **4** 28, 1918.
3. Hesse, E. Ueber die Verwendung des sogenannten Universal spenders bei der Bluttransfusion, *Deutsche Ztschr. f. Chir.* **245** 371, 1935.
4. Sharnov, V. N. Question of Universal Donor, *Vrach delo* **22** 403, 1940, abstr., *J. A. M. A.* **117** 492 (Aug. 9) 1941.
5. Witelsky, Ernest, Klendshoj, N. C., and Swanson, Paul. Preparation and Transfusion of Safe Universal Blood, *J. A. M. A.* **116** 2654 (June 14) 1941.
6. Rosenthal, Nathan, and Vogel, Peter, in Mudd, Stuart, and Thelheimer, William. Blood Substitutes and Blood Transfusion, Springfield, Ill., Charles C. Thomas, Publisher, 1942, p. 297.

Application of the concentrated phosphate buffer to a normal eye merely results in some hyperemia of the conjunctival tissue, which will disappear on the following day. Using a more dilute solution of the buffer would eliminate even this slight discomfort but would at the same time diminish the effectiveness of the antidote.

#### SUMMARY

1 Certain unphysiologic antidotes are much too acidic or alkaline for the treatment of vulnerable tissues.

2 Burns caused by acids or bases required a different treatment which necessitated a knowledge of the chemistry of the offending substance.

3 Phosphate buffer has none of these disadvantages. It is neutral in its reaction, can be employed safely in high concentration to assure rapid and penetrating neutralization and is equally well suited for the treatment of injuries caused by acidic or basic chemicals.

## Special Article

### AMERICAN HEALTH RESORTS

#### IMPORTANCE OF REST, EXERCISE AND DIETARY REGULATION IN THE SPA REGIMEN

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*These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.*

It is difficult to write a readable article about the obvious. Remove the three items mentioned in the title from a regimen and there remains no regimen either at a spa or at any other institution designed to preserve or promote health. There will be no references in this paper to the historical background of spas. This has been covered in another article. As for the literature, discussions of rest, exercise and diet in treatment occur over and over. When a spa regimen is mentioned these three items stand out. In textbooks on medicine, however, it is difficult to find references to a spa or a spa regimen. I have examined the 1941 edition of an excellent textbook of medicine.<sup>1</sup> One hundred and forty-four leading American physicians contributed to this volume. More space is devoted to discussions of treatment than was the practice in textbooks of medicine a few years ago. Even so, in the sixty pages of finely printed index I was unable to find the word spa or spas, although the words rest, exercise and diet in connection with the types of patients who go to spas occur frequently. Why not call a spa a spa?

#### WHAT IS A SPA?

A spa is an institution, built around a "mineral" spring or group of such springs, so equipped and staffed as to utilize the waters from these springs in conjunction with other therapeutic agencies for health purposes. The springs determine the location of spas,

but it takes more than a group of springs to make a spa. The "other therapeutic agencies" are of great variety and will be referred to in other articles in this series, but a spa is not a spa without some of them. This article is concerned with three of the more important of these "therapeutic agencies."

#### WHO GOES TO SPAS?

Rest, exercise and diet will be discussed briefly as applied to the types of patients who patronize spas. For this purpose some attempt has been made to find out who goes to spas.

In general, patrons of spas consist of middle aged and elderly persons who are normal in health and want to remain so, and persons of the same age groups who are suffering from certain of the chronic diseases or convalescing from surgical operations or acute diseases.

A survey<sup>2</sup> covering the period from 1933 to 1936 inclusive made at an American spa classified the 6,315 patients treated during this period under the following headings on the basis of the patients' chief complaint: heart and circulatory disorders, including variations of blood pressure, 30.8 per cent, "rheumatic" conditions, including arthritis, myositis, fibrositis and neuritis, 23.7 per cent, gastrointestinal ailments, including those of the liver and gallbladder, 17.6 per cent, nervous conditions, including both functional and organic diseases, 8.4 per cent, metabolic diseases, including diabetes, obesity and endocrine disorders, 4.1 per cent, skin diseases (noninfectious), 2.1 per cent, miscellaneous, 3.2 per cent, no disease, including general debility, 10.1 per cent.

At another American spa<sup>3</sup> during the period from 1937 to 1941 inclusive the patients were classed as follows on the basis of the chief complaint or the patient's reason for seeking treatment at a spa: normal, 18.3 per cent, obese, 11.1 per cent, "rheumatic," 23.6 per cent, disorders of the nervous system, 10.5 per cent, disorders of the circulatory system, 11 per cent, disorders of the digestive system, 5 per cent, convalescents, 7.8 per cent, fatigue or exhaustion, 6.3 per cent, miscellaneous, 6.4 per cent. Efforts to get similar information from other spas so far have been unavailing, but with these figures in mind, even though the classes listed are not clearly defined, the question "Who goes to American spas?" is partly answered.

#### REST AND EXERCISE

Rest and exercise as applied to these groups in the spa regimen will be discussed together because, except for certain special exercises such as corrective exercises and certain forms of local rest such as that obtained by splints or collapse therapy, rest and exercise are simply different degrees of the same thing—just like heat and cold. Absolute rest is analogous to absolute zero temperature and just about as difficult to attain.

For those normal persons who make up 10 to 20 per cent of spa patrons the importance of the proper balance of rest and exercise is admitted. In a recently published article by Piersol<sup>4</sup> this statement appears:

2 McClellan, Walter S. Report of a Survey Made at the Saratoga Spa and Presented in Form of a Chart at the Fifteenth Annual Meeting of the American Congress of Physical Therapy, September 1936.

3 From my own unpublished record. The Homestead Hot Spring, Va.

4 Pierol, George Morris. The Value of Physical Therapy in Internal Medicine. J. A. M. A. 117: 1835 (Nov. 29) 1941.

1 Cecil, Russell L. A Textbook of Medicine by American Authors, edited by Russell I. Cecil, ed. 5 Philadelphia: W. B. Saunders Company, 1941.



"It is generally admitted that the proper kind and amount of physical exercise is essential for the maintenance of good health. In this country during the past fifty years the trend in exercise has been toward the less formal gymnastics, more sport activities and a decided increase in the employment of corrective exercise."

At a spa exercise for the normal person is usually chosen from the great variety of "sport activities" available—walking on measured, scenic walking trails, golf, tennis, swimming, horseback riding, badminton or other outdoor sports. The kind and amount of such exercise determined on can be fitted easily into the patient's regimen. The degree of medical supervision of this exercise varies greatly from none at all at some spas to that conforming to a systematic program at others. In the supervision of the patient an important point is to protect an enthusiast in golf, tennis or other sport from becoming intemperate in his otherwise wholesome pastime. The patient's rest, like his exercise, should be regular as to time and sufficient in amount as is the case with normal persons whether at spas or elsewhere. Opportunity for an abundance of rest is the secret back of the success of many resorts and is a feature *par excellence* that all spas should offer. Spas provide the setting and the facilities for carrying out a well balanced program of rest and wholesome exercise away from the scene of the person's usual activities.

*Rest and Exercise for Arthritic Patients*—Approximately 1 patient in 4 who seeks treatment at spas is a victim of one of several maladies often grouped under the heading "rheumatic disease." Most of these patients suffer from atrophic or hypertrophic arthritis. Some suffer from the articular manifestations of gout. Victims of tuberculous arthritis, acute infectious arthritis and acute rheumatic fever go to spas only by mistake. For purposes of this article the rarer forms of arthritis may be ignored and the discussion limited to atrophic and hypertrophic arthritis.

Physicians may differ as to details in the treatment of these two forms of arthritis, but in the emphasis placed on rest there is general agreement. This applies to local rest of the involved joints and to general physical and mental rest. In the active stage of atrophic arthritis, local rest and the prevention of deformity may be obtained by the use of splints. It is my opinion that a spa is not the best place to treat a patient whose disease is so active as to require a splint, though it can of course be done. It is in the field of general physical and mental rest that spas have much to offer.

Definitely prescribed periods of rest constitute an important part of the regimen of all arthritic patients at spas, and many spas provide a suitable environment for obtaining such rest away from the stress and strain of business, home and family responsibilities.

Exercises make up an important part of the regimen of arthritic patients who go to spas. Passive exercises are often used to maintain mobility of the joints of patients suffering from atrophic arthritis. These are usually preceded by the application of heat and sometimes massage. The heat may be given as a hot bath, or in some instances active and passive exercises are

given while the patient is under water. Limitation of articular motion is not so pronounced in hypertrophic as in atrophic arthritis, and mobility can be maintained more easily. The amount and intensity of exercise suitable for patients suffering from arthritis will depend on the activity of the disease and the general condition of the patient. As a rule any exercise which results in undue fatigue or pain does more harm than good. The better equipped spas have attendants trained to give these exercises intelligently. The mechanical apparatus with which some spas are supplied is of little practical use in providing suitable exercises for arthritic patients.

*Rest and Exercise for Obese Patients*—An undetermined number of patrons of spas seek treatment solely because they are overweight. In my own practice slightly more than 11 per cent belong to this group. In addition to the patients who seek treatment solely because they are overweight there are many others who are actually overweight but who go to spas for other reasons. Many patients seeking treatment for arthritis, cardiovascular disease, nervous disorders and other troubles are definitely overweight. When all of these are taken into account it is readily seen that control of weight—which usually means reduction of weight—is a most important item in the regimen of a spa. A few patients who are overweight because of endocrine abnormalities do go to spas, but in my opinion their problems can be solved better elsewhere.

With few exceptions the reduction of body weight depends on the restriction of caloric intake and the stimulation of metabolism. Restriction of caloric intake is purely a matter of control of diet. Stimulation of body metabolism may be accomplished by exercises, baths and drugs. Cold baths will stimulate metabolism, and hot baths of sufficient degree and duration to raise body temperature will increase metabolism. It is my opinion that baths of either type are of minor importance in a weight reducing regimen. Diet will be discussed later, and drugs will be disposed of by pointing out that the dangers involved in the use of such drugs as dinitrophenol or the misuse of thyroid have no place in a spa regimen for the type of patients under discussion.

As for exercises as a means of stimulating metabolism, it can be said that spas provide a wide choice of them under conditions which minimize the drudgery of exercise for that not inconsiderable number of people to whom it is a drudgery. In addition to the wholesome "sport activities" mentioned previously, some spas are equipped with mechanical apparatus such as vibratory and percussion devices, rowing machines and stationary bicycles for both the active and the passive exercise of the voluntary muscles. The use of the vibratory and percussion devices may serve as a substitute for manual massage over which it has no demonstrable advantages. It has not been demonstrated that even heavy massage—mechanical or manual—will remove deposits of adipose tissue. Such treatment when applied to the abdomen may even be dangerous. The mechanical apparatus for active exercises does supply the necessary incentive to certain types of patients to take needed exercise which would not be taken otherwise. In my opinion, to this degree only does such apparatus serve a useful purpose in a weight reducing regimen.

*Rest and Exercise for Patients Suffering from Cardiovascular Disease*—At one American spa slightly more than 30 per cent of the patients suffer from some disorder of the circulatory system. In no large group of patients is the proper regulation of rest and exercise more important. Almost without exception, when the treatment of cardiovascular disease is discussed emphasis is placed on the proper kind and amount of rest needed. The patients suffering from cardiovascular disease who go to spas are usually those who have a chronic disease or who are convalescing from an acute disease. For this reason those spas to which such patients go should be adapted by virtue of their natural resources for patients of this type and staffed by physicians and technicians who are qualified to direct and handle them. It goes without saying that not all spas are so adapted and staffed.

In articles on the subject, such statements as these are found: "The matter of rest periods is one of the first things to be discussed. . . . some patients spend one period of twenty-four hours a week in bed."

It [a spa] endeavors to teach a suitable way of living for the individual and has to do largely with rest, relaxation, exercise, diet and the teaching of a calm philosophical outlook in general and upon the cardiovascular handicap in particular.<sup>6</sup> Some physicians of spas "point out that the spa treatment rarely if ever consists solely of drinking or bathing in spring water, but that many other factors, such as rest, diet, exercise, diversion and climate, play a definite part."<sup>7</sup> "The types of physical therapy indicated in cardiovascular disease are rest, voluntary exercise,"<sup>8</sup> Finally, "Physical therapy in vascular disease is most often beneficial when given in an environment far removed from the patient's usual surroundings."<sup>8</sup>

It is said that "hearts are bettered for taking some part of the amount of exercise which they can tolerate without embarrassment."<sup>6</sup> Systems of exercises have been worked out to provide for this. The Stokes-Oertel graduated hill climbing exercise is an example. This is often combined with restriction of intake of fluids and reduction of body weight by dietary control. A system of resistant exercises for patients suffering from chronic heart disease was developed by Dr. Theodor Schott and his brother August. This originated at a spa—Bad Nauheim—and is still in good repute with internists who are familiar with it. Spas equipped to treat patients suffering from chronic cardiovascular disease provide other suitable means for exercise. Walking trails accurately measured with reference both to distance and to grade enable the physician to give specific directions to his patients regarding exercise. Sports suited to the requirements of such patients are provided. These may include games requiring little physical exertion, such as croquet, or those requiring more effort, such as golf. Even the golf course may be designed for patients suffering from chronic cardiovascular disease, that is, be comparatively level throughout, as is the case at one American spa whose golf course does not contain any grade exceeding 4 per cent. It has been referred to as a "therapeutic golf course."

<sup>6</sup> Comstock, C. R. Convalescence in Coronary Disease with Special Reference to Struthers Spa. *Bull. New York Acad. Med.* 16: 546-549 (Aug.) 1940.

<sup>7</sup> Corham, L. W. The Place of Spas in the Treatment of Chronic Diseases. *New York State J. Med.* 31: 402-405 (April 1) 1931.

<sup>8</sup> Stroud, W. D. and Comstock, C. R. Principles and Practice of Physical Therapy, edited by Pemberton Mock and Coulter Hagerstown Md. W. F. Prior Company vol. 1 chapter 13 p. 27.

Enough has been written to indicate the attention given to detail at some spas in providing for the rest and exercise which play so important a role in the regimen of these patients. The effectiveness with which such facilities are utilized depends on the quality of the medical direction just as the effectiveness of any other therapeutic agent depends on the skill, judgment and integrity of the physician who directs its application.

*Rest and Exercise for Other Patients*—About two thirds of spa patrons are included in the groups already discussed. The remaining third—those who suffer from disorders of the nervous system, disorders of the digestive tract, fatigue or exhaustion and others listed as miscellaneous—will not be discussed in detail. The regimen for such patients will have to be individualized. Since they are all convalescents or suffering from chronic disease, it is obvious that any such regimen would include scheduled, planned rest and exercise. Spas are well suited to provide such a regimen in an environment conducive to the patient's feeling of well being. Between 5 and 10 per cent of patrons of spas go to them merely because they are tired. Many others listed under other headings who go to spas are tired but are not aware of it. These patients usually suffer from nervous and mental fatigue. The mere act of getting away from home or business affords such patients rest of the kind needed. With the restful atmosphere which should prevail and with the wide range of types of exercises from which to choose a suitable regimen with reference to rest, exercise and diet can be adjusted to the needs of these patients if competent medical direction is provided. Failure is more likely to result from lack of medical direction than from other factors involved.

#### DIET

I am convinced that the therapeutic measure most frequently advised by physicians is rest. I am convinced also that a thought uppermost in the minds of patients who go to spas—and one about which there is much confusion—centers around matters pertaining to diet. There are reasons why diet should be a matter of concern. Not the least of these is the fact that most people are confronted with it three or more times daily year in and year out. There are reasons for confusion in the lay mind about such matters. It is not necessary to itemize the reasons but that confusion is widespread. I am sure no physician will doubt. When a patient at a spa says "I have been on a very strict diet," a little questioning as to what he—or more often she—means by a strict diet will usually elicit one of the following replies: "I don't eat white bread," "I don't eat potatoes," "I don't eat red meat" or "I don't eat desserts." I should say that with the exception of carefully instructed patients suffering from diabetes, those suffering from peptic ulcer who have been well handled and those treated for allergy, this is not an exaggerated picture of the lay conception of what is meant by a "strict diet."

Detailed discussion of the diet for each type of patient who goes to spas cannot be given here. I believe it will not be denied that control of diet is an important item in the regimen of such patients. Physicians at spas have access to the same sources of information in dietetics both in health and in disease as do physicians generally. Control of diet is a matter of applying available knowledge to patients who happen to be at spas.

For the 10 to 20 per cent of normal persons who go to spas the diet should be that for normal persons under similar conditions of activity elsewhere. The discussion of the diet for a normal man or woman does not belong here.

For the 25 per cent of patients of spas who suffer from arthritis the diet should be that adapted to the individual needs of the same type of arthritic patient whether he is at a spa or elsewhere. Books, sections of books<sup>9</sup> and numerous articles have been written on just what such a diet should be. The prescribing physician has to exercise the same discretion that he is called on to exercise in many other situations. Dr. Walter Bauer made in analysis of the various types of diets proposed for arthritic patients. Familiarity with the contents of his article<sup>10</sup> will prove helpful in keeping the prescribing physician properly oriented.

For the undetermined but large number of people at spas who are overweight control of diet is by far the most important consideration. The principles governing control of diet at spas do not differ in any essential way from similar methods elsewhere. A regimen which includes suitable control of diet along with regulated exercise will prove effective in the reduction of surplus weight. Such a regimen can be carried out at spas without the use of drugs, excessive sweating, purging or other forms of dehydration. The success and safety of the regimen will depend on the adequacy of the medical supervision. "Mineral waters, except for possible laxative effects, have no peculiar virtue"<sup>11</sup> in a reducing regimen.

For that other large group of patients of spas—patients suffering from cardiovascular diseases—the diet, for the most part is directed toward the control of weight. In some cases the intake of fluids and mineral salts has to be taken into account. A spa organized for the care of such patients usually provides physicians capable of guiding them in such matters.

For the remaining third of patients who go to spas the diet should be adjusted to the individual needs of each patient. In the well organized spas this usually can be done. Except for the rest he might get, there is no reason for a patient who has a duodenal ulcer to go to a spa, but, should he go, there is no reason why he should not be able to carry out his dietary program. The same applies to patients who have diabetes, disease of the gallbladder, "colitis" or an irritable colon, and so for the others. It all boils down to the same thing. It is this. The principle governing dietary measures are the same for a given type of human being whether he happens to be living at a spa, in a hospital or at home. Since a large number of patients suffering from a great variety of chronic diseases do go to spas—whether they should or should not is beside the point—it means that if spas are to maintain a standard at which they can command the confidence of the medical profession they must provide medical supervision and control of such quality as to guide these patients properly in health matters whether they pertain to rest, exercise, diet or any other "therapeutic agent."

Dietary fads should not have any place in the regimen of a spa.

## Council on Medical Service and Public Relations

THE COUNCIL HAS AUTHORIZED THE PUBLICATION OF THE FOLLOWING  
STATEMENT  
J. W. HOLLOWAY JR., Acting Secretary

### A STATEMENT OF GENERAL POLICIES

Pursuant to carrying out the duties imposed on it by the House of Delegates, the Council has adopted the following general policies:

1 The Council on Medical Service and Public Relations recognizes the desirability of widespread distribution of the benefits of medical science; it encourages evolution in the methods of administering medical care, subject to the basic principles necessary to the maintenance of scientific standards and the quality of the service rendered.

It is not in the public interest that the removal of economic barriers to medical service should be utilized as a subterfuge to overturn the whole order of medical practice. Removal of economic barriers should be an object in itself.

It is in the public interest that the standards of medical education be constantly raised, that medical research be constantly increased and that graduate and postgraduate medical education be energetically developed. Curative medicine, preventive medicine, public health medicine, research medicine and medical education all are indispensable factors in promoting the health, comfort and happiness of the nation.

2 The Council through its executive committee and secretary shall analyze proposed legislation affecting medical service. Its officers are instructed to provide advice to the various state medical organizations as well as to legislative committees concerning the effects of the proposed legislation. It shall likewise be the duty of its officers to offer constructive suggestions to bureaus and legislative committees on the subject of medical service.

3 The Council approves the principle of voluntary hospital insurance programs but disapproves the inclusion of medical services in those contracts for the reasons adopted by the House of Delegates at the 1943 meeting.

4 The Council approves voluntary prepayment medical service under the control of state and county medical societies in accordance with the principles adopted by the House of Delegates in 1938. The medical profession has always been strongly opposed to compulsory health insurance because (1) it does not reach the unemployed class, (2) it results in a bureaucratic control of medicine and interposes a third party between the physician and the patient, (3) it results in mass medicine which is neither art nor science, (4) it is inordinately expensive and (5) regulations, red tape and interference render good medical care impossible. Propaganda to the contrary notwithstanding, organized medicine in general, and the American Medical Association in particular, have never opposed group medicine prepayment or group medical practice as such. The American Medical Association and the medical profession as a whole have opposed any scheme which on the face of it renders good medical care impossible. That group medicine has not been opposed as such is evidenced by the fact that there are many groups operating in the United States which have the approval of the medical profession, and members of these groups are and have been officials in the national and state medical organizations. That group medicine is the Utopia for the whole population, however, is not probable. It may be and possibly is the answer for certain communities and certain industrial groups if the medical groups are so organized and operated as to deliver good medical care.

5 The Council believes that many emergency measures now in force should cease following the end of hostilities.

6 The Council believes that the medical profession should attempt to establish the most cordial relationships possible with allied professions.

7 There is no official affiliation between the American Medical Association and the National Physicians Committee.

<sup>9</sup> Pemberton, Ralph. Arthritis and Rheumatoid Conditions, Philadelphia, Lea & Febiger, 1929.

<sup>10</sup> Bauer, Walter. What Should a Patient with Arthritis Eat? J. A. M. A. 104:1 (Jan. 5) 1935.

<sup>11</sup> McEster, James C. Nutrition and Diet in Health and Disease, ed. 3, Philadelphia, W. B. Saunders Company, 1939, p. 443.

However, since it is the purpose of the National Physicians Committee to enlighten the public concerning contributions which American medicine has made and is making in behalf of the individual and the nation as a whole, it is the opinion of the Council that the medical profession may well support the activities of the National Physicians Committee and other organizations of like aims.

8 American medicine and this Council owe a responsibility to our colleagues who are making personal sacrifices to answer the call of the armed forces. Therefore the Council expresses the desire to cooperate with the medical committee on postwar planning in order to assist our colleagues in reestablishing themselves in the practice of medicine and in the preservation of the American system of medicine.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN L. SMITH, M.D., Secretary

**ASCORBIC ACID** (See New and Nonofficial Remedies, 1943, p. 600)

The following dosage forms have been accepted

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Ascorbic Acid (*Crystals*) 1 ounce and 5 ounce packages

Tablets Ascorbic Acid 25 mg, 50 mg and 100 mg

**NICOTINIC ACID** (See New and Nonofficial Remedies, 1943, p. 596)

The following dosage forms have been accepted

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Nicotinic Acid (*Powder*) 1 ounce,  $\frac{1}{4}$  pound and 1 pound packages

Tablets Nicotinic Acid 25 mg and 100 mg

**PENTOBARBITAL SODIUM** (See New and Nonofficial Remedies, 1943, p. 495)

The following dosage form has been accepted

THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO

Capsules Pentobarbital Sodium 0.1 Gm

**SULFATHIAZOLE** (See New and Nonofficial Remedies, 1943, p. 182)

The following dosage form has been accepted

GEORGE A. BREON AND COMPANY, KANSAS CITY, MO

Sterators Sterile Sulfathiazole (*Crystals*) 5 Gm

**SULFANILAMIDE** (See New and Nonofficial Remedies, 1943, p. 175)

The following dosage form has been accepted

GEORGE A. BREON AND COMPANY, KANSAS CITY, MO

Sterators Sterile Sulfanilamide (*Crystals*) 5 Gm

**DIGITALIS** (See New and Nonofficial Remedies, 1943, p. 289)

The following additional dosage form has been accepted

JOHN WIETH & BROTHER, INC., PHILADELPHIA

Capsules Digitalis Leaf Defatted  $\frac{1}{2}$  U S P Unit

**MAGNESIUM TRISILICATE** (See New and Nonofficial Remedies 1943, p. 369)

The following dosage form has been accepted

BUNNROUGHS WELLCOME & CO., INC., NEW YORK

Tablets Magnesium Trisilicate 0.486 Gm

**EPHEDRINE SULFATE** (See New and Nonofficial Remedies 1943, p. 256)

The following dosage form has been accepted

BUNNROUGHS WELLCOME & CO., INC., NEW YORK

Solution Ephedrine Sulfate 3 per Cent Preserved with chlorobutanol 0.5 per cent, 1 fluidounce and 1 pint bottles

## Council on Foods and Nutrition

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT  
JAMES S. McFESTER, Chairman

### SCOPE OF COUNCIL

The passage of the Federal Food, Drug and Cosmetic Act, June 25, 1938, greatly strengthened the power of the federal government to deal with the labeling of foods, drugs and cosmetics, the maintenance of standards of quality and related problems. Many of the activities of the American Medical Association's Council on Foods and Nutrition have dealt with such questions. These activities were initiated and carried on by the Council at the home office of the American Medical Association as a public service. The well known seal plan of the Council was devised as a means of encouraging firms to secure as much scientific information as possible concerning their products, to label these products honestly and informatively, and to advertise them in ways that avoid all misleading implications. The success with which all of this has been done is readily evident to any one who will undertake an examination of the Council's book *Accepted Foods*, published in 1939, in which are listed 1,653 firms whose 2,706 individual products carried the seal at that time. The Council wishes to record its appreciation of the willingness of these firms to cooperate in the wording of their labels and their advertising and in the maintenance of high standards of quality in recognition of which the Seal of Acceptance was given.

For some time the Council has had under advisement the question of limitation of its scope of activities. Various reasons have operated to cause this, but the most cogent one has been the passage of the Food, Drug and Cosmetic Act, and the continued advance which the Food and Drug Administration has been able to make under this act in establishing standards of identity for various foods and rules regarding the labeling of them. At its annual meeting held July 23 in Chicago the Council finally took action to limit the number of specific products eligible for the seal. It was voted to restrict the use of the seal to "special purpose" foods, which may be defined as "any food promoted for a special group of the population in relation to health, growth and development." Familiar examples of special purpose foods would be those prepared especially for babies, and products designed for feeding invalids. Products that may be valuable, but which are offered for use by the population in general, are classified as "general purpose" foods, and under the action voted by the Council are, with perhaps a few exceptions outside its scope and therefore will no longer be considered for the seal. It is evident that by its action the Council has signified that so far as the use of the seal on individual products is concerned, it intends to devote its attention particularly to foods that stand in very definite relation to specific medical and health problems. The current popular interest in the science of nutrition, stimulated in considerable part by the war, the nutrition program of agencies of the government the Red Cross and other organizations can no doubt be relied on to develop interest in the greater use of more valuable foods by the population at large. The Council also voted, however, to consider what might at first sight appear to be exceptions to this category of special purpose foods if such action seems desirable and in the public interest. The wording of this part of the motion is as follows: Except that the Council may, under special circumstances consider the acceptance of any product when its nutritional importance or the claims made for it seem significant for the public health. Thus the Council has signified its continued freedom of action to deal with any food product if such action is deemed especially important.

Firms whose general purpose foods now carry the seal are allowed the period of one year from date of publication of this notice during which to dispose of their supply of remaining labels now carrying the seal.

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SATURDAY NOVEMBER 6, 1943

EPIDEMIC HEPATITIS, OR CATARRHAL  
JAUNDICE

Until recently there has not been essential modification of the original concept of catarrhal jaundice advanced by Bamberger in 1855 and supported by Virchow in 1865. Now, however, numerous clinically similar cases have appeared in epidemic proportions in troops and in civilian groups in almost all countries. Study of these events has resulted in a reconsideration of the basic interpretations. Formerly the initial lesion in this disease was considered a gastroduodenitis followed by spread of "catarrh" to the epithelium of the bile ducts which thereby produced obstructive jaundice. The occurrence of a biphasic van den Bergh reaction stimulated doubts of this simple explanation and suggested that damage of the liver must be present either alone or in combination with biliary obstruction. This altered theory has given rise to a changed nomenclature in which the term epidemic hepatitis or infective hepatitis (the former probably being preferable) has tended to replace the older term of catarrhal jaundice.

Cameron<sup>1</sup> reports studies at two army general hospitals in Palestine during 1940 and 1941, when "infective hepatitis" was epidemic among the troops. The clinical picture of the disease developed in collaboration with Colville is based on the clinical records of 170 cases. The minimum incubation period is apparently thirty-two days, but in many cases much longer. The initial stages of the disease resemble sand fly fever, although in epidemic hepatitis the headache is less intense and the characteristic pain behind and on movement of the eyes found in sand fly fever is here lacking. Initial severe anorexia is a striking and almost diagnostic feature. Disinclination for smoking is common, nausea is frequent but vomiting unusual. Abdominal discomfort, with a tendency to constipation rather than diarrhea, occurs frequently. Fever was present in all cases observed during the preicteric stage, usually it is of a regular type varying between 99 and 103 F

and continuing for three to six days, when jaundice appears. With the development of jaundice the initial symptoms rapidly subside. The depth of jaundice varies from a light coloration of the conjunctiva to a deep icterus involving the whole body. It lasts an average of twenty-one days, reaches a maximum intensity at five days and has a range varying from five to seventy-two days. Bradycardia occurs as soon as the development of jaundice but this is not diagnostic since it seems to accompany almost all virus infections. Transient enlargement of the liver was noted in 97 of the 170 cases. There was a scattering of other signs or symptoms, the most frequent being splenic enlargement, which was encountered in 46 cases. Five points are of major importance for diagnosis in the preicteric stage: anorexia, abdominal discomfort with or without hepatic enlargement and tenderness, absence of leukocytosis, increased urobilinogen in the urine, and histamine wheal test for latent jaundice. Deaths did not occur in the entire series, most patients recovered in thirty-five days. Treatment should include isolation of the patient and a minimum of one month hospitalization. The presence of clay colored feces was considered an indication for a low fat and cholesterol diet, in cases in which the feces remained persistently pale, bile salts were given so that fat could be introduced into the diet. All patients must refrain from alcohol for a minimum period of three months on the theory that alcohol lowers the resistance of the liver.

The infection is believed to be due to a virus. A number of animal inoculation experiments have been made and several attempts to transmit the disease by insect vectors. Van Rooyen and Gordon<sup>2</sup> obtained bile and stomach washings from 10 patients and fed large volumes of each specimen to animals. The animals employed were mice, white rats, jerboas, rabbits, guinea pigs, monkeys, Abyssinian baboons, a young pig and 3 kittens. In addition blood containing 1 per cent sodium citrate which had been withdrawn in 20 proved cases was introduced into each of these animals by various routes—subcutaneously, intravenously, intraperitoneally, intracerebrally, intratesticularly and intracorneally. Definite results were not obtained. Similar experiments were also performed by Cameron. Samples of blood were withdrawn from patients as soon as possible after diagnosis. Part of the blood was allowed to clot, but sodium citrate was added to the larger portion. Monkeys, guinea pigs, dogs, mice, rats and hamsters were employed as the experimental animals. Some of the animals received whole blood or plasma without further treatment. For others a leukocytic fraction was prepared by centrifugation of the citrated blood for an hour, the resulting sediment being then suspended in saline solution and injected. Careful clinical observations, blood counts

<sup>2</sup> Van Rooyen C E and Gordon Ian J Royal Army Med Corps  
 79 19 (Nov) 1942

and temperature charts were made. In the guinea pigs alone some suggestive observations were recorded, including leukopenia appearing five to twenty days after injection in all of them. One animal showed necrosis of liver cells and round cell infiltration of the portal tract. Because of the simultaneous occurrence of jaundice in horses it has been necessary to exclude piroplasmiasis as a cause of human hepatitis. Cameron reports experiments carried out by Captains Colville and Hynds in which 6 horses were injected with blood or serum from 6 patients with hepatitis. Repeated blood counts and close veterinary observation failed to reveal any effects.

It is agreed by Cameron, by Van Rooyen and Gordon and by others that jaundice may or may not be present in this disease. Van Rooyen and Gordon did not observe indications of obstruction or catarrh of the bile passages and therefore believe that the jaundice is toxic and due primarily to damage of the liver parenchymal cell. All are agreed that this disease is highly contagious and emphasize the necessity for treating it as a serious liver disease and one in which lowered general resistance such as that which occurs so commonly in military campaigns is a predisposing factor. Much further work is needed in order to determine the responsible agent, the mode of spread and possible relations to certain animal diseases.

#### THE IRRITANT EFFECT OF CATGUT

The irritant effect of catgut on living tissues has been commented on in a previous editorial<sup>1</sup> in *THE JOURNAL*. The clinical experience of Halstead, Jenkins, Kraissl, Whipple and others and the experimental demonstration by Meleney stress this undesirable effect of surgical gut as compared with some of the non-absorbable suture materials. These observers believed that the irritating effect was due to the catgut per se. Halstead believed that buried catgut serves as culture medium for saprophytic organisms which are carried into it from the deep epithelium and the follicles of the skin. Kraissl demonstrated the possibility of an allergic reaction to catgut in a patient with edema of the edges and disruption of the abdominal wall. The irritant effect manifests itself in the wound by induration, redness, serum formation, lowered tissue resistance with increased susceptibility to infection from organisms introduced at operation or from the blood stream, and retardation of healing.

The recent experiments by Dunham and Jenkins,<sup>2</sup> however, establish that it is the tubing fluid in which the catgut is kept that is responsible for the irritating effect. Surgical catgut has customarily been provided

in glass tubes with either an anhydrous hydrocarbon liquid for boilable catgut or an alcoholic solution for nonboilable gut. The anhydrous boilable tubing fluids have generally been xylene. These investigators state that the alcoholic solutions of numerous products examined by them contain appreciable quantities of hydrocarbon, which they believe is a residuum from the heat sterilization process, not removed during the process of manufacture before the alcoholic solution was added and the tube sealed. They believe this to be a common factor for the catgut, regardless of whether it was boilable or nonboilable. Their experiments clearly demonstrate that a fairly substantial part of the tissue irritation characteristic of catgut is due to the irritant hydrocarbon carried into the tissues with the gut. The presence of alcohol in the gut from non-boilable tubing fluid or from dipping boilable gut in 70 per cent alcohol to induce pliability contributes in part to the tissue irritation. However, they believe that the action of the alcohol is of secondary importance. They also found that those products which were characterized by excessive exudate and profuse polymorphonuclear leukocytic invasion of surrounding tissues generally had a high hydrocarbon content of the tubing fluid. They further suggest that the polymorphonuclear leukocytic response, which in their previous experiments was shown to hasten the onset of the mechanism of absorption, is probably induced by the extraneous tubing fluid irritants rather than by the catgut per se. Once this leukocytic mechanism of absorption has started to break down the catgut, it is not unlikely that the products of breakdown may further act as irritants to the tissues, so that the irritation inaugurated by the tubing fluid may be enhanced or prolonged. The combination of these two factors may be important in the tissue reaction to catgut.

Analytic study by Sidwell<sup>3</sup> of the American Medical Association Chemical Laboratory demonstrated the presence of up to 14 per cent of the water insoluble liquid aromatic hydrocarbons present in some of the samples of the nonboilable surgical gut tubing fluids examined. The physical and chemical properties of the water insoluble materials isolated from various specimens led to the conclusion that the tubing fluid contains material closely related to a coal tar distillate known as "xylene fraction" or solvent naphtha. Jenkins and Dunham<sup>4</sup> conclude that, from the point of view of obtaining optimum wound healing in surgery, the introduction of tubing fluid irritants into the tissue with suture material is not in the best interests of the patient or the surgeon. The elimination of tubing fluid irritants from surgical gut should result in better clinical results with the use of absorbable suture material.

<sup>1</sup> The Renaissance of Silk in Surgery editorial *J A M A* 113:1417 (Oct 7) 1939.

<sup>2</sup> Dunham C L and Jenkins H P. Surgical Gut (Catgut) Tubing Fluid as a Tissue Irritant. *Ann Surg* 115:269 (Aug) 1943.

<sup>3</sup> Sidwell A E Jr. Hydrocarbon Content of Nonboilable Surgical Gut Tubing Fluids. *Ann Surg* 115:285 (Aug) 1943.

<sup>4</sup> Jenkins H P and Dunham C L. Irritant Properties of Tubing Fluids as a Factor in the Tissue Reactions Observed with Surgical Gut (Catgut). *Ann Surg* 115:288 (Aug) 1943.



## MULTIPLICATION OF BACTERIOPHAGE IN ANIMAL TISSUES

Bacteriophage lysis is inhibited by blood serum, leukocytes, bile and tissue debris. Many bacteriologists have concluded, therefore, that bacteriophage would necessarily be an ineffective therapeutic agent in most regions of the animal body. This conclusion apparently is premature, as shown by recent demonstrations of the multiplication of bacteriophage in chick embryos<sup>1</sup> and in infected brain tissues of white mice.<sup>2</sup> In both cases the proliferation is associated with positive therapeutic effects.

The chorionallantoic membrane of the developing chick embryo is a useful medium for the cultivation of many viruses and bacteria. Weil and Volentine,<sup>3</sup> for example, showed that *Bacterium shigae* will proliferate on this membrane and will usually cause death of the embryo in from two to four days; increase in the bacterial count is demonstrable as early as five hours after the bacillus is placed on the membrane. At this five hour period the Rakieten<sup>1</sup> introduced 0.1 cc of the corresponding anti-Shiga phage on the infected membrane. This reduced the usual mortality rate from 100 per cent to 25 per cent. Examination of egg material collected from the survivors showed a uniformly increased titer of bacteriophage. The conclusion must be that antidyentery bacteriophage does multiply (or is multiplied) in living tissues and does result in local sterilization of the tissues.

Somewhat more detailed studies of the same phenomenon have just been reported by Dubos<sup>2</sup> of Harvard University, who made use of the experimental disease resulting from intracerebral inoculation of dysentery bacillus in white mice. This disease takes the form of a meningitis, which is usually fatal in from three to ten days. Extensive multiplication of the Shiga bacillus takes place in the infected brain without a generalized septicemia.

In preliminary tests Dubos found that anti-Shiga bacteriophage introduced intraperitoneally into normal mice can be detected in the brain within one hour after injection. The concentration of bacteriophage per gram of brain, however, is invariably much less than the concentration in the blood stream. In mice infected intracerebrally with the Shiga bacillus there is in contrast an apparent rapid and massive elective localization of the bacteriophage in the infected brain tissues, the concentration being much higher than in the blood stream. The high titer in the brain cannot be accounted for solely as a result of elective localization of circulating bacteriophage but implies a local multiplication of particles of bacteriophage.

Dubos also found that intraperitoneal injection of a sufficiently large dose of active bacteriophage reduces the mortality rate from 96.4 per cent to 28 per cent in Shiga infected white mice. The control mice were treated with the same doses of heat inactivated bacteriophage or with bacteriophage free Shiga autolysate. The minimum dose of bacteriophage necessary to produce these therapeutic effects was not determined. It was shown, however, that one million particles of bacteriophage (plaque count) injected intraperitoneally were without demonstrable therapeutic effects. Dubos's routine therapeutic dose was ten billion bacteriophage particles injected intraperitoneally. This was contained in about 1 cc of phage lysed Shiga filtrate. This mouse dose would be roughly equivalent to 3 liters of bacteriophage filtrate for a 150 pound (68 Kg) man. Whether or not the bacteriophage would be more effective if injected directly into the brain tissues has not yet been determined.

## THE GENERAL MEDICAL COUNCIL OF GREAT BRITAIN AND "INFAMOUS CONDUCT IN A PROFESSIONAL RESPECT"

In a lecture delivered to the staff and students of Guy's Hospital Medical and Dental School, Sir Herbert Lightfoot Eason,<sup>1</sup> president of the General Medical Council, pointed out that the lay press in Great Britain has not thus far learned to differentiate between the British Medical Association and the General Medical Council. This incidentally is a difference not clear to many American physicians. The British Medical Association is a body established by the medical profession whereas the General Medical Council was appointed primarily for the benefit of the public.

The short preamble to the Medical Act of 1858 sums up the function of the Medical Council: "Whereas it is expedient that persons requiring medical aid should be enabled to distinguish qualified from unqualified medical practitioners." The council distinguishes between the qualified and the unqualified practitioner, although it does not debar the unqualified practitioner from the practice of medicine and surgery.

The General Medical Council performs two functions. In exercising its educational function it inspects all the qualifying examinations of the licensing bodies and issues recommendations as to amendments to the curriculum. It does not impose any restriction on the intellectual freedom of the registered medical practitioner. He may hold any view in medicine or surgery that he prefers, there are, however, certain restrictions as to his conduct. These restrictions are included in section 29 of the act and constitute the second important function of the council. Information as to misconduct

<sup>1</sup> Rakieten, Tony I., and Rakieten, Morris L. *J. Bact.* 45: 477 (May) 1943.

<sup>2</sup> Dubos, René J., Strauss, June H., and Pierce, Cynthia. *J. Exper. Med.* 78: 161 (Sept.) 1943.

<sup>3</sup> Weil, A. J., and Volentine, J. A. *Proc. Soc. Exper. Biol. & Med.* 44: 160 (May) 1940.

<sup>1</sup> Eason, H. L. "Infamous Conduct in a Professional Respect: What a Practitioner May and May Not Do," *Guy's Hosp. Gaz.* 57: 147 (July 10) 1943.

on the part of any doctor is forwarded to the council from every magistrate's court, every court of justice and every police office in the kingdom. While the council records every offense or conviction against medical practitioners, its principal interest is in that which relates to "infamous conduct in a professional respect." Such conduct has been defined by Lord Justice Lopes as follows:

If a medical man in the pursuit of his profession has done something with regard to it which will be reasonably regarded as disgraceful or dishonourable by his professional brethren of good repute and competency, then it is open to the General Medical Council if that be shown to say that he has been guilty of infamous conduct in a professional respect.

The question is not merely whether what a medical man has done would be an infamous thing for any one else but a medical man to do. He might do an infamous thing which would be infamous in any one else, but if it is not done in a professional respect it does not come within section 29.

The particular section lists the following offenses which are considered as "infamous conduct in a professional respect": signing certificates which do not meet with the particular requirements, assisting unqualified practitioners in treatment of patients and drunkenness. The last named offense appears to be the most common "crime" and is particularly serious if a practitioner is found to be drunk while driving a car.

Of special interest are three offenses which are grouped as the "three A's": Advertising, Abortion and Adultery. Advertising is not permitted; the prohibition includes such types of advertising as newspaper interviews with a doctor, who may be referred to as "a distinguished surgeon" or "a well known physician." As to abortion, it is emphasized that, whatever views one holds regarding it, under the laws of Great Britain abortion is a felony which is punishable by terms of penal servitude. The General Medical Council takes the attitude that the council is no judge of morals and that its function is not to punish the members of the medical profession but rather to protect the public. Adultery per se would not be considered "infamous conduct in a professional respect," and the General Medical Council takes no note of adultery as such. If, however, it is adultery with a person who is a patient, the wife of a patient or the member of a patient's family, then the council may say that the doctor has abused his position of trust. The sincerity of this statement is evident from the advice Sir Eason offers which is "If you must have irregular relationships with women, you should keep those relationships away from the professional side of your life."

Like most English institutions, the General Medical Council has considerable legal authority but derives most of its power from its moral authority. It has succeeded in molding the British medical profession into an organic whole without at the same time interfering with the healthy rivalry and individualism of

the various educational institutions. The council controls the standards of medical education by its power to represent to the Privy Council that a licensing authority should have its license revoked because its teaching and its examinations are not sufficient, and the council would take the same step if any licensing body should attempt to impose any particular theory of medicine or surgery. The council may require information to discover these points and may appoint inspectors and visitors to the various authorities.

The General Medical Council also provides for the publication of the British Pharmacopeia, a function entrusted in our country to the United States Pharmacopeal Convention.

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## Current Comment

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### THE NEED FOR PHYSICAL AND OCCUPATIONAL THERAPY TECHNICIANS IN WARTIME PHYSICAL RECONSTRUCTION

Large numbers of physical therapy and occupational therapy technicians are needed to meet the expanding requirements of wartime physical reconstruction. The Army already has physical therapy technicians serving in a hundred and forty Army hospitals within the continental limits of the United States and in thirty-four Army hospitals overseas. Recently the announcement was made that the Army still needs a thousand more physical therapy technicians. The Navy, the Veterans Administration, the Public Health Service and the civilian hospitals also require large numbers of physical and occupational therapy technicians to assist in rehabilitation of persons disabled by the war. The distinguished educator Ernest J. Jaqua, president of Scripps College in California, now serving as director of the Professional and Technical Division of the Bureau of Training, War Manpower Commission, recently made a tour among middle and far western universities in the interest of physical and occupational therapy. He concluded that it would be necessary to develop additional training schools at larger educational centers. The views expressed by this educator are gratifying to physicians interested in physical rehabilitation. Some of his observations follow:

Hearty cooperation between the liberal arts and medical faculties is essential for complete success of a program of training in these fields. Whenever possible the two courses of study should be under joint administration since the first year of technical training can be practically identical. There is much overlapping in actual operation.

The general supervision of the training program can best be entrusted to the medical school since all courses of study must be approved by the Council on Medical Education and Hospitals of the American Medical Association, or to a joint committee of the medical and arts faculties the former providing the chairman. It is important to recognize the dominant medical implications from the outset.

The chief difficulty in establishing strong new schools of physical and occupational therapy at this time is the scarcity of qualified teachers. In the case of physical therapy this means doctors who have specialized in this field in medical

chool and have been directors of physical therapy departments in hospitals. These men are few and many of the best ones are now in the Army. As for occupational therapy teachers, they too are scarce and military hospitals are among them is rapidly as possible to direct newly established departments.

The founding of several new schools of physical and occupational therapy in state universities under experienced joint leadership where both medical and arts courses and hospital facilities are immediately available will have the double effect of giving added professional standing to the rapidly developing medical fields and at the same time discouraging the establishment of departments in institutions lacking medical affiliations.

Perhaps the deepest impression gained from this survey of physical and occupational therapy schools is one of admiration for the splendid pioneer work of the older schools in the face of half-hearted appreciation and support by the medical profession generally and only the vaguest knowledge of their importance on the part of the lay public. The first approved schools have steadily raised their professional standing, extended the range and quality of their courses of study (especially in medical subjects) and proved beyond all doubt the indispensable nature of their services to the medical profession. Indeed, thoughtful observers are deeply convinced, and the war will drive home this point with increasing poignancy, that the medical school or hospital which does not now take active measures to provide these services will some day be awakened to the fact that certain features of the magnificent procession of health have moved past while they were unaware of their presence or unmindful of their significance.

### IS TUBERCULOSIS DISAPPEARING?

The mortality rate from tuberculosis 'was cut in half during the first twenty years and then halved again by 1940, that is, the 1940 rate was less than one-fourth that at the beginning of the century'.<sup>1</sup> The average for the three years 1939-1941 established an all time low record of 45.9 per hundred thousand of population. While this decline has been general for all ages and races, the rate of decline in the productive years 20 to 45 has been slower than in later years. "The remarkable decrease in tuberculosis mortality, which resulted in lowering tuberculosis from one of first rank in numerical importance to seventh, conceals the fact that this favorable situation does not hold for all age groups, from early adulthood to age 35 it is still the first killer." The percentage of tuberculosis deaths to deaths from other causes by age starts at a low point in the younger ages, increases rapidly to reach a maximum at the most productive age periods, then declines continuously thereafter. Mortality for tuberculosis is highest in cities of 100,000 or more population. For males it declines steadily in cities of 2,500 to 100,000. It is lowest in rural areas. The deaths of females are lowest in cities of 2,500 to 100,000 population, although the difference is not great. The rate for males is considerably higher than for females throughout the population. Tuberculosis is still much more fatal among the nonwhite races, but the rate of decline is more rapid in the colored population. "Many factors have contributed to the extraordinary achievements in the control of tuberculosis as reflected in the reduction of the death rate from around 200 per hundred thousand at the beginning of the cen-

tury to less than 45 per hundred thousand at present. These factors are in the main the results of man's endeavor to control his environment. Some are tangible, such as the discovery of the causative organism and modes of transmission of the disease, many others are not so definite and may be stated vaguely to be the results of improvements in the 'standard of living'. The direct relationship of any one factor to the reduction of tuberculosis mortality may be difficult to prove. The combination of all factors, however, has reduced the mortality rate in the course of half a century to such an extent that the eradication of tuberculosis is within the realm of possibility."

### LIEUT. GEN. MARK W. CLARK EULOGIZES MEDICAL CORPS' SERVICES

Under Medicine and the War, in this issue of THE JOURNAL, appears a copy of a letter sent by Lieut. Gen. Mark W. Clark, commanding General of the Fifth Army, to Major Gen. Norman T. Kirk, Surgeon General of the United States Army, eulogizing the magnificent service rendered by the medical department in the invasion of Salerno Bay. The efficiency of the performance is testimony to the wholehearted, sacrificing effort of the medical profession of the United States. In June 1940 Gen. George Dunham, delegate from the United States Army Medical Corps to the House of Delegates of the American Medical Association, presented a call to the medical profession to mobilize for the war. Under Surg. Gen. James C. Magee thousands of physicians and Medical Corps men were enrolled and units like the evacuation hospitals, to which special praise is tendered, were established. Under Major Gen. Norman T. Kirk the medical profession continues to respond with courage and self-sacrifice. The letter of General Clark is special testimony to the magnificent work of the battalion surgeons who move up with the troops to the front lines and render their aid under enemy fire. General Clark emphasizes particularly the closeness of the medical service to the actual front. As the war intensifies and as our Army drives on to ultimate victory the demand on the medical profession is likely to become greater, the need for its service more imminent. At this time several thousand more doctors are needed and must be enrolled. The letter of General Clark should be an inspiration to every man who can possibly meet the call to come forward and offer his services.

### MEMORIAL TO WILLIAM BEAUMONT

A permanent memorial to William Beaumont, known as the founder of our modern knowledge of the physiology of the stomach, has been assured by the transfer of the historical "Early House" on Mackinac Island to public ownership. In this house Alexis St. Martin, the French Canadian voyageur who was the subject of Beaumont's famous studies, received his accidental shotgun wound on June 6, 1822. In the actual work of restoration technical advice will be obtained from a committee of the Michigan State Medical Society, the National Park Survey and other agencies and historical sources.

<sup>1</sup> Yerushalmy, J., Hilleboe, H. E., and Palmer, C. E. Tuberculosis Mortality in the United States, 1939-1941, *Pub. Health Rep.* 58:1457 (Oct. 1) 1943.

# MEDICINE AND THE WAR

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*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

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## GENERAL CLARK EULOGIZES MEDICAL SERVICES AT SALERNO

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HEADQUARTERS FIFTH ARMY

Office of the Commanding General

A P O No 464, U S Army

Major General Norman T Kirk  
Surgeon General, U S Army  
War Department  
Washington, D C

In the field  
25 September 1943

Dear General Kirk

I desire to express the highest commendation for the wonderfully fine work performed by the medical units of this Army. Their devotion to duty under the hazardous and trying circumstances of the landing in Salerno Bay and their skill and efficient administration reflect the best traditions of the Service. Many wounded officers and men, who will eventually be restored to full health, would have died but for the effective work of the Medical Corps. I am especially well pleased with the performance of the Surgeon Fifth Army. He has done a magnificent job.

From the first landing to the date of this letter, 3,335 casualties have been admitted to Fifth Army hospitals. The first hospital opened within 3 to 5 miles of the front lines. The next hospital began to function the following day still closer and under the most difficult conditions. Neither hospital had any nurses when opened. Thus far there have been only 42 deaths in the hospitals. Thirty-two of these cases were those of U S personnel who died from wounds. Five were U S personnel who died from disease or injuries, 5 were enemy who died of wounds. Many of those who survived would never have reached a hospital alive had the hospitals been located at a normal distance from the front.

Two thousand and sixty-one cases have been evacuated to North Africa by air and sea.

The beach medical service was superior. One medical battalion distinguished itself on the beaches under heavy fire early in the operation. I shall recommend that the unit be cited for its gallant work under terrible conditions.

The medical supply system began to function according to plan with the assault wave, and despite the most difficult conditions it rapidly developed to the highest state of efficiency.

Among the difficulties with which the medical services have had to cope were the loss of the entire equipment of our third evacuation hospital and the bombing of a hospital ship which was bringing the nurses. Fortunately only one nurse was injured, and all are again on their way to Italy to rejoin their units.

The whole performance of the Fifth Army medical services has been most heartening to me and has been of incalculable aid in the operation. I have been so favorably impressed with their performance that I cannot forbear to write you this personal letter to tell you of my gratitude and admiration.

Mark W Clark,  
Lieutenant General, U S Army,  
Commanding

## ARMY

## THE BRUNS GENERAL HOSPITAL

The Bruns General Hospital which was formally dedicated on September 22 is located in Santa Fe, N. M. The hospital was activated on February 18 and the formal flu season was celebrated April 19 at which time the first patient was admitted. Although the hospital was built with a thousand bed capacity recent construction will soon afford 1500 beds. It is of cantonment type composed of open and closed wards, officers and nurses quarters, barracks, utility shops, warehouses and a chapel. All the wards, quarters and barracks are connected by either closed or covered walks.

The Bruns General Hospital was named in honor of the late Col. Earl Harvey Bruns who was recognized as one of the world's leading authorities on pulmonary tuberculosis. The hospital has not been designated as one for any particular specialty but rather a typical general hospital. It is equipped to care for surgical, medical, eye, ear, nose and throat, genito-urinary and neurologic and psychiatric cases.

The medical officers assigned to the Bruns General Hospital as of September 27 were as follows:

1. Col. Larry B. McVee, executive officer, general  
1. Lt. Col. Robert J. Wilcox, executive officer, public relations officer  
1. Capt. Charles B. Alfeld, M. C., receiving and evacuation officer  
1. Capt. City, Mo.

## MEDICAL SERVICE

1. Major D. K. K. M. C., chief, Xavier Forest Ill  
1. Major Marshall W. M. C., assistant chief of Burlington Wis  
1. Capt. O. J. K. M. C., Ill, Pa, Texas  
1. Capt. J. O. H. M. C., Chicago  
1. Capt. H. E. T. M. C., chief of ophthalmic section, Detroit  
1. Capt. J. A. H. M. C., Dubois, Pa  
1. 1st Lieut. Paul I. Martin, M. C., Omaha  
1. 1st Lieut. Herman H. Levin, M. C., Newville, Pa  
1. 1st Lieut. Joseph F. Kauer, M. C., Bronx, N. Y.  
1. 1st Lieut. John A. Underwood, Jr., M. C., Parkville, Mo  
1. 1st Lieut. Robert K. Vandenberg, M. C., Stoughton, Wis

## MEDICAL SERVICE

Major George J. Kastlin, M. C., chief, Pittsburgh  
Major Samuel J. Koopferstein, M. C., assistant chief, Jersey City, N. J.  
Major John D. Ferrara, M. C., Jacksonville, Fla  
Major Jacob A. Lande, M. C., Sioux City, Iowa  
Capt. Harry L. Fischer, M. C., Detroit  
Capt. Erich P. Hausner, M. C., Amsterdam, N. Y.  
Capt. Herbert B. Ellis, Milton, N. Y.  
Capt. Max J. Yacht, M. C., Brooklyn  
1st Lieut. Edward J. Brazinski, M. C., Perth Amboy, N. J.  
1st Lieut. Clifford H. Kall, M. C., Grafton, Wis  
1st Lieut. Juan Larralde, M. C., New York  
1st Lieut. Ralph G. Lightly, M. C., Sussville, Pa  
1st Lieut. Theodore J. Talbot, M. C., New Brighton, N. Y.  
1st Lieut. John C. Patterson, M. C., Freehold, N. J.  
1st Lieut. Hyman L. Bass, M. C., Bronx, N. Y.

## NEUROPSYCHIATRIC SERVICE

1st Lieut. Col. Cullen W. Irish, M. C., chief, Los Angeles  
Major Jacob N. Friedman, M. C., New York  
Capt. Robert E. McDade, M. C., Philadelphia  
1st Lieut. Morris V. Borenstein, M. C., Springfield, Mass  
1st Lieut. Edward G. Feldman, M. C., Chicago

## EYE, EAR, NOSE AND THROAT

Major Gordon H. Pumphrey, M. C., chief, Mount Vernon, Ohio  
Capt. Earl W. Martens, M. C., Milwaukee  
1st Lieut. Edward Schwartz, M. C., Chester, Pa

## GENITOURINARY SERVICE

Capt. Frank L. Larkin, M. C., Scranton, Pa

## LABORATORY SERVICE

Major Elson B. Helwig, M. C., chief, St. Louis  
1st Lieut. Ralph C. Brown, M. C., Winnetka, Ill  
1st Lieut. Daniel E. Johnson, Sn. C., Muncie, Ill  
2d Lieut. Charles C. Croft, Sn. C., Washington, D. C.

## ROENTGENOLOGIC SERVICE

Major Murray M. Friedman, M. C., Altoona, Pa

## OUTPATIENT SERVICE

Capt. Herbert S. Weichsel, M. C., Poughkeepsie, N. Y.

## DENTAL SERVICE

Major Oscar J. Ogren, D. C., chief, Minneapolis  
Capt. Eldon L. Armer, D. C., Tucson, Ariz  
Capt. Eldon L. Njos, D. C., Baldwin, Wis  
1st Lieut. Richard L. Mosgrove, D. C., Lincoln, Neb  
1st Lieut. Frank A. Lemone, D. C., Shreveport, La  
1st Lieut. Arthur O. McGowan, D. C., Kansas City, Kan  
1st Lieut. Gustave P. Brickbauer, D. C., Milwaukee

COL STANHOPE BAYNE-JONES APPOINTED  
DIRECTOR OF TYPHUS COMMISSION

The War Department, Washington, D. C., announced on October 21 the appointment of Col Stanhope Bayne-Jones, M. C., A. U. S., as director of the United States of America Typhus Commission. Colonel Bayne-Jones succeeds Brig Gen. Leon A. Fox, U. S. Army, who asked to be relieved as director and appointed field director in order to give all his time to the field work of the commission, which has been operating abroad, particularly in the Middle East, since the first of this year. Colonel Bayne-Jones takes over the directorship in addition to his other duties as assistant director, Preventive Medicine Division, Office of the Surgeon General, where the main office of the commission has been established. In addition to General Fox and Colonel Bayne-Jones, members of the commission include Major Gen. LeRoy Lutes, U. S. Army, Rear Admiral Charles S. Stephenson (MC), U. S. Navy, Brig Gen. James Stevens Simmons, M. C., U. S. Army, Dr. R. E. Dyer, director of the National Institute of Health, U. S. Public Health Service, Col. Harry Plotz, M. C., A. U. S., Col. William I. Wilson, M. C., U. S. Army, Comdr. Thomas J. Carter (MC), U. S. Navy, Dr. Norman H. Topping, U. S. Public Health Service, Major John C. Snyder, M. C., A. U. S., Major Charles M. Wheeler, Sanitary Corps, A. U. S., Lieut. Comdr. W. B. McAllister (MC), USNR, Lieut. Comdr. A. Yeomans, USNR, Dr. Alexander G. Gilliam, U. S. Public Health Service, and Capt. Byron L. Bennett, Sanitary Corps, A. U. S.

Colonel Bayne-Jones is a former dean of Yale University School of Medicine, New Haven, Conn., and was professor of bacteriology at that university when ordered to active duty early in 1942. He graduated from Johns Hopkins University School of Medicine, Baltimore, in 1914, entered the medical reserve corps in 1915 and served throughout the World War. From May 1917 to March 1918 he was attached to the British Expeditionary Force in France and Italy and later with the American Expeditionary Forces in France and Germany. He has been decorated with the British Military Cross, the French Croix de Guerre and the Silver Star with two Oak Leaf Clusters.

SPECIAL HOSPITAL ESTABLISHED  
TO TREAT BURNS

According to a recent report from Algiers, Lieut. Col. Edward A. Krause, formerly of Washington, D. C., has been named head of the special hospital established to treat burns received on the battle field, under the Army's new "selective hospitalization plan." Col. Edward D. Churchill, former professor of surgery at Harvard University, Boston, and now on duty in Algiers, said that the new system whereby soldiers with special types of injuries are sent to special hospitals, such as that headed by Lieutenant Colonel Krause, had three large advantages. Naturally the establishment of centers specifying the treatment of various types of casualties will render better service to the men wounded in battle. Second, these centers also will be educational centers where surgeons and specialists from other hospitals may observe techniques. Then too, technical data to check on the results of surgical management and point the way to improved methods can be assembled.

U. S. ARMY UTILIZING TALENTS OF  
CHICAGO NEGRO DOCTORS

Many prominent Negro physicians from Chicago are looking after the health and battle care of Negro troops in United States camps and overseas. Fort Huachuca, which is located on the side of a mountain between Bisbee and Nogales, Ariz., and which is said to be the principal Negro training center in the country in the sense of providing finishing work with combat troops, is the home of some 20,000 Negro soldiers. There the 92d Division recently celebrated its first anniversary as an activated division. Lieut. Col. Median O. Bousfield, former member of the Chicago Board of Education, is in command of the station hospital at Fort Huachuca, Major Harold W. T.

Litcher and Major Roscoe C. Giles, both of Chicago are chief of the medical service and chief of the surgical division respectively. Many of the Negro nurses at Fort Hunchuck are from Chicago, as are many of the girls in the WAC battalion there.

Major John B. West, former superintendent of Provident Hospital, Chicago, with thirty nurses commands a station hospital in North Africa. En route overseas is another Negro station hospital staff under the command of Major Hugh Simmons of Washington, D. C. with which group Capt. Arthur Thomas, former resident surgeon at Provident Hospital, Chicago is also attached. Another Chicagoan, Major Harvey J. Whitfield, directs the medical detachment with the 365th Engineers at Camp Campbell, Ky.

#### FOURTH FERRYING GROUP BASE HOSPITAL

A new 150 bed military hospital, the Fourth Ferrying Group base hospital at the Municipal Airport, Memphis, Tenn., was activated without the usual ceremony on February 16 and since has been quietly administering to the medical needs of the air forces ferrying group and other military personnel. The hospital is fully equipped to handle any case from a minor injury to a major surgical operation. Malaria and other tropical diseases contracted by men of the Fourth Ferrying Group during their operations in other parts of the world as well as communicable diseases are also treated there. A modern air conditioned laboratory, a full array of the newest dental and dental surgical equipment, an up to date pharmaceutical department and a medical supply warehouse are at the hospital. Both wards and individual rooms are available for patients. All pilots and crew members of this ferrying group on their return from foreign trips are examined at the hospital before going on rest leave. The entire army personnel of the Fourth Ferrying Group base is given specified immunization shots at specified intervals at the hospital. All pilots are given physical check-ups at regular intervals, and aviation cadets selected by the local Aviation Cadet Examining Board are given their army physical examination at the hospital.

The convalescent program, for men able to be up and about, is one of the outstanding features of the hospital. Each day they are given the opportunity of hearing speakers who are well versed in the various fields pertaining to the air forces, such as pilots who have returned from foreign trips. There are speakers from the outside who keep the men posted on world affairs. The Red Cross Gray Ladies arrange recreational programs, and there are movies and hiking for those men who are able. A day room for patients and enlisted personnel of the hospital is now in the process of construction, which will be equipped for recreational facilities and will also be used for religious services.

Major Lowell C. Smith is commanding officer of the hospital. Other medical officers include:

Capt. Alfred V. Mahoney, executive officer  
Capt. Samuel Pritzker, chief of medicine  
Capt. David W. Wallwork, chief of surgery  
Lieut. Gerald Smith, attending surgeon  
Capt. Francis M. Dougherty, flight surgeon  
Capt. Eugene H. Bekampes, assistant flight surgeon  
Capt. Henry Bernstein, assistant flight surgeon  
Lieut. Meyer Leonard Kimmel, assistant flight surgeon  
Lieut. Mark L. Beauchamp, chief eye, ear, nose and throat section  
Capt. Maurice B. Furlong, ward officer and patients convalescent program  
Capt. Jacob David Weinberg, base industrial surgeon and ward surgeon  
Lieut. Irvin L. Libecap, assistant chief of surgery  
Capt. Samuel M. Klaristenfeld, base medical inspector

#### LIEUT. COL. W. R. LOVELACE AWARDED DISTINGUISHED FLYING CROSS

Lieut. Col. W. R. Lovelace, chief of the aeromedical unit at Dayton Field, Ohio, has been awarded the Distinguished Flying Cross for heroism beyond the call of duty in recognition of his record altitude jump to test oxygen equipment during the parachute descent. The cross was presented in Washington, D. C., October 20, by Gen. H. H. Arnold, commander of the United States Air Forces.

#### SEMINOLE COMMISSIONED U. S. ARMY HOSPITAL SHIP

The War Department announced on October 22 the commissioning of the United States Army hospital ship *Seminole*. The vessel has been painted white with a green band and red crosses and it travels alone, fully lighted. It has no armor or armament. The vessel, a former combination freight and passenger ship, is 402 feet long and has a gross tonnage of 5,896 and a net tonnage of 3,514. It was converted by the Transportation Corps of the Army Service Forces. It contains 284 beds for bed type patients and 182 beds for patients able to move about their quarters. The ship is staffed by fifteen medical officers, thirty nurses and eighty-one medical attendants. In addition it has a navy crew. The commanding medical officer is ship commander, but navigation is under command of a naval officer. There are two other hospital ships in operation by the Army, the *Acadia* and the *Shamrock*. Hungarian, Bulgarian, Rumanian, German and Japanese governments have been notified that the *Seminole* is a hospital ship entitled to immunity and protection under the terms of the Hague Convention X, 1907.

#### LIEUT. COL. PRESTON WHITE AND LIEUT. COL. PAUL SANGER CITED

Citations were presented by the Forty and Eight Voiture to Lieut. Col. Preston White and Lieut. Col. Paul Sanger, both formerly of Charlotte, N. C., as organizers of the 38th Evacuation Hospital Unit, who are overseas serving in North Africa. The formal presentation was made to the wives of Lieutenant Colonel White and Lieutenant Colonel Sanger by Dr. Addison G. Brenizer of Charlotte, who organized a local hospital unit in World War I and who has also been cited by the Forty and Eight Voiture for his recent efforts in organizing Base Hospital No. 111 and securing thirty-five nurses for Base Hospital No. 106.

#### OFFICERS GRADUATE AT MEDICAL FIELD SERVICE SCHOOL

Graduation exercises were held at the Medical Field Service School, Carlisle Barracks, Pennsylvania, for 344 more officers of the medical department who are now qualified for field duty with troops. The training course taught them the military knowledge necessary for them to be efficient medical department officers, capable of carrying out medical preventive measures and caring for the sick and injured under war conditions. Brig. Gen. Addison D. Davis, commandant of the school, presented the diplomas to the officers.

#### CAPT. PAUL D. HAHN AWARDED PURPLE HEART

Capt. Paul D. Hahn, Warsaw, Ohio, has been awarded the Purple Heart medal. He received shrapnel wounds in Sicily, according to an item published in the *Uhrichsville (Ohio) Chronicle* of September 24. Captain Hahn was wounded on July 11 in the Gala salient while he was giving first aid to two wounded U. S. soldiers in an evacuation area. The officer and the two men were cut off from their lines for six hours before they were rescued, following a counterattack by a German tank unit.

#### PRISONERS OF WAR

It has recently been reported that Capt. Alvin C. Powelent, formerly of Newport, Ky., is a prisoner of the Japanese in the Philippines. Captain Powelent graduated from the University of Louisville School of Medicine in 1936 and entered the service March 26, 1941.

First Lieut. Thomas Edward Corcoran, formerly of Rock Rapids, Iowa, was taken prisoner of war in Tunisia Feb. 17, 1943 according to a recent report. Lieutenant Corcoran graduated from the University of Iowa College of Medicine in Iowa City, in 1938 and entered the service Feb. 12, 1941.



## MISCELLANEOUS

TRANSPORTATION DIFFICULTIES HAMPER  
REMOVAL OF GERMAN WOUNDED

Oberfeldarzt Dr. Wolff in the *Berliner Borsen Zeitung* of August 28 in writing on the work of the army medical service said that for the wounded it is a long road from the moment they are wounded at the front to their arrival at a military hospital in the homeland. The wide spaces of the east, the shortage of railway lines and good transport roads, all the circumstances of a sparsely populated and little civilized country make themselves felt here in the most irritating manner. The removal of the wounded has become one of the hardest problems of this war. Munitions, provisions and material for the armies of millions are pouring to the front on an enormous scale. The outcome of heavy, decisive battles depends on the timely arrival of the supply trains. The few available railway lines are taxed beyond their capacity. Hospital trains. In order to let them through, the necessary supply trains so a part for the front would have to be held up somewhere or other. The transport of wounded by aircraft? The number of those who could pilot the planes is limited on the whole and above all the technical and tactical preconditions for the employment of aircraft and for the landing and starting of the planes would have to be fulfilled. Motor ambulances? Their carrying capacity is even more limited and they too are used in the first place at the front itself to transport the wounded to the main dressing centers and the field hospitals. It is not possible to release ambulances for long journeys on the worst possible roads. In these circumstances quite exceptional situations arise for our medical officers, difficulties of organization which are added to their medical and military duties. The obstacles so it often appears, are insurmountable. But they must be mastered and they are mastered too, often by emergency solutions by means of improvised hospital trains which are established in goods vans (only part of the ordinary passenger carriages are suitable for accommodating stretcher

cases) and which cannot offer the wounded all the comfort and conveniences they deserve. But there is nothing for it, and the wounded are front soldiers, accustomed to discomfort and inconveniences. The chief object is achieved, however the wounded are transported back home.

NERVOUS DISORDERS WIDESPREAD  
IN GERMANY

The *Leipziger Neueste Nachrichten* of August 23 states that nowadays the homeland is greatly in need of the nerve specialist. It is a question not so much of serious organic diseases of the nervous system but of the host of so-called nervous disorders which, although they do not endanger life, may have the most serious effect on the well-being, happiness, working capacity and performance of men. In wartime all are subject to heavy burdens. More work has to be done on less food. The hours of sleep are cut and the night's rest is disturbed. Frequently housing conditions are unfavorable and long distances have to be covered in overcrowded means of transport. Families are torn apart. Added to all this are the excitement, worries, mourning and uncertainty about the fate of one's dear ones. Even strong characters are not always equal to such a burden and weaker ones lose their power of resistance and break down. Not every one is capable of withstanding the terror air attacks. No one who does not live in a raided district can have any idea of how horrible an experience it is or of how much firmness and courage are needed to get through a heavy attack. The detonation of the bombs and mines, the collapse of houses, the cries of the wounded and trapped, the fires and the constant danger to life to which every one is exposed in helpless expectation strain one's nerves to the utmost. It is easy to understand that the wounded and trapped who save nothing but their bare lives, whose nearest and dearest are missing and who see themselves surrounded by death and mutilation, fire and devastation suffer a nervous collapse.

## ORGANIZATION SECTION

## 1944 ANNUAL SESSION TO BE HELD IN CHICAGO

Because of information received that it will not be possible for St. Louis to provide adequate hotel accommodations, the annual session of the American Medical Association in 1944, which had been scheduled to be held in St. Louis, has been changed by the Board of Trustees so that it will now be held in Chicago, June 12 to 16.

The meetings of the House of Delegates will be held at the Palmer House and the Scientific Exhibit will be installed in

that hotel. The Technical Exposition will be housed at the Stevens Hotel.

The Council on Scientific Assembly will meet at the offices of the Association in Chicago on December 1 and the Annual Conference of Section Secretaries with the Council will be held on that day for the purpose of making preliminary arrangements for the scientific program to be presented at the next annual session.

## MEDICAL LEGISLATION

## MEDICAL BILLS IN CONGRESS

*Changes in Status*—S 400 has been reported to and passed by the House, proposing to reorganize the United States Public Health Service. It retains the provision under which for the duration of the present war and for six months thereafter graduates of reputable colleges of osteopathy shall be eligible for appointment "as reserve officers in the Public Health Service." S 763 has passed the Senate and House, proposing to amend the Selective Training and Service Act of 1940. Among other things, this bill directs the President to appoint a commission of five qualified physicians, one of whom only shall be an Army officer and one only a Naval officer, and the three remaining members qualified physicians not in the employ of the federal government to examine the physical qualification requirements for admission to the Army, Navy and Marine Corps and recommend to the President any changes therein

which it believes can be made without impairing the efficiency of the armed services. H Res 328 was reported unfavorably by the House Committee on Military Affairs, proposing to request the President to furnish the House of Representatives certain information with respect to the availability of hospital facilities in the United States. The House after receiving the report of the committee tabled the resolution.

*Bills Introduced*—H R 3530, introduced by Representative King, California, proposes to authorize the construction and extension of certain marine hospitals in Alabama, California, Florida, Illinois, Louisiana, Maine, Maryland, Massachusetts, Michigan, New Mexico, New York, Ohio, Pennsylvania, Texas, Virginia and Washington. H R 3542, introduced, by request by Representative Rankin, Mississippi, proposes to provide for the rehabilitation of certain disabled veterans who served between Sept 16, 1940 and Dec 7, 1941.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Physicians Needed**—The Los Angeles County Civil Service Commission announces examinations for the position of head anesthetist in the Los Angeles County Hospital and for the position of head pathologist at the Olive View Sanatorium, Olive View. Applicants for both positions must have graduated with an M.D. degree from an approved medical school and must have completed a one year internship in an approved hospital. In addition to these requirements, applicants for the head anesthetist position must have at least two years' recent experience in the specialty of anesthesia in a hospital of not less than 200 beds. There is no age requirement. The examination for this "duration of war" position paying from \$345 to \$411 a month will be held in Los Angeles and such other localities as justified by the applications filed. Applicants for the \$345-\$411 a month position of head pathologist must be under 55 years of age and, in addition to the educational requirements, must have at least two years' recent experience as a specialist in clinical pathology, some of which must have been in a responsible administrative and executive capacity. Full information and applications for either of these positions may be obtained from the office of the commission, Room 102 Hall of Records, Los Angeles 12. Applications must be filed on or before November 17.

**Annual Symposium on the Heart**—The thirteenth annual symposium of the Los Angeles Heart Association will be held in Los Angeles, November 11-12. Dr. Tinsley R. Harrison, professor of medicine, Bowman Gray School of Medicine, Wake Forest College, Winston-Salem, N. C., will be the guest speaker, discussing "The Abuse of Rest in the Treatment of Cardiovascular Disease" and "The Differential Diagnosis of Palpitation." Dr. Harrison will conduct a clinical-pathologic conference and a cardiac clinic. Included among the speakers will be

Dr. William Gordon Garnett, Los Angeles, The Practical Management of Patients with Hypertension  
Dr. Samuel J. McClendon, San Diego, The Diagnosis of Rheumatic Fever in Children  
Dr. Wilbur A. Beckett, Los Angeles, On the Importance of Speaking One Heart Language  
Dr. Francis M. Smith, La Jolla, The Importance of Salt and Fluids in the Treatment of Congestive Heart Failure  
Major Maurice Elaser, Jr., M. R. C., Cardiovascular Disease in an Army General Hospital  
Dr. Leon G. Campbell, Pasadena, The Treatment of Cerebral Vascular Accidents  
Dr. Donald E. Griggs, Los Angeles, The Critical Diagnosis of Angina Pectoris  
Dr. Edward C. Rosenow, Jr., Pasadena, The Importance of the Electrocardiogram in Coronary Artery Disease  
Dr. Wilbur Bailey, Los Angeles, The Place of the Radiologist in the Diagnosis and Treatment of Heart Disease  
Dr. William J. Kerr, San Francisco, One Thousand Draft Rejections for Cardiovascular Conditions  
Dr. Howard F. West, Los Angeles, Nutritional Considerations in Heart Disease  
Dr. C. Russell Anderson, Los Angeles, The Treatment of Cardiovascular Syphilis  
Dr. Kendrick A. Smith, Los Angeles, The Patient with Diabetes and Heart Disease  
Dr. John Philip Sampson, Santa Monica, The Need for Conservatism in the Treatment of Acute Coronary Occlusion

**Course at California to Meet Latin American Needs**—The University of California will begin on March 1, 1944 a special course in health education to meet the particular requirements of students from the other American countries. Students will be urged, however, to commence their studies not later than December 10 to give time for those who require training in English to secure the necessary instruction. The course in English will be planned to deal with the vocabulary which will be used in the later course in health education and will also serve as an orientation course. The health education course will be given in the School of Public Health now being established and will include training in the principles of public health and hygiene, principles of education and methods, materials and techniques in health education particularly as they apply to conditions in the other republics. Arrangements are being made to appoint one or more experienced public health administrators from the other republics to serve temporarily on the faculty. The class for 1944 will be limited to thirty students. All applicants must give evidence of their intention to undertake service

in public health or in school health work in Latin America after completion of the course. Classroom instruction will be given on the campus at Berkeley, after which there will be supervised field training. Candidates need not be physicians, but persons with prior training or experience in public health work, school health education and related fields will be given preference. Students who are selected for this training by the Institute of Inter-American Affairs will receive monthly stipends adequate to meet their living costs and will be furnished with tuition and transportation from their residence to the University of California and return. All applications will be made through chiefs of party of the Office of the Coordinator of Inter-American Affairs in each republic in accordance with regulations governing the institute training program. Following is a list of the chiefs of party, who should be addressed in care of the American embassy in the respective republics:

Dr. George C. Bergman, La Paz, Bolivia  
Major Linor H. Christopherson, M. C., A. U. S., Rio de Janeiro, Brazil  
Dr. Howard B. Shookhoff, Bogota, Colombia  
Dr. David Glusker, San Jose, Costa Rica  
Dr. Theodore I. Grady, Santiago, Chile  
Dr. Thomas B. Phinzy, Ciudad Trujillo, Dominican Republic  
Lieut. Wymon R. Stone, Quito, Ecuador  
Lieut. Col. H. R. Van Hovenberg, San Salvador, El Salvador  
Dr. Robert L. Vought, Guatemala City, Guatemala  
Mr. Ralph S. Howard, Jr., Port au Prince, Haiti  
Dr. Isaac Frank Tullis, Jr., Tegucigalpa, Honduras  
Dr. C. Harold Hinman, Mexico D. F., Mexico  
Dr. Leonard S. Rosenfeld, Managua, Nicaragua  
Mr. Howard D. Schmidt, Panama City, Panama  
Dr. Richard J. Plunkett, Asuncion, Paraguay  
Dr. Edward A. Westphal, Lima, Peru  
Lieut. Col. Ernest W. Steel, Caracas, Venezuela

In other countries, information regarding the course may be secured from the Pan American Sanitary Bureau.

### DISTRICT OF COLUMBIA

**Personal**—Dr. Ludwig G. Lederer, acting chief of the medical department of the Pennsylvania-Central Airlines, has been appointed director of the department.—Mr. John A. Linder, Perth Amboy, N. J., has been appointed superintendent of Doctors Hospital, succeeding Mr. O. K. Fike, who resigned to become director of the Miami Valley Hospital at Dayton, Ohio.

**Special Meeting on Ophthalmology**—On December 4 the department of ophthalmology at George Washington University School of Medicine will hold its semiannual meeting, to which all members of the armed forces are invited. The following case demonstrations will be conducted by members of the staff of the department of ophthalmology:

Drs. William T. Davis and Ernest A. W. Sheppard, Anomalies of the Discs  
Dr. Edgar Leonard Goodman, Pemphigus Conjunctivae  
Dr. Ronald A. Cox, Bilateral Amblyopia Following Crushed Chest.  
Dr. Frank D. Costenbader, Retinal Detachment in Childhood  
Dr. Richard W. Wilkinson, Foreign Body in Cataractous Lens Located by Vogt X-Ray Technique  
Dr. Sterling Bockoven, Melanoma of the Choroid  
Dr. Carmon R. Naples, Hypertensive Retinopathy

Col. Frederic H. Thorne, M. C., U. S. Army, will discuss "Military Aspects of Ophthalmology" and Dr. Davis, professor of ophthalmology at the medical school, will give an illustrated address on "Differential Diagnosis of the Vertical Motor Anomalies."

### IDAHO

**State Medical Election**—Dr. Willard O. Clark, Lewiston, was chosen president-elect of the Idaho State Medical Association and Dr. Parley Nelson, Rexburg, was installed as president. Dr. Franklin B. Jeppesen, Boise, is secretary of the group.

### ILLINOIS

**Campaign Against Bang's Disease**—A campaign to eradicate Bang's disease has been begun in Lake County. The Lake County board of supervisors voted funds for the project and state and federal authorities are cooperating in the program, in which every cow will be tested and all dairy calves between 4 and 8 months old vaccinated. Farmers will receive compensation for any reacting cows disposed of through market channels.

**Program to Develop Adequate Health Protection in Schools**—Health and education officials of the state announced the launching of a program for the development of more adequate health protection in schools throughout Illinois to include a detailed scientific study of school health problems, with the consultant services of Clair E. Turner, Dr. P. H. professor of biology and public health, Massachusetts Institute of Technology, Cambridge, Mass. Preliminary meetings were held in Springfield on October 26 and in Chicago on October 29 to consider the program.

## Chicago

**University News**—Dr. Jacob Meyer, associate professor of medicine, has been promoted to professor of medicine at the University of Illinois College of Medicine effective September 1. Dr. Meyer graduated at Rush Medical College in 1916.

**The Belfield Memorial Lecture**—Dr. George I. Cahill, professor of urology, Columbia University College of Physicians and Surgeons, New York, delivered the fifteenth annual William I. Belfield Memorial Lecture before the Chicago Urological Society on October 28. His subject was "Hormonal Tumors of the Adrenals."

**New Members of Medical Center Commission**—New members appointed by Governor Green to serve on the medical center commission include George A. Burr, Joliet, David H. Brill, Albert D. Farwell and Dr. Raymond B. Allen, all of Chicago. The commission is working on the development of a medical center on Chicago's west side. The new members of the commission will take office in December.

## INDIANA

**Kellogg Grant for Medical Technologists**—The W. K. Kellogg Foundation, Battle Creek, Mich., has granted \$4,000 to Butler University, Indianapolis, to be used for loans and scholarships in training medical technologists. Following the two to four year preclinical training program at Butler, clinical work is done either at the medical center at Indiana University School of Medicine or at the Methodist Hospital, Indianapolis.

## KENTUCKY

**State Medical Election**—Dr. Oscar O. Miller, Louisville, was named president-elect of the Kentucky State Medical Association at its annual meeting in Louisville on October 6 and Dr. Van A. Stulley, Benton, was installed as president. New vice presidents include Drs. J. Watts Stovall, Grayson James H. Pritchett, Louisville, and William Howe Fuller, Mayfield. Dr. Philip F. Blackerby, Louisville, state health commissioner, was elected secretary of the association and Dr. Amphis W. Davis, Madisonville, was reelected treasurer. During the meeting the house of delegates chose Dr. Thomas Atchison Frazer, Marion, as the "outstanding general practitioner of Kentucky."

## MARYLAND

**Personal**—Dr. Guy B. Anderson, Ellicott City, has resigned as health officer of Howard County. After some special study at the Mayo Clinic, Rochester, Minn., Dr. Anderson plans to return to private practice.

**Roscoe R. Hyde Dies**—Roscoe Raymond Hyde, Ph.D., professor of immunology and director of laboratories of filtrable viruses since 1932 at Johns Hopkins University School of Hygiene and Public Health, died at Baltimore on September 15. Dr. Hyde graduated at the Indiana State Teachers College, Terre Haute, in 1908, receiving his A.M. and A.B. degrees in 1909 and his Ph.D. degree at Columbia University in 1913. He was assistant in embryology at Indiana University, Bloomington, in 1908-1909, assistant professor and later professor and head of the department of zoology and physiology at Indiana Teachers College serving as lecturer in pathology at the Terre Haute Veterinary College from 1912 to 1919. Joining Johns Hopkins as a fellow in 1918 he subsequently served as associate, associate professor of immunology from 1928 to 1932, and as associate professor of filtrable viruses and head of the department. He was editor of the *American Journal of Hygiene* from 1927 to 1932. Dr. Hyde had been a member of numerous scientific organizations and had written extensively in his field.

## MICHIGAN

**Inter-American Conference of Schools of Public Health**—The Pan American Sanitary Bureau, in cooperation with the Association of Schools of Public Health of the United States and Canada and the W. K. Kellogg Foundation, has called a conference of representatives of the schools of public health in the South, Central and North American countries. The conference will be held in the new School of Public Health of the University of Michigan, Ann Arbor, for four days beginning November 8. In attendance will be representatives from the schools of public health at Harvard, Boston, Yale, New Haven, Conn., Johns Hopkins, Baltimore, Columbia, New York, University of North Carolina, Chapel Hill, University of Toronto, Vanderbilt University, Nashville, Tenn., University of Minnesota, Minneapolis, and University of Michigan, together with representatives from the Rockefeller Foundation,

the W. K. Kellogg Foundation, the Commonwealth Fund, and Office of the Coordinator of Inter-American Affairs, the Department of State, the Pan American Sanitary Bureau and the U. S. Public Health Service. Thomas Parran, surgeon general of the U. S. Public Health Service, will discuss "The Service of the Public Health Schools to the Nation's Health" and Charles-Edward A. Winslow, Dr. P.H., New Haven, Conn., "The Fruits of Inter-American Relations in the Field of Public Health." At one session the education of public health personnel in Mexico, Central and South American countries will be discussed by

Dr. Alberto Zwanck, professor of hygiene, University of Buenos Aires Medical School, Argentina.

Dr. G. H. Paula Souza, director, School of Hygiene, University of São Paulo, Brazil.

Dr. Herman Romero, professor of hygiene, University of Chile Faculty of Medicine, Santiago.

Dr. Mario Prado Ilesort, acting director of the Bacteriologic Institute, Santiago.

Dr. Ortelio Martinez Fortun, professor of hygiene, Havana Medical School, Cuba.

Dr. Manuel Bustamante, professor of hygiene, Mexico D. F.

Dr. Carlos Enrique Paz Soldán, professor of hygiene, Medical School, University of Lima Faculty of Medicine, San Marcos, Peru.

Dr. Federico J. Silvera, assistant professor of hygiene at the University of Montevideo Faculty of Medicine, Uruguay.

On Wednesday and Thursday the meetings will be limited to a working committee to consist of one representative from each of the schools of public health and one from each of the interested cooperating agencies. The conference will limit its discussions to the needs of students who aspire to a professional career in the field of public health.

## MINNESOTA

**Medical Panel for Workmen's Compensation Cases**—Governor Elve recently appointed fifteen physicians to serve on a medical panel provided by the last legislature to help decide medical questions arising in workmen's compensation cases. The physicians are Drs. John R. Aurelius, Carl B. Drake and Francis W. Lynch, St. Paul, Harold R. Tregilgas, South St. Paul, Robert G. Allison, Jay A. Myers and Viktor O. Wilson, Minneapolis, Frank J. Elias and John R. McNutt, Duluth, Willis S. Lemon and Charles G. Sutherland, Rochester, Albert J. Wentworth, Mankato, Warren E. Wilson, Northfield, Bertram S. Adams, Hibbing, and Berton J. Branton, Willmar. The law provides that in case a claim involving controversial medical questions is allowed by the commission after the taking of testimony a medical board of three physicians from the panel of fifteen shall be chosen to act in the case. The panel includes ten physicians with experience in the diagnosis and treatment of industrial diseases and five x-ray specialists.

## MONTANA

**Personal**—Dr. Lunsford D. Fricks has resigned as health officer of Helena and Lewis and Clark County because of poor health. His resignation was effective August 31. Dr. E. Martin Larson, Great Falls, was reelected president of the Montana Tuberculosis Association at its annual meeting, September 11. Mrs. Henriette Crockett, Helena, is executive secretary. Dr. Charles J. Bresee, Great Falls, has been appointed a member of the Montana Department of Public Health succeeding Dr. George F. Turman, Missoula, and Dr. Richard C. Monahan, Butte, has been named to succeed the late Dr. Enoch M. Porter, Great Falls.

## NEW YORK

**Cancer Programs**—November 10 has been designated a cancer teaching day in Poughkeepsie, the program to be under the auspices of the Dutchess County Medical Society, the Dutchess County Tumor Clinic and the Tumor Clinic Association of the State of New York. The speakers will be Drs. Norman Treves, New York, on "The Management of the Patient with Advanced Cancer," Arthur J. Wallingford, Albany, "Cancer of the Uterus," and Maurice Lenz, New York, "The Treatment of Carcinoma of the Larynx." An evening session will be addressed by Drs. Lloyd F. Craver and Archie L. Dean, New York, on "The Significance of Enlarged Lymph Nodes," and "Carcinoma of the Genitourinary Tract" respectively. A cancer evening will be held at Olean, November 11, under the auspices of the Cattaraugus County Medical Society with Dr. Craver, on "The Role of the General Practitioner in the Early Diagnosis of Cancer" and Dr. Clyde L. Randall, Buffalo, on "The Significance and Management of Abnormal Vaginal Bleeding" as the speakers. The state medical society and the division of cancer control of the state department of health are sponsoring these programs.

## New York City

**Information Center on Alcoholism**—The Research Council on the Problems of Alcohol, now located in Bronxville, N. Y., plans to open a New York Information Center to be located in the Grand Central district for information, without charge, regarding alcoholism and its treatment to alcoholic addicts and to all persons who have a problem connected with the use of alcohol. Family doctors, employers, clergymen, representatives of social agencies, educators and other civic leaders will be welcome at the center. A qualified man and woman will be on duty to provide information and lists of hospitals and private practitioners competent to treat alcoholism will be available. The council is also planning to move its office to New York.

**Blood and Plasma Bank Established**—The Blood Transfusion Association, formerly the Blood Transfusion Betterment Association, announces the establishment of a blood and dried plasma bank. Connected with the association's laboratory, the blood and dried plasma supply service is placed at the disposal of the community on an exchange basis and is available to hospitals as well as to individual physicians and welfare groups. The association will also continue its blood donor bureau service and continue to support blood research work in the field of transfusion and in the preventive application of the Rh factor in the blood transfusion of pregnant women. The laboratory and office of the Blood Transfusion Association provide twenty-four hour service at 2 West 106th Street.

**Department of Tropical Medicine Created at Columbia**—The establishment of a department in tropical medicine at Columbia-Presbyterian Medical Center has been announced. Dr. Harold W. Brown has resigned as dean of the School of Public Health of the University of North Carolina, Chapel Hill, effective January 1 to become the professor of parasitology under the new setup. He is also the first member of the faculty for training and research in tropical diseases, which will function under the immediate direction of the DeLamar Institute of Public Health, a division of the medical school. The project was made possible by a grant of \$150,000 from the Josiah Macy Jr. Foundation, which will also defray a concentrated five year program of research and teaching at the medical center (THE JOURNAL, Jan. 23, 1943, p. 271).

## NORTH CAROLINA

**New Division of Local Administration**—The North Carolina State Board of Health has created a division of local administration and divided the state into three districts as a part of the general reorganization of the board. The directors of the districts will be Drs. Joseph C. Knox, Raleigh district 1, Robert E. Fox, Raleigh district 2 and John Roy Hege, Winston-Salem district 3. Because of the emphasis being placed on venereal disease control during the years preceding the war, and especially during this war period, it has been deemed advisable to consolidate all administrative activities pertaining to the cooperative working relationship between the state board of health and local health units, including venereal diseases, in the new division of local administration. Each district director will have under his immediate supervision certain personnel and services now provided by the state board of health consisting of a senior public health physician in venereal disease control, consultant public health nurses, a sanitary engineer, sanitary inspectors and public health educators. For the time being a skeleton organization of the present division of county health work will be retained in the division of local administration. An acting director of epidemiology will be responsible for the work of the division of epidemiology excluding venereal diseases. The office of personnel officer has been created to handle all questions between the state and local health units and the merit system council.

## OHIO

**Hospital News**—The medical library of the late Dr. Orr A. Dickson Jefferson has been presented to the Ashtabula General Hospital, Ashtabula. The collection consists of six hundred volumes with publication dates running from 1896 to 1942.

**Food Handlers to Be X-Rayed**—The Gallia County Tuberculosis and Health Association is urging all food handlers, all employees of food handlers and all owners of food establishments to request their employees to be tuberculin tested by the public health nurses. The association plans to bear the expense of this program and will urge all positive reactors to be X-rayed. All persons complying with this offer and found

to be free from communicable tuberculosis will be given health certificates. The Gallia County Association is said to be the first association in Ohio to inaugurate a testing program for food handlers, according to the *Bulletin* of the National Tuberculosis Association.

## RHODE ISLAND

**President of State Society Honored**—Physicians and civic leaders from the Newport area gave a dinner recently in honor of Dr. Michael H. Sullivan, newly elected president of the Rhode Island Medical Society. Dr. Norman M. MacLeod, Newport, formerly president of the state society, was toastmaster at the dinner at which Dr. Sullivan was presented with an electric clock. Speakers included Superior Court Judge Mortimer A. Sullivan, Cornelius C. Moore, president of the city council, and Dr. Elihu S. Wing, Providence, president-elect of the state society.

**Internship Reduction Disapproved by State Board**—The Rhode Island Board of Examiners in Medicine announced that it does not approve a decrease in hospital internship from twelve to nine months for the duration of the war. At a recent meeting the board voted "that the licensing authority in this state would expect subsequent service in an army or navy station, field or general hospital for those physicians who were compelled by the military authorities to leave their regular internships after nine months of service. Physicians who are physically disqualified and who therefore do not enter the armed forces will be required to complete their usual twelve months of rotating internship." The board feels that this action will meet the military purpose of the proposal to reduce the internship without lowering the standards for licensure.

## WASHINGTON

**State Medical Election**—Dr. Raymond L. Zech, Seattle, was named president-elect of the Washington State Medical Association at its annual meeting in September and Dr. Vernon W. Spickard, Seattle, was inducted into the presidency. Dr. Herbert E. Coe, Seattle, was chosen vice president.

**Hospital News**—Plans are going forward to construct the Doctors Hospital in Seattle at a cost of \$800,000. It will have 200 beds and will be sponsored by the King County Medical Service Corporation. The Franklin Delano Roosevelt Hospital at Bremerton has been built at a cost of \$986,000. The hospital was financed by the Federal Works Agency and was expected to be opened for patients on November 1.

**Immunization Program**—The Tacoma City Health Department and Pierce County Medical Society are cooperating in a community immunization program against diphtheria, smallpox and whooping cough. The decision to launch this program followed a request from the Tacoma housing authority to the health department for immunization services in the Salishan and Lincoln Heights areas. A survey showed that the number of children immunized was not enough to prevent occurrence of these diseases in epidemic proportions. The new program recommends that the family physician should encourage immunization of his own patients. It will include mass immunization clinics at the Salishan and Lincoln Heights areas by the city health department, with the department giving special emphasis to the promotion of immunization by the family physician in news releases.

## WISCONSIN

**Personal**—Dr. William C. Keettel Jr., Madison, obstetric consultant for the Wisconsin State Board of Health, has been granted a leave of absence for service with the U. S. War Department. He has been assigned to a special project in Knoxville, Tenn., as chief of the division of obstetrics and gynecology, the *Quarterly Bulletin* of the state board of health reports.

**State Medical Election**—Dr. Charles Fidler, Milwaukee, was chosen president-elect of the State Medical Society of Wisconsin at its annual meeting in September and Dr. Russell M. Kurten, Racine, was installed as president. Mr. Charles H. Crownhart, Madison, is the executive secretary of the society. At the meeting Dr. Cornelius A. Harper, Madison, who recently retired as state health officer after many years of service, was presented with a scroll of appreciation in acknowledgment of his services.

## HAWAII

**Personal**—Oscar A. Allen, Ph.D., professor of bacteriology and a former chairman of the department of botany at the University of Hawaii, Honolulu, has recently been named chairman of the newly established department of bacteriology, according to Science.

## GENERAL

**Dr MacLachern Named Chairman of Council on International Relations**—Dr Malcolm I MacLachern, Chicago, is vice director of the American College of Surgeons, was named chairman of the Council on International Relations created by the forty-fifth annual convention of the American Hospital Association in Buffalo, September 12. The council will cooperate with Nelson Rockefeller, coordinator of the Office of Inter-American Affairs, and plans to assist in maintaining reciprocal relations with all hospital groups in the world (*THE JOURNAL*, September 25, p. 225).

**Russian War Relief Requests Books**—Dr Vladimir Ichedenko has requested the Russian War Relief, Inc., 11 East 55th Street, New York 16, to secure for Russian physicians a considerable number of medical textbooks, reference works and periodicals. Soviet institutions, according to Dr Ichedenko, are training two and one half times as many physicians as before the war. The shortage of paper and other material has greatly reduced Russian own publishing activities. Physicians who wish to contribute books may request a copy of the list by writing directly to the Russian War Relief.

**American Therapeutic Society**—The American Therapeutic Society will meet on November 15 at the Netherland Plaza Hotel, Cincinnati. Speakers will include:

- Dr. E. A. M. I. Jr., Miami, Fla., The Therapeutic Value of the Lactone in Dermatitis
- Dr. W. W. W. D. D., New York, Vitamin C and Shock: Results of Recent Research Studies
- Dr. E. C. H. H. D., N. C., Experience with Gonadotropic Therapy in Sterility
- Dr. Joseph B. Wolfe, Philadelphia, Renal Artery Thrombosis: Its Clinical Recognition and Management
- Dr. N. C. M. M. D., U. S. Army, Development of Aviation Medicine in the United States

Dr. Walter L. Vest, Huntington, W. Va., will deliver his presidential address on "William Shakespeare Therapist," at the annual banquet Monday evening.

**Industrial Hygiene Meeting**—The eighth annual meeting of the Industrial Hygiene Foundation will be held at the Mellon Institute, Pittsburgh, November 10-11. Included among the speakers will be:

- Charles I. Kettering, Dr. L. M. D., Dayton, Ohio, subject not announced
- Dr. Charles I. Kettering, Pittsburgh, How the Inhalation of Some Chemicals Affects the Eye
- Lieut. Col. William J. McConnell, M. C., A. U. S. Surg., Robert H. H. H., U. S. Public Health Service, and Lieut. Col. Raymond H. H., M. C., A. U. S., Recent Data on Health Hazards in War Industries
- Dr. Robert A. Kehoe and Edward J. Argent, Cincinnati, Fluorides as an Industrial Health Problem
- Dr. Oscar A. Sander, Milwaukee, Further Observations on Lung Changes in Electric Arc Welders
- Dr. Leroy L. Gardner and George W. Wright, Saratoga Lake, N. Y., Progress Report on a Study of Disability in Silicosis
- Dr. Clarence O. Sappington, Chicago, Health Problems of Women in Industry
- Dr. Edward J. Stieglitz, Washington, D. C., Health Problems of the Older Employee and Employer
- William M. Gaffner, Dr. S., Bethesda, Md., Reducing Manpower Losses
- Philip Drinker, Ch. E., Boston, Control of Health Hazards in Shipbuilding, Including Welding
- Francis R. Holden, Ph. D., and W. C. L. Hemen M. S., Pittsburgh, Report on High Points of Foundation Plant Surveys
- Lieut. Col. Theodore I. Hatch, S. C., Fort Knox, Ky., Physiologic Effects of Heat
- Allen D. Brandt, D. Sc., sanitary engineer, U. S. Public Health Service, Application of Engineering Control Measures in Munitions Plant
- Theodore C. Waters, lawyer, Baltimore, Legal Developments in 1943 Respecting Industrial Health
- Almon E. Roth, Washington, D. C., Healthful Working Conditions Improve Labor Relations

**Proposed School of Physical Therapy**—A committee has been named to survey the field of physical therapy and to submit recommendations for the establishment of an institution of physical therapy for the study and teaching of the subject. The work will be financed with a grant of \$25,000 from Bernard M. Baruch, New York, who has been interested in the subject for many years and who wishes to set up such a project as a memorial to his father, the late Dr. Simon Baruch, professor of hydrotherapy, Columbia University College of Physicians and Surgeons, New York. Dr. Ray Lyman Wilbur, chancellor of Stanford University, has been named chairman of the committee, other members of which include Drs. Kristian G. Hansson, medical director of the Physical Therapy School at the Hospital for Special Surgery, New York, Carl R. Comstock, Saratoga Springs, N. Y., Benjamin A. Strickland Jr., lieutenant colonel, M. C., U. S. Army, Tucson, Ariz., Charles F. Behrens, commander (MC), U. S. Navy, head of the x-ray department, Naval Medical Center, Bethesda, Md., John S. Coulter, medical director of the Physical Therapy School at

Northwestern University, Chicago, Dr. Frank H. Krusen, medical director of the Mayo Clinic Department and School of Physical Therapy, Rochester, Minn., and William T. Sanger, Lt. D., president of the Medical College of Virginia, Richmond.

**Southern Medical Association**—On November 16-18 the Southern Medical Association will hold its annual session in Cincinnati at the Netherland Plaza Hotel, with the Campbell-Kenton County Medical Society of Kentucky and the Academy of Medicine of Cincinnati acting as hosts. This is the first time the Southern Medical Association has met north of the Mason-Dixon line. At a general public session Tuesday night Dr. Tom D. Spies, Birmingham, Ala., and Cincinnati, will be presented with the Research Medal of the association "in recognition of his outstanding contributions to our knowledge of the science of human nutrition, especially in his elucidation of the earlier and better methods of diagnosis and treatment of disease." Other speakers at this session will include Dr. Harvey I. Garrison, Jackson, Miss., president of the association, on "The Nation's Most Valuable Asset and Its Greatest Problem." The general program includes the following speakers:

- Norman T. Kirk, surgeon general of the U. S. Army, The Care of Battle Casualties and the Casual Sick
- Dr. James F. Paulin, Atlanta, Ga., President, American Medical Association, The Future of American Medicine
- Dr. James W. Bruce, Louisville, Free Diet in Juvenile Diabetes
- Dr. I. Wallace Frank, Louisville, Surgical Treatment of Cancer of the Urinary Bladder in the Obese
- Dr. Walter Dean, Louisville, Otitis Media Still Takes Its Toll
- Dr. William A. Altmeier, Cincinnati, Penicillin in Surgery
- Dr. S. Spafford Ackerly, Louisville, Is There an Anxiety Component of Every Complaint?
- Dr. Nathan Chandler Foot, New York, Glandular Metaplasia of the Epithelium of the Urinary Tract
- Comdr. Edward L. Bortz (MC), U. S. Naval Reserve, New Horizons in Medicine
- Dr. Bernard H. Nichols, Cleveland, The Elevation of Excretory Urography in General Practice
- Major Archibald Fine and Lieut. Theodore B. Steinhausen, M. C., U. S. Chest Lesions in Ninety Thousand Prospective Aviation Cadets
- Drs. Hugo T. Engelhardt and Vincent deP. J. Derbes, New Orleans, Allergies to Liver Extract
- Thomas Parran, surgeon general, U. S. Public Health Service, Health Problems Ahead
- Dr. Louis A. Bunc, Rochester, Minn., Jeep Disease (Pilonidal Disease of Mechanized Warfare)
- Dr. Harold H. Kuhn, Durham, N. C., Degenerative Fibrosis with Neuromatous Proliferation of Plantar Nerve (Morton's Metatarsalgia)
- Dr. Paul H. Holinger, Chicago, Post Thyroidectomy Laryngeal Paralysis: Medical and Surgical Aspects
- Dr. Edward H. Carr, Dallas, Texas, Ocular Headaches

The section on medical education and hospital training will offer the following program on Tuesday:

- Dr. Frank R. Bradley, St. Louis, Education of the House Staff Now and After the War
- Colonel James R. McDowell, M. C., U. S. Army, Postgraduate Training in Army Air Force Hospitals
- Dr. Stanley E. Dorst, Cincinnati, The Effect of the Accelerated Program on Faculty and Students After an Experience of Eighteen Months
- Lieut. Col. Earl H. Perry, M. C., U. S. Army retired, The Student's Army Specialized Training Program in Action
- Lieut. Col. Rottig Arnold Griswold, M. C., A. U. S., The Function of the Service Command Consulting Surgeon

Other groups meeting during the session of the Southern Medical Association include the American Academy of Pediatrics, region 2, and the American Public Health Association southern branch, which will hold only a luncheon meeting of the governing council this year.

## FOREIGN

**Personal**—The American Bureau for Medical Aid to China announced on October 8 the safe arrival at Calcutta of four medical specialists who are returning to China under its auspices. Miss Evelyn Lin, who will be superintendent of nurses at the National Central University Medical School at Chengtu, Miss Hui-yn Wang, who will be director of public health nursing in Szechuan Province, Dr. Y. K. Wu, who will specialize in chest surgery at the Central Hospital in Kweiyang, and C. S. Hsueh, public health statistician, who will join the staff of the National Institute of Health at Chungking.

## Deaths in Other Countries

**Dr. Cecil Rowntree**, vice president of the International Cancer Union, died on October 14 at his home, Little Warren, East Grinstead, Sussex, aged 63. He was educated at the University College, London, and had served as Hunterian professor of surgery at the Royal College of Surgeons of England. Dr. Rowntree was consulting surgeon to the Royal Cancer Hospital and emeritus surgeon to the Woolwich Memorial Hospital. He was also chairman of the Westminster Division of the British Medical Association and a fellow of the British Association of Surgeons.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Sept 17, 1943

#### The Proposed National Medical Service The Government's Proposals

The objections of the medical profession to certain features of the government scheme for a comprehensive medical service have been stated in previous letters. An address by Mr Ernest Brown minister of health to the annual meeting of the Association of Welsh Insurance Committees is of unusual importance as it deals with some of these objections and also discloses the government's proposals more fully than has been done before. He stated that when these were published the fullest opportunity would be given for discussion by the medical profession, local government and the public. Criticism could then be based—for the first time—on full knowledge of what the government has in mind. The first aim must be to cut down some of the limitations on the present service, so that people can get consultant specialist, hospital and convalescent treatment, Mr Brown said. The scheme must aim at prevention as well as cure. In spite of statements to the contrary, the minister stated, it was the avowed intention of the government to preserve the important principle of free choice of doctor and clinical freedom of the doctor in treatment. He hoped that the scheme would secure a fuller service of practitioners in congested areas where they were now insufficient. The service would be based on the family as a unit and the general practitioner as its primary attendant. Yet it had been alleged that the government wanted to abolish the family doctor. What was wanted, he said, was to provide a family doctor for millions for whom one was not now available.

Nearly two years ago the government announced its intention of coordinating the voluntary and municipal hospital systems. The new health service, it was explained, would render possible a completely integrated medical service, starting from the family doctor and embracing all institutional services. This would also make available to doctors a full consultant and specialist service from the hospitals. The government also hoped to give the general practitioner a better service for post-graduate courses, so that he could keep abreast of modern developments. Perhaps even more important, the government must see that he had the opportunity for leisure to get the best possible advantage from these courses.

#### Changes at the Royal College of Surgeons

At a meeting of the fellows of the Royal College of Surgeons the president, Sir Alfred Webb-Johnson, reviewed important recent changes. The primary examination for the fellowship has been made entirely postgraduate, with pathology introduced as an additional subject to anatomy and applied physiology. The interval between graduation and entry for the final examination is now two years. The damage done by bombing to the Royal Colleges of Physicians and Surgeons opened the question of the three Royal Colleges (the third being the College of Obstetricians and Gynecologists) working together in a combined building or in adjacent buildings. The present site of the Royal College of Surgeons had great advantages for such a building. The value of the buildings still standing was estimated at \$1 000 000. The president reported the definite view of the council that there must be a portal to the medical profession under the sole control of a professional body, and therefore the council disagreed with the suggestion that a university degree should be a *sine qua non* for medical qualification.

#### THE BEVERIDGE SCHEME

A representative committee of the medical profession, the president reported, was discussing the Beveridge scheme with the minister of health. The Royal Colleges were represented by their president, and he had insisted that he must be regarded as representative of consultant surgery. For this purpose the Royal Colleges had held a conference of representatives from all centers in order to obtain the views of all consultants throughout the country. They maintained that some freedom must be left both to doctor and to patient and declined to countenance the conversion of a free profession into a public service. An individual must be left free to enter the medical profession and to practice, they held. The profession must have a large say in the organization and management of the national health service. The administrative structure must allow a generous representation of the profession. The health service must be comprehensive, and the local health authorities as at present constituted did not provide satisfactory areas for dealing with the needs of the population. Some scheme of regionalization was essential. The government declared its intention that opportunities for private practice should be maintained, and the most reasonable way of providing for this seemed to be to apply the national contributory scheme only to those who needed such provision. In planning for positive health and the prevention of disease, the nonmedical proposals of the scheme—particularly improved housing, avoidance of unemployment, children's allowances, disability pay and old age pensions—were more important than revolutionary changes in medical practice.

#### A Practical Application of the Discovery of the Rh Factor

In a circular to local health authorities, the Ministry of Health points out a practical application of the discovery in 1940 by an American scientist that 85 per cent of the American and British white population have a previously unrecognized factor in their red corpuscles. As it was also found in the rhesus monkey it is called the Rh factor. A particular variety of jaundice and anemia has been known to occur in infants for some years. It seems to run in families, and often several infants in one family are affected. Some are stillborn, and others live only a short time. It has been found that these jaundiced infants nearly always have the Rh factor in their red cells, but their mothers are Rh negative. The infants have been jaundiced and anemic because before birth their red cells have passed into the mother's circulation, where antibodies to the Rh positive cells have developed and passed back into the infant's blood, destroying its red cells. If, however, the infant is given a blood transfusion with Rh negative blood, these antibodies are soon destroyed and its life is saved. If the mother should need blood transfusion after the infant is born, it has been found that she should also receive Rh negative blood.

#### A Film of Surgery in Chest Disease

A remarkable film entitled *Surgery in Chest Disease* has been shown at a London theater to a distinguished medical audience. It is the first of a series of medical films to be made for the British council and is primarily intended for overseas medical audiences. Surgeon Rear Admiral Gordon Gordon-Taylor, a member of the medical panel of the British Council, said that the film had been made by Gaumont-British Instructional with the cooperation of medical resident medical and auxiliary staffs of the Brompton Hospital for Diseases of the Chest where most of the scenes were taken. The general purpose of the film is to show the scope and progress of chest surgery in Britain. Its climax is an operation for total removal of a lung affected with cancer, an operation performed for the first time only ten years ago, one which even now can be undertaken only by a few surgeons of special ability.



## BRAZIL

(Dr. O. K. Under Correspondent)

Sept. 25, 1943

## Results of Blood Cultures in Pemphigus Foliaceus

As reported in a previous letter (*THE JOURNAL*, Jan. 23, 1943, p. 276) many cases of a malignant type of pemphigus foliaceus (fogo selvagem or wild fire) have occurred and continue to occur in the rural areas of the central states of Brazil and in the neighboring regions of Paraguay and Bolivia as well. The main focus of the disease is the state of São Paulo where hundreds of cases are already known and where a special service has been organized to combat the disease. This service under the direction of Dr. J. P. Vieira has a hospital, several outpatient clinics and visiting doctors. The cause of the disease is still unsolved, even its infectivity and its contagious nature are subjected to much discussion. Dr. J. Aranha Campos, assistant director of the São Paulo service, has published a study of the results of blood cultures from 600 cases during the febrile stage of the disease. The culture medium used was glucose broth with liquid petrolatum in 7:6 in tubes of 10 cc. Equal parts of blood and culture medium were mixed. In 139 of these cases with temperature of 39°C (102.2°F) and above streptococci mostly of the hemolytic type, were found in pure culture. As controls, Dr. Campos made blood cultures from all other patients without fever or subjected to artificial fever and these cultures were always negative or were positive only for *Staphylococcus albus*. The patients were divided into five groups according to the severity of the disease. The fever is rare in patients with slight symptoms or in the regressive stage of the disease. But the feverish spells are frequent in patients with generalized cutaneous lesions. The fatal cases present several of these feverish spells in the last stage of the illness. The author emphasizes the close relationship between the streptococcal bacteremia and the fever spells and the spread of the bullous cutaneous lesions. The high hospital fatality rate of the disease (about 40 per cent) is explained by Dr. Campos as the effect of the streptococcal toxemia, which coincides with the final diarrhea and hyperpyrexia. In the patients subjected to artificial fever the general condition is not modified, and spread of bullous dermatitis does not occur. Dr. Campos concludes that the hemolytic streptococcus is probably the cause of the disease.

## Cancer and Race

Some time ago Dr. Joaquim E. de Alencar published the first part of a study on the epidemiology of cancer in Brazil, the main features of which have been reported in a previous letter (*THE JOURNAL*, June 12, p. 459). In a new paper he presents the mortality from cancer in Rio de Janeiro according to races and nationalities. As the composition of the city population is not known in relation to color, because this kind of information has never been included in the censuses, and as the information regarding the nationalities would have to be derived from the last census, which was taken in 1920, Dr. Alencar decided to study the trend of mortality from 1903 to 1941, not as specific death rates for each color or nationality, but as a ratio between the absolute number of deaths from cancer to the absolute number of deaths from all causes, in each specific group of population. During the thirty-nine years included in the study the ratio of deaths from cancer to the deaths from all causes in the general population has risen steadily from 0.0013 in 1903-1905 to 0.0036 in 1939-1941, which corresponds to an increase of 174 per cent. The increase has been greater for the white than for the colored people: 201 per cent for the white, 161 per cent for the mulatto and 127 per cent for the Negro.

The differences in the increase of a similar ratio for the several nationalities into which the population is divided in the Brazilian statistical returns present interesting facts. The average increase of 174 per cent for the general population is differentiated as follows for the various nationalities: Brazilian 187 per cent, Portuguese 213, Italian 115, Spanish 310, German 306, English and Anglo-American 400, other European 149 and Asiatic (mainly Syrian) 385. It is not easy to grasp the complete significance of these figures, but Dr. Alencar points out the larger increase of the ratio in the population of European descent, particularly Nordic, a fact similar to the higher death rates shown by him in the first part of his study for the southern Brazilian cities where the amount of people of European descent is larger. It is interesting to recall, from the first part of the study, the increasing trend of the mortality from cancer in Rio de Janeiro since the beginning of the century: 33.8 per hundred thousand in 1902-1911, 41.7 in 1912-1921, 45.9 in 1922-1931 and 55.2 in 1932-1941. For the last five years, 1938-1942, the progression of the cancer death rate has been 55.0, 59.0, 65.3, 66.4 and 67.3.

Healthy Carriers of *Endameba histolytica* Cysts

Dr. A. Franco do Amaral from the Department of Parasitology of the University of São Paulo, and Dr. C. Avila Pires, physician of the penitentiary of the state of São Paulo, report the results of a survey in a sample of 300 inmates of the penitentiary to study the incidence of *Endameba histolytica* cysts in healthy persons. All the individuals examined were apparently in good health at the moment of the examination. The examinations have been made by the Faust zinc sulfate centrifugal flotation method. As far as the authors are aware it is the first time this method has been used for an extensive survey in Brazil. The individuals in the sample were subjected to a series of successive examinations, positive carriers having been found even in the fifth examination. Only the sixth examination showed no more cyst passers. The examinations were performed for each person during a period of twenty days with the hope of obtaining a fecal specimen corresponding to a stage of maximum production of cysts. Of the total of 300 persons examined 118 were positive for cysts in the total of five examinations (39.3 per cent). The first examination showed 64 positive results (21.3 per cent), the second 24 (8.0 per cent), the third 17 (5.6 per cent), the fourth 10 (3.3 per cent), the fifth 3 (1.0 per cent) and the sixth none. The large majority of the positive carriers were agricultural laborers from scattered districts of the state. The very good hygienic conditions of the penitentiary led the authors to exclude the possibility of the infection having been contracted at the institution. Such a high incidence of cysts carriers, as compared with that observed in other countries where the same method has been employed, suggests its use to survey other groups of healthy persons in Brazil in order to furnish a basis for estimating the real significance of amebiasis in the country.

## Marriages

GEORGE E. ROULHAC, Florence, Ala., to Miss Polly Ann Billington of Franklin, Tenn., near Oran, Algiers, North Africa, October 2.

HERBERT RICHARDSON DOWE, Columbia, S. C., to Miss Jewel Gwendolyn Rhinehart of Leesville, September 9.

TOM JERRY SMITH, Covington, Ky., to Miss Martha Geraldine Allen of St. James, Mo., in August.

LYMAN DAVID HEIM, Schuylkill Haven, Pa., to Miss Lulu Longenberger of Nuremberg, in August.

FRANK S. CROSS, Lansing, Mich., to Miss Mary Charlotte Keith of Chicago, June 29.

ALBERT EDEN CREMER, St. Louis, to Miss Evelyn Edith Kline of Columbia, S. C., in July.

## Deaths

**Joseph Milton Heller** \* Washington D. C., Georgetown University School of Medicine, Washington 1896 an Affiliate Fellow of the American Medical Association, assistant demonstrator of anatomy at his alma mater from 1897 to 1898, professor of tropical medicine at the George Washington University School of Medicine from 1904 to 1910, dispensary staff member at the Emergency and Garfield hospitals from 1896 to 1898, veteran of the Spanish-American War, Philippine Insurrection and World War I in charge of supply of water in Manila during cholera epidemic in 1902 and received commendation by the late President William Howard Taft, then governor general of the Philippines, commissioned major in the medical reserve corps of the U. S. Army in 1917. Later served as division sanitary inspector and acting chief surgeon of the 90th division, commanding officer of Base Hospital at Fort Riley, Kan., General Hospital number 23, Hot Springs, N. C., and number 22 in Philadelphia, lieutenant colonel in the medical corps of the U. S. Army from 1918 to 1922, colonel in the medical reserve corps not on active duty, participated in General Lawton's advance in northern Luzon and surgeon of Major Batchelor's "Lost Battalion" recommended for Congressional Medal of Honor in 1915 received Silver Star citation from the President of the United States for attending wounded under fire, Battle of Naguilian, Luzon, Dec. 7, 1899, since 1938 surgeon general of the Military Order of the World War, for many years national secretary of the Carabao, organization of officers who served in the Philippines, member of the Military Order of Foreign Wars, Military and Naval Order of the Spanish American War and the Association of Military Surgeons of the United States, died in the Naval Hospital National Naval Medical Center Bethesda, Md., October 11, aged 71, of coronary artery disease.

**George C. Chene**, Detroit, Detroit College of Medicine 1905, member of the Michigan State Medical Society and the Radiological Society of North America, past president of the Detroit Roentgen Ray and Radium Society, curator of the museum and clinical assistant in gynecology at his alma mater from 1908 to 1910, clinical assistant in gynecology in 1911, clinical assistant in roentgenology from 1911 to 1913, assistant clinical professor of roentgenology from 1913 to 1918, professor and head of roentgenology from 1918 to 1920 and assistant professor of roentgenology, 1920-1921, established the first x-ray laboratories at St. Mary's and Providence hospitals in Detroit and at the Hotel Dieu Hospital in Windsor, Ont., Canada, his retirement from active duty at the Providence Hospital was marked by the staff with a public banquet at which he was the recipient of an honor plaque for long and faithful service, secretary of the hospital staff for many years, staff member of St. Mary's, Receiving, Eloise and Providence hospitals either as attending or as consulting radiologist, died in the Harper Hospital August 31, aged 61, of carcinoma of the tongue and throat.

**Peter Whitman Rowland**, University Miss., Memphis (Tenn.) Hospital Medical College 1882, professor of pharmacology at the University of Mississippi School of Medicine, member and past president of the Mississippi State Medical Association and the Mid South Post Graduate Medical Assembly, fellow of the American College of Physicians, contract surgeon, University of Mississippi Student Army Training Corps during World War I, reported to be first physician to administer oxygen through the nose tube in the treatment of pneumonia using the device on a patient in 1903, the medical library at the University of Mississippi was named in his honor in 1939, two years previously he volunteered his services to augment the library and became field director on the staff of the Bramlett Hospital Oxford, died in Oxford, October 14, aged 82 of coronary thrombosis.

**Edmund Pendleton Shelby** \* Sarasota Fla., University of the City of New York Medical Department 1891, clinical professor of medicine at the University and Bellevue Hospital Medical College New York from 1918 to 1934, formerly instructor in pharmacology and therapeutics at the Cornell University New York, for many years on the staff of the New York City Hospital, past president of the New York Pathologic Society and the West End Medical Society, formerly chairman of the section on medicine of the New York Academy of Medicine, fellow of the American College of Physicians, consultant in medicine at the Florida Medical Center, Venice, author of "Hodgkin's Disease," 1907 and "Balancing the Physiological Budget," in *Hypa* 1936, died in Lexington Ky., September 22, aged 76 of carcinoma.

**Charles P. Arzt**, St. Paul University of Minnesota College of Medicine and Surgery, Minneapolis, 1895, died July 29, aged 73, of ventricular fibrillation.

**Alfred Goodrich Bailey**, Berkeley, Calif., Homeopathic Hospital College, Cleveland, 1889, died August 22, aged 76, of tuberculosis and nephritis.

**Elizabeth Ethel Bowen**, Lincoln Park, N. J., Woman's Medical College of Pennsylvania, Philadelphia, 1907, died August 4, aged 61, of heart disease and multiple myeloma.

**Arnold Louis Brandt** \* Pacific Beach, Wash., Washington University School of Medicine, St. Louis, 1902, formerly associated with the Indian Service, died in the Barnes Hospital, St. Louis, July 5, aged 66 of retroperitoneal hemorrhage due to ruptured aneurysm of the abdominal aorta.

**Mills C. Brasher**, Linden, Ind., Bennett College of Eclectic Medicine and Surgery, Chicago, 1889, on the staff of Culver Hospital, Crawfordsville, where he died August 13, aged 78, of appendicitis, gallstones and peritonitis.

**John Joseph Brennan**, Worcester, Mass., Harvard Medical School, Boston 1886, member of the Massachusetts Medical Society, in 1937 was presented with a scroll commemorating fifty years' membership in the Worcester District Medical Society, on the staffs of the Worcester City Hospital and St. Vincent Hospital, where he died August 26, aged 79, of arteriosclerosis.

**John L. Brown**, Campbell, Mo., St. Louis College of Physicians and Surgeons 1890, member of the Missouri State Medical Association, died in the Poplar Bluff Hospital, July 2, aged 73, of chronic myocarditis.

**John W. Brown**, Jefferson Township, Ind., Hospital College of Medicine, Louisville, Ky., 1881, died July 10, aged 91, of cerebral hemorrhage.

**Mabel Margaret Wirt Butka**, Pomona, Calif., College of Medical Evangelists, Loma Linda and Los Angeles, 1918, on the staff of the Pomona Valley Hospital, died in La Verne August 22, aged 48, of accidental carbon monoxide poisoning.

**Malcolm Samuel Campbell**, Malvern, Iowa, Tufts College Medical School, Boston 1915, served one month on the staff of the Binghamton (N. Y.) State Hospital as resident in psychiatry, died in Binghamton August 7, aged 52, of subdural hematoma.

**William Price Connally**, McGregor, Texas, Medical Department of Tulane University of Louisiana, New Orleans, 1898, a captain in the medical corps of the U. S. Army during World War I, died in a Waco hospital July 11, aged 72, of cerebral hemorrhage.

**Isaac Gladstone Cook**, St. Louis, St. Louis College of Physicians and Surgeons 1911, served during World War I, died in the Veterans Administration Facility, Jefferson Barracks, August 8, aged 69 of bronchopneumonia.

**Lucy Gusta Coon** \* Sterling Ill., State University of Iowa College of Medicine Iowa City 1927, medical adviser for women at the University of Illinois Urbana, from 1936 to February 1943 and since the latter date in a defense plant at Dixon, died in the Grant Hospital, Chicago, August 29, aged 47 of pulmonary embolism.

**Louis Leopold Davidson**, Newark, N. J., University of Vermont College of Medicine Burlington 1902, Cornell University Medical College, New York, 1903, member of the Medical Society of New Jersey, also a lawyer, formerly coroner of Essex County, a director of the Lincoln National Bank, on the staff of the Newark Beth Israel Hospital, where he died August 28, aged 63 of cerebral hemorrhage.

**Benjamin Lawrence Dorsey**, Los Angeles, Marions-Sims College of Medicine St. Louis 1896, Barnes Medical College St. Louis 1899, formerly professor of gynecology at the Barnes Medical College, died in Guadalajara, Mexico August 2, aged 73 of acute enterocolitis.

**John William Eckstein**, Ryan, Iowa, Northwestern University Medical School Chicago 1916, served in France and as a first lieutenant in the medical corps of the U. S. Army during World War I, died in the Veterans Administration Facility, Des Moines August 7, aged 53 of lobar pneumonia.

**Walter Brownley Foster**, Richmond, Va., Medical College of Virginia, Richmond 1901, associate public health physician for the Virginia Department of Health since 1940, director of public welfare for the city of Richmond from 1924 to 1940, organized the city health department in Roanoke and served as health officer from 1910 to 1924, past president of the Roanoke Academy of Medicine and a member of the governing council of the American Public Health Association, died August 10, aged 65 of coronary thrombosis.

Frank Harrold Grandy # Seattle, Indiana University School of Medicine 1926, died August 15, aged 45, of hypertension and cerebral hemorrhage.

William Walter Grantier, Buffalo, University of Buffalo School of Medicine 1899, died August 8, aged 67, of chronic myocarditis, arteriosclerosis and cerebral hemorrhage.

Richard Watson Graves, Arlington, Texas, University of Louisville (Ky.) Medical Department, 1883, died August 5, aged 85, of senility.

Samuel Thomas Gray # Albia Iowa State University of Iowa College of Medicine Iowa City, 1889, died in Wichita, Kan. August 12, aged 77, of uremia.

Charles Gregory Griffin Miami Fla. University of Nashville (Tenn.) Medical Department 1908, member of the Florida Medical Association, died in Nashville, Tenn. August 31, aged 60, of coronary occlusion.

Archer Thomas Hampton, Oilwood, Texas, Southern Methodist University Medical Department Dallas 1913, member of the State Medical Association of Texas, chairman of the governing board of the Orphans Home at Corsicana and the Old Folks Home at Lums, died July 7, aged 59, of coronary thrombosis.

George Wesley Horrom, Rolla, Mo., Medical College of Indiana Indianapolis 1894, member of the Missouri State Medical Association, past president of the Phelps-Crawford Counties Medical Society, died July 10, aged 73, of cerebral hemorrhage.

Andrew Richard Johnson, Ivanti, Minn., University of Minnesota Medical School Minneapolis 1929, member of the Minnesota State Medical Association, on the staff of the Ashbury Hospital Minneapolis where he died July 25, aged 44, of pulmonary embolism following an appendectomy.

Frederick Marshman Kennison, Boston Tufts College Medical School Boston 1905, member of the Massachusetts Medical Society, died suddenly July 31, aged 80.

James Oscar Meade, Mendota, Va., Tennessee Medical College Knoxville 1898, member of the Medical Society of Virginia, died July 17, aged 70, of hypertension and thrombosis.

John William Montrose, Grass Valley, Calif., Bellevue Hospital Medical College New York, 1892, died in Stockton July 26, aged 84, of senility.

James T. Myers # Hotchkiss, Colo., University Medical College of Kansas City, Mo., 1894, served as health officer, died July 28, aged 75, of cerebral hemorrhage.

William Frederick Nienstedt, Hartford, Kan. College of Physicians and Surgeons, Medical Department Kansas City University, Kansas City 1898, member of the Kansas Medical Society, died in the Newman Memorial County Hospital, Emporia, July 6, aged 67, of coronary thrombosis and sclerosis.

Albert Sidney Oburn # Altoona, Pa., Jefferson Medical College of Philadelphia, 1896, a member of the exemption board during World War I and recently a member of the induction board, a director of the Blair County Tuberculosis Society, chief of the medical staff of the Altoona Hospital, died August 9, aged 68, of coronary occlusion.

Richard John O'Connell, Chicago, Rush Medical College, Chicago, 1899, formerly instructor in medicine at the Loyola University School of Medicine for many years on the staffs of St. Joseph's and West Side hospitals, Chicago, and St. Francis Hospital, Evanston, Ill., where he died August 22, aged 74, of auricular fibrillation and chronic myocarditis.

Frederick Strattner Orem # Baltimore University of Maryland School of Medicine, Baltimore, 1900, associate in pediatrics at his alma mater, on the dispensary staff of the University Hospital, where he died August 8, aged 70, of nephritis.

Horace M. Paynter, Salem, Ind., University of Louisville (Ky.) Medical Department, 1890, died August 18, aged 77, of cerebral hemorrhage, hypertension and diabetes mellitus.

Thomas H. Pope # Newberry, S. C., Medical College of the State of South Carolina, Charleston, 1908, past president of the Newberry County Medical Society, member of the board of trustees of his alma mater, member of the District Advisory Medical Board of Selective Service, died August 6, aged 67, of coronary occlusion and hypertension.

Francis M. Roberts, Jacksonville, Ill., Cincinnati College of Medicine and Surgery, 1900, member of the Illinois State Medical Society, formerly postmaster and member of the school board of Lynnville, served three terms as mayor of Chapin and several terms as member of the school board, at one time superintendent of the Morgan County Tuberculosis Sanatorium

"Oaklawn", on the staffs of Our Saviour's Hospital and the Passavant Memorial Hospital, where he died August 6, aged 73, of cerebral hemorrhage.

Allen Charles Tiffany, Mackinaw City, Mich., Detroit College of Medicine and Surgery, 1914, served overseas and is a major in the medical corps of the U. S. Army during World War I, major in the medical reserve corps not on active duty, served on the city council for a number of years, on the courtesy staff of the Little Traverse Hospital, Petoskey, where he died August 10, aged 63, of coronary and cerebral arteriosclerosis and hypertension.

Juan Arango Villegas, Cliffside Park, N. J., Jefferson Medical College of Philadelphia, 1929, member of the Medical Society of New Jersey, school physician for Cliffside Park and formerly at Fairview, on the staffs of Holy Name Hospital, Tenack, Englewood Hospital and North Hudson Hospital, Weehawken, died in the Medical Center of Jersey City August 18, aged 41, of pneumonia.

William Desmond Wagar, Michigan, N. D., University of Minnesota College of Medicine and Surgery, Minneapolis, 1898, member of the North Dakota State Medical Association, for many years mayor, died in Kingston, Ont., Canada, July 23, aged 68, of carcinoma.

Bruce Courtney M. Whyte # Battle Creek, Mich., Trinity Medical College, Toronto, Ont., Canada, 1904, formerly on the staff of the Battle Creek Sanitarium, on the staff of the Community Hospital, where he died August 17, aged 64, of carcinoma of the stomach and myocardial insufficiency.

#### DIED WHILE IN MILITARY SERVICE

William Morgan Chew, New York, University of Virginia Department of Medicine, Charlottesville, 1931, member of the Medical Society of the State of New York and the American Academy of Ophthalmology and Otolaryngology, specialist certified by the American Board of Otolaryngology, formerly a member of the staffs of Bellevue and St. Luke's hospitals, entered the medical corps of the U. S. Naval Reserve as a lieutenant commander on June 24, 1942, died in the Johns Hopkins Hospital, Baltimore, September 4, aged 39.

Hugh Beauregard Disharoon # Lieutenant Colonel, M. C., U. S. Army, Lewisburg, Tenn., Vanderbilt University School of Medicine, Nashville, 1935, appointed a lieutenant in the medical reserve corps of the U. S. Army on June 12, 1935 and began active duty in the medical corps of the regular Army on July 1, 1940, assigned to the Fitzsimons General Hospital, Denver, rose through the various ranks to that of lieutenant colonel on Jan. 15, 1943, died in the Station Hospital, Fort Benning, Ga., August 22, aged 32, of virus pneumonia.

John Deetz Houck, Scranton, Pa., Harvard Medical School, Boston, 1941, appointed a lieutenant in the medical corps, Army of the United States, April 23, 1942, began active duty Aug. 1, 1942, attached to the 407th Infantry, Camp Maxey, Texas, later commissioned a captain, died, in the O'Reilly General Hospital, Springfield, Mo., October 3, aged 27, of cerebral edema due to brain tumor of the left frontal lobe.

Thomas Lacy Morrow # Medical Director, Captain, U. S. Navy, Mebane, N. C., University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1915, appointed an assistant surgeon in the U. S. Naval Reserve, April 10, 1917 and on June 23, 1917 a lieutenant (jg) in the medical corps of the U. S. Navy, advanced to the rank of captain in July 1941, served aboard the U. S. S. *Nero*, *Eurona*, *Patoka* and *Tulsa*, served at the Naval Base, Cardiff, Wales, with the Destroyer Force, the Atlantic Fleet, at the Naval Hospital, and the Pharmacist's Mates' School, Norfolk, Va., the Marine Barracks and Naval Hospital at Parris Island, S. C., the Naval Hospital, Boston, and on the Asiatic Station, fellow of the American College of Surgeons, awarded a letter of commendation for his work as head of the Medical Relief Unit at Belize, British Honduras, after the hurricane of September 1931 and the medal of distinction by the president of Nicaragua for services rendered in that country from May 1931 until November 1932 as brigade surgeon, second brigade of marines, died at Guilford College, N. C., August 11, aged 54, of cerebral hemorrhage, while on leave from his post of duty at the Naval Hospital, Marine Barracks, New River, N. C.

## Bureau of Investigation

### MISBRANDED COSMETICS

#### Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and are designated C N J. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

**Ambrosia Tightener**—Hinz Ambrosia Inc New York Shipped between Dec 6 1940 and Jan 3 1941 Composition in stringent consisting essentially of alcohol, water, zinc phenolsulfonate and perfume Misbranded because of the following false and misleading representations on label and in accompanying circular: Tightener for large pores wrinkles oiliness Tends to prevent the enlargement of pores It is especially useful to lessen oiliness and aids in clearing up pimples and muddy complexions resulting from external causes Stimulates the skin Ambrosia cream contains ingredients that resemble the natural sebaceous oils and fats of the human skin It helps to make dry skin smooth and thus aids in removing the annoying tiny lines caused by skin dryness —[C N J F D C 84 February 1943]

**Camelline**—Walter M Willett San Francisco Shipped Aug 28, 1941 Composition essentially calcium carbonate bismuth subcarbonate alcohol and water Misbranded because circular accompanying package falsely represented that this product when used as directed was a natural aid to beauty and greater charm would keep the skin delicate and youthful, would preserve the youthful creamy appearance of the skin was a stimulating lotion, would protect the skin against wind and sun was beauty and youth, would protect the face against the ravages of weather and prevent the disagreeable effects of exposure to the sun and wind —[C N J, F D C 85 February 1943] This product was also misbranded under the provisions of the law applicable to drugs

**Chin Firm**—Burtley Company New York Shipped between April 1 and 11, 1941 Composition essentially a clay with water and perfume Misbranded because of false and misleading representations that this product would produce a firm chin and throat line besides correcting crow's feet —[C N J F D C 87 February 1943]

**Chin Up**—L R Kallman and Company Chicago Shipped June 3 1941 Composition 53.4 per cent of alcohol with tannic acid water and perfume Misbranded because it contained a larger amount of alcohol than the 39 per cent declared on the label Further misbranded because label falsely represented that the use of this product would result in elimination of crepey skin or flabby tissues of neck or skin —[C N J F D C 88 February 1943]

**La Bonita Hollywood Skin Stimulant and La Bonita Hollywood Texture Oil**—House of Hollywood Los Angeles Shipped May 2, 1941 Composition not reported The first named was misbranded because its designation falsely represented that the product contained some ingredient capable of stimulating the skin The second was misbranded because of the misleading term Texture Oil in its name and because the directions for use gave the false impression that this preparation would affect the structure of the skin whereas it would not —[C N J F D C 86 February 1943]

**Natone Natural Oil for the Hair**—J D Bentley Los Angeles Shipped June 20, 1941 Composition essentially small amounts of potassium arsenite, fats perfume, water and a small amount of phenol Misbranded because label falsely represented that this product would promote the growth of hair, since it did not contain any ingredient capable of producing that result —[C N J F D C 89 February 1943]

**S T D 'The' Hair Tonic**—George A Dustin Chicago Shipped Dec 17 1941 Composition essentially small amounts of potassium arsenite, sodium borate and water The potassium arsenite contained arsenic equal to 0.2 gram per hundred cubic centimeters Misbranded because of the following false and misleading statements in labeling: Stops the dandruff The Hair Tonic for dandruff itching scalp and all scalp ailments Wet scalp with Ess Tee-Dee Hair Tonic and massage every day until scalp is free from dandruff For best results shampoo the hair once each week then apply Ess Tee-Dee Hair Tonic after hair has dried and continue applications every third or fourth day until scalp is free from dandruff and then use Tonic only as often as it is necessary to keep the scalp in a clean and healthy condition The Hair Tonic —[C N J F D C 90 February 1943] The product was also declared misbranded under the provisions of the law applicable to drugs

### DANGEROUS TO HEALTH

#### Because of Inadequate Warnings on Labels

[EDITORIAL NOTE—These abstracts differ from other abstracts of Notices of Judgment issued by the Food and Drug Administration of the Federal Security Agency which have appeared in these pages in that they deal with nostrums which were misbranded because their labels failed to carry adequate warnings against giving them to children or using them in those pathologic conditions in which they might be dangerous to health, or caution against unsafe dosages or methods or duration of administration or application, for the protection of the user. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

**Real Lax Chewing Laxative**—Pennsylvania Drug Products Corporation Pittsburgh Shipped between July 10 and Aug 7 1941 Composition a peppermint flavored gum containing phenolphthalein Misbranded because label failed to warn adequately against use in those pathologic conditions wherein product might prove dangerous to health or against unsafe duration of administration for protection of user since label did not contain a warning against use when abdominal pain nausea vomiting or other symptoms of appendicitis are present and against frequent or continued use which might result in dependence on laxatives —[D D N J F D C 618 February 1943]

**T S B Saline**—T S Burns and Boys Company Buffalo Shipped March 18 1941 Composition essentially a mixture of partially dehydrated epsom salt and Glauber's salt with traces of magnesium carbonate and sodium chloride Misbranded because indefinite dosage directions on label might cause danger to health of young children Misbranded further because labeling did not adequately warn against giving it in those pathologic conditions wherein use of product might be dangerous to health or caution against unsafe dosage or duration of administration since the package carried no warning to avoid the product when symptoms of appendicitis are present such as abdominal pain nausea or vomiting or caution against frequent or continued use when it might result in dependence on cathartics to move the bowels Again misbranded because of label misrepresentations that the product would be efficacious as a laxative and intestinal cleanser and effective in treating rheumatism constipation indigestion colds skin rash biliousness and many conditions due to faulty elimination since it would not be useful for such purposes Misbranded further because of label representation that magnesium carbonate was an active ingredient whereas it was present only in traces Misbranded also because label failed to bear common or usual name of each ingredient or an accurate statement of the quantity of contents —[D D N J F D C 556 November 1942]

**Vitalax (Special Formula No 8558)**—Medical Specialty Company San Antonio Texas (Repackager of product which originated in Bristol Tenn.) Shipped Feb 1 1941 Composition phenolphthalein (about 1 grain per tablet) with extracts of yeast and bile Declared misbranded for the following reasons: labeling of tablets in original container bore no directions for use and in the case of the repackaged tablets the statement suggesting the dose was not a suitable direction for use of laxative tablets of this composition labeling failed to bear adequate warning against giving to children when such use might be dangerous to health or to caution against unsafe dosage or methods or duration of administration since adequate warning was not given against potential danger of establishing the laxative habit no warning to discontinue use if skin rash appeared and in the case of the repackaged portion there was no caution against use when symptoms of appendicitis are present label statements as to composition were false and misleading in not revealing the material fact that product contained phenolphthalein a coal tar laxative drug designations Vitalax and Vitamin B Laxative (repackaged portions) gave the false impression that the laxative action of the tablets was due to their vitamin or vitamin B content whereas it was actually due to the phenolphthalein label claims on repackaged portion as to stimulating liver function and producing abundant flow of bile for normal digestion and proper elimination without use of habit forming cathartic drugs were false and misleading since product was not efficacious for such purposes and did contain a habit forming cathartic drug namely phenolphthalein label claims (on repackaged portion in envelopes) as to toning digestive tract and stimulating flow of bile without use of habit forming cathartic drugs were false and misleading label claim non habit forming in one repackaged portion was false and misleading labeling failed to bear common or usual name of each active ingredient since it did not mention one of these phenolphthalein labels of repackaged portion did not list common or usual name of one active ingredient bile extract since this could not easily be identified under the terms used Sodium Taurocholate Sodium Glycocholate and Bile Salts Compound —[D D N J F D C 555 November 1942]

## Correspondence

### ERRORS IN ARTICLE ON DOCTOR SHORTAGE FROM OFFICE OF WAR INFORMATION

*To the Editor*—I have had a large number of calls recently in regard to temporary licensure for the practice of medicine in New York State from physicians who wish to come to New York State under such an arrangement. One of the applicants referred to in article he had read in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

I find in the September 25 issue on page 215 in the middle of the fifth paragraph of the article entitled "Doctor Shortage and Civilian Health in War Time" the following statement: "Only seven states have laws permitting temporary licensure. These are Delaware, Maine, Nevada, Pennsylvania, Washington, New York and Montana." I understand that this article is a comprehensive report prepared by the Office of War Information. I do not know to whom to direct this statement in regard to that information being incorrect.

So far as I am aware there has been no change in the New York law governing the practice of medicine permitting temporary licensure in the practice of medicine. I would be interested to know where the writer of this article obtained that information.

In the next paragraph, the sentence beginning on the last line in the first column reads as follows: "The service found that nine states had medical license reciprocity with New York but none of these states could, by law, admit the foreign doctors." This statement is in error, for at the present time there are no reciprocity agreements between New York State and any other state. The law governing endorsement of licenses was amended by act of legislature in 1940 and at that time all reciprocity agreements were abolished. I think if you will refer to your table entitled "Reciprocity and Endorsement Policies" as published in the statistical number since that time you will find that in that table there is no indication of reciprocity agreements between New York State and any other state. Under the present law a physician from any state who has met all the New York State requirements upon submitting proper credentials and paying the proper fees may receive an endorsement of that license. This is regardless of whether or not that state grants endorsement to a physician holding a New York medical license.

ROBERT R. HANNON, M D, Albany, N Y  
Secretary, New York State Board of Medical Examiners

### IMMUNIZATION AGAINST INFECTIOUS DISEASES

*To the Editor*—The current comment on immunization against infectious diseases in large cities (THE JOURNAL, September 18) states that immunizations against typhoid were "negligible in frequency as compared with those against diphtheria and smallpox." It appears to be little known that in the spring of 1942 about 90 per cent of the population of the Territory of Hawaii received typhoid-paratyphoid inoculations. This program was instituted by the department surgeon (Brig Gen Edgar King) because there was no line of separation between military and civilian health problems in that territory. The wisdom of this move was dramatically revealed by the occurrence of an epidemic of typhoid in Honolulu (described in

the *Hawaiian Medical Journal*) shortly after the inoculation program was instituted (and long before it was completed). The incidence of typhoid in Hawaii during the postinoculation years should serve as the basis of an interesting study.

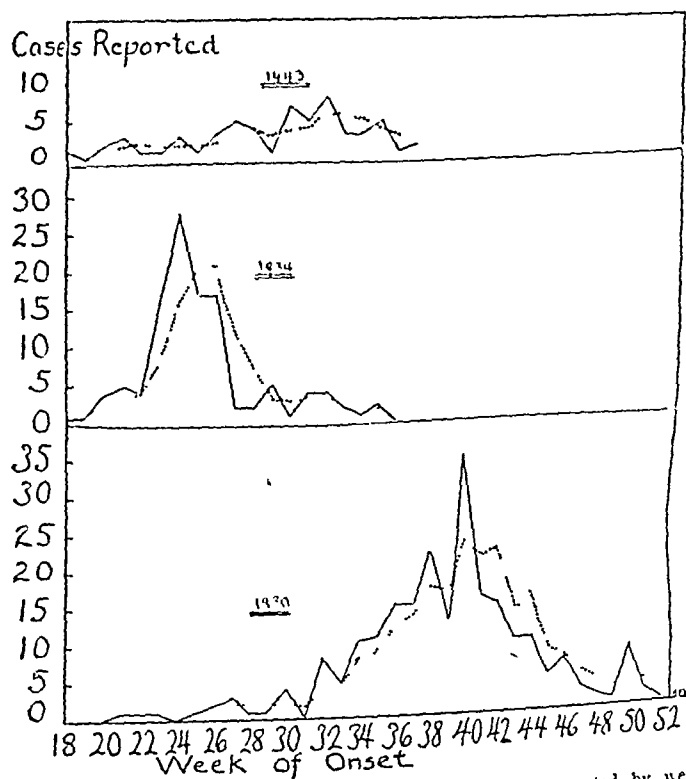
ROBERT J. HOAGLAND, Major, M C, A U S

### PREDICTION OF POLIOMYELITIS INCIDENCE IN EPIDEMIC YEARS

*To the Editor*—Attention was recently directed to the communication on the prediction of poliomyelitis incidence in epidemic years (THE JOURNAL, September 4, p 53). An effort was made to determine whether or not the experience in San Francisco coincided with that presented for Chicago.

As a result of a review of our recent epidemic years, apparently the observation can be made that the epidemiologic statistical pattern of infantile paralysis is still obscure, and the following conclusions may be reached:

1 The 1943 accelerated incidence in San Francisco should not be considered epidemic.



Poliomyelitis in San Francisco. Solid line, cases reported by week of onset. Dotted line, same using moving average (three weeks).

2 No standard for predicting the peak of an epidemic can be determined at least in San Francisco, as the interval from initial increase to peak varies between the years 1930 and 1934 from four to seven weeks.

3 Again, for San Francisco, it is not possible to assert with assurance that seasonal prevalence is fixed or to be predicted in any years. In 1930 the peak came in October, in 1934 in June, in the current cases the highest incidence was reported in August.

4 Geographically speaking, differences in incidence trends of this particular disease preclude the possibility of making statistical generalizations.

Attached is the chart from which these conclusions were drawn, depicting reported incidence by week of onset and showing the curve of incidence smoothed by use of moving averages for the three epidemic years 1930, 1934 and 1943.

J C GEIGER, M D, San Francisco  
Director of Public Health

### "GROWTH ACCELERATING PROTEIN"

To the Editor —It is indeed surprising to me that your editorial staff (*THE JOURNAL*, May 22, p 232) would select the article by White and Sayers (*Proc Soc Exper Biol & Med* 51 270 [Nov] 1942) for special recognition. I call particular attention to that part of the article and the editorial which has to do with 'soybean protein,' because that is my special field. I want to make three particular criticisms of the original article.

1 The 'commercial soybean protein' used by the authors was obtained from the Medical Research Division, Sharp & Dohme, Inc. who in turn obtained the material from the Glidden Company. This product is one we make by a special process for an industrial adhesive. An alkali treatment used in this process practically eliminates the possibility of this material being of good nutritional value. Our protein was further treated with alkali which would tend to decrease further the nutritive value. Although we had every reason to suspect a poor nutritional product we have fed this 'soybean protein' and have found our suspicions well founded. We can furnish more data than White and Sayers published that this product is poor nutritionally. This 'commercial soybean protein' is an adhesive used in the paper and fiberboard industry and is never sold or recommended for a food product.

2 White and Sayers state that they heated this material in an oven at 105 C for one hundred minutes to improve the nutritive values of the protein. They quote Wilgus, Norris and Heuser as their authority for this treatment. A check on this article will show that Wilgus, Norris and Heuser obtained the feeding materials for their studies from J W Hayward, then of the Wisconsin Experiment Station. By going to one of the papers from Wisconsin by Hayward, Steenbock and Bohstedt (*J Nutrition* 11 219 [March] 1936) we find on page 227 a table showing that heat in an electric oven had no appreciable effect on the nutritive value of soybean protein. It is apparent that White and Sayers not only used an inedible soybean product for their test but that the treatment they gave the product would not tend to increase its nutritive value.

3 The literature of science has many references to the high nutritive value of soy protein. We have data in the laboratory of the Glidden Company which will show the nutritive value of the protein as it is found in an edible product, soy flour, which is made for a food and not an adhesive, to be almost the same as the nutritive value of the protein of spray dried skimmed milk powder. The value of such a milk product is certainly accepted. In this laboratory we have data showing seven consecutive generations of rats raised on a simplified diet which derives its protein from soy flour. We discontinued the use of dehydrated yeast as a source of the vitamin B complex some years ago but for comparison with the data presented by White and Sayers we went back and hunted up data from our laboratory where we used yeast as the B complex source and 'Labco Vitamin Free' casein as the check lot of protein.

Protein level of diets 20 per cent

Test period fifty six days

Animals piebald rats  $22 \pm 1$  day of age at start of trial

Source of Protein	Number of Animals	Average Daily Weight Gain in Grams	Average Daily Food Consumption
Casein	10	2.26	10.5
Soy flour	10	3.07	13.6

Inasmuch as methods for preparing isolated globulins of unquestionably high nutritive value have not been exhaustively explored, we feel that the utmost caution should be exercised in approving or condemning such newcomers in the field of protein nutrition.

J L GABBY,  
5165 West Moffat Street  
Chicago

Chairman Nutrition Committee, Soy Food  
Research Council Soy Flour Association

### USE OF THE TERM PARA

To the Editor —Although I do not wish to add further confusion to the question regarding the term para, I would like to state that I was taught that para is an abbreviation of and derived from the Latin gerundive form parturienda, the translation of which is 'is going to give birth.' It is for this reason that many obstetricians have applied the term para 1 and so on to a woman who is in labor for the first time and nullipara to one who has never borne a child. It seems to me that the change in the application of the term para has been made during recent years. It would be desirable if a general agreement could be reached in the application of this term for the sake of uniformity of all hospital records.

HANS STEDTMANN, Captain, M C, A U S

### VITAMIN DEFICIENCY BY INTERFERENCE

To the Editor —In line with the article on "Vitamin Deficiency by Interference" in *THE JOURNAL*, September 18, page 151, it is interesting to note another evidence of this action. In attempts to prevent coccidiosis in chickens, it was shown (Holmes, C E, Deobold, H J, and Herrick, C A. Sulfur and Rickets, *Poultry Science* 17 136, 1938. Diseases of Poultry, edited by H E Biester and Louis Devries, Iowa State College Press, 1943, p 755) that, when 2 to 5 per cent of sulfur was included in a ration in which the sole source of vitamin D was cod liver oil, rickets developed. Apparently the sulfur made the vitamin D of the cod liver oil unavailable for absorption.

MARTIN M KAPLAN, V M D, M P H, Waltham, Mass

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS

##### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL* Oct 30 page 585

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Nov 15 17 and Jan 17 19 Sec Dr J S Rodman 225 S 15th St Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF INTERNAL MEDICINE *Written* Various centers Feb 21 Final date for filing application is Dec 15 Asst Sec, Dr William A Werrell 1301 University Ave Madison Wis

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written Part I* Locally, Feb 12 Final date for filing application is Nov 15 *Part II* May or June Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh 6 Pa

AMERICAN BOARD OF OPHTHALMOLOGY Los Angeles Jan 15 16 Sec Dr John Green 6830 Waterman Ave St Louis

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Written and Oral Part II* Chicago Jan 21 22 Sec Dr Guy A Caldwell 3503 Pryorina St New Orleans La

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Los Angeles Feb 25 Sec Dr Dean M Lierle University Hospital Iowa City Ia

AMERICAN BOARD OF PEDIATRICS *Written* Locally Feb 4 *Oral* Philadelphia March 25 26 and San Francisco May 6-7 Sec Dr C A Aldrich 707 Fullerton Ave Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *Oral* Locally Dec 20 21 Sec Dr Walter Freeman 1028 Connecticut Ave N W Washington D C

AMERICAN BOARD OF RADIOLOGY February Final date for filing application is Dec 15 Sec Dr B R Kirklin 102 110 Second Ave S W Rochester Minn

AMERICAN BOARD OF SURGERY *Written Part I* March Final date for filing application is Jan 1 Sec Dr J Stewart Rodman 225 S Fifteenth St Philadelphia

AMERICAN BOARD OF UROLOGY *Oral* Chicago February *Written* Various centers December 15 17 Final date for filing application is Nov 15 Sec Dr Gilbert J Thoma 1409 Willow St Minneapolis Minn



## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Accident Insurance Absence of Visible Contusion or Wound as Preventing Recovery for Death from Chloral and Bromide Poisoning**—The defendant insurance company agreed to pay the beneficiary stated benefits if the insured died from bodily injuries effected directly and independently of all other causes through external violent and accidental means "of which there is a visible contusion or wound on the exterior of the body." The insured died as a result of taking a medicated compound containing cannabiz chloral hydrate potassium bromide and extract of hyoscyamus. When the insurer refused to pay any benefits under the policy the beneficiary instituted suit and recovered judgment. On appeal the court of appeals of Tennessee, western section, reversed the judgment and ordered a new trial on the ground that while under the undisputed evidence the death of the insured resulted from a bodily injury effected by accidental means, it was not shown that the fatal injury was evidenced by a visible contusion or wound on the exterior of the body. *Travelers Ins Co v Ins't*, (Tenn) 121 S W (2d) 37 J A M A 113 2179 (Dec 9) 1939. On the second trial the sole issue was with respect to the existence of such evidence on the exterior of the body. At the conclusion of the beneficiary's case the trial judge directed a verdict for the defendant and the case was again appealed to the court of appeals of Tennessee, western section.

The insured was so constituted physically that a comparatively small amount of intoxicating liquor while not making him drunk, would result in his being rendered highly nervous after the effect had worn off. To relieve this condition, which occurred at irregular periods only, he was accustomed to taking the medicine described, which he procured at a drug store without a physician's prescription. On the evening of Nov 27, 1936 the insured had several drinks of gin and beer. He was not rendered noticeably intoxicated but nevertheless was so nervous the following day that he remained in bed. That night his wife, the beneficiary in this action, ordered some of the medicine over the telephone from a neighborhood drug store. A 2 ounce bottle of it was sent, with directions written on it to take "two teaspoonsful as needed." The insured was given a dose at 7 30 p m and another dose of 2 teaspoons about midnight. He apparently took some more of the medicine about 12 noon of the following day and another dose of 2 teaspoons about 3 o'clock. About 6 30 p m his wife noticed that he had a peculiar look about his eyes—that his eyes "looked kind of glassy"—and called in a friend of the family. Shortly after the arrival of this friend, the insured staggered back to his bed, fell face downward on it and went into a deep sleep. A physician was immediately summoned and found the insured in a condition of shock with "a pallor and a thready pulse." The insured was immediately taken in an ambulance to a hospital, where his stomach was washed and he was given cathartics and epinephrine. The driver of the ambulance testified that he observed "a little scraped place or a little scratched place" on insured's left leg and further observed that the insured's lips "were mighty blue—real dark blue, or purplish." The insured died while on the emergency table, death being attributed to chloral and bromide poisoning resulting from the cumulative effect of the medicine.

The sole question to be determined by the appellate court was whether there was any evidence before the trial court that there was a "wound or contusion" on the exterior of the insured's body evidencing the fatal injury. Admittedly, if there was no such evidence there was no liability on the part of the insured. A "wound," said the appellate court, is

An injury to the body of a person or animal, esp one caused by violence by which the continuity as skin, mucous membrane or conjunctiva is broken. Webster's New International Dictionary, second edition.

A "contusion" is

A bruise, an injury attended with more or less disorganization of the subcutaneous tissue and effusion of blood beneath the skin but without breaking the skin (ibid).

As justifying its conclusion that there was no wound or contusion in the present case, the court quoted at length from *Paist v Litch Ins Co*, 54 F (2d) 393, 60 F (2d) 476, in which the insured's death was caused by sunstroke and in which it was contended that since the insured's face was flushed and sunburned he had a "wound" or "contusion" within the meaning of the policy. The federal trial court in that case said

It might be just possible to bring it under the definition of wound given by the Century Dictionary as the meaning of the word in medical jurisprudence and cited by the plaintiff, but in insurance policies courts have been and are refused to adopt technical definitions and have adhered to the ordinary and popular meanings of words used. There is no reason why this rule should not work both ways. Certainly, in ordinary parlance "contusion" is almost exactly synonymous with "bruise," and to say that a flushed countenance is a wound would go beyond the limit of allowable interpretation.

On appeal the circuit court of appeals for the third circuit said with respect to the *Paist* case

We are here dealing with a written contract in which the parties agreed that the accident against which the insured was indemnified was one "evidenced by a visible contusion or wound on the exterior of the body." These words, "contusion," "wound," "visible on the exterior of the body" are of well known commonly understood meaning. "Contusion" which has its Latin origin "con" and "tundere," to strike, means a bruise or wound caused by a blow but where, as here, no physical blow is struck where there is no bruising, where the skin is not blown or bruised or blown broken certainly in common speech and common understanding the death of the plaintiff's husband from sunstroke cannot be said to be evidenced by visible contusion or wound on the exterior of the body.

Reverting to the facts of the case at bar, said the appellate court, apart from the scratch on the insured's leg, the condition relied on as constituting a wound or contusion was that just prior to his death his face was pale and his lips were somewhat swollen and blue. We do not think either condition was within the common, ordinary meaning of the words "wound or contusion." A pale face and swollen, blue lips might be regarded as indicating, and as a sign of, an internal disorder or even an injury, but we cannot conclude that either is of itself a wound or contusion within the ordinary meaning of those words, especially in the absence of any expert evidence on the point, which was the situation in this case.

There is, continued the court, moreover, another reason why the beneficiary cannot recover. The burden was on her to show a causal connection between the conditions relied on as constituting a wound or contusion and the fatal injury. In this respect she failed altogether. This is true not only with respect to the scratched place on the insured's leg but also with respect to the condition of his face and lips. As to the former, it is not contended that it had any connection with the injury that resulted in the insured's death. With respect to the blueness of the lips, the ambulance driver, who did not qualify as an expert and who was the only witness who undertook to testify about the matter, said that the condition was due to poor circulation. Apart from his testimony, if it can be regarded as having any probative value, the cause of the condition relied on by the beneficiary as meeting the policy requirement was left to speculation.

The judgment in favor of the insurance company was accordingly affirmed—*Ansley v Travelers Ins Co*, 173 S W (2d) 702 (Tenn, 1940).

## Society Proceedings

### COMING MEETINGS

- American Society of Anesthetists, New York, Dec 9 Dr McKinnie L Phelps 745 Fifth Ave, New York 22, Acting Secretary
- Annual Conference of Secretaries and Editors of Constituent State Medical Associations, Chicago, Nov 19 20 Dr Olin West, 535 North Dearborn St, Chicago 10, Secretary
- Association for Research in Nervous and Mental Diseases, New York, Dec 17 18 Dr Thomas L Bamford Jr 115 East 82d St, New York 28, Secretary
- Eastern Section, American Federation for Clinical Research, New York, Dec 4 Dr Charles H Wheeler, 345 East 68th St, New York, Acting Secretary
- Radiological Society of North America, Chicago, Nov 29 Dec 3 Dr Donald S Childs 607 Medical Arts Bldg, Syracuse, N Y, Secretary
- Seaboard Medical Association, Richmond, Va, Nov 30 Dec 2 Dr Clarence P Jones, 3117 West Avenue, Newport News, Va, Secretary
- Southern Surgical Association, New Orleans, Dec 7 9 Dr Alton Ochsner 1430 Tulane Ave, New Orleans, Secretary
- Southern Medical Association, Cincinnati, November 16 18 Mr C I Loran, Empire Building, Birmingham, Alabama, Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Journal of Diseases of Children, Chicago

66 103-226 (Aug) 1943

- Intravenous Hippuric Acid Test of Hepatic Function in Infectious Diseases of Children J. Meneghelli and M. Drinberg—p. 103  
Studies on Control of Acute Infections of Respiratory Tract. II. Oral Administration of Sulfadiazine at Onset of Acute Respiratory Illnesses M. Siegel—p. 114  
Delayed Production of Poliovirus Antibodies J. A. Toomey—p. 121  
Visible Tuberculin Patch Test: New Improvement M. Grozin—p. 126  
Response to Stimulating Injection of Tetanus Toxoid: Report of Study on Children Previously Immunized with Combined Diphtheria and Tetanus Toxoid Louise A. Yezell and W. C. Diemer—p. 132  
Experimental Basis for Treatment of Hemophilus Influenzae Infections Hattie E. Alexander—p. 160  
Treatment of Hemophilus Influenzae Infections and of Meningococci and Pneumococci Meningitis Hattie E. Alexander—p. 172

#### American Journal of Pathology, Ann Arbor, Mich

19 533-734 (July) 1943

- Sclerosing Hemangiomas: Their Relationship to Dermatofibroma Histocytoma Xanthoma and Certain Pigmented Lesions of Skin R. E. Gross and S. B. Wolbach—p. 533  
Chondrosarcoma of Bone L. Lichtenstein and H. L. Jaffe—p. 553  
Tumors of Sweat Glands O. Gates, S. Warren and W. A. Warren—p. 591  
Gynandroblastoma of Ovary E. A. Meckler and W. C. Black—p. 633  
Study of Sensory Ganglions in Macaca Mulatta After Gastrointestinal Administration of Poliovirus G. Y. McClure—p. 655  
\*Pathology of Convalescent Poliomyelitis in Man J. H. Peers—p. 673  
Atrophy of Brain Following Puerperal Eclampsia K. Lowenberg and R. T. Lossman—p. 697  
Medullary Involvement in Tetanus A. B. Baker—p. 709  
Tuberculosis of Tonsils L. J. Rather—p. 725

**Pathology of Convalescent Poliomyelitis in Man**—Peers describes the pathologic aspect of the residual lesions of 3 patients with poliomyelitis who had survived 7, 15 and 18½ weeks from the onset of illness. Lesions in the cerebral cortex consisting of perivascular collars of lymphoid cells and interstitial foci of microglia and astrocytes are confined to the paracentral lobules. Only minimal lesions are found in the basal ganglions and thalamus. In the midbrain the substantia nigra presents the most severe damage. Lesions in the pons are confined to the tegmentum. Loss of nerve cells is extensive in Deiters' nuclei and more patchy and asymmetrical in the motor fifth and seventh nuclei. Single necrotic cells are still present four months after the acute illness. Perivascular infiltration diminishes and density of fibrous gliosis increases with the duration of convalescence. In the cerebellum, lesions are found only in the tectal nuclei and in the cortex of the vermis. The most prominent changes in the medulla consist of cell loss and scarring in the reticular substance similar to that found in the pons. The spinal cord presents an almost complete loss of nerve cells throughout the entire length of the anterior gray substance. In contrast the lateral horns are comparatively spared. Lesions in Clarke's column are patchy and asymmetrical and no definite changes appear in the posterior horns. Replacement gliosis in the anterior horns is at first abundant but delicate with bulky astrocytes. Later the cells shrink and the fibrils become coarser. In the white matter of the spinal cord there is a mild diffuse demyelination of most of the ventral and lateral columns with the exception of the pyramidal tracts. In the posterior columns partial demyelination is confined to the region of the comma tract of Schultz. The anterior nerve roots show severe degeneration consequent to the extensive loss of anterior horn cells. Almost all the coarse motor fibers have disappeared. In contrast, the fine myelinated efferent sympathetic fibers are mostly spared. In the gasserian, dorsal root and sympathetic ganglions there are a very few small foci of

lymphoid cells. In the root ganglions only rare cells have disappeared, leaving behind capsules filled with mononuclear cells. The meninges contain only a few scanty foci of lymphoid cells, and no lesions were found in the choroid plexus.

#### American Journal of Surgery, New York

61 313-456 (Sept) 1943

- \*Traumatic Rupture of Kidney P. Adams—p. 316  
War Wounds J. L. Sheehan—p. 324  
Burns as War Wounds J. L. Sheehan—p. 331  
Tissue Grafting J. E. Sheehan—p. 339  
Tumors of Neck: Special Reference to Congenital Cysts and Fistulas F. W. Peterson—p. 350  
Know Your Patient J. M. Lynch—p. 360  
Fractures of Mandible: Report of Fifty Applications of Roger Anderson Skeletal Fixation Appliance L. Winter—p. 367  
Inguinofemoral Anatomy: Aspects Significant for Inguinal Herniorrhaphy L. J. Komora—p. 380  
Ovarian Cysts Complicating Pregnancy A. J. Capone—p. 387  
Uterography: Aid in Diagnosis of Gynecological Pelvic Disorders B. H. Brunkow—p. 394  
Sulfathiazole Therapy in General Surgery G. S. Serino—p. 400  
Aneurysms of Coronary Arteries: Review of Literature and Report of Case R. H. Rigdon and H. Vandergriff—p. 407  
Suture Materials L. E. Mahoney—p. 414  
Significance of Schwannomas as Factor in Obscure Cases of Appendicitis W. R. Laird and L. E. Nolan—p. 418  
Evaluation of McNairy Cecostomy J. W. Howser—p. 421  
Intravenous Use of Morphine Sulfate R. O. Pearman—p. 423

**Traumatic Rupture of Kidney**—Adams reviews the problem of traumatic rupture of kidney on the basis of 7 cases seen by him in the course of the last two years. In 3 cases the trauma resulted from horse kicks, a frequent cause in rural areas. One patient fell from a merry-go-round, one fell from a golf bunker, a third suffered a flank injury due to a coasting accident, and the fourth was injured in a football game. The author stresses the need of early operation, but only after primary shock from trauma to nerve plexuses about the kidney pedicle is controlled and before secondary shock from hemorrhage occurs. Operations were performed on 6 of the 7 patients recently observed by him. Preoperative evidence of urinary extravasation usually is demonstrated satisfactorily by intravenous urography. Retrograde urography is thought to be unnecessary and undesirable except when additional information is essential. Urinary extravasation always indicates severe injury of the kidney and is a specific indication for operation. The presence or absence and the degree of hematuria are no criteria of the severity of renal damage because obviously hematuria is absent when the ureter has been severed or when the renal vessels have been ruptured and the kidney spared from injury or when the fracture line does not enter the renal pelvis. Should blood clots block the ureter, hematuria disappears.

#### Archives of Internal Medicine, Chicago

72 301-428 (Sept) 1943

- \*Vascular Disease Following Toxemia of Pregnancy (Preeclampsia and Eclampsia): Observations on Its Clinical Course A. Golden, L. Dexter and S. Weiss—p. 301  
Friedlander's Bacillus Septicemia and Meningitis: Report of Case and Autopsy with Analysis of 29 Cases Collected from the Literature J. C. Ransmeier and J. W. Major—p. 319  
\*Sulfadiazine Administered Alone and with Antipneumococcus Serum in Treatment of Pneumococcal Pneumonia N. H. Shackman and J. G. M. Bullowa—p. 329  
\*Acute Brucellosis: Clinical, Bacteriologic and Serologic Studies of 3 Patients B. Wise—p. 346  
Alterations in Biologic Oxidation in Thyrotoxicosis: I. Thiamine Metabolism R. H. Williams, E. Egana, P. Robinson, S. P. Asper and C. Dutot—p. 353  
Modified Technique for Determination of Serum Bilirubin: Preliminary Report of Its Clinical Use B. Sepulveda and A. E. Osterberg—p. 372  
Milestones in Diagnosis and Treatment of Gout E. Neuwirth—p. 377  
Infectious Diseases: Ninth Annual Review of Significant Publications H. A. Reimann—p. 388

**Vascular Disease Following Toxemia of Pregnancy**—According to Golden and his associates toxemia of pregnancy is an acute type of vascular disease occurring during the last half of pregnancy usually accompanied by greater or lesser degrees of water retention sometimes subsiding before delivery and always after delivery. It may appear in women with hitherto normal blood pressure as well as in those who are already hypertensive. The authors studied cases in which toxemia of pregnancy was imposed on a previously normal cardiovascular renal system. Toxemia of pregnancy (preeclampsia) a

and eclampsia) occurs in approximately 6 to 9 per cent of all pregnancies. From published reports it is apparent that roughly 25 per cent of women in whom toxemia develops are left with permanent postpartum vascular disease. In 2 per cent of all women who become pregnant permanent hypertension develops after pregnancy. The duration more than the severity of the toxemia determines the development of permanent postpartum vascular disease. A latent period of several months may intervene between toxemia of pregnancy and the development of recognizable permanent hypertension or albuminuria. After toxemia of pregnancy hypertension may persist for at least a year and then disappear. The postpartum course may be predominantly hypertensive or albuminuric apparently dependent on a similar predominance in pregnancy. The course is prone to be rapidly progressive in comparison with that of other types of hypertension. Death usually occurs as a result of uremia, cardiac failure or cerebral hemorrhage as in other types of hypertension. Actual changes such as a vascular sclerosis, hemorrhages and exudate occur but no instances of true albuminuric retinitis have been observed. Nephrosclerosis is the characteristic postmortem finding. The pathological condition of the kidneys in other respects is variable and at times may duplicate that of chronic glomerulonephritis. This is not surprising as both diseases start with a diffuse glomerular lesion and the hypertensive vascular disorders following the two diseases may run almost identical clinical courses. The late vascular effects of toxemia may be prevented by interrupting pregnancy before the hypertension and albuminuria have lasted for more than three weeks. This applies to mild and to severe toxemia.

**Sulfadiazine Alone and with Antipneumococcus Serum in Pneumococcic Pneumonia**—Shadman and Bullowa report their observations on 232 patients with pneumococcic pneumonia treated with sulfadiazine and 70 patients with this condition treated with rabbit antipneumococcus serum in addition. These patients admitted to the Pneumonia Service of Harlem Hospital from July 1, 1940 to June 30, 1941, were adults for whom the diagnosis of pneumonia was based on history and physical findings and confirmed by roentgen examination. Prior to the institution of therapy bacteriologic studies of the sputum and the blood were made. Of the 232 patients treated with sulfadiazine alone 31 died—a mortality of 13.4 per cent. Excluding those patients moribund on admission, who died within twenty-four hours, the mortality is 8.3 per cent. Nine of 29 patients or 31 per cent, with bacteremia died. The total mortality for the patients undergoing combination therapy was 14.3 per cent. The mortality for patients with bacteremia in this group was 22.2 per cent. The authors conclude that sulfadiazine is as effective as sulapyridine in the treatment of pneumococcic pneumonias. The mortality among patients who received both serum and sulfadiazine was slightly higher than that among the sulfadiazine treated patients but the former group was composed of more severely ill patients.

**Acute Brucellosis**—Three patients suffering from undulant fever afforded Wise an opportunity for study of the persistence of bacteremia and the behavior of demonstrable serum antibodies for *Brucella* throughout the course of the illness. All 3 patients came under observation during the first month of illness, and all received treatment with sulfonamide drugs. The clinically suspected diagnosis of undulant fever requires substantiation by isolation of *brucella* organisms from the patient's blood or demonstration of *brucella* agglutinins in high titer in the serum. Although the 3 patients had serum agglutinins in titers of 1,2560 or higher, as well as *Brucella* suis in the blood at the time they came under observation, it was found that agglutinins may not be demonstrable for weeks after the onset of illness. Demonstrable complement fixing antibodies in the serum usually parallel agglutinins in time of appearance, but the complement fixation test has no real advantage over the more easily performed agglutination test. Determination of the opsonocytotoxic index has been found to be of no value for diagnosis. The 3 patients were febrile when they came under observation, and blood cultures positive for *Brucella* suis. Febrile episodes lasted usually seven to ten days, and in the intervals between febrile episodes the patients were symptom free despite the fact that bacteremia was demonstrated. It is not generally recognized that positive blood cultures may be obtained long after complete recovery from the acute illness

or even in the absence of a frank history of illness. Such possibilities should serve as a caution against interpretation of a single positive blood culture as indicating clinical disease. Sulfathiazole or sulfadiazine was given with little or no benefit. The use of these drugs has failed to prevent relapse. No significant changes in titers of *brucella* agglutinin or complement fixing antibodies were observed after sulfonamide therapy. A relatively prompt disappearance of serum agglutinins usually follows complete recovery, but complement fixing antibodies may persist for months.

## Archives of Ophthalmology, Chicago

30 291-420 (Sept.) 1943

- Reticular Content and Prognosis in Malignant Melanoma of Uvea  
J. S. McGregor and J. Hill—p. 291
- Aniseikonia: Review of 200 Consecutive Cases Examined on Eikonometer  
A. M. Hicks—p. 298
- Rupture of Aneurysm of Circle of Willis: Relationship Between Intracranial and Intracranial Hemorrhage  
J. N. Greear Jr.—p. 312
- Congenital Bilateral Anophthalmos  
R. Hare—p. 320
- Bilateral Uveitis, Poliosis and Retinal Detachment with Recovery  
Report of Case  
J. Guener—p. 331
- Embryology of Microphthalmos in Rattus Norvegicus  
L. G. Browman and J. Ramsey—p. 338
- Application of Wetting Agents in Ophthalmology, with Particular Reference to Sulfonamide Compounds  
J. G. Bellows and M. Gutmann—p. 352
- Lipemia Retinalis: Report of Case  
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- Rickettsias in Ophthalmology  
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- Blood Cholinesterase Values of Patients with Glaucoma  
A. Rados—p. 371

## Archives of Surgery, Chicago

47 121-220 (Aug.) 1943

- Pathologic Study of Degeneration and Rupture of Supraspinatus Tendon  
C. J. Wilson and G. L. Duff—p. 121
- Anatomic and Clinical Study of Transverse Abdominal Incision  
V. L. Rice and I. A. Collier—p. 136
- Primary Intracranial Lymphosarcoma: Report of 2 Cases and Review of Literature  
K. H. Abbott and A. W. Adson—p. 147
- Effect of Division of Sphincter of Oddi on Bile Diastase of Dog  
S. H. Gray, C. J. Hefetz and J. G. Probst, with Technical Assistance of S. Russ—p. 160
- Unusual Cases of Hyperinsulinism and Hypoglycemia  
E. Holman, D. A. Wood and A. B. Stockton—p. 165
- Hemorrhagic Hypotension and Its Treatment by Intra Arterial and Intravenous Infusion of Blood  
A. G. Kohlstaedt and I. H. Page—p. 178
- Bilateral Carcinoma of Adrenal Cortex with Metastasis to Iliac Bone  
M. Cleveland and Leila Charlton Knox—p. 192
- Confinement to Bed for Only Twenty Four Hours After Operation: Means of Preventing Pulmonary and Circulatory Complications and of Shortening Period of Convalescence  
D. J. Leithauer—p. 203
- Ceiling of Utilization of Nitrogen: Effect of Continuous Venoclysis with Amino Acids of Hydrolyzed Protein During Experimental Hypoalbuminemia  
R. Elman, R. Charnis and H. W. Davey—p. 216
- Hyperinsulinism and Hypoglycemia**—Holman, Wood and Stockton reviewed the literature of extrapancreatic islet adenomas and found 4 cases with symptoms of hyperinsulinism and hypoglycemia which were entirely controlled by removal of the extrapancreatic adenoma. To these 4 is added a fifth case in which the removal of one intrapancreatic adenoma failed to relieve the hypoglycemic symptoms but in which the removal of a second islet adenoma in the gastrosplenic ligament produced complete cure. The presence of multiple tumors is a relatively frequent occurrence in cases of hyperinsulinism in any operation undertaken in a case in which symptoms of hyperinsulinism are present, this possibility must be borne in mind. The entire pancreas must be exposed and searched for possible multiple intrapancreatic tumors. Failure to find an intrapancreatic tumor should be followed by careful search for an islet tumor in those sites where heterotopic pancreatic tissue is more frequently found, especially duodenum, stomach, jejunum, Meckel's diverticulum and ileum. Three other unusual cases are reported: one was that of a heterotopic islet adenoma of the duodenum and adrenal cortex without any hypoglycemic symptom, another of an islet carcinoma apparently engrafted on a calcified islet adenoma which presumably had been responsible for hypoglycemia of varying severity over a period of sixteen years. The third case presented severe episodes of hypoglycemia, and careful exploration was undertaken for an islet adenoma but none was found. In the course of the operation the pancreas was isolated from all surrounding structures although its arterial supply was not interrupted. No evidence of hypoglycemia have appeared after the operation. No explanation for this unexpected result is offered.

**Hemorrhagic Hypotension and Its Treatment by Intra-Arterial and Intravenous Infusion of Blood**—In experimental hemorrhagic shock in dogs, Kohlstradt and Page tested the therapeutic effects of the intra-arterial infusion of blood, as compared to the intravenous route. The rationale is that the intra-arterial infusion would elevate blood pressure rapidly, thus restoring tissue perfusion without delay. When all the blood removed was returned by the intra-arterial route under a pressure of 50 mm of mercury the systemic arterial pressure rose rapidly and recovery occurred. The same amount of blood given intravenously usually caused recovery, but as the rise in blood pressure is slower some of the dogs died. Readministration of only 50 per cent of the blood by vein resulted in recovery in 30 per cent of the dogs, while the same amount given intra-arterially resulted in recovery of 75 per cent. Three patients in profound traumatic shock were treated by this method. The radial and the femoral artery were used. There was a rapid rise in the blood pressure in all instances. All the patients were treated surgically for their injuries. During the operations the blood pressure was maintained by intermittent intra-arterial infusion. After five or six hours of intra-arterial infusion the needle was removed and the artery ligated. One patient died of shock twenty-four hours later. The second patient died four days later from a cause not directly related to shock. The third patient recovered. For the cases in which the blood pressure is excessively low or when the amount of blood or plasma available is insufficient, the method deserves trial.

# Bulletin of Johns Hopkins Hospital, Baltimore

73 65-142 (Aug) 1943

- Study of Thalamocortical Relations in Rabbit J E Rose and C N Woolsey—p 65
- Fluorescent Test in Management of Tubed (Pedicle) Flaps J A Dingwall 3d and J W Lord Jr—p 129
- Vitamin A Levels in Maternal and Fetal Blood Plasma Jane Nicholls Byrn and N J Eastman—p 132
- Deformol Simple Technique for Removing Formaldehyde from Preserved Tissue Specimens C F Elvers—p 138

# Delaware State Medical Journal, Wilmington

15 139-164 (Aug) 1943

- \*Rocky Mountain Spotted Fever Summary of Recent Literature Dealing with Virulence and Therapeutic Value of Immune Rabbit Serum E Cameron—p 139
- Weil-Felix Reaction (Rocky Mountain Spotted Fever) R D Herdman—p 140
- High School X-Ray Survey L D Phillips A M Dietrich and G T Evans—p 142
- Delaware Escapes Smallpox Outbreak E F Smith—p 143
- Has Gonorrhea Been Driven Underground? A L Chapman and A R Cameron—p 144
- Four Ps—Public Pollution Planning and Postwar Reconstruction R C Beckett—p 147
- Seasonal Incidence of Births C A Marshall—p 152
- Maternity and Infant Care for Wives and Infants of Enlisted Men in Armed Forces M Hotopp—p 153
- Role of Health Education in Public Health Program Katherine B Franklin—p 156
- Nursing Services Available Through State Board of Health Alberta B Wilson—p 158
- Physicians Role During Food Shortages Eleanor M Wilkinson—p 160
- Delaware's Wartime Dental Program Margaret H Jeffreys—p 162

**Rocky Mountain Spotted Fever**—It has been accepted that the western strain of the virus of Rocky Mountain spotted fever is more virulent than the eastern strain and hence accompanied by a higher mortality rate. Observations have been made according to Cameron, which indicate that this view is not entirely correct. Comparative studies on large numbers of cases from western and eastern states revealed that there was no significant difference in the fatality rate in comparative age groups. There is a significant difference between the fatality rates in the age group 40 and over and those of younger age groups. Immune rabbit serum given early following infection in an adequate dose gave the best results in repeated experiments on monkeys and guinea pigs. In studying the human cases it was impossible to use an untreated group as a control. The fatality rates were compared in a series of 19 cases treated with immune rabbit serum after the third day of the rash and in a series of 52 cases treated on or before the third day of

the rash. While the series are small, the inference is that immune serum is of value if used early in the infection. Up to the present there have been 13 cases reported in Delaware in 1943. There were three fatalities, in one of which immune rabbit serum had been given.

# Gastroenterology, Baltimore

1 635-722 (July) 1943

- Pancreas Contributions of Clinical Interest Made in 1942 R Elman and C F Fischer—p 635
- Intrahepatic Obstructive Jaundice T Steigmann and H Popper—p 645
- Why Do a Liver Function Test? A C Ivy and J A Roth—p 655
- Diagnostic Roentgenology in Gastroenterology for Year 1941 F J Riggs and B R Kirklin—p 669
- Relationship Between Lymphogranuloma Venereum and Regional Enteritis Etiologic Study of 4 Cases with Negative Results Paul C Rodaniche J B Kirsner and W I Palmer—p 687
- Endoscopic Study of Appearance of Gastric Mucosa in Anesthetized Dogs J A Payne and J B Carey—p 690

1 723 820 (Aug) 1943

- \*Duration of Gastric Cancer W L Palmer—p 723
- Vitamin B Excretion in the Aged H A Rafsky and B Newman—p 737
- Studies of Urobilinogen I Daily Urobilinogen Excretion in Urine and Feces in Health and Disease Evaluation of Watson's and Sparkman's Methods T Steigmann and Josephine M Dymiewicz—p 743
- Studies in Pathogenesis of Experimental Dysentery Intoxication Inhibition of Lesions A Penner and Alice Ida Berheim—p 765
- Fractional Blood Lipids in Dogs Subjected to Prolonged Feeding of Various Diets D A Glomset and J L Bollman—p 776
- Relationship Between Total Osmotic Pressure of Gastric Juice and Its Acidity N Lifson R L Varco and M B Visscher—p 784

**Duration of Gastric Cancer**—Palmer calls attention to the extremes of growth of the gastric cancer. He quotes cases to demonstrate that the rate of development, growth and extension of the gastric cancer varies within wide limits some tumors being truly "acute" and others extremely "chronic." The factors determining or influencing these rates of growth remain to be ascertained. The clinical implications are numerous. The prognosis in certain gastric carcinomas is hopeless regardless of how "early" the diagnosis is made, in others the prognosis is good even though the diagnosis is late. The therapeutic implication is that, as a rule, all gastric carcinomas should be resected unless there exist proved distant metastases. It is possible that in certain cases the removal of the primary tumor may exert a favorable influence on the growth of the secondary lesions but at the present there is little evidence to support this view.

# Georgia Medical Association Journal, Atlanta

32 257-290 (Aug) 1943

- Geriatrics in Present Economic Situation A J Mooney Sr—p 257
- Use of Blood Sedimentation Test in Clinical Medicine C P Roberts—p 259
- Increasing Individual Opportunity and Responsibility of Doctors and Hospitals for Service in Relation to Accelerated War Program E H Greene—p 262

# Hawaii Medical Journal, Honolulu

2 237-280 (May-June) 1943 Partial Index

- Acid Fast Bacilli in Sputum D R Chisholm—p 237
- Cigaret Smoking as Factor in Sterility—p 249

# Iowa State Medical Society Journal, Des Moines

33 409-454 (Sept) 1943

- \*Local Use of Sulfonamides in Open Wounds L M Overton—p 409
- Care of Premature Infant in General Practice H E Farnsworth—p 412
- Treatment of Meningococcic Meningitis Results in 10 Cases C H Millikan and D W Chapman—p 418
- Glioma of Optic Nerve F H Reuling—p 422
- Oral Lesions in Leukemias L M Fitzgerald—p 424

**Local Use of Sulfonamides in Open Wounds**—Overton implanted sulfonamides locally into 285 open wounds. He compares the results obtained in these cases with 215 open wounds treated earlier without implantation of sulfonamides. The following conclusions were made: 1 The local use of the sulfonamides has not improved the results in the treatment of open wounds when used as an adjunct to good surgery during the contaminated stage, however it was found not to delay in

healing time. 2 All of the sulfonamides produced some local tissue irritation as evidenced by the increase in serum and tendon adhesions. 3 The local use of the sulfonamides is not necessary in the early treatment of open wounds which can be thoroughly cleansed and debrided. These drugs may produce enough irritation to contraindicate their use in such cases. 4 The use of the sulfonamides may be of definite value when administered in badly disrupted wounds which cannot be thoroughly cleansed and debrided. When combined with the use of one of the drugs by mouth sulfonamides are invaluable in this type of case. 5 Early treatment of any open wound is thorough cleansing and the removal of all contaminated and nonviable material followed by wound support and rest. Under no circumstances should the sulfonamides be substituted for this treatment.

### Journal of Experimental Medicine, New York

78 91-150 (Aug.) 1943

- Increased Resistance to Viral Infection as Result of Increased Fluid in Tissue. H. M. Fowler and D. H. Sprunt—p. 91  
Adsorption of Influenza Virus on Cells of Respiratory Tract. G. B. Harbo—p. 99  
Further Studies on Titration and Neutralization of Western Strain of Equine Encephalomyelitis Virus in Tissue Culture. C. H. Huang—p. 111  
Virus Group A Hemagglutinating by M. Precipitin Reactions in Cells of Pig. H. I. Scott, A. L. Wilson and Rebecca C. Langer—p. 127  
Reactions in Skin and in Internal Organs of Rabbits Sensitized with Streptococcus with Intracutaneous Vaccine and Their Relation Ship to Antibodies. P. J. DeBora and D. M. Ameyne—p. 135

78 151-224 (Sept.) 1943

- The Rate of Absorbed Zinc in Pancreatic Juice, Duodenal Juice and Urine of Dog Measured by Its Radioactive Isotope ( $^{65}\text{Zn}$ ). M. I. Montenegro, G. I. Shelton and L. I. Charkoff—p. 151  
Multiplication of Brucellaphage in Vivo and Its Protective Effect Against an Experimental Infection with Shigella Dysenteriae. R. J. Dubos, June Hooley Straus and Cynthia Pierce—p. 161  
Radioactive Iron Absorption by Gastrointestinal Tract. Influence of Anemia, Anoxia and Antecedent Feeding. Distribution in Growing Dogs. P. I. Hahn, W. I. Bale, I. I. Koss, W. M. Balfour and G. H. Whipple—p. 169  
Outbreak of Psittacosis in Pigeons Involving Production of Inclusion Bodies and Transfer of Disease to Man. J. I. Smadell, M. J. Wall and A. Greig—p. 189  
Effects of Hypotension Due to Hemorrhage and of Blood Transfusion on Renal Function in Dogs. A. C. Corcoran and I. H. Page—p. 205

### Journal of Infectious Diseases, Chicago

72 179-254 (May-June) 1943 Partial Index

- Hypothermia in Experimental Infections. J. D. Hardy, Dorothy Rhodes Duerschner and C. Muschlerheim—p. 179  
Fermentation of Maltose by Salmonella Pullorum. W. R. Hinshaw, A. S. Brown and T. J. Taylor—p. 197  
Antigenic Analysis of Isolated Tissues and Body Fluids of Round worm Ascaris lumbricoides Var. Suum. J. Oliver Gonzalez—p. 202  
Protective Action of Normal Sheep Serum Against Infections of Trypanosoma Duttoni in Mice. W. H. Taliaferro and Helena P. Imhoff Olsen—p. 213  
Streptococci Present in Leeces of Patients with Nonspecific Ulcerative Colitis, and Effect of Oral Administration of Sulfonamide Compounds on Them. Enid C. Rodaniche, W. L. Palmer and J. B. Kirsner—p. 222  
Adaptation of Yellow Fever Virus to Young Chickens by Serial Brain to Brain Passages. H. W. Ivenmeyer Jr. and H. Mousatche—p. 228  
Studies on Endameba Histolytica. II. Observations Concerning Encystation, Maturation and Excystation of E. histolytica and on Longevity of Culture Induced Cysts in Various Fluids and at Different Temperatures. S. L. Chang—p. 232  
Electrophoretic Studies on Antibodies to Trichinella Spiralis in Rabbit. G. G. Wright and J. Oliver Gonzalez—p. 242  
Effect of Actinomycin, Clavacin and Tyrothricin on Staphylococcus Toxin. J. E. Blair and Frances A. Hallman—p. 246

### Journal of Lab and Clinical Medicine, St. Louis

28 1295-1414 (Aug.) 1943

- Nutrition in War. F. C. Bing—p. 1295  
Principles of Percutaneous Absorption. S. Rothman—p. 1305  
Simple Liver Preparation Orally Effective in Treatment of Human Amyloid Disease. J. Loukides, H. G. Grayzel and M. Jacoby—p. 1321  
Prophylactic Use of Sulfanilamide in Children with Rheumatic Heart Disease. C. R. Messeloff and M. H. Robbins—p. 1323  
Glycolytic Enzymes of Synovial Fluid. R. S. Hubbard and R. C. Porter—p. 1328  
Studies of Pancreatic Function. II. Effect of Injury to Pancreas or Liver on Amylase and Lipidase Content of Blood. J. H. Roe and N. P. Goldstein—p. 1334  
Intravenous Injections of Soluble Tin Compounds. J. Seifter and E. S. Rambousek—p. 1344

### Michigan State Medical Society Journal, Lansing

42 577-664 (Aug.) 1943

- Significance of Unresolved Organizing or Protracted Pneumonia. J. B. Amberson—p. 599  
Postoperative Gastrointestinal Disturbances. C. B. Puestow—p. 604  
Cancer of Rectum. I. W. Rankin—p. 607  
Clinical Aspects of Arteriosclerosis. R. W. Scott—p. 611  
Toxicology of War Gases. C. W. Muchlberger—p. 617  
Paternal Blood Therapy for Moderate Vomiting of Pregnancy. R. M. Melson—p. 622

42 665-768 (Sept.) 1943

- Present Status of Medical Programs in War Industries. J. G. Towns—p. 691  
Industrial Hygiene in War Industries. J. J. Bloomfield—p. 699  
Absenteeism of Industrial Workers. A. T. Court—p. 707  
Mental and Psychologic Problems Relative to Industrial Employment. I. I. Fallman—p. 710  
Evaluation of Handicapped Worker for Employment in Industry. E. P. Chester—p. 715  
Medical Aspects of Industrial Employment of Handicapped Workers. I. J. Carey—p. 723

**Absenteeism of Industrial Workers**—Court presents charts on the basis of which he analyzes absenteeism among industrial workers. All of the increase in disability rates has been in respiratory diagnoses, the other major classifications having remained about stable. From 1939 through 1942, respiratory difficulties were both the most frequent and the only expanding major cause of disability. The almost universal use of supplementary vitamins and the wide availability of "cold shots" does not seem to have helped much. One of the charts shows for General Motors men the time lost in 1942 from short term sickness, serious sickness, nonoccupational accidents and occupational accidents. The relative unimportance of the last category is obvious. Recent public statements by poorly informed persons have exaggerated the importance of industrial accidents by 1000 per cent or more. Another chart compares the stable rate of serious sickness among General Motors factory workers, with a sharp increase in short term absenteeism which has occurred among these workers. An analysis of this rapidly increasing short term absenteeism shows that the workers themselves give personal sickness as the reason for nonattendance in about two thirds of all cases, with sickness of other members of the family and other personal needs making up the remainder. When this short term personal absence (alleged to be mostly sickness) is analyzed day by day it is found that it is heavily concentrated on Saturdays and Mondays. These days average about twice the lost time rate that is shown on payday each week. Thus it appears that the type of absenteeism which is currently most disturbing—that is short term absenteeism—is usually attributable to sickness which reaches epidemic proportions around the week end. Another striking fact about personal lost time is that absenteeism is concentrated among a few workers who compose a chronic fringe having more than their share of time off. One obvious characteristic is the relative youth of the group. A plant physician may be able in an important number of cases to help effect some reorientation of the individual's understanding of his job or his home problems which will enable him to cope better with those temptations which lead to excessive "week end sickness" and related types of absence.

### Minnesota Medicine, St. Paul

26 585-672 (July) 1943

- Postwar Medicine. F. W. Rankin—p. 601  
Virus Diseases of Animals. W. L. Boyd—p. 604  
Fundamental Aspects of Virus Diseases. R. G. Green—p. 606  
Nutrition in Normal Adults. J. J. Boehrler—p. 610  
Food Preparation and Preservation. Eva Donelson—p. 616  
Early Treatment of Injuries to Face and Neck. G. B. New—p. 619  
Pain as Symptom in Appendicitis. R. A. Glabe—p. 622

26 673-752 (Aug.) 1943

- Compression Fractures of Spine. C. C. Bell—p. 687  
Intertrochanteric Fractures. M. O. Henry—p. 690  
Ununited Fractures. M. S. Henderson—p. 692  
Fractures of Lower End of Radius and Ulna. C. C. Chitterton—p. 697  
Pathologic Changes in Auricles in Auricular Fibrillation Associated with Hypertension. L. Stover and T. J. Dry—p. 699  
Management of Industrial Injuries. H. W. Meyerding—p. 703  
Deodorant for Colostomies. W. C. Carroll—p. 709  
Trauma of Spleen. J. M. Culligan and D. J. Soltman—p. 710

## New Orleans Medical and Surgical Journal

96 87-128 (Sept) 1943

- \*Treatment of Carcinoma of Cervix at Charity Hospital. Preliminary Report of End Results. M. Garcia and J. J. Menville—p. 87
- Functional Uterine Bleeding. R. I. Crockett—p. 91
- Some Practical Aspects of Human Blood Plasma Preparation and Therapy. T. W. Davenport Jr.—p. 97
- Umbilic Hernia. R. Kapsner—p. 104
- Effect of Repeated Lumbar Punctures on Spinal Fluid in Normal Children. F. K. Bauer—p. 106
- Albrecht von Haller. W. D. Litch—p. 107

**Treatment of Carcinoma of Cervix at Charity Hospital**—Garcia and Menville report observations on 226 patients with carcinoma of the cervix who were treated at Charity Hospital of Louisiana between April 1938 and August 1939. A combination of x-ray and radium therapy was employed whenever possible. Treatment usually began with external x-ray therapy, given in accordance with the technique worked out by Arneson and Quimby. The dose amounted to from 1,600 to 2,000 roentgens in air through each of six pelvic ports in a period of twenty-four days with 200 kilovolts 0.5 mm of copper plus 1 mm of aluminum filtration and 50 cm distance. In addition many of the patients had per vaginal x-ray therapy according to the method described by Cooper. The dosage through this route varied considerably but it seldom exceeded 5,000 roentgens. Radium therapy was administered approximately a month later by means of a modification of the technique of Regaud and Lacassagne. From 5,000 to 8,000 milligram hours was given in a period of four to eight days, about half in the cervical canal and half in the vaginal fornices. The absolute three year survival rate in primary cases is 37.7 per cent. Prognostic factors are evaluated and satisfactory agreement is shown between the results obtained and the figures reported from other clinics.

## Ohio State Medical Journal, Columbus

39 705-800 (Aug) 1943

- Procurement and Assignment Service for Physicians, Dentists and Veterinarians. Responsibilities, Accomplishments and Future Problems. H. S. Diehl—p. 721
- Abdominal versus Vaginal Hysterectomy. J. L. DeCoursey—p. 729
- Office Proctology. P. W. Palmer—p. 731
- Multiple Congenital Anomalies with Intestinal Obstruction. D. M. Glover and J. A. Garvin—p. 734
- Pathologic Interpretation of Curettings. L. J. Bossert—p. 736
- Importance of Immunization of the Civilian Population in Wartime. J. A. Toomey—p. 739
- Tendon Suture. J. A. Soffel—p. 745
- Atypical (Virus Type) Pneumonia with Cor Pulmonale. R. M. Woolford and J. H. Ogura—p. 746
- Danger from Fluoroscopy. R. W. Stenstrom—p. 748
- Current Thinking on Nutrition. J. Forman—p. 749
- An Ohio Naval Surgeon At Sea. P. D. Jordan—p. 753

39 801-888 (Sept) 1943

- Coronary Thrombosis or Occlusion. J. J. Coons—p. 817
- Experiment to Determine Conservation of Vitamin A in Eye Under Strain. F. H. Newton and A. H. Schade—p. 827
- Adequacy of Photofluorographic Method of Chest Survey. M. W. Mason—p. 830
- Latent Brain Abscess. H. M. Salzer—p. 833
- Study of 27 Cases of Chronic Subdural Hematomas. W. J. Gardner and E. W. Shannon—p. 835
- \*Urine Alcohol Test and the Drunken Driver in Cincinnati. O. P. Behrer and C. A. Wilzbach—p. 836
- Renal Complications Following Single Intravenous Injections of Sodium Sulfadiazine. Report of 2 Cases. N. Shapiro, H. S. Bloch and L. Schiff—p. 838
- Abscess of Lung and of Brain as Complications of Lysol Poisoning. E. F. Koster—p. 840
- Extrauterine Pregnancy Following Hysterectomy. B. F. Shreffler and R. F. Zeller—p. 842
- Treatment of Gun Shot Wounds in Frontier Ohio. P. D. Jordan—p. 844

**Urine Alcohol Test and the Drunken Driver**—According to Behrer and Wilzbach, alcohol is an important primary cause of traffic accidents. The alcohol concentration of the body is the best method for determining the causative factor for the nervous manifestations and incoordination present in the accused person. When the alcohol concentration of the urine is 0.07 per cent or less the subject is not greatly incapacitated when the concentration in the urine ranges from 0.07 per cent to 0.2 per cent a considerable number of people may be under the influence of alcohol, all persons having urinary alcohol concentrations above 0.2 per cent may be assumed to have been under the influence of alcohol. During 1942 the

Cincinnati Police Department submitted 224 urine samples which were examined for alcohol content, sugar, acetone and sedative type of drugs. Of this number 204 tests represented persons charged with driving while under the influence of alcohol. The other 20 specimens were taken from dead pedestrians and suicides for evidence of intoxication. A study of the 20 fatalities showed 13 definitely intoxicated, 3 showed evidence of drinking and the remaining 4 were free of alcohol. Of the 204 persons arrested for drunken driving 7 were found to have insufficient alcohol to sustain the charge and dismissals were requested by the prosecution. Eleven of the drivers had alcohol concentrations from 0.07 to 0.19 per cent, 132 from 0.20 to 0.29 per cent, 42 from 0.30 to 0.39 per cent, 4 from 0.40 per cent upward. The authors cite facts which show that urine-alcohol tests do not penalize the moderate social drinker but do expose and aid in convicting the drunken driver who has consumed a large amount of alcohol.

## Public Health Reports, Washington, D. C.

58 1201-1232 (Aug 6) 1943

- \*Experimental Transmission of Spotted Fevers of United States, Colombia and Brazil by Argasid Tick *Ornithodoros Parkeri*. G. E. Davis—p. 1201
- Note on Rickettsioses in India. N. H. Topping, R. Heilig and V. R. Naidu—p. 1204
- Approach to Mental Hygiene. Public Health Problem. G. B. Haugen—p. 1211

**Transmission of Spotted Fevers by Argasid Tick *Ornithodoros Parkeri***—Davis shows that the argasid tick *Ornithodoros parkeri* transmits the infectious agents of spotted fevers of the United States, Colombia and Brazil with equal facility. Transmission was effected by larvae, throughout the nymphal stages, and by the male and female. Females that fail in transmission may give rise to infective progeny. Transmission through the egg was observed in spotted fever of the United States to the F4 generation, in the spotted fever of Colombia to the F2 generation, and in the spotted fever of Brazil to the F1 generation. The invasiveness of the infecting agent was not lessened by continuous tick passage. Ticks that had fasted for one year produced typical infection, and progeny of these fasting ticks produced infections resulting in the death of the host. The data submitted suggest that this tick may be a factor in the maintenance of spotted fever in nature and, occasionally at least a vector to man.

## Radiology, Syracuse, N. Y.

41 107-212 (Aug) 1943

- Pathology of Brain Tumors and Its Relationship to Roentgenologic Diagnosis. E. Boldrey—p. 107
- Reliability of Brain Tumor Localization by Roentgen Methods. V. C. Johnson and F. J. Hodges—p. 117
- Application of Some New Techniques to Study of Brain Tumors. E. R. Witwer, A. J. Derbyshire and K. E. Corrigan—p. 130
- Physical Examination at Induction. Standards with Respect to Tuberculosis and Their Application as Illustrated by Review of 53,400 X-Ray Films of Men in Army of United States. E. R. Long and W. H. Stearns—p. 144
- Coexistence of Chronic Lymphogranuloma and Cancer. L. Guzman—p. 151
- Venography with Fluoroscopy in Venous Lesions of Lower Limb. A. Lesser and L. Raider—p. 157
- Selection of Physical Factors for Maximum Output in Roentgen Therapy. W. W. Saunders—p. 164
- Roentgen Examination of Pancreatic Tumors. J. Borak—p. 170

## Southern Medical Journal, Birmingham, Ala.

36 603-664 (Sept) 1943

- Nutritional Deficiency as Etiologic Factor in Icterus Accompanying Pneumonia in Negro. E. L. Turner, M. J. Bent, G. D. Holloway, J. R. Cuff and W. S. Quimland—p. 603
- Treatment of Fractures of Both Bones of Leg by Conservative Method. H. I. Mauck—p. 609
- Moniliasis of External Ear Canal. W. L. Dobes—p. 614
- Sterility in Female. W. D. Sugg—p. 616
- Sperm Fluctuations in Health and Disease. R. I. Brown—p. 619
- Variation and Interpretation of Glucose Tolerance Test. H. J. John—p. 624
- Malarial Immunity. W. N. Bispham—p. 636
- Use and Abuse of Physical Therapy in Dermatology. H. M. Robinson—p. 640
- Tuberculous Peritonitis. D. W. Barrow—p. 646
- Relief of Pain Following Anorectal Surgery. T. E. Smith—p. 650
- Keratitis Due to Mumps. O. Lippmann—p. 654
- Birth Injury. T. D. Young—p. 666



## FOREIGN

An article ( ) before a title indicates that the article is abstracted. In such case report and trials of new drugs are usually omitted.

## British Journal of Ophthalmology, London

27 345-352 (Aug.) 1943

- Case of Microphthalmia with Special Reference to Its Possible Relation to Strabismic Amblyopia—A. Gervais and A. Loewen—p. 345
- Topical Therapy of the Eye in the Treatment of the Eye—And in Ophthalmic Herpes—N. Hertz—p. 348
- Importance of the Eye in the Treatment of the Eye—J. B. C. Hughes—p. 350
- Antibiotic Therapy—A. Gervais—p. 352

## British Medical Journal, London

2 191-222 (Aug. 14) 1943

- Experiences in Military Dermatology—R. M. B. Muckenna—p. 191
- Epidermal Inactivation in Ulcer Therapy—A. M. Gull and L. A. Keele—p. 193
- Problems of Method of Cephalometry and Pelvimetry—P. Cave—p. 196
- Experimental Infection of Mepacrine (Atabrine)—Histologic Effect—J. Hinkley—p. 198
- Experimental Erythema—S. Dunn—p. 199

2 223-256 (Aug. 21) 1943

- War Surgery in Middle East—K. K. Debenham—p. 223
- Acute Lymphocytic Mononucleosis in Epidemic Catarrhal Jaundice—J. Waring—p. 225
- Pseudo-dermatitis—K. B. McMillan—p. 229
- Infection Treated with Sulfamethazine—Report of 77 Cases—B. A. Peters and M. J. Fashy—p. 230
- Effect of Injections of H. H. on Growth of Mouse Tumors—D. I. Woolhouse—p. 231
- Composite Ziehl-Neelsen Staining Method for Sputum Pus and Exudates—S. Marshall—p. 232

## Edinburgh Medical Journal

50 385-448 (July) 1943

- Experiments in Study of Immersion Foot—W. Blackwood and H. Russell—p. 385
- Control of Sepsis—J. M. Robson—p. 399
- Pathology of Rheumatism—W. M. Leitch—p. 415
- Studies in Refractory Anemia—III Refractory Anemias with Cellular Marrow—L. S. P. Davidson, I. I. Davis and J. Innes—p. 431

**Etiology of Rheumatism**—Leitch maintains that acute and chronic rheumatism is an anaphylactic disease with multiple lesions in the mesodermal system produced by continual antigen-antibody reactions in or on tissue cells. The antigen in most cases—gout is probably a conspicuous exception—consists of dissolved bacterial substances derived from the sites of subacute or chronic infection. The corresponding antibody is distributed in the faulty way characteristic of sensitization with a prevalence in the cells and a deficiency in the blood stream. This deficiency permits the antigen or a portion of it to pass unchecked the antibody obstacle in the circulation and to reach the antibody-storing tissues. The anaphylactic distribution of the antibody is due to its quantitatively insufficient output in a person with constitutional or temporary debility of the reticulo-endothelial system, such a person represents an intermediate type between the sufficiently good responder to immunizing stimuli and the complete nonresponder. This debility of the antibody-producing system is the basic cause of rheumatism. All agents detrimental to health and the functional integrity of the body, such as disease, malnutrition, exposure, and physical and mental exertion, act as indirect and precipitating factors, interfering with the antibody production.

## Journal of Neurology and Psychiatry, London

6 1-82 (Jan.-April) 1943

- Neurotic Constitution—Statistical Study of Two Thousand Neurotic Soldiers—E. Slater—p. 1
- Psychosomatic Syndrome of Spurious Pregnancy After Menopause—Betty Jacobs—p. 17
- Suggestibility and Hysteria—H. J. Eysenck—p. 22
- Case of Atypical Lindau's Disease—W. R. Brain, J. G. Greenfield and D. W. C. Northfield—p. 32
- Spontaneous Ventricular Rupture in Hydrocephalus with Subtentorial Cyst Formation—J. Pennybacker and Dorothy S. Russell—p. 38
- Erosion of Alar Nerve Following Trigeminal Denervation—J. Schorstein—p. 46
- Ventricular Changes After Closed Head Injury—H. Davies and M. A. Falconer—p. 52

## Deutsche medizinische Wochenschrift, Leipzig

68 1-28 (Jan. 2) 1942 Partial Index

- So Called Catarrhal Icterus and Epidemic Hepatitis—S. Dietrich—p. 5
- Dependence of Reactivity of Organism on Type of Food—Clinical Significance—R. Abderhalden—p. 10
- Damage of Joints Caused by Pneumatic Tools—P. Rostock—p. 14
- Pneumomonocytosis Caused by Iron Dust—K. Humperdinck—p. 16
- Treatment of Tetanus—W. Bartschwaroff—p. 17

**Catarrhal Icterus and Epidemic Hepatitis**—Dietrich believes that the disorders designated as catarrhal icterus and epidemic hepatitis are probably identical. Catarrhal icterus is an infectious disease which is probably caused by a virus. The infection takes place from person to person probably by droplet or contact infection. Children are most readily attacked. The disease confers a prolonged immunity. Although its course is usually benign, it may lead to hepatic cirrhosis or acute atrophy. In almost every war in the last hundred and fifty years increased numbers of cases of jaundice have been observed among soldiers. The French have termed the disease "jaunisse de camps." During the Napoleonic wars large numbers of cases of jaundice were observed. It was also observed during the American Civil War, the Franco-Prussian War of 1870, the Boer War and the first world war. It was therefore to be expected that during the present war there would again be large numbers of cases of jaundice among the soldiers, and this has been the case. As in former wars, it has been noted that jaundice occurs chiefly during the fall and early winter months. Since the disease is infectious the patients should be isolated, although it is possible that transmission takes place in the preicteric stage. The treatment is symptomatic. In view of the fact that the disease is infectious and produces immunity, treatment with convalescent serum might be worth a trial. The "soldier's disease" is identical with epidemic hepatitis.

## Zentralblatt für Chirurgie, Leipzig

69 161-208 (Jan. 31) 1942

- \*Esophageal Diverticula and Diverticular Carcinoma—G. Graumann—p. 166
- Scrotal Preternatural Anus—P. Ries—p. 176
- Röntgenologisch Demonstrated Papilloma of Renal Pelvis—R. E. Wegener—p. 180
- \*Is Use of Lenggenhager's Dry Serum Free From Danger?—F. Frimberger—p. 183

**Esophageal Diverticula and Diverticular Carcinoma**—Graumann states that pulsion as well as traction diverticula are acquired and that developmental disturbances play no decisive part even in the development of pulsion diverticula. Developmental disturbances are probably not the decisive factor in cancerous degeneration of diverticula. Inflammatory processes occurring in every diverticulum may lead to atypical epithelial proliferations and thus create a basis for malignant growth. The author presents the history of a man in whom cancerous degeneration took place in a pulsion diverticulum of the esophagus.

**Danger in Use of Lenggenhager's Dry Serum**—Lenggenhager's serum is prepared from fresh cattle serum to which dextrose is added. It is dried by air, it can be stored indefinitely and it dissolves easily and without residue. It can be sterilized, because even prolonged boiling does not cause precipitation. After it is dissolved and boiled for ten minutes it is said to be suitable for intravenous administration to human subjects, quantities of from 300 to 650 cc being tolerated without reactions even after repeated injections. The boiling is supposed to destroy completely the foreign blood characteristics, so that no sensitization results. Frimberger points out that, although the cooking process may destroy the specific characteristics of the serum, new ones of antigen character, so called coctoantigens of coctoanaphylactogens, are certainly formed. He investigated the dried cattle serum for its antigenic characteristics on guinea pigs, rabbits and a dog. Repeated injections at intervals of two or more weeks caused severe and even fatal serum shock in all three species of animals. The serum of rabbits sensitized with dried cattle serum was found to contain antibodies against the boiled cattle serum. Antibodies against fresh cattle serum were absent. The development of coctoantigens during the boiling of the dried cattle serum is thus demonstrated. The author warns against the use of the dried cattle serum in human beings.

## Book Notices

**Roentgenographic Technique. A Manual for Physicians, Students and Technicians.** By Darron Artelle Rhinehart. A. M. M. D. F. A. C. R. Professor of Roentgenology and Applied Anatomy, School of Medicine, University of Arkansas Little Rock. Third edition. Cloth. Price \$5.00. Pp. 471 with 201 illustrations. Philadelphia: Lea & Febiger, 1943.

In the preface to this useful manual on x-ray technique it is stressed that the needs of x-ray technicians, medical students and physicians doing some roentgenographic work for themselves have been particularly kept in mind. Having thus clearly indicated the scope of the volume, the author proceeds to cover it quite adequately. In common with many textbooks of its kind, it appears to devote a little more space to physics than is necessary. The dark room layout illustrated on page 99 seems more cramped than it should be. In the sections dealing with x-ray examination of the extremities greater prominence should be given to the use of cardboard holders. The loss of fine detail and of adequate soft tissue rendition (inevitable when intensifying screens are used) can be partly avoided by the proper use of such film holders. Most of the illustrations in the text show the use of a cassette, and the accompanying roentgenographic reproductions show the high contrast inevitable with intensifying screens.

In connection with x-ray examination of the wrist, the author does not mention the value of posteroanterior or dorsoventral views made with the hand in slight ulnar deviation, in order to bring out detail in the scaphoid more clearly. For true lateral projections of the wrist merely rotating the hand is not sufficient, in this position only the radius and carpus are in lateral projection, the ulna is still in dorsoventral projection. For true lateral projections of the wrist it is usually necessary to turn the tube and use a horizontal beam.

In connection with x-ray examination of the hip, it would seem desirable to point out the advantages of lateral projection made with the leg flexed and abducted. Of course, this particular projection in the presence of a fractured femoral neck, can be made with safety only when the fragments have been immobilized by internal fixation. The illustration used for showing a lateral view of the femoral neck is not clear and deserves remaking. Similarly that showing the bladder, figure 191, appears to be fogged and should be remade.

In the section concerning examination of the gallbladder with tetraiodophenolphthalein, nausea is mentioned as a common complication. It might be worth pointing out in the next edition that this nausea can be completely eliminated by the simple expedient of having the patient hold his nose while drinking any of the popular preparations. There has recently been placed on the market a compressed tablet preparation which eliminates nausea almost if not entirely, irrespective of control of the olfactory apparatus.

The author mentions the use of fluoroscopy for preliminary determination of the presence or absence of opaque foreign bodies in the eye (page 439). We doubt if many roentgenologists would endorse this procedure. The dangers of fluoroscopy and indeed, of radiography deserve a little more stressing than is given in the present text. The dangers of radiography with portable apparatus have been vividly illustrated in recent months by the tragic incidents at certain large industrial plants, where many amputations of hands proved necessary following the indiscreet use of portable x-ray apparatus at too close a distance.

Most of the illustrations are clear and well reproduced. The type and format are also satisfactory. The book can be recommended for use by those for whom it was written.

**A Handbook of Medical Library Practice Including Annotated Bibliographical Guides to the Literature and History of the Medical and Allied Sciences.** Based on a Preliminary Manuscript by M. Irene Jones. Compiled by a Committee of the Medical Library Association. Edited by Janet Doe. Cloth. Price \$5. Pp. 609 with illustrations. Chicago: American Library Association, 1943.

This volume was compiled by a committee of the Medical Library Association under the leadership of Janet Doe of the Library of the New York Academy of Medicine. An original manuscript prepared by M. Irene Jones was the basis for the complete work. Data are here made available that are not easily found in many other places. There is for example a list of medical libraries possessing a hundred thousand or more

volumes in and out of America. There are chapters on periodical and book selection, ordering, cataloguing, subject headings, classification, pamphlets, pictures, maps and microfilms, a discussion of rare books and a guide to bibliographies, biographic collections and histories. The final chapter is a consideration of reference work by Eileen R. Cunningham. While the book will not have much of an appeal for the average physician, it is well worth invaluable to any one concerned with libraries in the field of medicine. The statement relative to the *Quarterly Cumulative Index Medicus* deserves repetition for the attention of every physician.

This index is the most important current international index to medicine and the allied sciences. No medical library can afford to be without it. Its importance to the medical profession is acknowledged throughout the world. It is, of course, particularly useful to English speaking readers, but there is no other medical index of equal excellence and value published in any other country. It is conveniently arranged and is easy to consult rapidly.

**The Conquest of Epidemic Disease. A Chapter in the History of Ideas.** By Charles Edward Amory Winslow. Cloth. Price \$4.50. Pp. 411. Princeton, New Jersey: Princeton University Press, 1943.

The author is professor of public health in Yale University. His objective has been to write a history of the ideas on which have been based the efforts to control epidemic diseases. "How did the leaders of science really visualize a given problem in a given century, what was their solution and what were the reasons which dictated that solution?" The course of epidemicologic progress is described in detail.

A hurried summary can give only a general outline of the scope of the book. Following detailed reviews of supernatural medicine, demonic and divine, practices of which are not yet limited to the past or to remote places, account is given of the directing influence of observation and experience on medical thinking in Greece, in accord with the Greek concept of a universe of natural law. Hippocrates observed that each disease "has a nature of its own, and none arises without its natural cause," and in the case of epidemic diseases this cause is mainly disturbances of the body by atmospheric influences. Some five hundred years later Galen defined epidemic disease as one "which attacks all, or the greater number, arising from corruption of the air with the result that great numbers perish. Certain diseases, notably ophthalmia, skin diseases and phthisis were early recognized as contagious. The fact that epidemics always spared some persons was explained on the score of individual predisposition. These three factors—atmospheric influences, predisposition and contagion—dominated epidemiology until the nineteenth century. Winslow observes that while historians and poets suggested that epidemics were spread by contagion, miasmatic and constitutional factors received the main emphasis in medical writings. He points out that the Old Testament presented the first clean-cut conception of contagion and built on this conception a definite and well conceived program of differential diagnosis, isolation, quarantine and disinfection. For three hundred years after 1348 plagues raged in Europe and it was the Black Death which at last taught the communicability of disease by contact beyond all doubt. The numerous tracts put out to explain the causes and treatment of plague appear to be the first example of popular instruction in public health on a large scale and in these tracts contagion was accepted. It was in the sixteenth century that Fracastorius developed a remarkably complete and adequate theory of contagion in which the only major deviation from the modern conception was the lack of recognition of the biological nature of the contagious element. In the seventeenth century Athanasius Kircher presented the first clear concept of 'contagium animatum' and Leeuwenhoek the first to do so described and figured bacteria and protozoa. The stage was now fully set for a sound complete theory of contagion but the emphasis by Sydenham on the epidemic constitution of the atmosphere to the neglect of contagion in the spread of epidemics held back the progress of epidemiology for many years. The modern public health movement started in the first half of the nineteenth century with the great sanitary awakening led by Shadwick, Simon, Snow and Budd. The role of filth as the nurse of infectious disease, it not the mother and the nature and modes of spread of the contagions of cholera and typhoid were demonstrated even before their bacterial etiology was known. Finally led by Pasteur the germ theory of commun-

cable disease was established. Discovery of the carrier and of the insect host as well as the close analysis of modes of infection explained the occurrence of infectious disease when not traceable directly to contact as commonly understood. The book closes on a note of triumph for the germ theory and of reminder of unsolved problems. 'There is today a wholesome reaction against exclusive emphasis on the germs and a recognition of the importance—even in many germ diseases—of factors of constitutional resistance (diathesis) and of the influences of climate and season and nutrition upon vital resistance.'

The book is based on deep comprehensive study and able analysis of first hand information. As stated in the author's preface, the story has been told as far as possible in the actual words of the various participants and after a thorough analysis of their surviving works. There are also appropriate sketches of the participants. The long chapter on "The Impact of Yellow Fever" might well have included a brief comment on its solution. The role of vaccination in the control of small-pox might also have been considered even though the general subject of immunity is not included in the discussion. The book is a notable example of good historical writing and scholarship.

**The Therapy of the Neuroses and Psychoses. A Socio-Psychobiologic Analysis and Resynthesis.** By Samuel Henry Kravins, M.D., Associate in Psychiatry, University of Illinois College of Medicine, Chicago. Second edition. Cloth. Price, \$7.50. Pp. 767 with 6 illustrations. Philadelphia: Lea & Febiger, 1941.

This is a good book on psychiatric treatment. Both psychologic and medical therapeutic measures are discussed in some detail. In spite of the title there is a considerable portion on psychosomatic diseases, which are perhaps not really neuroses in a technical sense. The explanations which are given are up to date and carefully presented, and the style is good. All of the mental disorders which would interest any one doing therapy with mental cases are well covered. While some variations of medical treatment are not discussed, the presentation as a whole is quite detailed and adequate. There is nothing dramatically new, but this volume is one of the few books that contain such specific material on treatment of mental cases a subject which is becoming more and more important today with the return of mentally and nervously disordered members of the armed forces. There is some discussion of the war required mental disorders and there is less discussion of the psychoanalytic method in this than in the previous edition, however, much of the discussion is predicated on psychoanalytic concepts, although not expressed in psychoanalytic terms. There are a number of case histories which are well presented and in most instances form quite conclusive evidence of the therapeutic methods which the author describes. The psychiatrist and the general practitioner who have to treat neuroses and psychoses and psychosomatic complaints should be able to get much valuable information.

**Notes on Gas Gangrene: Prevention, Diagnosis, Treatment with an Account of the Technique of Wound Excision and a Scheme for the Bacteriological Investigation of War Wounds.** By the War Wounds Committee of the Medical Research Council and the Committee of London Sector Pathologists. Medical Research Council War Memorandum No. 2. Second edition. Paper. Price, 6d. Pp. 28. London: His Majesty's Stationery Office, 1943.

This paper gives a thorough and complete discussion of all the medical, surgical and pathologic aspects of gas gangrene. It represents a balanced view of British experience in the subject, therapeutic as well as diagnostic. It is a sober, well balanced dissertation. In concise form and in simple language there are presented in order the clinical aspects of the disease, its prophylaxis and the laboratory methods of diagnosis. The bacteriologic portions are particularly good. Much ink has been spilled in the complexities of the etiologic anaerobes. That error is not made here. On the contrary, the laboratory procedures given have the double virtue of being short and accurate.

**The Nature, Method & Purpose of Diagnosis.** By Henry Cohen, M.D., F.R.C.P., F.R.C., Professor of Medicine, University of Liverpool. The Skinner Lecture. Paper. Price, 1s. Pp. 27. Cambridge University Press, 1943.

This booklet contains Dr. Cohen's Otis Skinner Lecture delivered under the auspices of the Faculty of Radiologists at the Royal Society of Medicine. As the title implies, this is a philosophic discussion of the larger aspects of diagnosis.

**Vertebrate Photoreceptors.** By Samuel R. Detweiler, Professor of Anatomy, College of Physicians and Surgeons, Columbia University, New York. Cloth. Price, \$1.15. Pp. 181 with 110 illustrations. New York: Macmillan Company, 1941.

Pegunung with a short description of the eye as a whole in various vertebrates, the author goes on to a more detailed study of the vertebrate retina. With a careful digest of the literature is included a summary of his own studies, including measurement of the retina in twenty-seven different vertebrates with illustrations from his own photomicrographs. Various forms of the macular area are illustrated and adequate consideration is given to Polyak's work which has necessitated a modification of our simple conception of the conduction pathways in the retina to a much more complex one. The minute histology of the rods and cones and their development are reviewed. The author estimates that there are about seven million cones in the human retina and from seventy-five to one hundred and seventy million rods. His review and personal studies have convinced him that the duplicity theory is valid, i.e., that the cones and rods form distinct systems mediating vision in high and low degrees of illumination respectively.

Consideration of the habits of various vertebrates is, generally speaking, in accord with what one would expect from this theory, cones predominating in the retinas of diurnal animals while in nocturnal forms rods are chiefly or exclusively present. Some apparent exceptions are the presence of abundant rods in the strictly diurnal chicken and of cones, though small ones, in the owl. Wall's conclusions that cones may change to rods during evolution, involving a change of habits in certain vertebrates, is discussed.

The latter part of the book, dealing with the functions of the retina in relation to its anatomic structure, is of especial interest. The author has critically analyzed the evidence for various theories and, on the whole, is inclined to emphasize the need for further experimental evidence as regards most of them. Although migration of pigment during light adaptation has been conclusively demonstrated in many forms by various observers, including the author, it is absent in other forms and has not been conclusively shown to occur in any of the mammals in spite of statements to the contrary, which persist in many textbooks. The same is true of contraction of the cones and elongation of the rods during light adaptation, which has not been proved to occur in mammals although it is definite in many lower forms.

In at least some forms showing these photomechanical responses, they disappear following section of the optic nerve and also, according to Arey, have a definite relation to eye movements. A peculiar phenomenon of diurnal rhythm in these reactions observed by Welch and Osborn has been confirmed by Arey and Mundt. The changes of extreme dark adaptation were found only in animals whose eyes were removed at night, regardless of how long the animals had been dark adapted. It is concluded that, while these photomechanical responses are of value for dark adaptation in those forms in which they occur, they cannot be regarded as explaining the phenomenon.

While we are accustomed to consider our own visual apparatus as at the top of the scale from a functional and evolutionary standpoint, there is evidence from comparative anatomy that this is by no means the case. In birds the cones are much more closely packed in the foveal area than in man, there being about one million cones per square millimeter in Buteo as compared with a hundred and sixty thousand in man. In the goldfinch the internal nuclear layer is five times as thick as the vitreous, whereas in man the internal is actually narrower than the external nuclear layer, another indication of much greater visual acuity in the bird. The occurrence of well developed foveas in many lower forms, such as the lizards and in forms in which complete decussation of the optic nerve fibers occurs, deprives of all validity Elliott Smith's assumption that the fovea is a criterion of place in the evolutionary scale.

The facts concerning biochemical changes in the retina during adaptation are reviewed and a final chapter is devoted to the effects of vitamin A deficiency. In addition to the well known functional findings as revealed by adaptation tests the author describes certain degenerative changes, as shown by

microscopic studies, which occur in the rods after prolonged vitamin A deficiency. These, as shown by the author's associate Johnson, may reach extreme degrees and, although recovery from such changes was shown to occur, it was slow, requiring ten to eighteen weeks in rats and was not complete at the end of this time.

**A Text Book of Pathology. An Introduction to Medicine.** By William Boyd M.D. F.R.C.P. Professor of Pathology and Bacteriology in the University of Toronto. Toronto. Fourth edition. Cloth. Price \$10. Pp. 1008 with 519 illustrations. Philadelphia: Lea & Febiger, 1943.

The first edition appeared in 1932. The publication of four editions in eleven years is an indication of its popularity as a textbook among medical students, for whom it was primarily written, and of the rapid changes that are taking place in pathology. The modern point of view in pathology, still not recognized by many physicians, considers disease from its physiologic aspect against the background of morbid anatomy and histology. The structural changes induced by disease are still the chief concern of the pathologist but with the added factor of the effects of these changes on the function of the diseased organ. This is definitely the point of view from which Boyd's book is written. This edition is characterized by the same clear style, the same readability and the same apt allusion and deft turn of phrase that have been such prominent features of previous editions. It is fifty-six pages shorter than the third edition and is illustrated with 490 'engravings' and 29 colored plates. Three hundred and forty-six pages are devoted to general pathology, 631 to special pathology and 37 to the index.

This revision may lay claim to be a thorough one because in addition to new material, much has been rewritten, much has been condensed through a tightening of the belt of speech and a considerable amount has been deleted. The principal deletions are the chapter on body constants in disease, the sections on immunity and hypersensitiveness and on the principles of heredity and much bacteriologic detail in the chapter on bacterial infections. All these subjects are dealt with more adequately in textbooks in other fields and should have been learned by medical students in other courses that are prerequisite to the study of pathology.

In the preface, twenty-eight additions are listed. Among the more important of these are vitamin K in relation to thrombosis, histoplasmosis, liposarcoma, necrosis of the liver in burns, spread of tumors by the vertebral system of veins, virus pneumonia and radiation pneumonitis, cystic fibrosis of the pancreas, the renal juxtaglomerular apparatus, the relation of the kidney to hypertension, crush nephritis, Hunner's ulcer, blood phosphatase in carcinoma of the prostate, fibrosing adenomatosis of the breast, Boeck's sarcoid, the Rh factor in erythroblastosis fetalis and lesions of the intervertebral disks. Seventeen sections 'have been largely or in part rewritten,' such as the etiology of tumors, cirrhosis of the liver, goiter, pathologic physiology of the spleen, etiologic agents in carcinoma of the breast, the etiology of atheroma, of cholecystitis and of diabetes, the pathogenesis of lobar pneumonia, endometriosis, and the etiology of poliomyelitis.

The qualities of this book justify its popularity among medical students. While definitely not written for either practicing physicians or pathologists, both these groups will find in it much that is interesting and valuable. On the whole, the opinions expressed, often quite dogmatically, by the author are sound and in harmony with the established facts of modern pathology.

**Annual Review of Physiology. Volume V.** Edited by James Murray Luck, Stanford University. Associate Editor, Victor E. Hall, Stanford University. Cloth. Price \$5. Pp. 613. Stanford University Press. Annual Reviews, Inc. 1943.

It is recognized in the preface to this volume that probably all reviews which will appear for the duration of the war will have to omit reference to important foreign scientific publications. Nevertheless the table of contents offers an impressive array of physiologic subjects reviewed by an equally-competent group of authorities. The reviews of this series including the one under consideration, are quite invaluable for research workers and medical libraries. They should be also of great assistance to scientifically minded workers everywhere who attempt to keep abreast of the rapid advance of science.

**Clinical Roentgenology of the Cardiovascular System.** By Hugo Roessler M.D. F.A.C.P. Associate Professor of Roentgenology and Cardiologist, Department of Medicine, Temple University School of Medicine, Philadelphia. Second edition. Cloth. Price \$7.50. Pp. 480 with 337 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1941.

The author has considerably enlarged and revamped the text in this edition to bring the material up to date. The illustrations have been expanded and improve the presentation by including more graphic case reports. The author's experience in this field together with his background of teaching, research and clinical practice makes him well qualified to deal adequately with the subject. The book is useful for the beginner, but he will have to absorb it piecemeal. It is excellently suited for the cardiologist, since it integrates roentgenology with clinical states. It is well adapted for the roentgenologist since it gives him a clinical and anatomic background of the conditions considered making his point of view more complete and suitable as a consultant. It will be found useful as a reference book. It is therefore regrettable that at times the style makes it difficult to follow the author's thoughts, that certain words are used in an unusual sense, that more headings of subdivisions have not been introduced and that the illustrations have not been placed at the end of each section rather than interspersed in the text. Further it would have helped if the author had set off a section in the legend of every illustration devoted to comment in which he could integrate the points for which the case report was presented; this is done in only a few cases. This lack at times makes it difficult to find out what the figure is supposed to illustrate. The reproductions are excellent, and the illustrative material is arranged so that it can be used independently of the text. Only one error was noted in the illustrations, namely that the chest lead record of the second electrocardiogram in figure 281 is reversed. Considering the merits of this excellent book these are relatively minor criticisms. The author is to be commended for his courage in omitting references in the text to particular communications in order to avoid the pitfall, found in many textbooks, of giving credit to particular authors rather than in pointing out the broad sweep of subject development. Polemics are avoided, and the deductions presented are those of the author himself. The bibliography is extensive and should meet the requirements for further study of any reader. It seems, therefore, that this book admirably fulfils a real need in clinical practice.

**Pictorial Handbook of Fracture Treatment.** [By] Edward L. Compere M.D. F.A.C.S. Associate Professor of Surgery, Northwestern University Medical School, Chicago and Sam W. Banks M.D. Associate in Surgery, Northwestern University Medical School. Cloth. Price \$4.25. Pp. 351 with 171 illustrations. Chicago: Year Book Publishers, Inc. 1943.

This handbook was compiled particularly for the general practitioner and medical students. The authors have presented the simplest principles and methods which they have found satisfactory for the treatment of fractures. The excellent illustrations by Dr. Harold Laufman give a graphic presentation of the technic described in the text and make the subject matter more readily comprehensible. The authors follow the methods of treatment of fractures and dislocations described in the modern textbooks of Boehler, Campbell, Key, Conwell, Magnuson, Scudder, Speed and Watson-Jones. The subject matter is condensed and is written to substitute for the larger textbooks. The general considerations of treatment of fractures are limited to the essential facts. Then fractures are taken up according to the parts involved and the authors' method of choice is described. In some of the difficult fractures the method of necessity involves technical difficulties which it would be hard to expect the student and general practitioner to carry out, such as the five pin treatment for the fracture of the neck of the femur as well as the various techniques of reconstruction when this fracture becomes ununited. Bone grafts are described with clearness but this does not make them any simpler or safer to do in the hands of the inexperienced. On the whole the book is well written and the illustrations add a great deal for the simplification and clarity of this large subject. The book is concise and a good condensation of the larger textbooks on fractures.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES, NOR SPECIFICALLY STATED IN THE REPLY. ADVISORY CORRECTIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. LETTERS MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### ACUTE FEBRILE ILLNESS AND ADMINISTRATION OF SULFONAMIDES

To the Editor—I have had several interesting cases at a camp in the Catskills during this past summer and hope that you can help me explain them. These were all of a similar nature. They were all characterized by an acute onset with headache and no other physical findings except temperature from 101 to 103 F. Two of the patients not treated with sulfadiazine developed signs in the chest, which were not of a classic pneumonia and an increasing cough. One of these reached a temperature of 104 F on the fifth day and responded rapidly to sulfadiazine. The other patients (4) were treated immediately at onset with sulfadiazine and were better by the next day. These patients were all children from 9 to 12 years of age. The total amount of sulfadiazine varied from 50 to 90 grains (3.25 to 6 Gm). Headache started to disappear almost immediately on administration of sulfadiazine without any other drug. I have spoken to another physician in this locality who has had similar cases but he states that he has had some rapid cures without sulfadiazine. I would appreciate any information you can give me.

M. D., New York

ANSWER—Although it may be that the epidemic disease referred to was an unusual one in which the sulfonamides were helpful, the few details given strongly suggest that it was one of the syndromes called "primary atypical pneumonia, etiology unknown" or virus pneumonia. It appears that in the epidemic form of this grippike or influenza-like syndrome the majority of cases are mild and without pneumonia, which casts doubt on the wisdom of using the word "pneumonia" to name it. Some more general name like the ones just mentioned would seem preferable. An example of a similar epidemic in a summer camp is described by Iverson (*Bull. Johns Hopkins Hosp.* 72:89 [Feb.] 1943), in which pneumonia occurred in certain cases. The sulfonamide compounds are not of value in infections of this sort. Although it may be too late now, it would have been of interest to determine the presence or absence of cold agglutinins in the blood of these patients (*THE JOURNAL*, June 5, 1943, p. 369).

It is doubtful that pneumonia developed in the 2 cases mentioned because sulfadiazine was not given, and equally doubtful that sulfadiazine alone caused the immediate rapid response noted.

### NITRATES IN VEGETABLES NOT TOXIC FOR MAN

To the Editor—There is an idea prevalent among the people around here that nitrate of soda used as a fertilizer to vegetable crops is injurious to human beings. People will get sick after eating certain vegetables and then say "I should have known better than to eat those cabbages or watermelons that have been grown with nitrate of soda." Since nitrogen is essential to plant growth I am unable to see why the application of nitrate of soda to hasten growth could be injurious to the human organism. Is there any evidence that the use of nitrate of soda as a commercial fertilizer to certain fruits and vegetables is in any way injurious to the person eating it?

J. Street Brewer, M.D., Roseboro, N. C.

ANSWER—Nitrogen is one of the most important plant nutrients and is usually the limiting factor in the growth of practically all crops. The general opinion is that it may be possible under extremely unusual conditions for nitrate to accumulate in the vegetative portion of the plant. This has been recorded for tobacco which has had a surplus of nitrate of soda applied to it. The veterinarians state that there is one case on record of a toxic reaction of stock to a field which had an extremely heavy application of nitrate of soda. In general nitrate which is applied as fertilizer is rapidly converted to other forms of nitrogen if not immediately used by the plant. The plant serves as a reducing system and converts the assimilated nitrate to nitrite, to ammonia, to amino acids and to protein constituents. Tollingham in *Plant Biochemistry*, discussing nitrogenous compositions of tomato plants, states that "these data show almost complete disappearance of nitrate in passing from the roots to the tip of the stem but there is a serious reappearance of this fraction in the conducting system of the leaf. This may signify, of course, translocation toward the leaf more rapidly than will allow reduction by the stem mechanism, but it is apparent that the leaf lamina promptly disposes of nitrate." Nightingale (*New Jersey Agricultural Experiment Station Bulletin* 461, 1928) found 10 to 13 per cent

of the total nitrogen present as nitrate in all parts of growing tomato plants except the leaf blade. Bridges and Mattice indicate that a watermelon contains 0.4 per cent of protein (probably N times 6.25) or 0.064 per cent nitrogen, if 15 per cent of this is nitrate nitrogen, equaling 0.0096 per cent N as nitrate or 0.042 per cent nitrate as  $\text{NO}_3$ . It would hence require 2,500 Gm (over 5 pounds) of watermelon to contain 1 Gm of nitrate. If one ate this much one would be sick from something besides nitrate poisoning. Furthermore, Merck's Index gives the clinical dose from 0.2 to 1.3 Gm of potassium nitrate. Toxic amounts are much greater. If nitrate poisoning does occur, one would expect it from market gardening centers where heavy fertilization is the rule. Record of such an occurrence has not been found.

There is no evidence to support the belief that the use of nitrate of soda in the growing of fruit and vegetables is in any way injurious to people who eat such produce.

### REPEATED BLOOD DONATIONS AND IMMUNE ANTIBODIES

To the Editor—Is there any scientific evidence to warrant the assumption that immune bodies, specific or general, might be reduced appreciably by repeated donations of blood so that the donor's resistance to infection would be materially affected?

R. V. Brokaw, M.D., Champaign, Ill.

ANSWER—There is no evidence that the periodic donation of blood as practiced by professional donors or persons donating their blood repeatedly to the Red Cross reduces appreciably the capacity of the body to form immune antibodies. If these small donations have any effect at all, it would more likely be a stimulating one. According to the present view antibodies are modified globulins, and to reduce the capacity of the body to produce antibodies rather drastic measures are necessary, sufficient to bring about a hypoproteinemia. This has been accomplished in experimental animals, for example, by feeding young rabbits a low protein diet and in adult rabbits by supplementing a low protein diet by plasmapheresis (Cannon, P. R., Chase, W. E. and Wissler, R. W. *J. Immunol.* 47:133 [Aug.] 1943).

### INFRAORBITAL EDEMA AND EXOPHTHALMOS AFTER THYROIDECTOMY

To the Editor—The exophthalmos associated with hyperthyroidism not infrequently is increased following removal of the goiter. In a few patients the exophthalmos is complicated by infraorbital edema. What is the physiologic basis of that type of edema and what is the favored treatment? The cases cited average a metabolic rate of between plus 5 and plus 10.

Robert Hoffman, M.D., South Bend, Ind.

ANSWER—The cause of infraorbital edema and increase in exophthalmos following subtotal thyroidectomy is not clearly understood.

The most logical explanation so far presented is that it appears to be related to disturbances in pituitary function. The most interesting aspect of the problem is that the exophthalmos often increases when the basal metabolism is within normal limits. However, there is too much tendency to create the impression that this phenomenon occurs more frequently than it does.

Some improvement seems to have followed the combined administration of strong solution of iodine and desiccated thyroid. This is probably the most satisfactory treatment at the present time.

Irradiation of the pituitary has been tried with questionable results.

It is rarely necessary to resort to any operative procedure such as removal of the roof of the orbit to allow the eyeball to sink back into the skull.

### ADHERENT SCAR IN FRONT OF TRACHEA

To the Editor—On page 68 in the Sept. 4, 1943 issue of *The Journal under Queries and Minor Notes* there is an item about an adherent scar in front of the trachea following a thyroidectomy. The question is asked about a deep funnel shaped scar which is adherent to the trachea. Might not this be due to the so-called prethyroid muscles being widely separated in this area and leaving nothing but scar tissue between the skin surface and the trachea? When the scar is excised it would seem desirable to pull the deep prethyroid muscles, the sternothyroid muscles together in the midline with interrupted sutures and do the same for the superficial prethyroid muscle, the sternothyroid muscle, and thereby eliminate the depression in this area over the trachea. This is an important step in any thyroidectomy in my estimation, and certainly it is true in women because this preserves the contour of the neck rather than having a depression over the trachea when the muscles are not sutured together in the midline.

Leslie M. Bell, M.D., Winchester, Va.

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## SULFONAMIDES IN BRONCHIAL SECRETION

THE EFFECT OF SULFONAMIDES IN  
BRONCHIECTASIS

CHARLES M. NORRIS, M.D.  
PHILADELPHIA

The frequency of chronic infectious diseases of the bronchi and the limitations of the various medical measures used in their treatment would appear to justify an investigation of the possibilities of sulfonamide therapy, yet a review of the recent literature shows only a few brief references to this subject. Although the pathologic changes in many of these diseases are at least partially irreversible, it would seem logical that diminution in the infectious factor should result in improvement. Acquired bronchiectasis and chronic asthmatoïd bronchitis are characterized in their earlier phases by impairment in the function of the bronchi and bronchioles, gross structural disease is in most cases a secondary development. The possibility of restoring normal structure and function by medical measures is not a likely one, but partial elimination of infection would be expected to have a favorable effect on the symptoms and on the natural course of the disease.

The distribution of the sulfonamides, including sulfadiazine,<sup>1</sup> among the various body fluids has been thoroughly studied. The purpose of the first part of our investigation was to determine (1) the correlation between blood levels of sulfonamide following oral administration and their concentration in bronchial secretion and (2) the concentration in bronchial secretion resulting from the intratracheal or intrabronchial instillation of sulfonamide at twenty-four hour intervals following the instillation.

Because the character of bronchial secretion presents a special problem in chemical analysis, a modification of the Bratton and Marshall method for the quantitative determination of sulfonamide concentration, applicable to bronchial secretion, was devised.<sup>2</sup> Because of the obvious inaccuracies which would result from the use of sputum for such analyses, only bronchoscopic specimens were submitted to examination. The use of cocaine hydrochloride as a local anesthetic preliminary to bronchoscopy does not interfere with the color

reaction on which the determination is based. Atropine was omitted from the usual prebronchoscopic hypodermic because of its drying effect on the bronchial secretion.

### DETERMINATION OF SULFONAMIDE IN BRONCHIAL SECRETION, A METHOD FOR OBTAINING A CLEAR FILTRATE<sup>3</sup>

Solutions used, except 10 per cent sodium hydroxide, are those of Bratton and Marshall. Transfer secretion to beaker, obtaining weight by difference. Add gradually 10 per cent sodium hydroxide enough to render the secretion homogeneous (not more than an equal volume). Rinse solution into a stoppered graduate with saponin solution, diluting until viscosity appears low. Add 15 per cent trichloroacetic acid solution, a small amount at a time with gentle shaking, until the point is reached at which a little of the precipitate remains undissolved after prolonged shaking. Note volume. Divide latter by weight of sample of secretion to obtain dilution. Remove to a small flask the number of cubic centimeters corresponding to 1 Gm. of secretion and add enough saponin solution to bring the volume to 16 cc. Add 4 cc. of 15 per cent trichloroacetic acid solution, shake well, filter and proceed with the clear filtrate as with a blood filtrate.

### RELATION BETWEEN CONCENTRATIONS OF SULFON- AMIDE IN BRONCHIAL SECRETION AND IN BLOOD AFTER ORAL ADMINISTRATION

The amount of secretion present in the bronchial tree of normal subjects is insufficient to permit collection of adequate amounts for chemical analysis. Therefore, as subjects for this investigation, 12 patients with acquired bronchiectasis under treatment at the Chevalier Jackson Bronchoscopic Clinic were chosen, an effort being made to select those with varying degrees of disease and to include patients who produced but small amounts of sputum as well as those with much expectoration. The bronchiectasis was of the saccular type in 8 cases and of the cylindric or fusiform type in 4.

Sulfadiazine was given by mouth in sufficient dosage to maintain adequate blood levels. Specimens of bronchial secretion were obtained by bronchoscopy at intervals of from one to four days and the concentration of sulfadiazine determined by the method described. The results were then compared with the concentrations in specimens of blood taken at the time of bronchoscopy.

**Results**—The results of the individual determinations are shown in table 1. The concentrations of sulfadiazine in bronchial secretion range from 1.8 to 11.6 mg. per hundred grams, with corresponding blood sulfadiazine levels of from 3.9 mg. to 16.4 mg. per hundred cubic centimeters.

From the Chevalier Jackson Bronchoscopic Clinic, Temple University Hospital.

<sup>1</sup> Reinhold, J. C., Flippin, H. F., Schwartz, Leon and Domm, A. H. The Absorption, Distribution and Excretion of 2 Sulfanilamide Pyrimidine (Sulfapyrimidine Sulfadiazine) in Man. *Am. J. M. Sc.* 201: 106-115 (Jan.) 1941.

<sup>2</sup> Bratton, A. C. and Marshall, E. K., Jr. A New Coupling Component for Sulfanilamide Determination. *J. Biol. Chem.* 128: 537-550 (May) 1939.

<sup>3</sup> The author is indebted to Robert H. Hamilton, Ph.D., M.D., associate professor of physiological chemistry, Temple University School of Medicine, for this modification which he developed and for the derivation of technique.



The average ratio between the two concentrations (bronchial blood) was 0.58, with an average variation from the mean of 0.08 or 14.0 per cent. The ratio obtained in considering only those determinations with the higher results (blood levels from 10.0 to 16.4 mg per hundred cubic centimeters) is only slightly higher (0.61) than that obtained by considering only the determinations with the lower results (0.55). The values obtained in those patients who produced but little bronchial secretion differed to no significant degree from those in the patients who produced large amounts, furthermore the ratios obtained in the cases of saccular bronchiectasis do not differ appreciably from those

TABLE 1—Relation Between Concentrations of Sulfadiazine in Bronchial Secretion and in Blood Following Oral Administration

		Approximate Daily Sputum Volume	Sulfadiazine Concentration (Mg per 100 Cc)		Ratio	
			Bronchial Secretion	Blood		
S. I.	Bilateral cylindric bronchiectasis	25 cc	4.2	7.2	0.58	Av 0.58
			7.5	12	0.61	
			7.5	10.2	0.71	
			6.0	11.2	0.51	
I. S.	Bilateral cylindric bronchiectasis	40 cc	5.0	1.0	0.50	Av 0.59
			6.2	10.5	0.59	
			11.6	16.4	0.70	
H. I.	Unilateral cylindric bronchiectasis	1 cc	2.2	7.0	0.32	Av 0.47
			4.0	5.5	0.47	
I. M.	Bilateral cylindric bronchiectasis	5 cc	8.2	13.8	0.59	Av 0.56
			6.0	9.5	0.63	
			2.0	7.2	0.28	
			7.8	10.1	0.75	
V. R.	Bilateral saccular bronchiectasis	200 cc	7.5	12.0	0.62	Av 0.55
			4.0	9.5	0.45	
B. B.	Bilateral saccular bronchiectasis	60 cc	5.2	7.5	0.69	Av 0.62
			9.5	12.0	0.79	
			2.0	5.1	0.37	
			4.5	7.2	0.62	
M. S.	Bilateral saccular bronchiectasis	400 cc	3.8	8.0	0.48	Av 0.41
			2.2	3.0	0.56	
			3.8	12.8	0.30	
D. I.	Bilateral saccular bronchiectasis	50 cc	4.5	9.0	0.50	Av 0.74
			8.0	8.5	0.91	
			0.8	7.6	0.69	
			3.5	5.4	0.61	
			0.4	12.7	0.74	
			8.0	10.0	0.80	
			8.0	11.8	0.68	
I. C.	Unilateral saccular bronchiectasis	50 cc	3.5	9.6	0.37	Av 0.42
			3.3	10.2	0.32	
			5.9	10.4	0.57	
I. I.	Bilateral saccular bronchiectasis		3.2	6.0	0.53	Av 0.56
			6.2	8.1	0.76	
			3.8	9.5	0.40	

obtained in the cases of fusiform and cylindric bronchiectasis, the averages being 0.59 and 0.55 respectively.

#### SULFONAMIDE CONCENTRATION IN BRONCHIAL SECRETION FOLLOWING INTRATRACHEAL OR INTRABRONCHIAL INSTILLATION

The feasibility of using solutions showing bactericidal or bacteriostatic activity for intrabronchial instillation or lavage has been demonstrated by Kolmer,<sup>4</sup> Stitt<sup>5</sup> Moore<sup>6</sup> and others. As subjects for this investigation 10 patients having acquired bronchiectasis were used. In all, eighteen instillations were performed, a 5 per cent suspension of microcrystalline sulfathiazole<sup>7</sup> being

used in 12 instances and a 2.5 per cent aqueous solution of sulfadiazine<sup>8</sup> in 6. Several of the instillations were performed bronchoscopically, the remainder were performed by instillation through the larynx following preliminary cocaineization. Specimens of bronchial

TABLE 2—Concentration of Sulfonamide in Bronchial Secretion Following Intratracheal or Intrabronchial Instillation

		Approximate Daily Sputum Volume	Instillation	Concentration (Mg per 100 Cc)	
				24 Hours	48 Hours
I. M.		5 cc	Sulfathiazole, 1.0 Gm	270.0	3.5
D. W.		10 cc	Sulfathiazole, 1.0 Gm	06.0	Negative
S. I.		25 cc	Sulfathiazole, 0.5 Gm	22.0	Negative
I. T.		70 cc	Sulfathiazole, 1.0 Gm	4.6	Negative
			Sulfathiazole, 1.0 Gm	6.0	Negative
D. I.		50 cc	Sulfathiazole, 1.0 Gm	9.0	Negative
			Sulfathiazole, 1.0 Gm	9.3	5.7
			Sulfathiazole, 0.6 Gm	Negative	
V. R.		200 cc	Sulfathiazole, 1.0 Gm	40.0	
			Sulfathiazole, 0.5 Gm	2.0	Negative
M. S.		400 cc	Sulfathiazole, 0.5 Gm	3.2	Negative
			Sulfathiazole, 1.0 Gm	2.0	Negative
			Sulfadiazine, 0.5 Gm	Negative	
I. F.		200 cc	Sulfadiazine, 0.5 Gm	Negative	
A. P.		100 cc	Sulfadiazine, 0.75 Gm	Negative	
			Sulfadiazine, 0.75 Gm	Negative	
B. B.		60 cc	Sulfadiazine, 0.75 Gm	Negative	
F. C.		50 cc	Sulfadiazine, 0.50 Gm	Negative	

secretion were obtained by bronchoscopic aspiration at twenty-four hour intervals and the concentration of sulfonamide determined by the aforementioned method.

**Results.**—The results are given in table 2. The values obtained following instillation of microcrystalline sulfathiazole suspension appeared to depend largely on the amount of sputum being produced at the time of the instillation. The 2 cases in which unusually large concentrations were found at the end of twenty-four hours were those in which the average daily sputum volume had been 10 cc or less, much smaller concentrations were found in the remaining cases. In 2

TABLE 3—Effect of Sulfonamide Therapy on Bacterial Flora in Ten Cases of Bronchiectasis

	Sulfadiazine Orally		Sulfathiazole Instillation	
	Present Before Treatment	Disappeared from Culture	Present Before Treatment	Disappeared from Culture
Streptococcus hemolyticus	3	1	2	0
Probably group A	4	1	4	2
Other groups	7	4	3	1
Streptococcus nonhemolyticus	0	0	2	2
Staphylococcus albus (nonhemolytic)	1	1	0	0
Pneumococcus, type 14	1	1	1	0
Pneumococcus, type 22	1	0	0	0
Pneumococcus, type 27	1	0	0	0
Pneumococcus, type 29	1	1	2	1
Haemophilus influenzae	2	0	1	1
Friedlander's bacillus	0	0	1	1
Bacteroides melaninogenicum	0	0	3	3
Other bacteroids	6	3	3	0
Neisseria flavescens	5	4	1	0
Neisseria sicca	4	4	0	0
Neisseria catarrhalis	5	2	2	1
Diphtheroids	1	0	1	1
Micrococci	2	2	1	1
Bacillus coli	1	0	0	0

instances appreciable amounts of sulfathiazole were found at the end of forty-eight hours.

In none of the cases following instillation of sulfadiazine solution were there significant amounts of sulfadiazine at the end of twenty-four hours, regardless

4 Kolmer, J. A. Bronchial Disinfection and Immunization. Effect in Rabbits of Intrabronchial Injections of Various Chemical Disinfectants, Arch. Int. Med. 51: 346-366 (March) 1933.

5 Stitt, H. L. Bronchial Lavage for Disinfection and Immunization of the Bronchial Tree, J. Med. 14: 576-579 (Jan) 1934.

6 Moore, W. F. Bronchiectasis and Pulmonary Abscess, S. Clin. North America 4: 87-96 (Feb) 1924.

7 Microcrystalline sulfathiazole 5.0 Gm., strong solution of iodine (Tugols solution) 2.0 cc., distilled water to 100.0 cc.

8 Sulfadiazine powder 2.5 Gm., triethanolamine 7.5 cc., butyl para hydroxybenzoate 0.05 Gm., boiled distilled water to 100.0 cc.

of the amount of sputum being produced at the time of instillation. Presumably this is because the sulfadiazine, being in aqueous solution, is more rapidly eliminated by absorption and expectoration than the suspension of microcrystalline sulfathiazole.

#### EFFECT OF SULFADIAZINE GIVEN ORALLY IN ACQUIRED BRONCHITIS

The 10 patients used as subjects for this investigation were given sulfadiazine by mouth in courses lasting from four to fifteen days. As an adjuvant measure to improve bronchial drainage, bronchoscopic aspiration was performed at intervals of from two to four days during the time the sulfadiazine was being administered. Bronchoscopic specimens were obtained for bacteriologic study at the beginning and end of each course

several reasons.<sup>9</sup> In the first place, spontaneous alterations in bronchectatic flora are presumably rather frequent, so that the disappearance of an organism from the culture during the period of treatment does not necessarily mean that it has been eliminated by the specific therapy. Careful examination of table 4 will show several instances in which organisms not present before treatment were recovered in the bronchial secretion after treatment, in most cases these organisms were of the group ordinarily considered to constitute the normal throat flora, and their appearance in and disappearance from the bronchial cultures is therefore probably of no great significance.

The relative pathogenicity of the various organisms present in a given case is difficult to estimate except in a general way. Ordinarily, hemolytic streptococci

TABLE 4—Effect of Sulfadiazine Given Orally (Combined with Bronchoscopic Aspiration) in Ten Cases of Bronchectasis

D S	Drug	Bronchos- copies	Sputum Volumes		Cultures (Bronchoscopic)	
			Average	First 2d Last 2d	Before	After
D S	Sulfadiazine 6 days oral	Two	20 cc	8 cc	Few hemolytic streptococci probably group A Few nonhemolytic streptococci Few N flava and N catarrhalis	Occasional nonhemolytic streptococci Occasional N flava
F C	Sulfadiazine 8 days oral	Three	0 cc	70 cc	Few hemolytic streptococci moderate number of non- hemolytic streptococci Few N siccra and N flava	Occasional hemolytic streptococci Many nonhemolytic streptococci Few bacteroids
B B	Sulfadiazine 10 days oral	Two	10 cc	30 cc	Few bacteroids Moderate number of hemolytic streptococci few non- hemolytic streptococci Moderate number of bacteroids few diphtheroids N flava N siccra and N catarrhalis	Few hemolytic streptococci Moderate number of H influenzae Few N catarrhalis
W D	Sulfadiazine 9 days oral	Three	30 cc	5 cc	Many pneumococci type 14 Few nonhemolytic streptococci Few bacteroids N siccra N flava and N catarrhalis	Few nonhemolytic Staph aureus Moderate number of H influenzae
S J	Sulfadiazine 6 days oral	Four	12 cc	5 cc	Moderate number of pneumococci type 22 Few nonhemolytic streptococci Few N catarrhalis	Few nonhemolytic and hemolytic strep- tococci Few N catarrhalis and siccra
J M	Sulfadiazine 4 days oral	Two	24 cc	0 cc	Many pneumococci type 9 Moderate number of N siccra Moderate number of N flava	Few nonhemolytic streptococci Few H influenzae Few micrococci and diphtheroids
D W	Sulfadiazine 6 days oral	Three	203 cc	44 cc	Many mucoid hemolytic streptococci Few nonhemolytic streptococci Moderate number of bacteroids	Occasional nonhemolytic streptococci Moderate number of coliform bacilli
M S	Sulfadiazine 15 days oral	Six	230 cc	50 cc	Many hemolytic streptococci probably group A Few nonhemolytic streptococci Few H influenzae Few bacteroids and micrococci Many mucoid hemolytic streptococci	Moderate number of hemolytic and non- hemolytic streptococci Few bacteroids and micrococci Many H influenzae Few hemolytic and nonhemolytic strep- tococci
V R	Sulfadiazine 8 days oral	Three	220 cc	50 cc	Many H influenzae Many B coli few bacteroids	Moderate number of H influenzae Few B coli and bacteroids occasional micrococci
L F	Sulfadiazine 11 days oral	Five	250 cc	125 cc	Many hemolytic streptococci probably group A Occasional pneumococci type 27 Occasional micrococci and N catarrhalis	Many hemolytic streptococci Moderate number of pneumococci Few bacteroids and N catarrhalis

and daily sputum volumes were recorded accurately. An attempt was made to maintain blood levels between 8 and 12 mg per hundred cubic centimeters and blood counts and urinalyses were obtained at suitable intervals.

An estimation of the clinical effect was based on (1) reduction in amount of expectoration, and (2) alteration in the bacterial flora of the bronchial secretion as determined in specimens removed bronchoscopically.

**Results**—The results are presented in table 4. The outstanding effect was a definite and rather pronounced decrease in the daily sputum volume. The actual reductions in volume varied from 55 to 81 per cent with an average of 69 per cent, so that most of the patients at the end of the combined course of sulfadiazine therapy and bronchoscopic aspiration were producing from one fifth to one third of the original amounts of sputum.

The effect on bacterial flora is summarized in table 3. The proper evaluation of these data is difficult for

of certain groups viridans streptococci pneumococci, Friedlander bacilli and the like are considered to be pathogenic although this cannot be proved with certainty without pathogenicity testing. The Neisseriae (flava siccra and catarrhalis) and the various bacteroids diphtheroids and micrococci are usually considered as secondary invaders, but this of course does not mean that they are innocuous or that they have no part in producing symptoms or tissue damage.

Table 3 also summarizes the alterations in bacterial content noted following from one to three instillations of a 5 per cent suspension of microcrystalline sulfathiazole as shown by cultures obtained bronchoscopically before and from twenty-four to forty-eight hours after the last instillation. The difficulties encountered in evaluating these data are the same as those already described.

<sup>9</sup> Suggestions concerning evaluation of the bacteriologic data were given by Earle H. Spaulding, A.B. Ph.D., a lecture in bacteriology, Temple University School of Medicine.

## COMMENT

The clinical data presented are intended as only a preliminary report, further study and observation will be required to confirm our impression that the measures described are of actual value. The general effect of sulfonamide compounds appears favorable, particularly when combined with a series of bronchoscopic aspirations. We have tentatively preferred the oral method of administration because of comfort and convenience from the patient's standpoint and because its use presumably allows a much more diffuse, uniform and prolonged action than can be obtained by instillation or a series of instillations.

The disadvantages encountered in the use of instillations are the following: 1. It is difficult to distribute the instilled material uniformly among the various diseased segments, even when the instillation is performed bronchoscopically. 2. Prolonged action can be maintained only by daily instillation, in the case of sulfadiazine aqueous solution, even this would fail to maintain sufficient amounts for continuous local effect. 3. The consistency of bronchial secretion appears to be unfavorably affected by instillation of sulfonamides, this change is particularly true in the case of microcrystalline sulfathiazole suspension which causes a rather definite increase in the viscosity of the secretion. 4. Local efficacy of sulfonamides is greatly diminished in presence of purulent material of the type produced in bronchiectasis, although presumably the addition of an oxidizing agent such as strong solution of iodine at least partially destroys the inhibitory effect<sup>10</sup> of the para-aminobenzoic acid present in purulent exudate.

Untoward reactions were not observed in this study with one exception. One of the patients, a girl aged 17 years with bilateral sacular bronchiectasis, developed fever reaching 102 F the day following an instillation of 5 per cent microcrystalline sulfathiazole suspension. The temperature subsided promptly following bronchoscopic aspiration, and since the findings were not suggestive of a lobar atelectasis we believe that this temporary effect was due to transient occlusion of one or more of the segmental branch bronchi by thick secretion.

We hesitate to advance absolute indications for the type of treatment described. However, it would appear to be of definite value as a preliminary to lobectomy or pneumonectomy for suppurative disease. Here reduction in the amount of suppurative exudate from the diseased lung lessens the possibility of aspiration into the good lung at the time of operation and partially eliminates the risk of postoperative atelectasis or pneumonitis. Diminution of infection should likewise decrease the likelihood of postoperative empyema.

Riggins,<sup>11</sup> Perry and King<sup>12</sup> and others have amply emphasized the problem created by the morbidity of patients with well established bronchiectasis who fall into the nonsurgical group. These patients, if untreated, follow the natural course of the disease through a series of acute infectious complications to chronic disability and, usually, early death. The persistence of symptoms and progression of disease in bronchiectasis are due in the main to chronic infection. It has appeared to us that this factor can be most directly attacked

by combining a measure which improves bronchial drainage and prevents stagnation (bronchoscopic aspiration<sup>13</sup>) in a rather intensive course with specific antibacterial therapy. This means, in most cases, hospitalization for a period of from seven to ten days.

It is not possible to predict in advance which patients will obtain the most clinical benefit. For example, M. S., a girl aged 19 years with unusually extensive sacular bronchiectasis involving four lobes, had been producing approximately a pint of foul sputum daily. She was given a course of sulfadiazine by mouth for nine days and received four bronchoscopic aspirations during the same period. Her sputum was reduced to less than one fifth of its former volume, and although the cultures showed no qualitative change in the bacterial flora there was substantial decrease in the odor. More significant is the fact that during the six week period after leaving the hospital this patient increased her weight from 99 to 116 pounds (from 45 to 52.6 Kg.), more than she had ever weighed previously.

Undoubtedly the research programs now under way will produce specific antibacterial substances whose action will be more potent and toxicity less than that of the sulfonamides we have been using. Penicillin has already been found effective in acute phases of pulmonary suppuration in the three cases reported by Blake and Craige<sup>14</sup>. Castex, Capdehourat and Lavarello<sup>15</sup> and more recently Harris, Sommer and Chapple<sup>16</sup> have administered sulfonamides by inhalation. Further investigations similar to the one which has been attempted in this study will probably be warranted.

## SUMMARY AND CONCLUSIONS

1. The concentration of sulfadiazine in bronchial secretion during oral administration is approximately 60 per cent of the blood level. This ratio is apparently not materially affected by the extent of bronchial disease or the amount of expectoration.

2. After intratracheal or intrabronchial instillation of 5 per cent aqueous suspension of microcrystalline sulfathiazole, significant concentrations persist in the bronchial secretion for twenty-four to forty-eight hours. The concentrations are larger, as would be expected, in cases in which there is but little expectoration.

Elimination of 2.5 per cent aqueous solution of sulfadiazine following intratracheal or intrabronchial instillation appears to be much more rapid, the amounts remaining at the end of twenty-four hours being negligible.

3. Combined sulfonamide and bronchoscopic treatment in 10 cases of acquired bronchiectasis resulted in a considerable reduction in daily sputum volume, with favorable alterations in the bacterial flora.

4. The plan of treatment described should prove of definite value as a preliminary to lobectomy or pneumonectomy for suppurative disease. It is probably worthy of trial in cases of well established nonsurgical bronchiectasis.

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# SOME COMPLICATIONS OF CAUDAL ANESTHESIA AND THEIR MANAGEMENT

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Recently there has been comparatively widespread and in some instances indiscriminate use of continuous caudal anesthesia in obstetrics. To prevent serious accidents, some of the hazards and the methods of preventing and combating them should be reemphasized.

As more data are accumulated, one learns of complications which might have been prevented had the proper safeguards been taken. Some of the complications presented followed the single injection rather than the continuous administration of the anesthetic. However, the same principles apply to the two groups.

In a series of 121 cases of caudal anesthesia at the Chicago Lying-in Hospital there have been no deaths, either maternal or fetal. However, some interesting reactions have occurred, the most frequent being a drop in blood pressure. Our incidence of failures is 16 per cent.

## SUBDURAL INJECTION

Most serious and dangerous of the complications is that of injecting the solution into the subarachnoid space, and it has only been recently that precautions other than simple aspiration have been taken to prevent this accident.

While no deaths have been reported due to this complication since the introduction of continuous caudal anesthesia, there have been serious accidents, and in 1920 Zweifel<sup>1</sup> reported a series of 4,200 single caudal injections with 10 deaths, 3 of which were attributed to the anesthesia, an incidence of 1 in 1,400. All 3 deaths occurred within a few minutes of respiratory failure, and in connection with 2 of them punctures in the dura were demonstrated at autopsy. The third was not investigated and was ascribed to acute procaine poisoning. About three years ago a similar accident was observed by Eastman<sup>2</sup>. In approximately the one hundredth case of single dose caudal anesthesia in the obstetric service at Johns Hopkins Hospital a death occurred due to injection of 45 cc of 1 per cent procaine hydrochloride into the subarachnoid space although the usual precaution of aspiration was carried out. Chemical analysis of the spinal fluid post mortem showed a lethal concentration of procaine.

My associates and I have observed perforation of the dura once in our series of 110 cases. In this instance the needle was introduced into the caudal canal and on aspiration no spinal fluid was obtained. According to the routine advocated by Hingson and Edwards<sup>3</sup> and Gready and Hesselstine<sup>4</sup> a test dose of 8 cc of a 1.5 per cent solution of metycaine hydrochloride (120 mg) was injected and ten minutes allowed to elapse. (The importance of this simple precaution cannot be too strongly emphasized.) At the end of ten minutes the patient had almost complete paralysis of the dependent extremity but was still able to move the toes on the

opposite foot. In another two minutes there was complete motor paralysis of both lower extremities, while on the abdomen the anesthesia had risen to the level of the third thoracic segment. Since no spinal fluid was obtained by aspiration, it is apparent that had the precautionary measure of waiting ten minutes before injecting the 30 cc dose not been taken the procedure would have resulted in massive spinal anesthesia (approximately 450 mg in 30 cc), which probably would have been fatal.

Block and Rochberg<sup>5</sup> report 1 case out of a series of 39 in which massive spinal anesthesia occurred. In their case 30 cc of a 1 per cent solution of procaine hydrochloride had been given. Fortunately the patient survived after a prolonged period of artificial respiration.

Small<sup>6</sup> reported a similar case of possible massive subdural injection in spite of careful precautionary measures. He employed the continuous drip technique. Respiratory failure also developed.

Another such case has been brought to my attention by Brown<sup>7</sup>. In this instance a single caudal injection had been made for a proposed cesarean section. The patient survived spinal anesthesia high enough to cause both respiratory and vocal paralysis. These near catastrophic results illustrate the importance of combining preliminary aspiration with a suitable test for subarachnoid injection. Hingson and Edwards<sup>3</sup> reported that perforation of the dura had occurred only twice in more than 1,000 injections.

The best treatment for this unwelcome accident is prevention, and the test dose I believe is the best method available to avoid a massive subdural injection. It is further recommended that a test dose of 5 to 8 cc be repeated ten minutes prior to each subsequent injection. This is especially important when the needle technique is used, since the needle may pierce the dura at any time during the procedure. This apparently occurred in the case reported by Small.

A thorough knowledge of the normal anatomy of not only the bony sacrum and sacral canal but also the dural sac and spinal cord is important and indeed fundamental if one is to administer caudal anesthesia intelligently and safely. The spinal cord normally ends at the level of the first lumbar vertebra, with the dural sac containing spinal fluid and the cauda equina tapering to a point in the sacral canal at the level of the second sacral vertebra. The contour of the lower end of the dural sac is not constant but varies with straining, jugular compression and other forces, as has been shown by x-rays after introduction of opaque substances. The sacral canal is continuous with the epidural space in the vertebral canal and extends all the way to the foramen magnum. Anatomic variations in the sacrum are common and may at times interfere with the proper insertion of the needle.

The important fact that the dural sac may extend lower than the second sacral vertebra should be kept constantly in mind. If the patient is thin and the sacrum short, the use of a 2½ inch rather than a 3 inch needle lessens the danger of perforating the dura. This complication also seems less likely when the catheter method is used. There is a continuation of the dura around each of the nerves in the sacral canal for a variable distance, as can be seen in the illustration.

Fl. Lilly & Co. furnished the metycaine used in this study.  
Dr. William J. Dieckmann and Dr. H. C. Hesselstine gave helpful criticism of the manuscript.  
From the Department of Obstetrics and Gynecology of the University of Chicago and the Chicago Lying-in Hospital.  
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7 Brown, Hugh O. Per. oral communication to the author.

It is theoretically possible for the point of the needle to pierce this dural sheath thus permitting the injected solution to dissect up into the subarachnoid space. Such a puncture of this nerve sheath and subsequent injection may cause pain and so give some warning.

Should the recommended precautions be disregarded and massive spinal anesthesia occur, treatment should be instituted immediately. The patient should be supported in a sitting position, and a lumbar puncture should be done using a large needle so that the fluid will flow rapidly. Walker<sup>8</sup> recommends that approximately 100 cc. of spinal fluid be withdrawn. The flow can be hastened by compression of the jugular veins.

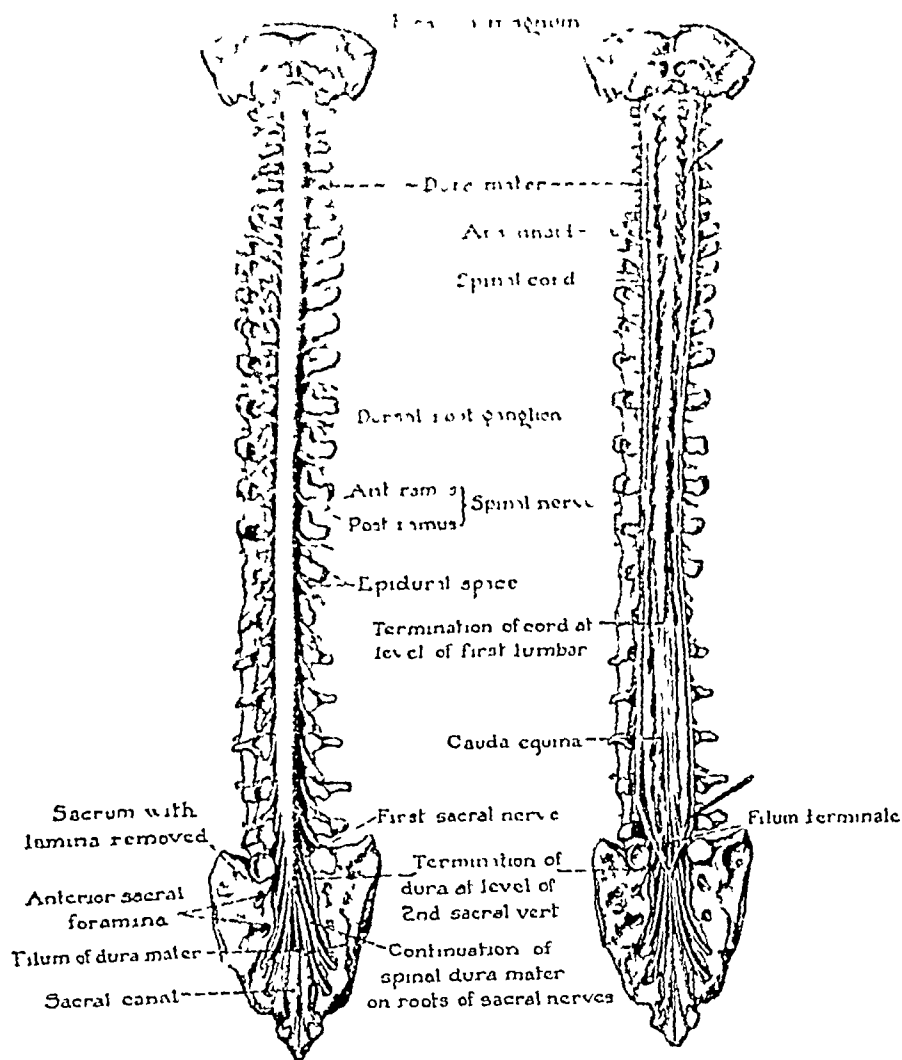


Diagram showing the relationship of the dural sac and cord to the epidural space and to the sacral and the vertebral canal (after Toldt Karl Atlas of Human Anatomy, New York, Macmillan Company, 1926)

in the neck. Forced drainage may also be accomplished by giving 0.45 per cent saline solution intravenously while the lumbar puncture needle is in place. Hypertonic dextrose solution would decrease the amount of spinal fluid and thus retard drainage. It is extremely important that the fluid be drained off before the drug has reached the vital centers in the brain. Even though the respiratory center is anesthetized, the method should still be tried in order to prevent involvement of the vasomotor center, which is at a higher level. Drop in blood pressure and shock are combated in the usual manner with ephedrine, stimulants and intravenously injected fluids, such as plasma. Respiratory paralysis must be treated by artificial respiration. The presence of a physician anesthetist skilled in the art of intubation and resuscitation might prove life saving, as it undoubtedly did in 2 of the cases reported.

## INFECTION

Because its appearance is usually delayed, infection is sometimes overlooked as a complication of caudal block. It ranks second in importance to massive spinal anesthesia. It may occur either in the tissues outside the sacral canal or in the epidural space. The latter is more serious because of its proximity to the cord and nerves of the spinal and sacral canal. It may be extremely dangerous and even cause death. That the epidural space is much more susceptible to infection than the subarachnoid space is suggested by experiments on monkeys. Cultures of virulent organisms were injected directly into the spinal fluid without causing any evidence of inflammation.<sup>9</sup>

Edwards and Hingson<sup>10</sup> recently reported a death from infection in a series of 650 obstetric cases. An epidural abscess developed with which there were no localizing signs or neurologic manifestations. The patient was treated with sulfonamides but died on the thirty-first postpartum day. Post-mortem examination revealed multiple small pulmonary abscesses and a large abscess involving the peridural space and communicating through the foramina with a subpsoas abscess. The infection had not penetrated the meninges.

Carlisle<sup>11</sup> reported a death following continuous caudal anesthesia of a patient aged 70. After laparotomy a large necrotic, sloughing ulcer developed over the sacrum which extended to the bone. Death on the twentieth postoperative day was believed to have been due to this infection. However, since autopsy was not permitted it is not known whether or not the epidural space or the meninges were involved.

Siever and Mousel<sup>12</sup> in their series of 300 cases had 1 case of epidural abscess. They report "the patient was seriously ill for three weeks but responded to large doses of sulfonamide compounds and completely recovered."

Manalan<sup>13</sup> reported staphylococcal meningitis occurring after 1 of 46 single caudal injections made with the catheter technique. On the third postpartum day symptoms of malaise, headache and hyperirritability developed. No local infection in the sacral canal could be determined by aspiration. The statement is made that "she recovered completely following a critical illness."

The complication was believed to have been due to sacral block, but this was never proved.

In 1927, following an attempt at sacral block, Hall<sup>14</sup> reported a death from gas bacillus infection. Southworth, Edwards and Hingson<sup>15</sup> reported low grade cellulitis about the sacral hiatus in 1 case in a series of 355.

<sup>9</sup> Walker, A. Earl. Unpublished data.  
<sup>10</sup> Edwards, W. B., and Hingson, R. A. The Present Status of Continuous Caudal Analgesia in Obstetrics, *Bull. New York Acad. Med.* 10: 507 (July) 1943.

<sup>11</sup> Carlisle, William T. Personal communication to the author.  
<sup>12</sup> Siever, James M., and Mousel, L. H. Continuous Caudal Anesthesia in 300 Unselected Obstetric Cases. *J. A. M. A.* 122: 424 (June 12) 1943.

<sup>13</sup> Manalan, S. A. Caudal Block Anesthesia in Obstetrics. *J. Indiana M. A.* 35: 564, 1942.

<sup>14</sup> Hall, L. S. Report of a Case of Septicemia Following a Sacral Anesthetic. *Am. J. Obst. & Gynec.* 14: 256 (Aug.) 1927.

<sup>15</sup> Southworth, J. L., Edwards, W. B., and Hingson, R. A. Continuous Caudal Analgesia in Surgery, *Ann. Surg.* 117: 321 (March) 1943.

The principal etiologic factor in this type of case is obviously faulty technique. Extreme care should be taken in the sterilization of the apparatus and in the preparation of the solution. The site for injection normally is not the cleanest part of the body, situated as it is close to the anus. It should be as thoroughly cleaned and prepared as for a major surgical procedure. Rigid asepsis is of the utmost importance. If the needle technique is used, the only bacteriologic weak point in the equipment once the tubing is connected is the plunger of the syringe. Since the anesthesia is sometimes carried out over a period of hours, it is not at all improbable that during one of the many injections the plunger may be accidentally contaminated and then on a subsequent injection bacteria may be introduced into the sacral canal.

Symptoms of epidural abscess at first are those of systemic infections in general, such as malaise, fever and leukocytosis. According to textbooks,<sup>10</sup> the symptom which first focuses attention on the spinal region as the site of infection is usually pain in the back which may be exaggerated by coughing, sneezing, jugular compression or movement of the spinal column. There also may be tenderness over the spine in the region of the abscess. Radicular pains at the site of the abscess are common, and there may be hypesthesia or numbness in the dermatome supplied by the nerve roots involved. If the abscess is situated in the lumbar region, spinal puncture should not be done because of the danger of penetrating the abscess with resultant contamination of the subarachnoid space. Bagley and his co-workers<sup>10</sup> recommend surgical drainage as soon as the diagnosis of abscess is established. This often necessitates laminectomy. Accessory measures, such as the use of sulfonamides, blood transfusion and the injection of a specific antitoxin, should be employed. Siever and Mousel<sup>12</sup> treated their patient with sulfonamides alone. She survived. The help of a competent neurologist may be of much value in locating the site of infection.

Local infection about the site of injection does not present such a problem as infection in the epidural space. There the management is the same as for other superficial infections. In our series so far we have had no infection of the epidural space nor have we had any local infection of the skin.

#### INTRAVENOUS INJECTION

Intravenous injection of the drug is another complication which cannot always be avoided. The minimum lethal intravenous dose of procaine in animals has been found to be one-tenth the amount necessary to kill the animal if given subcutaneously.<sup>1</sup> Preliminary aspiration must always be carried out to minimize this danger. If blood is obtained the position of the needle must be changed until blood can no longer be aspirated and then the injection should proceed slowly and expectantly. We have had 1 case in which this complication occurred. In this instance no blood appeared on preliminary aspiration, and with the patient in the knee-chest position the 8 cc test dose was administered. The patient was then turned on the left side. In ten minutes

25 cc of a 1.5 per cent metycaïne hydrochloride solution was injected. The patient immediately became irrational, talked incoherently and underwent mild clonic convulsions of both upper and lower extremities. Slight opisthotonos was present. This reaction lasted about two minutes and disappeared spontaneously before treatment could be instituted. We are certain that the fluid went intravenously for three reasons: (1) The needle and approximately 1 foot of the pressure tubing was found to be filled with blood, (2) absolutely no anesthesia developed although a total of 33 cc of the drug solution was injected, (3) the needle was reinserted and the caudal anesthesia carried out successfully and without reaction for the remainder of the labor. Possibly the 5 patients reported by Lahmann and Mictus<sup>18</sup> as becoming "irrational" and developing 'clonic convulsions' received a certain amount of the drug intravenously. In these cases the reactions also passed off in a few minutes without serious effect. Cases are on record, however, in which intravenous injection of procaine has proved fatal. The toxicity from these drugs can be due to three factors: (1) rapid absorption, (2) intravenous injection and (3) idiosyncrasy. In richly vascular areas, such as the epidural space, rapid absorption is likely to take place.

Treatment for the condition is more or less specific and is the same as that for an overdose of the drug. The excellent work done on the toxicity of cocaine by Tatum, Atkinson and Collins<sup>19</sup> using rabbits and dogs, proved that the various barbituric acid derivatives are of distinct value both in prophylaxis and in treatment. They showed that the prophylactic administration of a mixture of barbital sodium and paraldehyde to the dog raised the minimum lethal dose from 267 mg per kilogram to above 100 mg, representing approximately a fourfold increase in tolerance. In severe reactions due to overdosage death may occur from either paralysis of the heart muscle or respiratory paralysis during a convulsion. It is imperative that respiration be maintained, by artificial means if necessary. One of the quick acting barbiturates, such as evipal sodium or pentothal sodium, should relieve the convulsions immediately. When caudal anesthesia is used, it is wise to have one of these drugs readily available. In our case the reaction had disappeared by the time the drug was prepared for administration, so it was not given. Since the barbiturates counteract the untoward effects of the local anesthetic, the administration of one of them is indicated as preoperative medication when this type of anesthesia is to be used. Rapid absorption may be delayed by the addition of epinephrine to the solution.

#### IDIOSYNCRASY

Sensitivity to locally employed anesthetic drugs may occur, one of the most dangerous types being that manifested in the anaphylactic reaction. Every patient should be questioned prior to the initial injection as to a history of allergy and especially as to previous reactions to these drugs. Practically every patient has had a tooth pulled at one time or another under local anesthesia. If a reaction occurs its management should be the same as for any other anaphylactic reaction, namely the immediate hypodermic administration of

10. Bagley, J., Grant, F. C. and Horrax, C. Infections of the Nervous System and Its Covering in Neurosurgery and Thoracic Surgery. Prepared and Edited by the Subcommittee on Neurosurgery and Thoracic Surgery of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Philadelphia: W. B. Saunders Company, 1943, chapter 5.

11. Gilman, S. The Treatment of Dangerous Reactions to Novocain. New England J. Med. 210: 841 (Nov. 24) 1938.

18. Lahmann, A. H. and Mictus, A. C. Caudal Anesthesia. Its Use in Obstetrics. Surg. Gynec. & Obst. 63 (Jan.) 1942.

19. Tatum, A. L., Atkinson, A. J. and Collins, K. H. Acute Cocaine Poisoning: Its Prophylaxis and Treatment in Laboratory Animals. J. Pharmacol. & Exper. Therap. 26: 325 (Dec.) 1925.



epinephrine hydrochloride. Convulsions, should they occur, are controlled by using barbiturates intravenously, care being taken not to give an overdose.

#### INJURY OF NERVE ROOTS

Judging from the paucity of reports in the literature, injury of the nerve roots in the caudal canal does not often occur. I report some observations from a case which occurred in Hawkins's<sup>20</sup> practice in Chicago.

With the needle technique continuous caudal anesthesia was maintained for nine and one-half hours. A total of 215 cc of a 1.5 per cent metacaine hydrochloride solution was given. On the second postpartum day the patient complained of pain in the region of the sacrum, tingling and numbness of the left great toe and anesthesia of the perineum. When the patient was allowed to lie up she continued to have saddle anesthesia and complained of numbness and burning in the region of the great toe. Her gait was definitely affected with a tendency to place the right foot forward much like a trabetic patient. Two months later she was again seen by a neurologist who reported: "There is slight difficulty in hopping on the right foot and she can walk on her toes better than on her heels, gait and station are not otherwise affected. There is rather marked weakness of the anterior tibial and peroneal muscles on the right side and of extension of the toes. There is slight weakness of the muscles of the right calf and of plantar flexion of the feet and toes. Some impairment to pinprick was present over the right foot on both dorsal and plantar surfaces. There was also slight hypesthesia to pinprick in the saddle area bilaterally. This patient presents evidence of injury to the fourth and fifth sacral roots bilaterally and to the first sacral and fifth lumbar roots on the right side."

From the history, improvement was taking place and the prognosis for ultimate recovery was believed good.

#### BREAKING OF THE NEEDLE

The complication of a broken needle has not yet occurred in our series, although of necessity we have used some needles more than five times. Hingson and Edwards<sup>21</sup> reported 12 cases of broken needle out of a series of 850. In 4 instances a small incision was necessary for removal. Their last 250 consecutive procedures were done without a break. Block and Rotstem<sup>22</sup> were unable to remove a broken needle from the canal, so they left it in place.

A broken needle should be removed immediately lest it migrate farther into the sacral canal and become inaccessible.

Cathelin<sup>23</sup> reported a case in which the needle fragment was recovered from the body of the fourth lumbar vertebra at autopsy six months later, and Meeker and Scholl,<sup>24</sup> a case in which removal of the posterior wall of the sacrum was necessary to recover the needle.

The incidence of this complication has been considerably reduced since the development of the malleable needle and catheter technique. The danger can be still further minimized by keeping the patient on her side during labor and then giving an injection and removing the needle just before she is placed on her back for delivery. It is suggested that the needle not be withdrawn until the obstetrician is certain that the cervix is completely dilated and the patient ready for delivery.

#### CHANGES IN BLOOD PRESSURE

Mild and severe vasomotor reactions developed more often than has been reported by most investigators. Shaw<sup>25</sup> in 1925, however, using the single injection method in urologic practice, described changes similar to those which my associates and I have observed.

The relaxation of a patient in labor, after the pains have been relieved and the anxiety has subsided, usually causes a slight fall in blood pressure. Fifteen patients had slight chills and complained of having the "shakes" but not being cold. Such complaints represent a mild vasomotor or toxic reaction. Preliminary administration of a barbiturate may prevent it. In our group of cases there were 27 with a drop of more than 20 mm in systolic pressure. Usually such a change is associated with a feeling of faintness, fatigue and sweating. The face is pale and the pulse weak. Increased respiratory excursion may indicate mild air hunger. One patient complained of severe substernal pain. All the larger changes in blood pressure occurred in patients in whom the level of anesthesia was at or above the umbilicus. The changes undoubtedly were due to splanchnic dilatation as the visceral sympathetic fibers were blocked. Of 39 patients with an anesthetic level at or above the umbilicus 26 showed drops of more than 20 mm. Two patients definitely had shock reactions, the systolic pressure dropping to zero from 158/110 and 90/60 respectively. In 2 instances slowing of the fetal heart rate was noticed during the period of lowest pressure. Every one of these patients responded to ephedrine sulfate administered hypodermically and oxygen inhalations. In 19 patients the anesthesia was pushed to a high level in preparation for cesarean section. The drop in blood pressure could have been minimized in this group by preliminary administration of ephedrine. Patients with severe heart disease probably would not tolerate the increased cardiac load associated with large drops in blood pressure.

Control of dosage to prevent too high a level of anesthesia should eliminate this reaction in most patients during labor. The semi-Fowler position or elevation of the head of the bed tends to keep the anesthesia at a low level whereas the Trendelenburg position favors an ascending level. Possibly the addition of epinephrine to the solution would also prevent large drops in pressure.

#### ANTESACRAL INJECTIONS

Owing to variation in the type of sacrum and in angulation of the coccyx it is possible in difficult cases to penetrate the sacrococcygeal joint or the tissue lateral to it so that the point of the needle comes to rest on the anterior surface of the sacrum close to the rectum. This has occurred twice in our series. In both cases there was difficulty in identifying the sacral hiatus. One of the patients had evidence of rickets. In cases in which the anatomy is obscure, preliminary rectal examination with palpation of the sacrococcygeal joint is helpful in preventing this error. If the infant's head is low, it is conceivable that the rectum flattened against the sacrum may be penetrated. The accident occurs more frequently with beginners and in most instances represents carelessness.

25 Shaw, E. C. Epidural Anesthesia for Perineal Prostatectomy. An Experimental and Clinical Study with Report of One Hundred Consecutive Cases, *J. Urol.* 15: 219 (March) 1926.

20 Hawkins, Robert J. Unpublished data.  
21 Hingson, R. A., and Edwards, W. B. Comprehensive Review of Continuous Caudal Analgesia for Anesthetists, *Anesthesiology* 4: 181 (March) 1943.

22 Block, Nathan, and Rotstem, Morris. Continuous Drip Caudal Anesthesia in Obstetrics, *J. A. M. A.* 122: 582 (June 26) 1943.

23 Cathelin, F. Les injections épidurales par ponction du canal sacré et leurs applications dans les maladies des voies urinaires, Paris, J. B. Baillière & fils, 1903, p. 231.

24 Meeker, W. R., and Scholl, A. J. Sacral Nerve Block Anesthesia, *Ann. Surg.* 80: 739 (Nov.) 1924.

COMPARISON OF METHODS WITH REFERENCE  
TO COMPLICATIONS

Two principal methods are advocated for this type of anesthesia, the malleable needle technique originated by Hingson and Edwards and the catheter modification described by Adams, Lunde and Seldon<sup>26</sup> and Manalan.<sup>13</sup>

Since we have used only the malleable needle technique we do not have two series to compare, however logically, different methods are devised because they avoid certain complications.

The advantage of the catheter technique aside from the fact that it allows greater freedom of movement on the part of the patient is that there is less danger of perforation of the dura or a blood vessel once the needle is withdrawn over the catheter. Three disadvantages are apparent: (1) There is more trauma associated with the introduction of the 13 gage needle, (2) this trauma naturally increases the risk of infection, (3) the number of failures should be increased, owing to the difficulties involved in the insertion of the large needle in some patients.

With use of the needle technique the complications which are increased in number are (1) the perforation of the dural sac after the needle is in place with subsequent intraspinal injection, (2) the broken needle and (3) the possible trauma inside the canal if the needle is manipulated by the patient moving about on her back.

The development of a smaller useful catheter which can be threaded through a 16 gage needle should combine the advantages of the two methods with resulting increased safety.

DO NERVES BECOME REFRACTORY TO LOCAL  
ANESTHETIC DRUGS?

In general, we have noticed some difficulty in maintaining the effect of the anesthetic that is used over a long period of time. This same observation has been made by Wall<sup>27</sup> and may be due to malposition of the needle. However, the thought has occurred to us that possibly the nerve roots may become refractory to the action of the drug after prolonged anesthesia. We have noticed this phenomenon in 3 cases in which we felt certain that the needle had not become dislodged from its proper place in the caudal canal.

Regnier and Lambin<sup>28</sup> noticed a disappearance of the anesthetic action of dilute solutions of cocaine hydrochloride after prolonged instillation of these on the cornea of the rabbit. The possibility of this occurring in peripheral nerves should be investigated.

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- 26 Adams, R. C., Lunde, J. S. and Seldon, T. H. Continuous Caudal Anesthesia or Analgesia. *J. A. M. A.* 122: 152 (May 15) 1943.  
27 Wall, David. Personal communication to the author.  
28 Regnier, J. and Lambin, S. Sur la disparition de l'action anesthesique de solutions de chlorhydrate de cocaine en contact prolonge avec la surface anesthetisee. *Essais sur la cornee du lapin. Anesth. et analg.* 4: 497 (Nov.) 1938.

**First Description of Pulmonary Circulation**—Around the middle of the thirteenth century an Arabic physician, Ibn an-Nafis described the pulmonary circulation. This is the earliest description we know, and its rediscovery has put an end to the claims for priority of either Michael Servetus (1553) or Realdus Columbus (1559). However, it is not probable that Servetus knew of his Arabic predecessor nor has any historical link been established between Ibn an-Nafis and Columbus. Whether on the other hand any connection existed between Servetus and Columbus is a question still open for debate—Jarke, Sanford V., and Temkin, Owsei in *Essays in Biology*. Berkeley University of California Press 1943.

DEFINITIVE TREATMENT OF  
SEVERE WOUNDS

## LARGE SURFACE TO SMALL AREA

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It is generally understood that the first aim in the practice of surgery and medicine is to get the patient through an ordeal alive, at all times keeping him at the greatest possible distance from the possibility of death. From the surgical standpoint this aim is achieved when the patient arrives at the hospital as a good risk. Yet often the traumatic patient arrives at the hospital in extreme shock, even irreversible shock, when if adequate first aid had been given promptly after injury he would have arrived at the hospital in good physical condition. For example, a patient arrives practically exsanguinated by profuse hemorrhage from an otherwise minor wound, the hemorrhage from which could have been readily controlled by a compression dressing. Similar mischances are usual in all forms of injuries whether they are surface wounds involving extensive areas of the body, crushing injuries of moderate areas or severed blood vessels in small area wounds.

The medical profession has made great strides in the care of these patients at the hospital, but it is my belief that a great deal more can be done for patients with traumatic injuries during the critical period from the time of injury to the time of admission. Since the care of the patient prior to admission to the hospital is in the hands largely of nonprofessional and only briefly trained persons, treatment must be outlined which will be simple in procedure but most effective in functional result. This prehospital treatment should be such that its principles will be carried on into and through hospitalization. It is to this goal that the present paper is directed.

To illustrate my meaning better, a number of cases are presented.

Approximately one year ago 22 men were working in a building about 20 by 30 by 10 feet. This building became filled with gasoline fumes, which ignited, resulting in a violent explosion followed by a total fire. Two men were blasted from the building through the only door one of them receiving a second degree burn forming a 4 inch band around the lower third of the left leg. Otherwise there was no injury to these 2 men. The negative pressure created by the blast slammed the door shut. The inside of the building became entirely aflame, and the 20 men remaining in the building received fatal or serious flash type as well as slow type burns. It was not possible for any of the remaining men to get out of the building until the fire department arrived, broke in the door and had the fire under control. In the following confusion 2 of the severely burned victims slipped out of the building ran to a small hospital 3 blocks distant, went into irreversible shock and died without responding to shock treatment. Four were dead when found and 2 died immediately after reaching the hospital. Except for the 2 men who ran from the building the patients were placed on litters and conducted to the hospital by ambulances. This particular hospital had only one operating room and an emergency treatment room necessitating the use of improvised operating rooms.

In accordance with hospital rules all attendants immediately took cap mask and gown precautions and by medical officers orders gave every patient ½ grain (0.032 Gm.) of morphine sulfate subcutaneously. The dead dying and critically injured practically filled the hallway of the small hospital where they had been placed by the ambulance crews at the direction of the attending surgeon. The stench of the burned human flesh

and clothing added to the horror of the continual cries of pain. The doctors and the nurses present administered morphine to the living and gradually the patients became quiet.

There was a selection made for priority in operation in that the moribund patients were held for shock treatment. The force was divided into teams with each of the most experienced surgeons having an assistant medical officer and nurse. Each team immediately started blood plasma intra-

patient was close to exsanguination but was conveyed to the operating room, where he was given plasma, a large blood transfusion, and treatment for shock for two hours without molestation of the dressing. Then, with everything ready, his wound was repaired. He was given another transfusion during the night and still another the next day, following which he progressed to complete recovery.

This case is unusual in that the compression dressing, although at hand, was not used promptly by the excitable attendant. The dressings have been successfully used promptly by personnel in every other similar case in some of which the tourniquet would have been as here, of no avail. Such instances clearly illustrate what compression treatment can do for profusely bleeding wounds. Had this dressing been used by the ambulance driver as he had been thoroughly taught to use it, it is reasonably certain that the patient would not have been so near to dying. Had the distance to the hospital been longer the patient would have arrived dead.

#### DESCRIPTION OF NEW TYPE DRESSINGS

All five of the first aid dressings described herein embody the compression technique. The original type dressing (labeled *B* in figure 1) was made to simulate the sea sponge as it would be dampened and all ready in moderate compression. The economy of space gained by packing is illustrated by comparing *A* and *B* in figure 1. The new package as reduced by hand pressure only will be smaller when packed by machinery. The new dressings are made to comply with a demand for a more compact packaged dressing to avoid waste space in shipment and to permit the first aid men to carry a more adequate supply in small first aid bags. These dressings when adequately packed, as by machinery will occupy but little more space than a package of cigarettes, but when released they will have adequate bulk in great depth to cover an area approximately 4 by 4 inches while still in the sponge shape, and when further unfolded, by pulling the short string, they will offer a cover type compression dressing of 36 square inches. The larger dressing is similar to the smaller one as shown in figure 2 *C* except that it has a bias cut stockinet bandage anchored to its top. It can also be press packaged for economy of space, but when

venously and where necessary, cutting down on the vein. They then proceeded to cleanse the wounds with sterile water and sterile whipped white soap, lavaging away the white soap with sterile cotton that had been saturated with saline solution. Then with sterile spring forceps, sharp dissecting scissors or Bard-Parker knives complete debridement of all wounds was accomplished.

The use of tannic acid-silver nitrate on the trunk and the upper half of each arm was necessary because there was not adequate compression dressing material on hand. If another similar disaster should be encountered, the compression technique would be used entirely, for it is now seen that sufficient materials are on hand.

It is believed that the patients discussed here were well handled under the circumstances in that all who did not die within fourteen hours recovered to return to full duty. However, it is probable that under the present day management of first aid treatment to the severely burned, had this disaster happened at a considerable distance from the hospital, practically none of them would have survived. The 2 men who ran from the scene of the fire to the hospital and went into irreversible shock illustrate the point clearly. Figures 3 to 8 present a comparative case.

To illustrate the first aid treatment of profusely bleeding wounds by the compression principle, another case is briefly discussed.

A civilian employee was painting lines in an airplane parking area of an airport, when an airplane out of control ran over him. The propeller of the airplane struck him at the right midclavicular area, widely opening his thoracic cavity at the apex. An ambulance driver, parked within a few feet of the accident, rushed over with his ambulance, picked up the injured man, placed him on a litter, saw his profuse bleeding but only became more excited by seeing it, and although there were ample compression dressings in the ambulance, raced madly 6 blocks to the outpatient department of the hospital without applying the dressings. An attendant there saw the profuse hemorrhage, grasped a large packaged compression dressing, ripped off the top of it, placed it on the wound, applied compression with the bandage going under the opposite arm pit, thereby forcing the pad down into the apex of the right chest cavity, and effectively stopped the hemorrhage. The

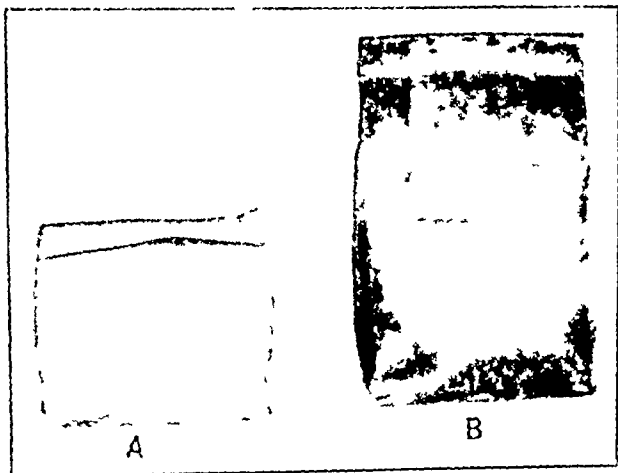


Fig. 1.—The reduction in size of the packaged dressings (1 new type original) will be more pronounced when the new type is packed by machinery. *A* is the new dressing as represented in figure 2. (Official photograph U. S. Army Air Forces Technical Training Command.)

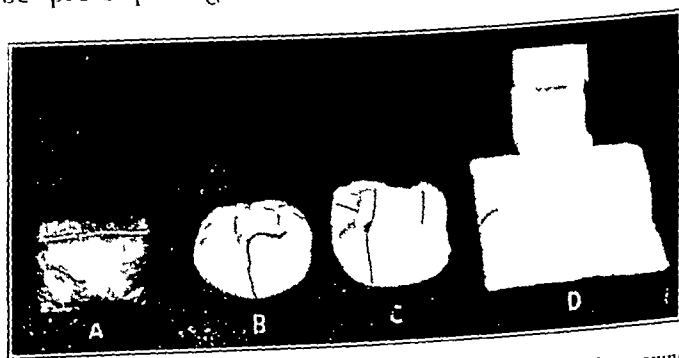


Fig. 2—4, new type packaged dressing made impervious by waxing. *B*, dressing with the pressure cap not completely drawn up. *C*, dressing with long string which when pulled leaves the pad ready for use, simulating a sea sponge of great depth. *D*, dressing unfolded to cover 36 square inches in good compression. The large dressing unfolds to cover 81 square inches. (Official photograph U. S. Army Air Forces Technical Training Command.)

released from its compressed package it will have its original large bulky sponge of great depth for safe control of external hemorrhage from large wounds, up to 5 by 5 inches plus the advantage of an elastic bandage for holding the dressing to difficult contours, e. g. those of the head and shoulders and the groin, with a more

resilient compression This dressing when unfolded by pulling the short string will cover an area of 81 square inches and retain its compression feature

My pack for compression treatment of all extensive wounds and for Koch treatment of burns consists of sixteen sterile pads 9 inches square, each pad containing 8 ounces (225 Gm) of grade 1 mechanic's waste,



Fig 3—Patient injured in a gasoline explosion and fire. There were third degree burns of the zygomatic area of the face, of the nose and both ears the anterior surface of the neck the anterior surface of the chest the anterior and lateral surfaces of the upper half of each arm and of the shoulder and of the forearms and the hands. The remainder of the face including the upper eyelids the mouth and the chin showed second degree burns. The aforementioned areas were bordered by wide areas with first degree burns. The primary treatment was completed within two hours after injury. (Photograph by U S Army Air Corps)

covered by one thickness of 44-40 mesh gauze overlying two layers of coarse gauze. Four of the dressing pads have a 5 inch by 5 yard roller bandage of bias cut stockinet anchored to them. The pack also contains two operating caps and three face masks (the extra mask for the face of the patient). The entire package is put up in maximum compression for the purpose of economizing space in shipment to armed forces and in carrying by personnel and to permit hospitals generally to maintain adequate sterile supplies of the dressings for disasters. The final container will be tin 8 by 8 inches. Thus in this small cube there will be adequate, smooth, soft, compressible, sterile surgical pads and elastic bandages to cover 1,296 square inches of body surface (both upper extremities, shoulder girdles and axillas) and also finger individualizer strips, caps and masks. It is further proposed to place instructions on the outside of the package for the handling of severe wounds (burns and other types) in this manner. The principal ingredient of these dressings is mechanic's waste (cotton waste) a waste thread material from textile mills and therefore most inexpensive and plentiful. Grade 1 of this material can be bought in Chicago for 9 and a fraction cents a pound. Compare this price with that of absorbent cotton or that of surgical gauze and the economy will be apparent. From the standpoint of resilience mechanic's waste is the one adequate substitute for the unobtainable sea sponge. Neither absorbent cotton nor waste cotton nor surgical gauze can compare with mechanic's waste in the all important matter of giving resilience to compression dressings. It is a fair absorbent and is readily sterilized.

When firm, safe bandaging is applied over a wound coverage such as this, with ample bulk and good resilience, the dressing continues to cover the wound indefinitely, whereas a dressing of poor resilience will slide off the wound or turn to expose it, even if the bandage is applied so tightly as to cause constriction. This is particularly true when there is a circular bandage about an extremity or the thorax, where there is a constant

change in the circumference. If there is a bulk of resilient material beneath the bandage, it will give as the bandage tightens and will spring back to take up the slack as it loosens to hold the dressing firmly in place. If, on the other hand, there is not resilience in bulk, the dressing pad becomes packed, or the threads of the bandage give (something must give if there is not ample resilience), and the dressing loosens and slips from the wound. This feature of the resilient bulk of the dressing giving when the circumference of a portion of the body increases is an important safety factor in that it prevents a circular bandage about an extremity from accidentally becoming an effective tourniquet subsequent to enormous edema formation or when an arm or a leg becomes flexed after application in an extended position. It is difficult to obtain constriction as one bandages over a bulky dressing of good resilient material when the bandage is going on smoothly in one direction. However if there are two bandages being applied in opposite directions with each offering force for the other to be pulled against, constriction is likely and gangrene of a member is a real danger.

This entire series of dressings has been devised with the thought of simplifying for nonprofessional or briefly trained personnel, prompt optimal first aid treatment for the injured. This procedure will enable such personnel to apply efficient, effective dressings, which can be applied by them and maintained in their aseptic condition. The dressing when so applied will serve to control bleeding without the use of the tourniquet, give compression therapy to the wound area, bring about a splinting effect to the wound so pad an extremity that a hard rigid splint can be applied without further padding and give protection from outside contamination by the sterile bulk of the dressing. Thereby many of the things which cause the patient to go into shock and on into irreversible shock are arrested early and a safe definitive treatment is instituted. The urge to rush is abated and the many injuries done to the patient in frantic haste to get him to the hospital are avoided.

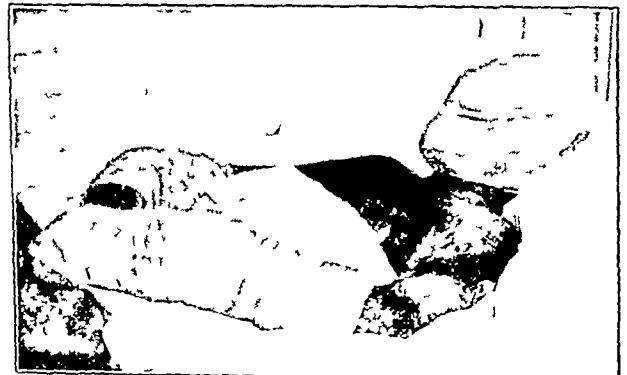


Fig 4—Two days after injury. The patient is in a canopy bed. The sheets pillow case and other material reflect a sterile technique. All visitors and attendants are required to comply with cap mask and gown regulations. As shown the entire head the upper part of the neck the fore arms and the hands have voluminous compression dressings of cotton waste the ears are fixed with supersaturated absorbent cotton molds. The eyes have been treated with yellow mercuric oxide ointment beneath the bandages. The remainder of the body (chest neck and upper arms) has been given the standard tannic acid silver nitrate eschar. (Photograph by U S Army Air Corps)

The patient who would otherwise arrive at the hospital in critical condition because of avoidable shock will arrive there in good shape with the fundamental principles of treatment already under way.

The advantages of the described compression dressings may be summarized as follows: (1) They control hemorrhage from the wound and thus the use of the tourniquet with its hazards, tedious timing and releasing is avoided, and more important they control hemorrhage from wounds where the tourniquet is not applicable,

to prevent shock from hemoconcentration occurring after extensive surface wounds or crushing injuries. Since fluid escaping into the tissues and remaining there as edema will result in the tissue cells being placed in a nonconductive medium, which also seriously compresses them and isolates them from the principal functions of the blood, namely (a) oxygenation, (b) nutrition, (c) phagocytic action and (d) elimination of waste products, the prevention of this series of events is to be desired.

It is firmly believed that the additional loss of skin experienced in the tannic acid-silver nitrate method of treatment of severe burns is mainly due to the aforementioned deprivation of the circulation and only slightly to the chemical action of the astringents. The cells which die do so largely because of anoxia of the tissue cells, but infection resulting from delayed phagocytic action also plays a part. Loss of nutrition and failure of elimination of waste products from the cells are due to the abnormal pressure and physiologic isolation resulting from surrounding edema. This theory is substantiated by the fact that severe burns often become infected whatever type of topical application is used unless the compression technique is employed. It is well known that infection rarely occurs when burns are promptly and properly treated by compression, whether or not a medicinal preparation is placed on the burned surface. The rapid improvement of a burned infected surface following compression treatment further substantiates this theory.

The modern concept that a burn is a large surface traumatic wound is of paramount importance in present day treatment. The extensiveness of the wound makes it more hazardous from the standpoint of infection than the ordinary traumatic wound, since there is more surface to receive contamination and a greater area over which the cells of the blood must be distributed in their phagocytic action against invading organisms.

(2) they insure ease and rapidity of aseptic application of primary adequate dressings by the nonprofessional attendant, (3) they facilitate application of dressings to dependent parts, as the under surface of the arm, the groin or the under surface of the chin, (4) they bring a splinting effect to the wound and its immediate area, (5) by pressure they prolong viability of tissue through aiding return circulation from the wound, (6) they obliterate spaces and crevices in wounds by this compression, (7) by their sterile bulk they form a barrier against added contamination, (8) they create a safety factor in that they may remain as originally applied without additional adjustments or changes for a number of days when necessary, as under battle conditions, (9) they permit easy, as well as efficient, application to any wound with or without spurting vessels under such unfavorable conditions as high wind, semidarkness and cramped close spaces as in multiple passenger combat planes, (10) they make a superior type of first aid treatment available at or near the scene of injury for extensive surface injuries, such as burns, frozen members (frost bite), severe abrasions or crushing injuries, and (11) they afford a dressing the bulky resilience of which will give maximum comfort and permit firm safe bandaging, adequate to hold it indefinitely in place.

#### PRINCIPLES OF THE COMPRESSION TREATMENT

It is my opinion, substantiated by outstanding surgeons of my acquaintance, that the compression treatment of burns is by far the most logical and successful. My own particular theories as to the success of compression treatment for wounds, whether burns, frost bite, traumatic or surgical wounds, are discussed briefly. The compression aids return circulation from the wound and in so doing tends to prevent edema. In an extensive surface wound, such as a burn, plasma is lost from the blood stream by escape into the tissues, the principal loss being into the tissues and not as formerly thought entirely out of the body by evaporation and drizzle. It is therefore most important that the compression treatment be instituted at the earliest possible moment

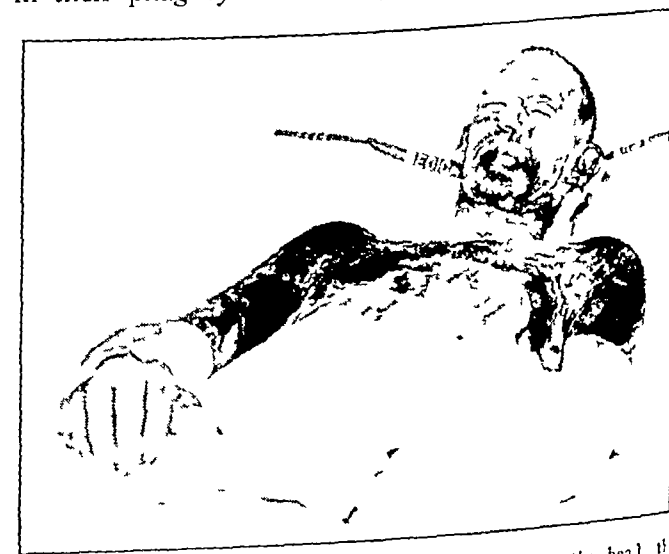


Fig. 6—After ten days the dressing is removed from the head of the right forearm and the hand. Note the absence of edema of the surgically clean wounds of the head, upper part of the neck and right forearm. The left ear is surgically clean, although bleeding slightly after removal of the dressing. The patient begged that the dressing of the badly lacerated left forearm and hand not be disturbed since it was so comfortable. (Photograph by U. S. Army Air Corps.)

Prompt precaution against contamination is indicated whatever the nature of the injury, and the greater the raw surface of the wound the greater the need for promptness in adequate protection. With extensive surface injuries, such as burns, severe abrasions,



Fig. 5—Patient on the third day. The eyes have been exposed by removing the special dressings in that area. There is no edema of the lids or surrounding areas to speak of. Notice the areas of fluid formation beneath the eschar and one or two areas in which it was necessary to excise the eschar (upper right area of chest, left axilla). Thus far the patient has directed his complaints to the tannic acid areas, claiming complete comfort for the hands, the forearms and the head. (Photograph by U. S. Army Air Corps.)

multiple lacerations, the need for prompt protection against added contamination is even overshadowed by the need to get the wound under adequate treatment. Certainly when such treatment, if initially applied can serve as a control for severe hemorrhage from the external wound, as a protection against added con-

therapy should be accomplished prior to departure. The patient should not be subjected to transportation if he is developing shock until it is controlled, else it is likely to continue into irreversible shock and subsequent death.

#### RECOMMENDED PROCEDURE

It is proposed that an adequate simple sterile compression dressing be applied to a severe burn or other large surface wound immediately at or near the scene of injury, especially if the patient is to be moved a considerable distance. The technique is not involved. The persons administering the treatment obtain the multiple pad pack. They remove the top covering and put on the caps and masks taken from the pack. They then apply the patient's mask. Their hands are washed in soap and water followed by alcohol. The patient is given morphine sulfate  $\frac{1}{4}$  to  $\frac{1}{2}$  grain (0.016 to 0.032 Gm) subcutaneously and the first unit of plasma and the chemotherapy are started. The wounds are exposed by cutting away clothing as indicated, and every effort is made to keep the patient warm if the outside temperature is low. The plywood frame which opens to form a splint is then removed from the top of the pack. The draw string is pulled from the end of the muslin bag, presenting two finger individualizers. The first pad will be lifted off by its attached bandage and will be placed on one extremity of the wound. Then subsequent pads will be obtained, placed side by side and



Fig 7—Patient whose chest ears nose and zygomatic areas were apparently burned to about the same degree as he appeared eighteen days after injury. Notice how much further advanced toward recovery are the head forearms and hands comparatively. (Photograph by U S Army Air Corps)

tamination and as a preventive of edema with its harmful effect on cellular metabolism, it will be advantageous to start this treatment early. To start treatment prior to contamination is the ideal. However, if contamination has already taken place it is of utmost importance to get this treatment under way (1) before the contamination becomes an actual infection, (2) before the increasing loss of fluid from the blood stream causes hemoconcentration with progressive shock and (3) before the fluid elements of the blood have escaped into the tissues to affect adversely cellular metabolism. Compression dressings on burns of the arms, the legs and the trunk, when approaching the total area of these members, help to raise the blood pressure of the patient in shock by compressing the blood vessels in the area and displacing the blood to the larger vessels and the heart for a more favorable volume. I have seen severely burned patients who already were suffering with shock react favorably immediately after the application of such compression dressings to the entire upper and lower extremities.

Many lives can be saved if optimal treatment will be given patients having severe or extensive wounds before they are subjected to transportation. (When indicated, treatment should be continued while en route.) Prompt effective control of external hemorrhage, proper compression dressing and splinting of all severe wounds, administration of a sedative, intravenous injection of plasma and institution of chemo-

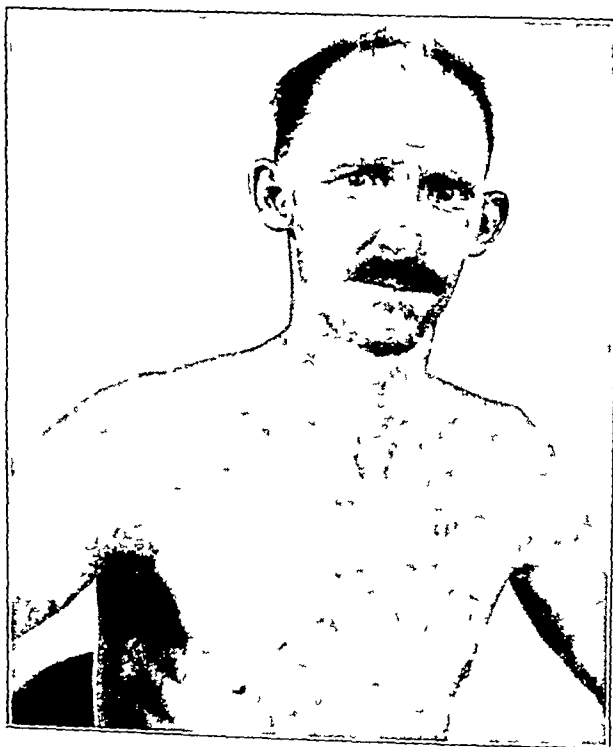


Fig 8—After thirty five days some areas in the portion that received open treatment require a skin graft. The left ear has cupped a little but the deformity is not a noticeable one. There have never been indications of infection or edema or complaints of pain in the areas treated by voluminous dressings. None of these areas have any indication for skin grafting. (Photograph by U S Army Air Corps)

fixed with the bandage under moderate pressure. The fourth pad will have another bandage and so on until the package is used up. Other packages are obtained as needed for complete coverage of wounds in compression. The splints from the frames may then be applied without padding.



The fine mesh 44-40 gauze in my opinion is the ideal substance for contact with the wound. If loose gauze is placed on the wound it should be saturated with isotonic solution of sodium chloride to keep it smoother as in the Neal Owen method. Here the gauze is held smooth by the pad to which it is attached. It is my belief that ointments, dyes, topical antiseptics and the like are harmful in certain instances and superfluous in most. However, chemotherapy given orally or intravenously is essential.

These dressings on burns of patients arriving at the hospital should remain undisturbed as treatment unless there is information on the diagnosis card or otherwise of gross debris, which would necessitate cleansing, debridement and subsequent reapplication of a compression dressing. Otherwise, to change dressings would subject the patient to added hazards of contamination and perhaps increase his shock. The compression dressings on lacerated and other severe wounds should be removed in a proper surgical unit under aseptic conditions with full protection against respiratory contamination and with provisions such that adequate surgical care can be complete. Even in the case of lacerated wounds it is better to make x-ray search for foreign bodies and leave the dressings intact, if too long an interval has elapsed for safe surgical intervention, until indications arise for their removal. In any case, treat the patient in a logical conservative manner to bring him through the critical period alive, leaving well enough alone. See to it that the blood volume is kept up, that unavoidable losses of blood plasma or cells are replaced, prevent or treat shock and promptly administer adequate chemotherapy. Keep an accurate record of the fluid intake and output and adjust the intake of fluid accordingly.

#### SUMMARY

1 The series of compression dressings offered makes possible adequate treatment of wounds, including the extensive surface wounds of burns and frost bite.

2 Three of the compression dressings are packaged with maximum compression for economy of space in shipment in the war effort and in carrying by personnel and to permit hospitals generally to store easily an adequate supply of sterile compression dressings for instant use in mass disasters.

3 The sterile ready-to-go compression dressings are devised to simplify the dressing of severe wounds so that the briefly trained person may become proficient in their application.

4 The oval pads of the individual dressings are designed to have sufficient firmness to collapse injured vessels and stop hemorrhage but to have ample resilience to permit circulation beyond the wound and to the tissue of the wound through the uninjured blood vessels, thus obviating the use of the tourniquet with its hazards.

5 The two new type dressings have a dual purpose, in that they may serve as thick spongelike pads for quick control of external hemorrhage or, by unfolding, may become wide coverage compression dressings.

6 The economy and saving of strategic materials is apparent.

Hospital care and treatment are today superior, generally, however, the critical period from the time of injury to the time of admission to the hospital offers room for improvement. This has been an effort in that direction.

## A WORKING CLASSIFICATION OF THE CAUSES OF ABORTION

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The traditional method of classifying the causes of spontaneous abortion divides them into two major groups: fetal and maternal, each of which is again divided into numerous subgroups more or less ill defined. As a practical basis for diagnosis and treatment such an analysis tends to be confusing rather than helpful.

Every accomplished abortion includes three events: death of the embryo, separation of the ovum from its attachments and expulsive uterine contractions. Any one of these may be the primary event in a given case followed sooner or later by the other two. Thus abortion can be induced by killing the ovum with x-rays by dislodging it with the curet or by provoking effective uterine contractions with bougies. In the same way spontaneous abortions are initiated by accidents of three general types. A consideration of the causes from this point of view clarifies certain aspects of the problem of clinical management.

#### DEATH OF THE OVUM

In some cases of abortion the embryo dies days or even weeks before there is any evidence of ovular detachment in the form of bleeding or of expulsive uterine contractions in the form of cramps. In others the embryo already moribund dies after some slight appearance of bleeding or cramps but before these symptoms are well established. Such cases are of two sorts. In the first the trouble is hereditary, present from the moment of conception. Faults inherent in the germ plasma may produce anatomic defects, more often they lead simply to a state of insufficient vitality. In the second sort of case the trouble is environmental. A normal ovum succumbs after nidation either because of malnutrition from poor implantation or less often as a result of acute or chronic disease in the mother.

To speak first of the last mentioned item, situations in which maternal ill health kills a normal embryo in the uterus offer good examples of primary ovular death. In practice they are relatively uncommon, indeed, it is surprising how sick a woman can be without interruption of her pregnancy. Chemical poisoning, notably by lead and toxemia from local infection predispose to abortion, as do also thyroid disorders and diabetes. Malnutrition and avitaminosis appear to have the same effect though less than one might expect. There is a high incidence of abortion in febrile diseases such as scarlet fever, malaria and pneumonia, and while in some of these cases the primary event is uterine contractions provoked by high temperature or anoxemia more often the embryo dies first. On the other hand maternal syphilis, for all its disastrous consequences in the second half of pregnancy, is relatively harmless to the ovum during the early months.

Mall<sup>1</sup> and others<sup>2</sup> have found that upward of 50 per cent of aborted embryos are pathologic. In Mall's opinion these malformations without exception are produced by environmental factors, chiefly by abnormalities of the uterine mucosa which interfere with nidation.

Read before the New England Obstetrical and Gynecological Society in Boston Dec 2, 1942.  
From the Department of Gynecology of the Boston University School of Medicine and the Gynecologic Service of the Massachusetts Memorial Hospitals.  
1 Mall F P. A Study of the Causes Underlying the Origin of Human Monsters. *J Morphol* 19 1 (Feb) 1908.  
2 Hertig A T and Edmonds H W. Genesis of Hydatidiform Mole. *Arch Path* 30 260 (July) 1940.

tion, prevent regular growth of the trophoblast and thus affect the nutrition of the embryo. He states categorically "It is perfectly clear that monsters are not due to germinal or hereditary causes."

There is now, however, a considerable body of evidence to show that defects inherent in the germ plasma can and do cause weakness in the embryo if not actual malformations. Lethal factors in heredity are well known in lower animals. Something closely analogous has been demonstrated in human beings by Levine and his co-workers,<sup>3</sup> who find that an Rh negative pregnant woman with an Rh husband may produce, as a result of immunization with the Rh fetal blood anti Rh agglutinins which can penetrate the placenta and hemolyze the blood of the fetus. The type of embryonal weakness most often encountered in practice is due to relative infertility of the spermatozoon or of the ovum, this being caused in turn by constitutional faults in one or both parents such as endocrine disturbances, chronic intoxications, debilitating diseases and poor hygiene. When disorders of this sort are severe they prevent conception, when present in milder degree they deprive the fertilized ovum of that vital energy necessary to carry it through pregnancy. The foregoing facts and others well supported by clinical and laboratory observations have led some workers to ascribe the majority of primary ovular deaths to preconceptional rather than postconceptional influences.

The literature of the past few years contains numerous papers<sup>4</sup> reporting 80 per cent or thereabouts of successes in the progesterone treatment of both threatened and habitual abortion. The fact that a majority of pregnancies in which abortion is threatened can thus be carried to term, with the birth of normal babies is proof positive that the embryos are not inherently defective. It likewise sustains the views of Mall for the protective action of progesterone on the decidua would operate specifically to prevent the pathologic sequence of events envisaged by him. Equally definite conclusions about the ovum cannot be drawn from the reports on habitual abortion, since that diagnosis is often little more than presumptive. No doubt the administration of progesterone from the beginning of pregnancy can act prophylactically in the same way as it does therapeutically after a threat of trouble has appeared. When constitutional treatment of one or both partners is carried out before the start of pregnancy it may be assumed that increased fertility in the parents results in the survival of a certain number of embryos which otherwise would not have had enough vitality to complete their intrauterine development.

#### SEPARATION OF THE OVUM

The commonest initial event in spontaneous abortions is some degree of ovular separation. Bleeding was noticed before cramps in more than 80 per cent of my cases. Usually the first separation is not extensive, with proper treatment, or even without, healing may occur so that the pregnancy continues uneventfully. Under less favorable conditions further detachment takes place, the embryo weakens and dies, contractions supervene and abortion becomes inevitable.

There is probably no agent short of instrumental intervention which will bring about the detachment of a normal ovum properly implanted in a normal uterus. Healthy fruit does not fall from the tree until it is ripe.

<sup>3</sup> Levine, Philip, Burnham, I. Lynn, Katzin, E. M. and Vogel, Peter. The Role of Immunization in the Pathogenesis of Erythroblastosis Fetalis. *Am. J. Obst. & Gynec.* 42: 925 (Dec.) 1941.

<sup>4</sup> Kotz, Jacob, Parker, Elizabeth and Kaufman, M. S. Treatment of Recurrent and Threatened Abortion. Report of Two Hundred and Twenty Six Cases. *J. Clin. Endocrinol.* 1: 335 (Oct.) 1941.

Primary separation of an ovum before the death of the embryo or the onset of expulsive contractions indicates therefore some defect in its attachments, either in the decidua or in the trophoblast.

The formation and the maintenance of a normal decidua depends on two factors: adequate endocrine stimulation and a healthy endometrium capable of responding. As Browne and his associates<sup>5</sup> point out, between the seventieth and ninetieth days of most pregnancies there occurs a transfer from the corpus luteum to the placenta of the function of producing progesterone essential to the integrity of the decidua. If at this critical time or at any other the secretion of progesterone is insufficient (an event often evidenced by a fall in the excretion of pregnandiol), the result is regression of the decidua, disruption of its tissues by internal hemorrhages and separation of villi. A point often overlooked by clinicians is the role of estrogen of which an adequate production is necessary to prepare the endometrium pregnant or nonpregnant, for the action of progesterone.

Less frequent as a cause of poor decidua formation is inability of the endometrium to respond to physiologic stimulation. An important item in this category is uterine hypoplasia which would figure more largely than it does in the causation of abortion were it not that the accompanying hypoplasia of the ovaries makes conceptions few and far between. Inflammatory conditions likewise are more apt to produce sterility than abortion. The older literature has much to say about 'decidual endometritis'. This term usually represents a pathologic misconception interpreting as inflammation the dissolution and the infiltration with leukocytes, which are nothing more than a phase of the regression that follows withdrawal of progesterone. Nevertheless infections of the decidua, the placenta and the embryo itself do occur, either through the blood stream or by invasion from the vagina. The hyperplastic endometrium, an end result of more or less prolonged estrogen-progesterone imbalance, can rarely prepare itself for the implantation of an ovum. The same is true of the endometrium of the subinvolved uterus. This fact may sometimes account for a series of very early abortions, perhaps not recognized as such.

Defects in the trophoblast naturally predispose to ovular separation. Mall reports that the study of comparatively normal embryos often shows that the membranes are decidedly pathologic, the villi being deformed, diseased, atrophic or hypotrophic. Here again, as in the matter of ovular death, it is a question whether the disorder is primarily an imperfection inherent in the ovum or poor nutrition from faulty implantation. The theory has been advanced that the type of placental infarction seen in chronic nephritis may have its origin in disease of the young blood vessels of the chorion.

#### EXPULSIVE UTERINE CONTRACTIONS

In a minority of cases the threat of abortion is first announced by symptoms of uterine contraction. These commonly start as low backache with dull pain and a sense of weight in the pelvis, if the process is not checked, they soon develop into rhythmic cramps of increasing severity. Cramps without bleeding or followed by a show of bright blood are consistent with the possibility that the ovum is still normal. But when pains have been preceded by days of spotting or brown-

<sup>5</sup> Browne, J. S. L., Henry, J. S. and Venning, E. H. The Significance of Endocrine Assays in Threatened and Habitual Abortion. *Am. J. Obst. & Gynec.* 75: 927 (Dec.) 1939.

symptoms and the combined thiamine suggests that the latter may be in a form unavailable to the body. The source of the thiamine in the feces remained to be explained.

Two possibilities to be considered were (1) that intestinal bacteria were manufacturing thiamine, a phenomenon that is known to occur in the rat under certain conditions and in the rumen of certain ruminant animals, (2) that the stores of thiamine in the body had not been completely exhausted and that the fecal thiamine represented an excretion into the intestine. The latter alternative seemed rather unlikely in view of the fact that urinary thiamine excretion had for many months remained at extremely minute levels. The possibility of thiamine excretion into the intestine was tested by administering 50 mg of thiamine intravenously to 1 subject daily for one week in order to find out whether this was followed by an increased thiamine content of the stools. A negative result was obtained.

In order to obtain direct evidence for the production of thiamine by the intestinal bacteria one of the symptom free subjects (G B) was given succinylsulfathiazole by mouth 1.5 Gm every four hours for one week. The feces of this subject showed a prompt reduction in free thiamine from the previous values of 37 and 52 micrograms per day it fell within a week to zero reappearing a few days after the drug was discontinued. Conceivably this negative result may have been due to direct destruction of thiamine by succinylsulfathiazole or to some interfering effect of the drug on the thiamine determination. Both these possibilities have been explored and ruled out. It is thus clear that the thiamine in the feces had its origin in the intestinal bacteria.

It is conceivable that the fecal thiamine was formed only by bacteria present in the large intestine a site from which absorption of thiamine is perhaps impossible.

TABLE 2—Urinary Excretion of Thiamine Following Administration of Thiamine by Enema  
(Micrograms in twelve hour specimen)

Subject	Before Thiamine Enema	After Two Thiamine Enemas
A	160	1,615
B	162	5,200

If this were the case, the presence of fecal thiamine would not explain the protection from the deficiency which these 4 subjects exhibited. In order to test this possibility, retention enemas containing 50 mg of thiamine were given to 2 persons on successive days. Twelve hour collections of urine were made before this regimen was started (control period) and on the day the second enema was given. The results (shown in table 2) indicate a pronounced rise in urinary thiamine as the result of the thiamine enemas and provide ample proof that the large intestine can absorb thiamine.

It is not possible to state at the present time that thiamine requirements can be sustained for an indefinite length of time by such thiamine as is formed by intestinal bacteria. It may be that minute amounts of oral thiamine are needed for the growth of the bacteria which synthesize thiamine. The nature of the organisms which synthesize thiamine and the relation of diet to such bacterial synthesis are now under investigation.

The demonstration that intestinal bacteria can synthesize thiamine carries interesting implications for human nutrition. This phenomenon may explain the discrepancies in thiamine requirements found by differ-

ent observers. Since it is likely that the biosynthesis of thiamine is greatly affected by diet, as is known to be the case in animals, it follows that we must think in terms of requirements on particular diets rather than of requirements in general. It is quite possible that dietary factors other than the thiamine content may explain in part some of the paradoxes in the incidence of beriberi. The possibility of controlling thiamine deficiency by means other than thiamine administration remains to be explored. Finally, we may point out that the inhibition of the biosynthesis of thiamine by a sulfonamide drug has an important clinical implication for the physician who uses these drugs.

### III CIRCULATION IN THE SKIN IN THE SHOCK SYNDROME

#### COMPARISON OF SIMPLE PROGNOSTIC FEATURES OF CLINICAL VALUE

JOSEPH R DiPALMA, M.D.

BROOKLYN

"Early diagnosis and early adequate treatment" is a maxim which applies with particular emphasis to the shock syndrome. If impending shock could be suspected and treated effectively before changes in blood pressure and pulse sound the clarion call of approaching death, lives could be saved. Indeed it is even maintained by some observers that when the blood pressure falls and is maintained for an appreciable time below the so-called "critical level" and pulse changes are pronounced, a stage of shock has been attained which is frequently irreversible.<sup>1</sup> Hence the need for simple clinical methods which provide a means of diagnosing impending shock at the earliest possible moment. To accomplish this many attempts have been made, to date not one remains so effective as a serial follow-up of blood pressure and pulse. Among the promising are studies of blood concentration. Unquestionably they are of value in the shock arising from burns. They are not so satisfactory when applied to other types of the shock syndrome.<sup>2</sup>

My purpose in this investigation was comprehensive. It was to establish a physiologic and clinical basis for evaluation of certain features of shock states and to show that a few simple tests of the circulation in the skin are of diagnostic and prognostic importance in various types of the shock syndrome which are commonly encountered. The use of two recently developed methods of studying quantitatively the responses of the smaller blood vessels of the skin have made this possible.<sup>3</sup> The first method measures two aspects of the hyperemic response (vasodilatation) consequent to a standardized period of local ischemia. First is the minimum time required to elicit a given degree of reactive hyperemia. The second is to measure the clearing time for this

Mrs. Blanche V. Richard rendered valuable technical assistance. This investigation has been aided by a grant from the Josiah Macy Jr. Foundation. From the Department of Medicine, Long Island College of Medicine, Kings County Hospital Division. Dr. Walter B. Cannon and Dr. S. R. M. Reynolds read and criticized the manuscript of this paper for which the author is grateful. 1. Cannon, W. B., and Cattell, M. K. Studies in Experimental Traumatic Shock. V. The Critical Level in a Falling Blood Pressure Arch. Surg. 4: 500 (March) 1922. Scull, C. W., and Finner, J. Physiological and Clinical Basis for Treatment of Shock. Clin. 1: 43 (June) 1941. Wiggers. 2. Scudder, J. Shock. Blood Studies as a Guide to Therapy. Philadelphia: J. B. Lippincott Company, 1940. Weiss, Soma. Shock and Collapse and Shock, Proc. Inst. Med. Chicago 13: 2 (Jan.) 1941. Harkins. 3. DiPalma, Reynolds, and Foster (footnotes 9 and 11).

response. This it has been shown is an indication of the rate of blood flow in the skin. The second method measures the sensitivity of the small dermal vessels to give the so-called white reaction to graded mechanical stimulation (vasoconstriction).

#### PHYSIOLOGIC CONSIDERATIONS

Except for Grant, who has stressed the importance of clinical observation of the skin in shock, most observers dismiss the skin with the brief comment that it is pale, sometimes ashen in color, cold and sweaty.<sup>4</sup> Little of a factual nature is therefore known.

Perhaps the best way to approach the problem is to state the commonly accepted view of the pathogenesis of the circulatory failure in the initial stage of the shock syndrome. This may be regarded as three definite but merging phases:

1. Reduction in effective circulating blood volume resulting in diminished cardiac output and diminished venous return. (The cause and mechanism do not concern us here but naturally may include trauma, hemorrhage, massive infection, burns, intestinal perforation or cardiac shock.)

2. Blood pressure maintained by vasocompensatory mechanisms. Pulse may or may not be altered.

3. Result is slowing of the peripheral blood flow. This is demonstrated in the skin by coldness of the extremities, cyanosis of the nail beds and sometimes actual stagnation of the blood in the small blood vessels.

It follows therefore that closer observation of the circulation of the skin by the use of certain objective tests of the skin circulation, to be described later, will yield important clues of impending shock before it is heralded by a fall in blood pressure or changes in pulse rate. While slowing of the peripheral blood can exist without the patient being in shock (as for example in cardiac failure, myxedema, peripheral vascular disease or in debility) it must be emphasized that the shock syndrome cannot exist in the presence of an adequate peripheral circulation. This truism has been given the attention it deserves in Harkins's recent review.<sup>6</sup> In summarizing the results of numerous investigators who universally found slowing of the peripheral circulation in the early stages of the shock syndrome, he says "All these writers obtained confirmatory results and it seems to be without question that a decrease in blood flow is one of the prime factors in shock. So important and progressive is it that one might almost say that to diagnose shock, a lancet to cut the ear or finger and determine the blood flow would prove almost as useful as all the sphygmomanometers ever made. If one were to select a single determination to follow the course of shock, an observation of the peripheral blood flow might be the best to choose."

To test the foregoing hypothesis the following observations were made:

#### METHODS AND PROCEDURES

No attempt was made to study just one type of shock. Rather, all patients in whom the funtest possibility of shock existed were seen as early as possible after they were admitted.<sup>7</sup> The following standard procedure was

followed with each patient. First, a careful but brief clinical history was secured to establish an etiologic factor. In the physical examination which followed and usually done at the same time as the history, particular attention was directed to the following details. The patient was stripped and remained exposed to the room air. At this point the importance of examining the patient as a whole cannot be too strongly stressed. The skin was examined with the aid of a light of a 60 watt daylight mixed electric bulb.

**Blanching Test.**—First a rough estimate of the amount of blood present in the skin areas in the trunk, extremities and face was made. This was done by simply pressing the forefinger forcibly into the skin and observing the blanched area for color contrast with the surrounding skin. Naturally, it follows that if the skin can be blanched at all by pressure some blood must be present in it and the greater the color contrast with the unblanched skin the greater must be the amount of blood originally present. The rate of fill-in of the blanched areas also permits a rough though very unreliable, estimate of blood flow.

**Temperature of the Skin.**—Since the rate of blood flow determines the temperature of the skin, perceptible cooling of the skin, especially of the extremities, is an important indication of slowing the peripheral blood flow. It is not advisable to use instruments to do this because they are cumbersome, are not always available and the exact skin temperature actually means nothing in itself. What is important is to determine if there are any gross differences between the temperature of the skin of the trunk and the skin of the extremities. This can best be done by gentle palpation with the back of the digits of the hand. It is surprising what fine temperature gradation can be detected in this manner. Again it must be stressed that to do this properly the patient must be naked and exposed to room air for at least ten minutes and preferably for a longer period of time. To attempt to palpate skin temperature while the patient is covered by a blanket is ridiculous, and an extremity which has been in close proximity to a warm body will be warm because of direct transference of heat.

In this study, therefore, careful attention was directed to notation of unusual cooling of the skin of the hands and feet as compared to the temperature of the skin of the trunk.

**Color of the Skin.**—The color of the skin admirably reflects changes in the rate of peripheral blood flow. The best places to observe are the nail beds of the hands and feet, the lips and the cheeks. The observer by himself can become competent in visual judgment of the changes in skin color which are dependent on the amount and state of oxygenation of the hemoglobin present in the blood vessels of the skin in the following manner. Apply a blood pressure cuff to a suitable normal arm held at heart level and rapidly inflate the cuff to a pressure above the systolic level of the subject. Note carefully the skin color changes which attend the complete circulatory stasis. In about one minute the skin of the arm and forearm will become slightly pale and ashen in color, the nail beds very cyanotic. This limb now represents the changes in skin color which are encountered in the average case of shock in which there has been no blood loss. The arterial color which replaces the cyanosis on release of the pressure in the cuff serves to emphasize the type of skin color with excellent circulation. Now if the experiment is

<sup>4</sup> Grant, R. T. Memorandum on the Observations Required in Cases of Wound Shock. *Brit. M. J.* 2: 332 (Sept. 6) 1941.

<sup>5</sup> Wiggers, C. J. Present Status of the Shock Problem. *Physiol. Rev.* 22: 74 (Jan.) 1942.

<sup>6</sup> Harkins, H. Recent Advances in the Study and Management of Traumatic Shock. *Surg. G.* 231 (Feb.) 447 (March) 607 (April) 1941.

<sup>7</sup> Patients in this study included those in both the open and closed divisions of medicine and surgery at Kings County Hospital. The majority of the staff, both doctor and nurses, gave an untiring cooperation.

repeated, this time the limb held high and the blood drained out of it before inflation of the cuff, the type of skin color changes encountered most commonly in hemorrhagic shock may be observed. In this case extreme pallor of the skin will be noted. Cyanosis can be detected only in the nail beds. Finally, if the experiment is repeated once more with the limb held dependent and blood allowed to collect in it, the skin color changes most frequent in medical types of shock such as that due to massive infection and shock of cardiac origin may be studied. In this case, the limb is plethoric and the color changes are more striking than in the foregoing instances. The bright red arterial blood color first changes to a duller shade of red, perhaps best described as brick red then purplish and finally deeply cyanotic. Thus it should be realized that a brick red skin color of the palm may denote considerable slowing of peripheral blood flow in a patient with a reason for going into shock. If deep cyanosis is waited for, many cases of impending shock may be missed.



Fig. 1—The ease with which the reactive hyperemia ring test is done clinically is illustrated. A weighted rubber ring is applied to the skin of the forearm for a period of seconds measured by the stopclock. By trial and error on different areas a threshold hyperemic response is determined. Note that no additional pressure is put on the weight. The forefinger merely balances it. The length of time required for the threshold response to fade is known as the clearing time and is related to rate of blood flow in the skin. In this instance two weights are used simultaneously to speed up the determination.

**The Tache Response**—One other clinical method of detecting slowing of blood flow in the skin has been found occasionally useful. This consists in stroking the skin rather forcibly with a blunt instrument such as the end of a ruler or the cap of a fountain pen. This response, best described by Lewis, in a normal skin consists in the appearance in a few seconds of a red line along the exact path of the stroking instrument. Surrounding the red line is an area of pallor and beyond this an arteriolar flare.<sup>8</sup> Our procedure for the shock patient was to stroke simultaneously the skin of the chest in the area just above the breast and the skin of the forearm. Three things were watched for: (1) the length of time required for the red line to appear, (2) whether or not there was a delay in the appearance of the red reaction on the forearm as compared to the chest and (3) the color of the blood which composed the red line. No attention was paid to the presence or

absence of the surrounding pallor and flare, as this was found to be extremely variable.

The following conditions denote slowing of the peripheral blood flow: delay in the appearance of the red line beyond five seconds, and especially delay in the appearance of the red line on the forearm as compared to that on the chest. The color of the red line should be bright red. Altered shades of red, varying from brick red to a purplish red and even a deep cyanotic color, denote respectively a more severe degree of slowing of peripheral blood flow.

These four simple clinical tests of the circulation in the skin, while they are of inestimable value in the proper detection and judgment of the severity of the shock syndrome, still leave much to be desired. They are purely of a qualitative and subjective nature and require much experience to be interpreted properly. Moreover, they do not take into account environmental and seasonal factors, which are known to affect profoundly the circulation of the skin.<sup>9</sup> The test to be described obviates these difficulties.

**Reactive Hyperemia Ring Test**—It has been found that the disappearance or clearing time of a standardized reactive hyperemia response produced by local ischemia of the skin is related to the rate of blood flow. Proof of this fact and, in addition, a description of the method, physiologic, seasonal, and aging variables, and its application to the clinical evaluation of peripheral vascular disease have been dealt with before in detail.<sup>10</sup> As regards the method of its determination, suffice it to say here that it depends on the application of a weighted rubber ring (weight loading 100 Gm per square centimeter) to the skin of the flexor surface of the forearm. A stopwatch or a suitable clock is required to time the period of ischemia (application of the weight) and clearing time of the response after removal of the weight. Figure 1 shows the ease with which the test is done clinically. The minimal length of time, expressed in seconds, required to elicit hyperemic rings of uniform coloration, uniform width and with discrete edges is noted as the stimulus time or threshold for a response. The length of time required for the hyperemic rings to fade completely is noted as the clearing time. To establish a base line of seasonal and environmental factors a control reactive hyperemia ring test was done on the observer himself or a suitable normal patient in the same room as the shock patient.

**Capillary Sensitivity**—In this investigation one other test was done which, although not clinically applicable because of the complexity of the apparatus and the time involved, supplied important information concerning the reactivity of the smallest blood vessels of the skin. A strength-duration or excitation curve was determined by using a mechanical device capable of varying both the speed and the intensity of application of a stroker along the skin. This was done by finding the least weight in grams at each of five critical speeds of the stroker which produced a limited degree of vasodilatation against a background of vasoconstriction. The curve thus obtained was quantitated by means of the

9 DiPalma J. R., Reynolds S. R. M. and Foster F. I. Quantitative Measurement of Reactive Hyperemia in Human Skin, *Am Heart J* 23: 377 (March) 1942.  
10 DiPalma, J. R., and Foster F. I. The Segmental and Arterial Variations of Reactive Hyperemia in Human Skin, *Am Heart J* 24: 332 (Sept.) 1942. DiPalma, J. R., Muss, I., and Foster F. I. Reactive Hyperemia Ring Test in the Study, Evaluation and Progress of Pedal Lesions Caused by Arteriosclerosis Obliterans and Arterial Fibrinoid. *ibid* 24: 345 (Sept.) 1942. DiPalma, Reynolds and Foster.

8 Lewis Thomas. *The Blood Vessels of the Human Skin and Their Responses*, London, Shaw & Sons, Ltd. 1927.

formula recommended by Lassalle where excitability or  $E$ , is equal to  $\frac{1}{\text{Rheobase}^2 \times \text{Chronaxie}}$ . The reciprocal is used so that a low coefficient signifies low excitability a high coefficient a high degree excitability. Figure 2 illustrates three curves and the coefficient derived from each curve in a patient in shock from massive infection. A full discussion of this method is given elsewhere.<sup>11</sup> The significance of this test is this. Since normal data have already been secured for this response, comparison can be made with the results obtained in the shock syndrome. Moreover correlation can be made in the various types of the shock syndrome and in different stages with the degree of clinically observed and objectively studied alterations in rate of peripheral blood flow. This will be brought out in more detail later.

### RESULTS

Forty-nine cases of surgical and medical shock of various degrees of severity have been closely followed. Eleven additional cases of suspected shock which later proved to have different disease syndromes were also studied. In the interest of brevity, 25 of these cases have been selected as a representative sample and summarized in detail in the accompanying table.

**Clinical Evaluation**—Review of the results in the table clearly demonstrates the value of the clinical examination of the skin in the shock syndrome. Particularly valuable is the estimation of the amount of blood present in the skin by means of the blanching test. It will be noted that the cases of hemorrhagic shock are the only ones which show definite diminution of blood in the skin. The cases of traumatic shock also often show some diminution of blood in the skin but in our experience never as much as the hemorrhagic ones. It should be pointed out here that mere notation that the skin is pale is not enough. Often it will be found that a patient who looks pale particularly under some lighting conditions actually has considerable blood in his skin when a critical attempt is made to determine this by means of the blanching test. The cases of medical shock such as massive infection and those of cardiac origin invariably show greatly increased amounts of blood in the skin, while those cases observed with ruptured peptic ulcer show diminution for only transitory periods and soon revert to normal filling of the skin even without treatment. Thus mere observation of the amount of blood in the skin gives an important clue as to the cause of the shock syndrome in puzzling cases. In this regard, particularly striking is the case of B S. Attention to the amount of blood in the skin would have led early to the correct diagnosis, and the life of the patient might have been saved. The clinician should have asked himself the question "Why is it that this patient who gives a story of blood loss and should have the appearance of hemorrhagic shock, actually has such a great amount of blood present in the skin?" Search at this time for a medical cause for the shock syndrome might have led to the finding of suggestive tenderness and spasticity of the lower abdomen.

As regards skin temperature and skin color, little need be said. The results are clearly summarized in the table. Suffice it to reiterate here that the mere finding of cold hands and cyanotic nail beds does not indicate at all that the shock syndrome is present. On

the other hand, they are very suggestive findings when they fit in with the history and other physical findings. Moreover, the insidious onset of coldness and altered skin color in a patient who was previously normal in this regard often presages the onset of the shock syndrome before evident blood pressure changes occur.

The tache response should be done in all cases. It is simple to do and gives information of slowing of blood flow in skin areas (forearm and chest) in which cooling and color changes are not so easy to pick up clinically. The table demonstrates the range of change which can be expected in shock cases.

**Reactive Hyperemia Ring Test**—This simple test proved more valuable than all others. It permitted objective determination of alterations in blood flow in the small blood vessels of the skin of the forearm. Reference to the table will bring out first the absence of variation of the readings in the cases of suspected shock from the normal controls. Of particular interest is the case of E H, who had a systolic blood pressure of about 70 mm of mercury for eight hours, yet by clinical signs and the reactive hyperemia ring test her peripheral blood flow was normal. The fact that she eventually attained normal blood pressure with just 1,000 cc of 5 per cent dextrose in isotonic solution of sodium chloride as therapy substantiated the impression that she was never actually in the shock syndrome.

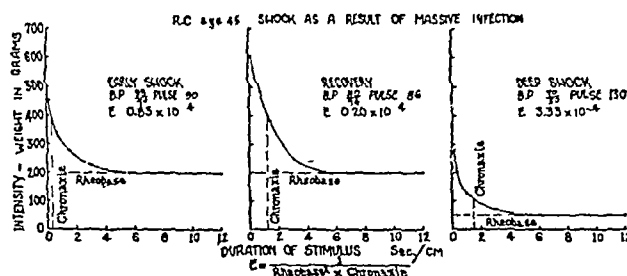


Fig 2—Three strength duration curves on the same patient in shock from massive infection. An instrument capable of critically varying both the duration and the intensity of a stroke along the skin is used to determine these curves. They are quantified mathematically by use of the formula and graphic location of the rheobase and chronaxie as illustrated. The result is expressed as a coefficient reduced to the fourth power to give a simple digit as an idea of the excitability. A coefficient  $E$  or excitability above  $0.5 \times 10^{-4}$  indicates an increase in the sensitivity of the small dermal vessels and vice versa.

Three other cases of suspected shock are included in the table because they are particularly illustrative of the type of patient which offers trouble in the determination of the presence or absence of the shock syndrome. The first type is the patient who succumbs to a moderate or minimal amount of trauma. Blood pressure may or may not be lowered when the patient is first seen. Serial follow-up of skin circulatory changes should be done as well as frequent blood pressures and pulses. A change in the skin circulation may indicate the need for more intensive treatment before blood pressure or pulse changes occur. Conversely, a good skin circulation as in case S A<sup>1</sup> is a reassuring sign. The second type is a patient who is brought to the hospital with a history of falling suddenly on the street or down a flight of stairs and who incurs some degree of trauma. It is desired to know if the patient has had a cerebral vascular accident which preceded the fall or if the trauma incurred as a result of an accidental fall accounts for the superficial appearance of the shock syndrome. Case L S demonstrates the value of observation of skin circulatory changes under these conditions. The third type frequently seen in medical practice is the patient,

11 DiPalma J R, Reynolds S R M, and Foster F J. Measurement of the Sensitivity of the Small Blood Vessels in Human Skin Responses to Graded Mechanical Stimulation in Normal Men. *J Clin Investigation* 20: 33 (July) 1941.



Type of Shock	Patient, Age, Sex	Orbital Diagnosis	Throat Diagnosis	Blood Pressure and Pulse		Clinically Detectable Skin Circulatory Changes on Admission			
						Blanching Test	Skin Temperature	Skin Color	Tache Response
				On admission	R P P				
Sepsis shock	H 24 ♀	Spontaneous abortion with hemorrhage ( )	Acute multiple sclerosis	On admission Recovery	70/40 110/80	87 76	Normal amount of blood in skin	No abnormal cooling of extremities	Good arterial color No delay good arterial color
	S A 1 ♀	Head trauma ( ) fracture of pelvis fracture of right hip ( ) traumatic shock ( )	Non-displaced fracture of pelvis	On admission Recovery	110/70 140/80	88 80	Normal amount of blood in skin	Slight cooling of fingers and toes	Good arterial color Simultaneous appearance on arms and chest good arterial color
	H 14 ♀	Head trauma ( ) internal injuries ( ) traumatic shock ( )	Head injury extracranial hemorrhage	On admission Deep shock	0/0 110/70	110 90	Supernormal amount of blood in skin	Hands and feet very warm	Bright arterial color Immediate appearance supernormal responses cerebral tache?
	M 1 ♀	Coronary occlusion ( ) cardiac shock ( )	Myocardial damage and clinical syndrome arteriosclerotic heart disease	On admission Deep shock Recovery	90/60 100/70 110/74	100 91 82	Supernormal amount of blood in skin	No abnormal cooling of extremities	Good arterial color No delay, good arterial color
Traumatic shock	S A 2 ♂	Head injury ( ) bilateral fractures	Fracture of right tibia and fibula and left tibia	On admission Deep shock Recovery	82/44 100/64 140/70	140 100 78	Fair amount of blood in skin hands plethoric	Pronounced cooling of hands and feet as compared to trunk	Cyanosis of hands and lips Delayed but appear simultaneously on the arm and chest brick red
	M D 70 ♀	Compound fractures of both legs	Same	On admission Deep shock Recovery	0/20 60/2 140/80	100 96 81	Small amount of blood in skin	Extreme cooling of the hands and feet	Pronounced cyanosis of hands, feet and lips Decidedly delayed, builds up slowly tache on arm comes up much later than on chest, cyanotic
	R A 61 ♂	Avulsion of left arm, multiple rib fractures	Same	On admission Deep shock Recovery	108/60 110/60 120/80	120 93 90	Fair amount of blood in skin	Hands and feet warmer than trunk (only skin on trunk is sweaty)	Moderate cyanosis of hands and feet Slight delay appears simultaneously on arm and chest brick red
	H S 21 ♂	Comminuted fracture of left tibia fracture of right tibia	Same plus head injury intracranial hemorrhage ( ) hypertensive cardiovascular disease	On admission Deep shock Recovery	140/70 180/70 170/100	76 84 80	Supernormal amount of blood in the skin	Cold hands and feet as compared to the trunk	Cyanosis of nail beds and lips Moderate delay in appearance of tache in the arms and chest fills in with a brick red color
	G A 69 ♂	Compound fracture of left tibia	Same	On admission Deep shock Recovery	90/70 100/40 110/60	84 90 88	Normal amount of blood in skin	Moderately cold hands and feet as compared to trunk	Slight bluish tinge of nail bed No delay in tache response good arterial color
	J L 27 ♂	Multiple fractures of both upper extremities fracture of left tibia hematoma of abdominal wall internal injuries ( )	Same	On admission Deep shock Recovery	120/80 (leg) 140/100 (leg)	104 90 80	Fair amount of blood in skin	Moderately cold hands and feet as compared to trunk	Definite cyanosis of nail beds and lips No delay in tache response brick red color
	P L 64 ♂	Comminuted fractures of both lower extremities	Same	On admission	50/0	110	Normal amount of blood in skin through out pooling in hands and dependent portions of body	Pronounced cooling of entire body	Deep cyanosis especially of hands, lips and feet Impossible to elicit tache response even with most vigorous stroking except for faint cyanotic response on chest
Hemorrhagic shock	D B 45 ♂	Bleeding peptic ulcer	Same	On admission Deep shock Recovery	84/30 50/30 140/90	100 120 90	Very small amount of blood in skin	Pronounced cooling of hands and feet	Bluish tinge of nail beds and lips No delay in tache response brick red
	H S 17 ♂	Bleeding peptic ulcer	Same	On admission Deep shock Recovery	90/60 80/50 140/52	140 130 96	Small amount of blood in the skin pale mucous membranes	Pronounced cooling of hands and feet as compared to the trunk	Definite cyanotic color of nail beds Delayed pronounced delay in appearance on the arm cyanotic
	H K 59 ♂	Bleeding peptic ulcer	Same	On admission Deep shock Recovery	140/70 128/80 110/70	84 90 80	Fair amount of blood in skin	Moderate cooling of hands and feet as compared to the trunk	Nail beds reddish purple No delay in tache brick red
	A S 08 ♂	Bleeding peptic ulcer	Same	On admission Deep shock Recovery	70/30 80/50 150/90	108 100 74	Bloodless skin	Pronounced cooling of hands and feet trunk warm	Cyanotic tinge of nail beds Decidedly delayed good arterial color
Ruptured viscera	H R 36 ♂	Ruptured peptic ulcer	Same	On admission Deep shock Recovery	100/60 120/70 110/80	78 86 78	Normal amount of blood in the skin	Slight cooling of hands and feet	Nail beds reddish purple Slight delay brick red
	H S 69 ♂	Ruptured peptic ulcer	Same	On admission Deep shock	0/0 70/30	9 120	Pooling of blood in palms of hands and in dependent portions of the body	Generalized cooling of the entire body	Deeply cyanotic almost black, especially palms of hands Decidedly delayed comes up very slowly deeply cyanotic

## Twenty-five Cases

Objective Tests of Skin Circulatory Changes						Shock Therapy	Initial Outcome	Comment
Reactive Hyperemia Ring Test *		Capillary Sensitivity Coefficient $\times 10^{-4}$						
	111	0 1	On Ad mission	Deep Shock	Recovery			
On admission	70	25	0 41		0 5	1 000 cc of dextrose and saline solution intravenously	Recovery	History of a fainting spell recent marriage bloody vaginal discharge and very low blood pressure which entitled admitting physician to make a diagnosis of abortion with hemorrhage development of definite neurologic signs 24 hours later brought out the true diagnosis
Recovery	70	25				1 000 cc of dextrose and saline solution intravenously	Recovery	Because patient was very restless sweating and asked continuously for water she was thought to be in impending shock
Normal control	0	70						
On admission	20	25				Infusion started	Died in 8 hours	Picked up on street automobile accident (?) Initial blood pressure could not be obtained because of obesity of patient later on stertorous breathing and peripheral neurologic signs indicated hemiplegia which was immediate cause of death
Deep shock	25	75				Morphine	Recovery	Low blood pressure and precordial pain indicated a coronary occlusion excellent peripheral blood flow was against this diagnosis compare with cases of cardiac shock before
Recovery	25	50						
Normal control	25	50						
On admission	70	650	4 70	14 0	0 41	500 cc plasma 1 000 cc blood 2 000 cc dextrose and saline solution	Recovery (See graph)	Moderately severe traumatic shock seen early good response to therapy
Deep shock	10	230						
Recovery	70	50						
Normal control	15	72						
On admission	170	900				500 cc plasma 1 000 cc blood, 2 000 cc dextrose and saline solution	Recovery (See graph)	Some degree of shock due to hemorrhage is possible amount of blood loss could not be estimated
Deep shock	170	940						
Recovery	50	170						
Normal control	60	70						
On admission	180	900	0 65	5 30	0 71	1 000 cc blood 1 000 cc dextrose and saline solution	Died in 24 hours	Probably lost at least 500 cc of blood blood pressure did not fall until the very end but reactive hyperemia ring test revealed extreme slowing of peripheral blood flow note that capillary sensitivity coefficient rose to 70 just before death
Deep shock	170	470						
Recovery	120	360						
Normal control	15	15						
On admission	70	210	0 18	0 70	0 17	1 000 cc blood 4 000 cc dextrose and saline solution	Died in 18 hours	Clinical picture indicated that immediate cause of death was head trauma note that clinical picture and tests denote the shock syndrome despite elevated blood pressure patient was known to be hypertensive
Deep shock	105	600						
Recovery	55	200						
Normal control	70	72						
On admission	75	90	0 18	0 42	0 77	500 cc blood 2 000 cc dextrose and saline solution	Recovery	A mild case of traumatic shock with excellent response to therapy
Deep shock	75	125						
Recovery	60	7						
Normal control	25	70						
On admission	105	155	0 46	0 80	0 70	1 000 cc blood 500 cc plasma 5 000 cc dextrose and saline solution	Recovery	Blood pressure could not be taken because of extensive trauma to extremities it was finally taken on the uninjured leg skin changes indicated early shock and the need for intensive therapy which was life saving
Deep shock	90	210						
Recovery	60	115						
Normal control	70	27						
No response to local ischemia even after five minutes of application of the weighted ring						300 cc blood	Died in 30 minutes	Picked up on the street probably many hours after an automobile accident included to show terminal changes in the skin as a result of prolonged severe shock possibly some element of exposure to cold also present
On admission	180	165	0 61	9 40	0 77	2 500 cc blood 500 cc plasma 4 000 cc dextrose and saline solution	Died (See graph)	Despite adequate therapy bleeding from ulcer could not be stopped by conservative measures
Deep shock	240	470						
Recovery	120	155						
Normal control	30	3						
On admission	120	150	0 14	0 77	0 14	1 000 cc blood 3 000 cc saline solution	Died	Initial blood loss of at least 1 000 cc patient had been bleeding for two weeks prior to admission probably inadequately treated
Deep shock	180	470						
Recovery	90	120						
Normal control	60	80						
On admission	170	1 080	0 99	1 00	0 18	1 000 cc blood 1 000 cc dextrose and saline solution	Recovery	Clinically a mild case of hemorrhagic shock patient evidently responded to his blood loss by hypertension instead of hypotension however despite this initial hypertension he had pronounced slowing of peripheral blood flow
Deep shock	90	600						
Recovery	45	70						
Normal control	70	70						
On admission	80	94	0 13	0 23	0 37	1 000 cc blood 1 000 cc dextrose and saline solution	Recovery	Mild case of hemorrhagic shock note that peripheral blood flow was excellent despite low blood pressure and pallor of patient
Deep shock	50	50						
Recovery	45	51						
Normal control	35	35						
On admission	45	60	1 60	0 77	0 43	500 cc blood 2 000 cc dextrose and saline solution	Recovery	Mild case of shock operated on immediately with excellent results
Deep shock	40	60						
Recovery	35	155						
Normal control	25	27						
On admission	150	2 400	1	9 70		500 cc blood 500 cc plasma	Died in 12 hours	Neglected case in terminal shock note definite evidence of slowing of peripheral blood flow and the poor response to therapy
Deep shock	90	600						
Normal control	30	55						

Observations in Twenty-

Type of Shock	Patient, Age Sex	Original Diagnosis	Final Diagnosis	Blood Pressure and Pulse		Clinically Detectable Skin Circulatory Changes on Admission			
					B P P		Blanching Test	Skin Temperature	Skin Color
Massive infection	R R 35 ♂	Ruptured peptic ulcer	Same	On admission Deep shock Recovery	78/60 86/70 120/78	130 100 80	Normal amount of blood in the skin	Moderate cooling of the hands and feet	Hands brick red
	B S 40 ♀	Spontaneous abortion with hemorrhage	Septic abortion; gangrene of the uterus (autopsy)	On admission Deep shock Recovery	0/0 80/80 80/80	? 120 160	Supernormal amount of blood in the skin, pooling of blood in the hands	Pronounced cooling of entire body	Purplish red skin color; deep cyanosis of hands and lips
	T R 42 ♂	Lobar pneumonia	Same	On admission Deep shock Recovery	120/70 0/0 90/60	90 120 96	Supernormal amount of blood in the skin	Pronounced cooling of hands and feet	Cyanosis of lips, hands and nail beds
	R C 44 ♂	Peritonitis ruptured appendix	Same	On admission Deep shock Recovery	88/70 70/50 110/74	90 120 88	Supernormal amount of blood in the skin	Moderate cooling of hands and feet as compared to the trunk	Reddish purple color of nail beds and palms of hands
Cardiac shock	A S 51 ♀	Myocardial infarction	Same; positive blood cultures	On admission Deep shock	50/? 0/0	94 (Apex) 91 (Apex)	Extreme plethora of the entire skin	Pronounced cooling of entire body	Deep cyanosis of all skin areas; many petechiae
	M R 7 ♀	Coronary occlusion; hypertensive cardiovascular disease	Same; type of electrocardiogram	On admission Deep shock	110/80 60/0	86 80	Pronounced plethora, especially of the hands and the face	Pronounced cooling of the extremities	Deep reddish purple cyanosis of the entire skin; deep cyanosis of the hands
	I A 67 ♀	Coronary occlusion (?), paroxysmal auricular tachycardia	Arteriosclerotic heart disease; coronary sclerosis	On admission Deep shock Recovery	130/90 0/0 100/60	90 180 84	Pronounced plethora, especially of the face and upper chest	Pronounced cooling of the extremities	Deep reddish purple cyanosis of the face and hands
	T V 40 ♀	Rheumatic heart disease; severe mitral stenosis; multiple embolization (?); pulmonary infarct (?); auricular fibrillation	Same plus hemiplegia as a result of an embolus	On admission Deep shock	90/60 80/60	62 60	Supernormal amount of blood in the skin; pooling in the hands	Pronounced cooling of the extremities	Trunk is of good color but extremities are cyanotic

\* TH = threshold C T = clearing time (in seconds)

usually known to have heart disease, who has sudden onset of precordial pain and the doctor notices that his blood pressure has fallen considerably. Here again, as in the case of A M, attention to the circulation of the skin is most helpful in diagnosis and prognosis.

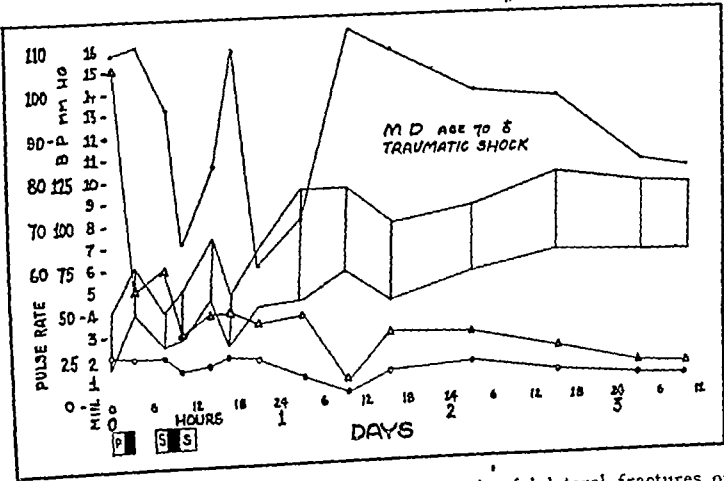


Fig 3—A case of traumatic shock as a result of bilateral fractures of the legs. From above downward are pulse, blood pressure (shaded area), clearing time (triangles) and threshold (heavy dots) of the reactive hyperemia ring test. Solid black box is whole blood, box with P is plasma and box with S is saline solution, all in 500 cc amounts. Note the immediate fall of the clearing time (improved skin circulation) indicating the improvement in peripheral blood flow. Note also that this precedes the relatively slow rise in blood pressure and the great variability of the pulse.

The changes found in the reactive hyperemia ring test in the shock syndrome which results from trauma are shown in the table. It will be noted that in all cases

except one the threshold of the response is raised. This is not surprising, since it has been previously demonstrated that two factors known to exist in shock, anoxemia and acidosis, both tend to elevate the threshold. Also of great interest is the observation that hypercapnia will neutralize the effect of acidosis and anoxemia, and it is well known that acapnia is usually present in shock.<sup>12</sup> The changes in the clearing time of the response are even more striking. The rise in clearing time (i.e. decreased blood flow) ranges from three times to sixty times the control value dependent on the degree of slowing of peripheral blood, which obviously varies greatly in different degrees of shock and with seasonal and environmental conditions. From our experience we have set the arbitrary rule that a rise in clearing time of three times the normal control clearing time denotes a highly significant degree of slowing of skin circulation in the forearm.

The value of following the clinical course of a patient by means of the reactive hyperemia ring test is clearly demonstrated in the case of M D in the table and in figure 3. It will be noted that with therapy the blood pressure did not rise significantly. The pulse was extremely variable. The immediate and persistent fall in the clearing time, however, was a very hopeful sign. Thus, improvement in peripheral blood flow as indicated by the clearing time of the reactive hyperemia

12 DiPalma, J R. Quantitative Alterations in the Hyperemic Responses to Local Ischemia of the Smallest Blood Vessels of the Human Skin Following Systemic Anoxemia, Hypercapnia, Acidosis and Alkalemia. J Exper Med 76: 401 (Nov.) 1942.

## Fig. 4—Continued

Objective Tests of Skin Circulatory Changes									
Reactive H <sub>2</sub> peremia Ring Test *			Capillary sensitivity Coefficient $\times 10^4$			Shock Therapy	Final Outcome	Comment	
	T H	C T	On Adm.	Deep Shock	Recovery				
On admission	2	130	0.61	1.1	0.31	1000 cc blood 2000 cc dextro and saline solution	Recovery	Moderately severe shock relieved by adequate therapy and operation	
Deep shock	40	140							
Recovery	40	60							
Normal control	40	50							
On admission	60	200	2.10	4.10		1000 cc blood 3000 cc dextro and saline solution	Died in 12 hours	History of abortion with loss of blood led to a mis- taken diagnosis. Later it covered that blood loss had been negligible. Absence of skin pallor should have been a dominant physical finding suggesting a more plausible diagnosis than hemorrhagic shock	
Deep shock	10	40							
Recovery	60	150							
Normal control	20	50							
Deep shock	60	340				2000 cc 10% dex- trose caffeine intravenous chemotherapy	Recovery	Patient was admitted as having ordinary pneumonia. fortuitous examination of the skin circulatory changes several hours later led to a diagnosis of shock con- firmed by blood pressure changes. prompt intensive therapy was life saving	
Recovery	50	150							
Normal control	50	60							
On admission	90	20	0.83	3.33	0.90	1000 cc blood 1000 cc plasma 2000 cc dextro and saline solution	Died in 48 hours	The striking thing was the pooling of blood in the skin upon drainage was of no avail	
Deep shock	90	450							
Recovery	80	140							
Normal control	35	30							
No response to local ische- mia even after five minutes of application of the weighted ring							Died in 6 hours	Included to show pronounced changes in severe terminal shock. the amazing thing was the mental clearness of the patient until the very end	
On admission	40	130	1.10	8.00		1000 cc 10% dex- trose caffeine	Died in 4 hours	Went on to develop symmetrical peripheral gangrene of the extremities. remained mentally lucid until the very end	
Deep shock	20	170							
Normal control	40	45							
Deep shock	20	600		2.20	0.93	Mecholyl	Recovered from the first attack died 3 days later	Illustrates forward failure of heart with shock syn- drome as a result of tachycardia	
Recovery	20	150							
Normal control	50	25							
On admission	60	600	0.40	16.00		500 cc blood 1000 cc dextro and saline solution	Died in 12 hours	Immediate cause of death was hemiplegia with bulbar failure. note very high capillary sensitivity coefficient	
Deep shock	100	1200							
Normal control	20	22							

ring test was the only objective finding on which a good prognosis could be based. Incidentally in this particular patient there was also clinical evidence of improvement in skin circulation by the tests that have been mentioned.

A low blood pressure maintained even for as long as eighteen hours as in this patient does not denote irreversible shock as long as the peripheral circulation remains adequate.

Case S A<sup>2</sup> in the table and in figure 4 illustrates another interesting point brought out by these studies. Peripheral blood flow as indicated by the clearing time of the reactive hyperemia ring test may remain relatively slow for a long period and even after the blood pressure has attained normal levels. This is interpreted as indicating that the patient is not yet out of danger despite an elevated blood pressure. Indeed, in this case (fig. 4) improvement in peripheral blood occurred at a time twenty-one hours after admission, when the blood pressure had diminished considerably.

In hemorrhagic shock the threshold is also elevated just as in traumatic shock. As a rule, however, there is not as pronounced an elevation of the clearing time as in other types of shock. This may indicate that peripheral slowing of blood flow is not so dominant a feature in hemorrhagic shock, especially in the early stages of the shock syndrome.

Case D B in the table and in figure 5 again demon- strates the value of peripheral blood flow studies by means of the clearing time of the reactive hyperemia

ring test. This patient, suffering from a severe bleed- ing peptic ulcer, had an initial blood loss of approxi- mately a quart of blood. When first seen his blood pressure was 84 systolic, 50 diastolic, and the pulse rate was 100. There was a moderate slowing of

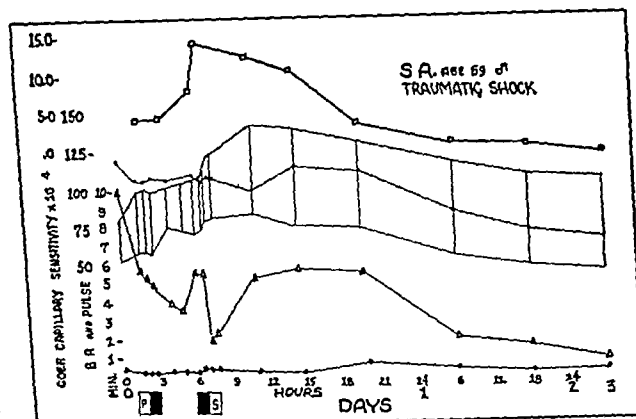


Fig. 4—A case of traumatic shock as a result of multiple leg fractures. Symbols same as in figure 3 except for addition of the capillary sensitivity coefficient (top line squares). For complete discussion see text.

peripheral blood flow. Immediate restoration of blood volume with plasma and whole blood brought about quick and satisfactory improvement. Conservative therapy kept him well for seven days. At this time he had another copious hemorrhage which precipitated

much more severe shock. There was now a profound decline of blood pressure (fig. 5) and definite slowing of peripheral blood flow. With transfusion he again improved, his blood pressure attaining almost normal levels. His peripheral blood flow remained considerably slowed for forty-eight hours and then the clearing time began to creep slowly and perniciously upward despite the absence of change in the blood pressure. He died suddenly four days after his second large hemorrhage in spite of transfusions. Here again it must be mentioned that the clinically detectable changes in peripheral dermal blood flow correlated very well with the clearing time of the reactive hyperemia ring test. Thus in this case as in the other, serial observations on the rate of peripheral blood proved to be a better prognostic sign than alterations in blood pressure or pulse. Lest it be misconstrued that serial studies of blood pressure are of no value in shock let it be clearly emphasized here that this is not the case. The point which I wish to make is that both studies of blood pressure and peripheral blood flow must be done to evaluate properly the shock syndrome.

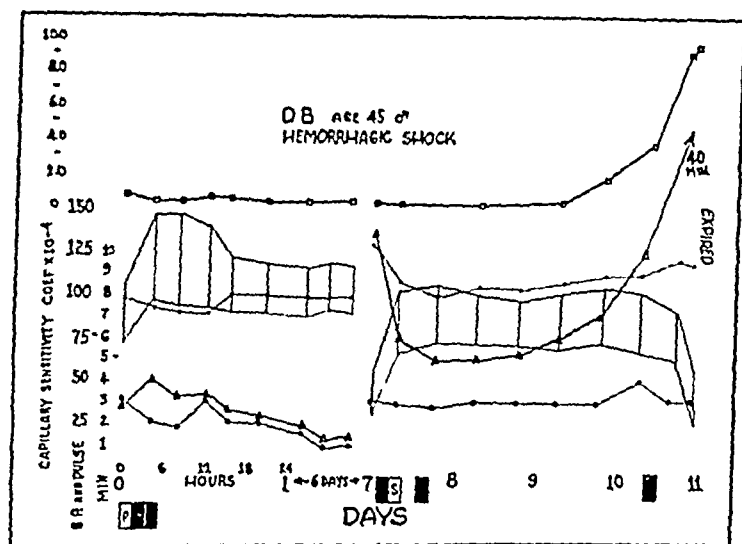


Fig. 5—A case of hemorrhagic shock as a result of a bleeding peptic ulcer. Symbols same as in figures 3 and 4. For full discussion see text.

The results obtained with the reactive hyperemia ring test in medical shock are summarized in the table and need not be dealt with at length.

**Capillary Sensitivity**—In this study it was desired to demonstrate that state of shock is associated with an altered reactivity of the smallest blood vessels of the skin. Former investigations in which the capillary excitability coefficient was determined on over 100 normal persons permits the statement that as a general rule the coefficient is practically never elevated above  $0.5 \times 10^{-1}$ .<sup>13</sup> A rise in the coefficient as determined in this study indicates an increase in small dermal blood vessel reactivity. A fall signifies the opposite. The only diseases reported thus far in which the coefficient has been found to be definitely elevated are certain diseases of the central nervous system. Anoxemia, hypercapnia, local heat, stasis and certain steroids injected subcutaneously are also known to alter the coefficient of capillary sensitivity.<sup>14</sup>

When the results of the capillary sensitivity test are averaged for all types of shock presented, it is found that on admission the mean coefficient was  $1.56 \times 10^{-1}$ , during deep shock  $4.66 \times 10^{-1}$  and following recovery  $0.31 \times 10^{-1}$ . Thus it can be seen that even in this small series significant and striking changes in small dermal vessel reactivity are evident. Patient S A in the table and figure 4, with moderately severe traumatic shock, demonstrates these changes well. One hour after admission his coefficient was  $4.90 \times 10^{-1}$ . Despite therapy, a slight rise in blood pressure and considerable improvement in peripheral blood flow his coefficient rose to  $14.00 \times 10^{-1}$  in a period of six hours, demonstrating an extreme degree of increase in sensitivity of the small dermal blood vessels to mechanical stimulation. At this point the coefficient began to fall and in twenty-four hours had attained normal levels. This correlated with the clinical improvement, sustained blood pressure and more rapid peripheral blood flow.

In hemorrhagic shock there has not been observed such a large increase in small vessel sensitivity on admission. No significance is attached to this, as the average case of hemorrhagic shock when first seen is not very severe. However, should it become grave the small dermal vessel sensitivity increases, as demonstrated in the table. Patient D B (fig. 5) illustrates the ominous rise in small vessel sensitivity before death. It is worthy of note that the rise in the capillary excitability coefficient began forty-eight hours before the final failure of blood pressure and correlated in this case with the pernicious slowing of peripheral blood flow as shown by the lengthening clearing time of the reactive hyperemia ring test. The table illustrates the increase in small vessel sensitivity in deep shock as a result of other causes.

Thus it is evident that the state of shock is associated with an increased responsiveness of the small dermal blood vessels to mechanical stimulation as well as slowing of dermal blood flow. The question of whether or not this increase in small vessel sensitivity precedes slowing of dermal flow and actually is a causative factor (or vice versa) is an important one but unfortunately cannot be answered from the present data. The important point to establish at this time is that slowing of blood flow is not the sole factor in shock; changes in the small blood vessels also play an important role.

#### COMMENT

It is probably true that many expert clinicians have consciously or unconsciously learned to diagnose and evaluate the shock syndrome by accurate observation of the changes in temperature and color brought about by alterations in blood flow in the skin. However, it is not common knowledge and in general too little stress is laid on it. At the danger of tedious repetition it must be again pointed out that the shock syndrome cannot exist without slowing of peripheral blood flow; that the amount of filling of the skin with blood is important in the diagnosis of the type of shock; that only constant practice can make the physician expert in the clinical detection of slowing of blood flow in the skin and that a clinically useful and simple reactive hyperemia ring test is available for objectively determining changes in the rate of dermal blood flow. Moreover, alterations in dermal blood flow are often more diagnostic and prognostic than blood pressure and pulse changes.

13 DiPalma, J. R., and Foster, F. I. Sensitivity of the Smallest Cutaneous Blood Vessels. Quantitative Responses to Graded Mechanical Stimulation and to Local Ischemia in Arterial Hypertension, Arteriosclerosis and Certain Allied Disorders. *J. Clin. Investigation* 21: 675 (Nov.) 1942. DiPalma, Reynolds and Foster.  
14 Reynolds, S. R. M., Hamilton, J. R., DiPalma, J. R., Hubert, G. B., and Foster, F. I. Dermovascular Change. Dermovascular Actions of Certain Steroid Hormones in Castrate, Eunuchoid and Normal Men. *J. Clin. Endocrinol.* 2: 228 (April) 1942. DiPalma, Reynolds and Foster.

Finally, it must be recognized that slowing of blood flow in the skin while a very important and clinically useful method of diagnosing and following shock is not the sole factor present. Alterations in the responses of the small blood vessels are just as much a part of the picture. Unfortunately the latter cannot as yet be readily detected clinically and the exact relationship to slowing of the blood flow remains for future investigation.

## Clinical Notes, Suggestions and New Instruments

### POSTURE DURING EXAMINATION OF RAPID HEART

I. S. LUTON, M.D. St. Louis

During the summer of 1942 while examining a man with a rapid heart, I asked him to lean forward the better to appreciate the auscultatory findings. He responded by bending, to a 90 degree angle, when the rate abruptly slowed, apparently because of vagus influence. This was to me something new and was confirmed and since then has been verified in many tachycardias. This slowing occurred in most cases but not all and amounted to about one third of the previous rapid rate and required a full 90 degree angle for in some cases a bending to something less did not produce slowing. The most pronounced effect came in the first ten to twenty seconds when a gradual quickening ensued.

Many clinicians have wished to examine a rapid heart when slower and have relied on recumbence to secure this end. A forced expiration after a deep inspiration to slow the heart temporarily is recommended by the American Heart Association or recumbence and waiting for the nervousness to subside. There are murmurs due to a rapid heart action which disappear of course when slowed as do apical systolic grating murmurs in rapid forcibly beating hearts, which simulate the murmur of mitral stenosis. From time to time in tachycardias difficulty is experienced in identifying the sounds, and pauses and murmurs of an organic nature are puzzling to time in the cardiac cycle. The apical systolic murmur is still a perplexing problem in a routine examination and several tests are used such as changes in posture and phase of respiration to help in separating significant from non-significant murmurs and it would seem that 90 degree bending might be used as an additional procedure especially in tachycardias—nervous thyrotoxicosis, flutter paroxysmal disorders and neuromuscular asthenia.

While this procedure has been used along with a great many others to influence an attack of paroxysmal tachycardia, a survey of some thirty or forty current textbooks on the practice of medicine, heart disease and physical diagnosis together with an equal number of reports here and especially in Britain of men writing on physical examinations of the heart did not disclose mention of the use of a 90 degree bend for the specific purpose of slowing the heart as an aid in its examination. This procedure is not to be confused with the one commonly used in having the patient lean forward to facilitate auscultation.

From time to time as opportunity presents itself an effort is being made to identify this procedure as an aid in specific heart abnormalities. It is hoped that others may try this along with other changes of posture phases of respiration and so on as an additional aid particularly in distinguishing normal from abnormal hearts.

505 North Grand Boulevard

## BIATERAL CONGENITAL MUCOUS CYSTS IN THREE GENERATIONS

THREE GENERATIONS OF MUCOUS CYSTS OCCURRED WITH HARELIP AND CLEFT PALATE

CLAUDE LEROY STRAITH, M.D., D.D.S. DETROIT AND  
FREDERICK HENRY S. LUTTO, MEDICAL CORPS  
ARMY OF THE UNITED STATES

It is not too unusual for a physician to have in his active years of practice a family with two or three generations of members with harelip cleft palate or both. Recently we have observed a family in which through three generations there was a tendency to bilateral harelips and also hypertrophy of mucous cysts in the lower lip of each individual with harelip or cleft palate. We believe this unusual distribution of congenital deformities in one family to be of interest to the profession.

In this family of thirteen persons there were in three generations six persons with bilateral harelips. Some of these patients had an associated cleft palate as might well be expected, but more interestingly each had a pair of hypertrophied mucous glands on the lower lip. These glands secrete a tenacious mucous material from two very prominent excretory ducts which open just above the mucocutaneous line of the lower lip. They are 1 cm. apart and are placed in the center of the lower lip. On the mucous membrane surface they appear to be blue and about the shape of an almond pit. In the adult they measure 2 by 0.5 cm. These glands have been described as mucocysts, retention cysts or congenital fistulas.



Fig. 1—Five members have had bilateral harelip cleft palate and mucous glands. The insets show evidence of these deformities in the first and second generations.

Truman W. Brophy<sup>1</sup> pictures these deformities in his textbook on oral surgery. He quoted Sir Arthur Keith's—belief that these cysts might be a reversion to a certain species of shark in which such glands occurred. In reviewing the literature and checking with two responsible sources we can find no such evidence in the Elasmobranchs. It is known that as certain amphibians assume the terrestrial life, lateral line organs sink beneath the skin and atrophy. This might be an analogue to this condition. Also in fishes the hyomandibular line forms two anterior pores in the lower lip posterior to the symphysis and may be a zoological ancestor to this deformity. In human embryology no clear explanation is to be found for the uniformity and size of these cysts. We do

<sup>1</sup> Brophy, Truman W. Cleft Lip and Palate. Philadelphia: P. Blakiss Sons & Co. 1923, p. 66.

<sup>2</sup> Keith, Sir Arthur. Brit. M. J. 2: 363, 1909.



know that mucous cysts occur abundantly in this region and that hypertrophy of the lower lip occurs routinely when there is lack of pressure from opposing tissue, as in harelip. Also we have observed these glands and lips decrease in size after surgical repair of the harelip. We cannot, however, explain to our satisfaction the occurrence of two symmetrical glands when many other such glands are in the vicinity. The occurrence



Fig. 2—An example of bilateral harelip and mucous glands in the third generation of this family.

must follow mendelian laws in these cases and the glands must have some analogue other than the numerous small mucous cysts found in this region.

In figure 3 we present as accurately as possible the family genetic history. The father had a double harelip, cleft palate and mucous cysts. The mother of the second generation had a congenital syphilitic perforation of the hard palate. This was untreated when her first two harelip children were born.

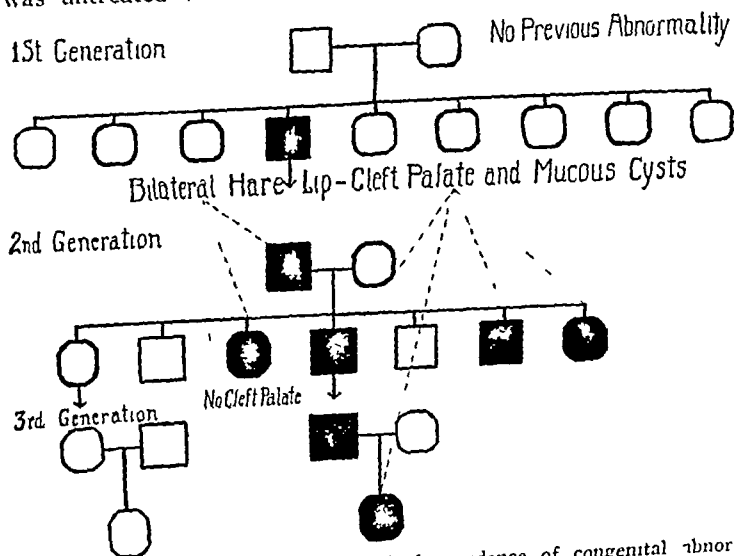


Fig. 3—Family history, showing high incidence of congenital abnormalities.

This infection was then treated and her Wassermann reaction was negative when the next two harelip children arrived. None of these children have congenital syphilis today. The mother's sisters, however, are under treatment for congenital syphilitic lesions. We do not feel that this disease influenced the frequency of deformities in her offspring. This same mother's syphilitic palate lesion came on spontaneously and healed under antisyphilitic therapy.

In figure 1 some of the members of this unusual family are shown with their bilateral mucous glands of the lower lip.

Figure 2 is an example of double harelip and bilateral mucous glands before surgery.

We have found that simple excision of the gland and some tissue reduces the size of the lip and eradicates the glands. Of course no glandular tissue should be left for fear of recurrence.

#### CONCLUSION

We report three generations of a family, having six of thirteen members presenting bilateral hypertrophy of mucous cysts associated with cleft palate and harelip deformities. It would appear that in this family the genetic factor responsible for these glands is as dominant as is the harelip factor. Simple excision is the treatment of choice. (These cases are presented as we have not found three generations of bilateral mucous cysts described in the literature before, also because of the relative infrequency of the condition.)

1713 David Whitney Building

#### THE TREATMENT OF CREEPING ERUPTION WITH SODIUM ANTIMONY BISCATECHOL (FUADIN)

DUDLEY C. SMITH, M.D., CHARLOTTESVILLE, VA.

Creeping eruption, or larva migrans, is a condition characterized by progressive, linear burrows caused by the larvae of a number of different parasites. The larvae of flies and intestinal parasites have been reported as causing this condition. The larvae are found most abundantly in warm, sandy soil. They penetrate into the epidermis and migrate slowly, causing intense subjective symptoms. The larvae do not penetrate deeper than the epidermis. The majority of cases in this country result from the larvae of the dog and cat hookworm.<sup>1</sup> This abnormality is apparently most prevalent in the southeastern portion of the United States, especially Florida. There have been seen in this clinic 2 cases which were acquired on the beaches of Virginia.

The treatment usually recommended is freezing or cauterization of the skin at the site of the parasite. The parasite is usually present in the area around the advancing end of the burrow within a radius of 1 centimeter. Local treatment in this area is not uniformly successful in producing a cure. In cases presenting a large number of lesions this type of treatment has disadvantages.

Recently (Jan. 22, 1943) a 2½ year old boy was seen at the University of Virginia Hospital with a condition characteristic of creeping eruption. His history is as follows:

In the latter part of September 1942 the patient was living in New River, S. C. His mother first noticed the migrating linear eruption on the left foot. This started as a red spot and advanced in an irregular line. There was intense itching. Later a number of similar lesions developed in the perineal and perianal areas. The symptoms were so severe that the child had difficulty sleeping. A number of local applications failed to give symptomatic relief or improve the condition. No attempt was made to identify definitely the type of larva.

Because of the age of the patient and the location of the eruption, the usually recommended measures for local treatment presented difficulties. Sodium antimony biscatechol (Fuadin), used with success in other protozoal diseases, such as heart worm in dogs and Vincent's stomatitis, was therefore considered for treatment in this case. A 63 per cent solution was used, of which 2 cc solution was given intramuscularly and the home physician was to continue this dosage at daily intervals for five days, discontinue for one week and then give five more similar daily injections. The first injection was given on January 22. On February 24 Dr. J. F. Hubbard, the family physician, reported that the boy was started on 2 cc intramuscularly daily beginning January 23 and given five doses. After the lapse of a week the medication was started again with 2 cc intramuscularly daily for three doses. The eruption began to clear up after two or three doses of the first course.

From the Department of Dermatology and Syphilology, University of Virginia, Department of Medicine, W. E. and White, G. F. Creeping Eruption, Arch. Dermat. & Syph. 13: 137 (Feb.) 1926.

and was entirely gone by the time the fifth dose had been given. The second series was begun, but as the child seemed entirely well and was sleeping all night, which he had not done for a long time, the treatment was discontinued after the third injection of the second series, at his mother's request. There was no recurrence.

On February 15 the patient's mother stated: 'From the first injection of Furdin Bobby's eruption began to dry up, no more has appeared and he has had no bad reaction whatever.' On March 13 the boy was examined again. There were no gross or subjective evidences of larva migrans.

#### COMMENT

Search of the literature reveals no reference to the use of Furdin in the treatment of creeping eruption. Antimony (formula not mentioned) was used by Cawston<sup>2</sup> without success. The improvement here reported was so prompt and permanent that this record is submitted with the hope that physicians in areas where the infestation is more prevalent will give this agent further trial.

## Special Article

### AMERICAN HEALTH RESORTS

#### THE PHYSICAL EQUIPMENT FOR ADMINISTRATION OF HEALTH RESORT TREATMENT

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*These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.*

#### OUTLINE

- I General Plans
  - A Baths
  - B Hydrotherapy
  - C Hot Mineral Water Packs
  - D Massage and Special Treatments
  - E Inhalations
  - F Mechanotherapy
  - G Mud Baths and Packs
  - H Drink Halls
  - I Linen and Service Rooms
  - J Attendants' Rooms
  - K Swimming and Mineral Water Pools
- II Technical Equipment
  - A Storage
  - B Metals Used for Storage and Distributing Systems
  - C Heating of Mineral Waters
  - D Boiler and Pumping Plant
  - E Laundry Facilities
  - F Bath House Fixtures and Equipment
    - 1 Bath Tubs
    - 2 Packs
    - 3 Hydrotherapy
- III Methods of Cleaning and Sanitation

The successful administration of treatments in a health resort depends to a considerable degree on the physical equipment available and the intelligent use of these facilities.

#### I GENERAL PLANS

The design for any institution depends first on the number of treatments to be given and, second, on whether or not the institution itself provides the entire care of the patient, including living accommodations and treatments. A system of multiple units is presented which can be applied in either the small or the large institution.

The buildings required for administration of treatments will differ somewhat with the type of water and nature of the service provided. Fundamentally, most institutions will utilize mineral waters or muds in some way. Most places are equipped to provide additional hydrotherapeutic treatments, various forms of packs and massage. In some places further specialization may include the use of waters for inhalations, the application of physical exercise as mechanotherapy and the utilization of light and electricity in various forms.

In planning a bathing establishment it is also necessary to determine, as already mentioned, whether it is to be an independent unit or part of a hotel or sanatorium. In the former, adequate space must be provided to allow for the proper rest period following the treatment. If the bathing unit is a part of the hotel, the rest period can be provided by returning the patients to their rooms. This will allow for more rapid turnover of bathing facilities and increase the number of daily treatments per unit to the maximum.

In the bathing establishment the control office provides for the collection of charges, the checking of valuables and the assignment of patients to the various treatment sections. In general, separate sections with duplicate equipment must be provided for men and women. In larger institutions several separate sections may be connected to a central lobby. These sections can be used for either men or women, depending on the requirements.

**A Baths**—Provision for bathing is usually made with individual tub units. In a very few resorts the treatments are given in a natural bathing pool. The most practical unit both for privacy and for efficiency consists of a tub room, connected with two rest rooms, all of which must be directly accessible from a hall or passageway. This provides for adequate rest space, service and privacy and allows for more frequent utilization of the technical equipment. The number of such units will depend on the volume of work. Figure 1 is a sketch showing an arrangement of a semiprivate bath and rest rooms.

In some places the strictly private room arrangement is in use. Here the patient has a tub and rest couch in the same room. This private room arrangement is an expensive installation in that it ties up the tub equipment during the entire rest period of the patient, and in general it provides no additional privacy. In some institutions the bathing section may be arranged in a series of treatment cubicles where the bath or other associated treatment is given. The patient is then sent to a general rest room in another corridor. Aside from the inconvenience of going from the treatment room to the rest room and the lack of privacy, this arrangement is particularly satisfactory where the demand for treatments is large.

In any case the particular plan selected will depend on the type of the clientele.

<sup>2</sup> Cawston, F. C. Creeping Eruption at the Natal Coast. J. Trop. Med. 3: 374-375 (Dec.) 1934.  
From the Medical Department of the Saratoga Spa.

**B Hydrotherapy**—A hydrotherapy department is usually separated from other treatment sections and should be complete in itself with hot room, steam room, electric cabinets, rubbing tables, douche stall with control table and resting facilities. In small installations the hot room and steam room may be omitted for lack of space.

Arrangement of the various units in this department for convenient and efficient operation is shown in figure 2. The technical details of these units will be considered in a later section.

**C Packs**—In many bathing establishments some form of pack is utilized as an adjunct to the bath or as a separate treatment. In smaller institutions packs may be prepared in the mineral bath tub. This arrangement generally is not satisfactory because it limits the use of the tub for baths and frequently proper facilities for preparing the pack cannot be provided. It is much better to have a hot pack department with cubicles adjacent to the bathing section and space for the proper equipment.

**D Massage and Special Treatment**—Provisions for massage may be arranged in a separate massage room in the bathing section or it may be given in the rest

rooms allowing for individualization and economy of operation in small departments. For practical use these cabins are large enough to accommodate one chair and are about the size of a telephone booth.

The wall cubicle allows the patient to sit at a small treatment table or sink, where provision is made for breathing the nebulized mineral waters either through the nose or mouth and where accessory apparatus is available for administering medicated oils in finely nebulized vapors.

**E Mechanotherapy**—Mechanotherapy rooms in general are large halls provided with varying apparatus to allow both for general and for local exercise. The apparatus may be either for active or for passive exercise. In the former the patient provides the motive power while with the passive group some source of power, either central or local, must be provided to operate the machines. If the problem is one of general exercise such as is associated with a reducing program, provision should be made for such types of apparatus as the electric horse or camel, stationary bicycle, rowing machine, chest weights and mechanical and vibratory massage. If the program of treatment is more particularly rehabilitation then it is necessary to have the types

of apparatus which will allow for the exercise of individual joints. A large series of the latter group have been worked out by Zander and can be applied to a wide range of conditions. Their use in this country today is extremely limited. Many physicians prefer to rely on a trained attendant rather than on the machine, which lacks adaptability. The requirements for a complete mechanotherapy unit are large from the standpoint of space and of mechanical equipment. These units are therefore

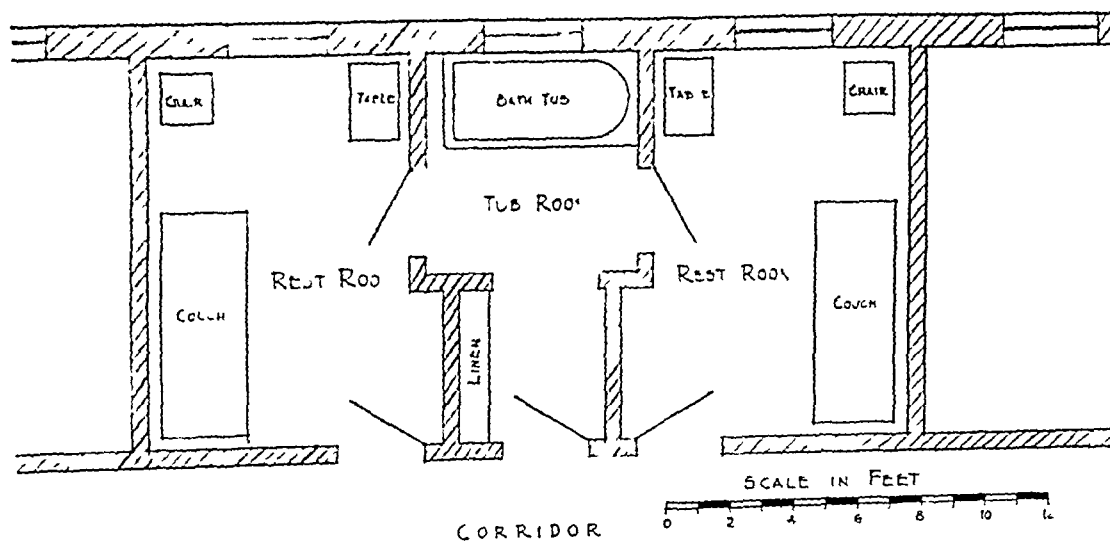


Fig. 1—A semiprivate bath arrangement

room itself if it is of sufficient size to accommodate a portable massage table. The first arrangement is satisfactory to the large majority of patients. A few may desire the greater privacy afforded by the second plan.

Additional treatment, such as the use of infra-red rays, ultraviolet radiation and various electrical treatments may be combined in a room similar to that used for massage. Such rooms should be in or near the bathing section as these treatments are frequently combined with the bath and carried out by the same attendant.

**E Inhalations**—The inhalation department is a separate division which can be located in a wing of the bath house or in a separate building. Provisions can be made for three units: first, a large room for group treatment, second, an individual cabin and third, a table unit in a wall cubicle.

In the group treatment room the atmosphere is saturated with the gases directly from over the mineral water springs or with the finely nebulized vapors of the mineral water. Here the physician has no opportunity of individualizing for his patients unless a series of rooms at different temperatures are provided.

In the individual cabin, mineral water vapors of various concentrations can be given at different tempera-

tures allowing for individualization and economy of operation in small departments. In many places, however, a limited number of exercise machines may be used to advantage in smaller space.

**G Mud Baths and Packs**—The administration of mud baths calls for elaborate equipment. The necessary means for supplying, storing, heating and preparing the mud for the bath, its transport to the tub and its disposal after use all call for special consideration and attention. For practical purposes mud baths should be considered only when adequate facilities and ample space can be made available. A separate building is most desirable. The bathing unit in this building must be larger than the three room unit described for mineral water baths, as two tubs must be provided: one for the mud bath with a tub adjacent for a cleansing bath following the mud treatment. Therefore the administration of mud baths should be attempted only after careful consideration of all the facilities required.

On the other hand, the use of mud for packs does not require so complete a layout. The pack may be a full body pack omitting the upper chest or it may be limited to local packs on an extremity, the liver region, spinal region and the like. Here the treatment unit can be made up of individual pack rooms or cubicles surrounding a central mud heating unit.

**H Drink Halls**—In practically all health resorts provision is made for the internal use of the mineral waters. The simplest arrangement, of course, is to have the patients go directly to the spring. In some places the mineral water is piped directly from the spring to a special section of the general bathing establishment. In other places a separate building or drink hall provides facilities where many patients can obtain the water as prescribed. Also, if possible, it is of value to have music or concerts during the day when the waters are usually taken. The extent of this phase of the work will depend on the number of patients coming to the health resort for treatment.

**I Linen and Service Rooms**—Because of the large quantities of sheets and towels required, an adequate supply can best be maintained if a laundry is run in connection with the institution. Each bathing wing or group of bath rooms should be provided with a linen room in which reserve sheets, towels and other materials used in the actual work of the wing may be stored. The service or linen rooms are usually connected by dumb-waiter with the basement through which the laundry and general service is operated.

**J Attendants' Rooms**—In planning a large bathing establishment it is of real importance to provide adequate facilities for the attendants where they may have locker space, shower baths and tables for eating lunch. It has been found that the provision of such space pays dividends in the better satisfaction of the staff and in removing all evidence of street clothing from the patient's vision.

#### K Swimming and Mineral Water Pools—In

many health resorts, provision is made for the utilization of the natural water in swimming pools. These pools are generally provided in a separate building although in some places they may be a part of the treatment unit. The size of a swimming pool depends on the number of guests to be accommodated. General and technical descriptions for the proper arrangement operation and control of swimming pools are available.

In some places special treatment pools are provided in which the natural mineral water is used in exercise treatments either for the patient convalescent from poliomyelitis or for the patient with chronic arthritis. Here the size, shape and necessary provisions for construction have been outlined by Lowman.<sup>1</sup>

#### II TECHNICAL EQUIPMENT

Spas are usually built around a mineral spring or group of springs that have some proved medicinal value for either internal or external use or for both. The first and most important consideration, therefore, in the establishment of a spa is the study of the mineral

water supply and the equipment necessary to conduct it to the place of utilization.

The first thing to determine is whether or not the supply is adequate and sufficiently uniform in flow and composition to warrant the contemplated development. Considerable time and expenditure of money may be involved in gaining such information. If the springs are shallow natural flowing springs both the flow and the mineralization may vary at different periods of the year. Therefore, frequent measurements of flow and partial chemical analyses should be made over several seasons to determine such facts. If the wells are artesian in nature and the flow is a natural one there is apt to be less variation but if pumping is required studies must be made to establish the rate that will assure a uniform mineralization. When it has been definitely established that the mineral water supply is satisfactory, methods of storage and distribution must be planned.

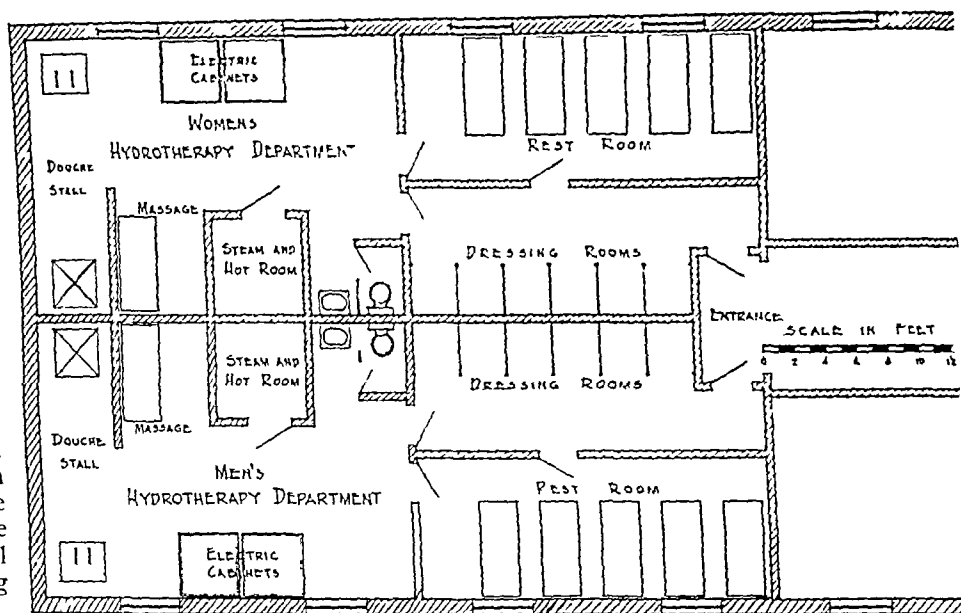


Fig 2—Arrangement of units in hydrotherapy department.

**L Storage**—Methods of storage are dependent entirely on the nature of the water, the extent of the supply and the volume demanded. The volume demand at some period may exceed the supply. In such cases larger storage may be required. No set rule can be made to apply to all waters with the exception that waters that come from the darkness should be kept in darkness.

Light affects all artesian waters in one way or another, such as the promotion of the growth of algae in open reservoirs or the precipitation of iron when exposed to the air.

Waters that contain no volatile gases or salts that would be precipitated may be stored in the covered concrete reservoirs of either a gravity or a pumping system.

Mineral waters containing either carbon dioxide or hydrogen sulfide gas should preferably be stored in closed systems under pressure and entirely free from contact with the air. Such storage will prevent the precipitation of iron and other minerals that are common constituents of gaseous waters. No method is known for the satisfactory storage of waters containing radon (radium emanation).

<sup>1</sup> Lowman C I, Reen Susan G, Aust Ruth and Paull Helen G. *Technique of Underwater Exercises*. Los Angeles: American Publications Inc. 1914.

Waters that flow from the ground at elevated temperatures usually need no cooling before entering the bath tub or treatment room. This cooling can be accomplished by holding the water in storage for a definite time or as is done in some resorts by passing the water through radiators which furnish required heat purposes.

Water is stored under pressure proper control is installed so that the pumps work automatically either directly on the well or from pump chambers into which the spring water flows. If the waters are highly carbonated the system from the well to the storage tanks must be entirely closed and the water conducted through the distributing lines to the baths with the least possible agitation to prevent dislodging the gas. The water should be brought into the tub at or near the bottom through a fixture so designed that smooth flow and even distribution are accomplished.

**B Metals Used for Storage and Distributing Systems**—Special attention must be given to the type of metal used for the tubing of wells, tanks used for storage and the distributing lines. Waters that are alkaline in nature and are free from excess of carbon dioxide or hydrogen sulfide can be handled most economically using a good grade wrought or cast iron pipe. Steel pressure tanks that may or may not be coated on the interior with a protective plastic or rubber base paint.

Mineral waters containing large excesses of carbon dioxide or hydrogen sulfide are the most difficult to store and distribute. They are always very corrosive toward metals, particularly iron or steel and wherever these metals are used means must be taken to use protective coatings or to establish a chemical protection, the nature of which can be determined only through chemical study of the water. The basis of such treatment is the precipitation of an insoluble substance on the metal.

Pure copper and some of the copper alloys are the best metals to be used with the carbonated saline waters, in conjunction with steel pressure tanks that are either glass lined or protected with a suitable acid resistant paint. For conducting carbonated waters that are to be used internally, red brass pipe that has been tin coated is the most satisfactory equipment. Most mineral waters of the carbonated type have a very drastic initial action on pure copper, but after a short time a coating is formed on the metal that protects it from further attack.

Sulfur waters can be handled in copper alloy pipe or in wooden stave pipe. Iron pipe lasts but a short time with these waters.

Bath tub fixtures should be made, wherever possible of cast stainless steel. Nickel and chromium plated fixtures do not withstand the action of most mineral waters. They are affected by salt waters, alkaline waters, sulfur and carbonated waters.

**C Heating of Mineral Waters**—The heating of mineral waters is probably the most bothersome and expensive problem associated with spa operation. This problem is encountered in all types of waters except those that issue from the ground in the form of hot springs.

Waters that are brines containing as their main constituents sodium chloride or soluble salts of magnesium and calcium can be heated to sufficiently high tempera-

tures or the heat is in the ordinary heating equipment designed for fresh water with minimum difficulties caused by scaling or corrosion.

Waters containing large volumes of carbon dioxide gas along with the bicarbonates of the alkaline earths are the most difficult to handle. On heating carbonated waters large volumes of carbon dioxide gas are liberated and salts of lime, magnesia and iron are simultaneously precipitated coating tanks, pipe lines and fixtures with hard scale that reduces to a minimum the efficiency of heating units and in a very short time renders all small lines useless.

Much study has been given to the heating of these waters both here and abroad. In many places in Europe the water is heated to the required bathing temperature directly in the tub by a small radiator through which high temperature steam is passed. The radiator itself is supported on a swing joint so that when not in use as a bath heater it is swung up on the wall where it may either be turned off or used as a room heater. This method produces a fine bath with high carbonation but has two very objectionable features. First large volumes of carbon dioxide are liberated in the room where the patient is to be treated and the atmosphere becomes very dense with the gas making breathing difficult. Second the heater itself after short use becomes coated with scale that chips off when the steam is turned on for a succeeding bath. This is usually very objectionable to the patient. Instantaneous type of heating of the water as it enters the tub has been tried but without success. The gas is liberated from the water so rapidly that the finished bath is absolutely flat.

At Saratoga Spa a special pressure heating system has been designed and in use many years with highly satisfactory results. The heater tanks are kept under constant pressure and are designed so that the free gas forms a cushion at the top of the tanks. Heat is applied through a copper steam coil in the bottom of the tank and the temperature is thermostatically controlled at 135 to 140 F. It has been found that at higher temperatures excessive precipitation occurs and the iron in the water oxidizes very rapidly when the water is drawn in the tub. As the heating proceeds, some carbon dioxide is liberated and the excess pressure produced thereby is relieved through an automatic valve on top of the tank. The carbon dioxide thus bled off is trapped into a sewer line. The hot water saturated with carbon dioxide, is drawn directly into the bath tub and the preparation of the bath completed by adding cold, highly carbonated water directly from storage.

The scale formed in heating is trapped in the tank where it can easily be removed. The atmosphere of the bath room is nearly normal because of the elimination of the large volume of carbon dioxide gas at the heater tank.

**D Boiler and Pumping Plant**—A central boiler plant is desirable in all spas where the patronage is large. The source of heat may be derived from oil, coal or gas, depending on which is most economical. Wherever possible, oil or gas should be given first consideration because of the ease of automatic control, the absence of ash and smoke nuisance and the lower maintenance cost. If coal or coke is used, automatic stoking should be installed.

The boiler plant should be of much larger capacity than the usual plant where there is a steady steam load. Unusual and sudden steam demands are the rule at most spas at certain hours of the day and this demand must be met by providing liberal boiler capacity and steam reserve.

The spa buildings should be grouped conveniently around the boiler plant and connected with it by subways for carrying both steam and water lines, thus affording easy access for repairs.

Pumping equipment, whether steam or electric should be long stroke and slow moving so as to reduce the agitation of water to a minimum.

**E Laundry Facilities**—The linen demand for spa work is large, from four to eight pieces being required for each treatment. Since it is not always possible to provide adequate linen through an outside service, provision for a laundry building should be given thoughtful consideration. Such a building should be located near the boiler plant for easy steam supply and requires the installation of washers, air driers, centrifugal driers, ironers, necessary baskets and tables, and small trucks for collecting and delivering linen. Adequate space should be provided for the storage of linen and the various chemical supplies needed for operation.

**F Bath House Fixtures and Equipment**—Most spas provide, in addition to mineral water baths, adjunct treatments including mineral packs, mud packs, various types of douches and sprays, hot rooms, steam rooms and water rubs. The materials and design of equipment must be chosen with the same care as other mechanical equipment.

**1 Bath Tubs**—Bath tubs should be large enough to immerse a patient completely in a relaxed position. Usually the tub should be about 6 feet long by 24 inches deep by 24 inches wide, to meet this condition. These dimensions provide a tub that is suitable for the taller patients. A foot rest made of stainless steel or some resistant metal, provided with a base and four rubber suction cups, can be placed anywhere on the bottom of the tub by the attendant to suit the comfort of the shorter patient.

Tubs made of porcelain or iron coated with acid resistant enamel are most suitable. Other materials used for tubs include native mineral rock, wood, slate or concrete. Sometimes concrete is covered with a metal sheeting such as copper or aluminum. The latter has been used with sulfur waters.

**2 Packs**—Hot packs may be given either with mineral water or with fresh water. If fresh water is used, the autoclave type of pack heater is most convenient. The pack material is placed on shelves in the autoclave and steam is kept flowing through, so that the packs become wet and heated to the proper temperature.

If the packs are to be prepared from mineral water, a hot pack sink must be provided. This sink should be of porcelain or slate, so that it may be easily cleaned with acid. Hot mineral water is piped to it and a suitable wringer attached for wringing the packs.

Mud packs require much special equipment. There should be rooms with suitable couches on which the patient reclines during the application of the packs. These rooms must be provided with either a tub or a shower to cleanse the patient after the application of the packs. Resting facilities must also be provided. The

equipment for grinding, mixing and heating the mud should be installed in a separate room. Flowing steam is passed through the outside jacket, and either hand or motor operated paddles revolve to bring the mud to a uniform temperature. Grinding equipment is similar to that used for paint grinding and can be obtained from the same manufacturers.

**3 Hydrotherapy**—In considering the technical features of the hydrotherapy department the hot rooms should be large enough to accommodate several people reclining in chairs of the steamer type, covered with a sheet to protect the patient from burns. The source of heat can be steam radiation provided in the room itself or circulated conditioned air from a conditioning plant. Whatever the source of heat may be, when moisture is provided much lower temperatures can be used. The usual temperatures are between 140 and 160 F., depending on the amount of humidity present.

Steam rooms are usually small and are entirely of tile with a domed ceiling to prevent hot condensed water from dropping on the patient. The steam is introduced into the room through atomizing nozzles so as to produce a fog. Marble slabs are provided for the patient to sit or lie on during treatment.

Both hot and steam rooms should have windows so that the attendant can watch the patient.

Rubbing tables are constructed of marble on which sponge rubber mats are placed. Directly over the rubbing table a series of sprays are suspended which are controlled by a mixing valve. These sprays are used following the salt or soap rub or may be used on the patient while the attendant administers massage.

The douche equipment is located in a shower stall the walls of which are usually constructed of slate, marble or tile. The floor should be of tile and preferably of the nonslip type to avoid accidents.

At the extreme end of the stall a shower equipment is placed. This shower is provided with a rain douche applied from overhead, and needle sprays that impinge on the patient from four directions, covering every part of the body but the face. The temperature and pressure of the water are controlled by an attendant through a douche control table placed at the opposite end of the stall. This table is also equipped to administer the "Scotch," jet and fan douches.

### III METHODS OF CLEANING AND SANITATION

Particular attention must be given to keeping any bathing or hydrotherapy department scrupulously clean and sanitary.

To carry out such a program the rooms, floors, walls and equipment should be constructed of materials such as tile, marble or porcelain that lend themselves to easy cleaning and sterilization.

All equipment that is used in conjunction with sulfur water or waters containing iron should be of a material that will stand the action of acids. It is often necessary to remove the stains produced with an abrasive powder containing acid, or a dilute liquid acid to ensure proper appearance.

Floors in the bath rooms and hydrotherapy rooms should be cleaned with water containing some efficient antiseptic such as the chlorinated compounds. It is not practical in most bath houses to use foot baths, as the patient must go from one treatment room to another. The floors themselves, therefore, must be thoroughly cleaned and disinfected each day.



## Council on Medical Service and Public Relations

THE COUNCIL HAS AUTHORIZED THE PUBLICATION OF THE FOLLOWING  
STATEMENT J. W. HOLLOWAY, JR., Acting Secretary

### THE WAGNER-MURRAY-DINGELL BILL

The legislation introduced in the United States Senate, June 3, 1943 by Senator Wagner and Senator Murray is S 1161 and in the House of Representatives by Congressman Dingell as H. R. 2861 proposes radical amendments to the Social Security Act. Others have characterized it as "fantastic in scope, idealistic in objective and extremely expensive in its economic aspect."

The Council reserves judgment on the amendments proposed that are not directly concerned with medical care. Concern must be expressed, however, over the effect on the health of the people of that part of the legislation that undertakes to create a federally controlled system of compulsory sickness insurance to include an estimated 110,000,000 wage earners, self-employed persons and the dependents of both classes. Such a system would be created by section 11 which proposes to amend title IX of the Social Security Act to provide "Federal Medical Hospitalization, and Related Benefits."

By a revolutionary process the enactment of section 11 would undermine and destroy the American system of medicine that has developed in an evolutionary, healthful manner over the entire period of the history of medicine in the United States.

American medicine has developed an unexcelled quality of medical education. The enactment of section 11 would break down our system of medical education. It would remove the incentive that stimulates the student to acquire the best medical education obtainable by offering that student a regimented practice federally supervised and controlled. Thus result the sponsors of the legislation inferentially apprehend by including a provision for federal grants-in-aid to stimulate medical education.

American medicine has made available to the people an unexcelled quality of medical care. The enactment of section 11 would attenuate the quality of medical care available to the people by imposing on physicians conditions of practice under which good medical care could not possibly be rendered. Medical practice would deteriorate from a highly personalized professional service to an impersonal, regimented service.

American medicine has produced unexcelled medical research by individuals. The enactment of section 11 would lessen the incentive for individual medical research by making it impossible for the results of that research to be utilized to their fullest extent. This result the sponsors of the legislation inferentially apprehend by providing for federal grants to *nonprofit institutions and agencies* to encourage and promote research.

American medicine has been responsible for a state of health of the people unexcelled in any other country. The enactment of section 11 would result in a deterioration of the health of the people, for if medical education suffers, if the quality of the medical care available to the people becomes attenuated, if the incentive to individual medical research is removed, the resulting harmful effect on the health of the people will be inescapable.

#### WHAT DOES SECTION 11 PROPOSE?

Section 11 proposes to amend title IX of the Social Security Act to provide general medical, special medical, laboratory and hospitalization benefits to every person currently insured under the act, to the wives and children of such persons and to certain other groups who may voluntarily bring themselves within the coverage of the act.

To provide these benefits, the Surgeon General of the United States Public Health Service would be authorized to make all

necessary arrangements. He would, in effect, become the autocrat of American medicine. Although every physician legally qualified by a state may, if he consents to regimentation, participate in this compulsory health insurance scheme, the Surgeon General may by regulation prescribe the conditions of participation. He too would be authorized to determine what compensation the participating physicians may receive and would have the final say as to the manner in which they will be compensated, whether on the basis of fees for services rendered, on a per capita basis, on a salary basis or on any combination or modification of these bases. He would be authorized to limit the number of insured persons a particular physician may treat. He would be authorized to determine what constitutes the services of a specialist.

Ostensibly to assist the Surgeon General there will be created a National Advisory Medical and Hospital Council to be appointed by the Surgeon General, of which he will himself be chairman. This council will have no authority, it will be authorized only to "advise." While an insured individual may select, normally, from the list of participating general practitioners the physician to treat him, he will be denied that privilege if the physician's quota of patients, as established by the Surgeon General is already filled. If he is in need of the services of a specialist, he will have no voice in the selection of that specialist. The Surgeon General may arbitrarily assign an insured person to a particular physician if such person does not make his own selection.

The bill provides that in each area the provision of general medical benefit for all insured persons shall be a "collective responsibility of all qualified general practitioners in the area who have undertaken to furnish such benefit." The significance of this provision is difficult to determine. It may signify that each participating physician will be responsible for the quality of medical service rendered by every other participating physician in that particular area.

The Surgeon General would be authorized to determine what hospitals may participate in the scheme. Hospital benefits will range from \$3 to \$6 for each day of hospitalization, not in excess of thirty days as determined by the Surgeon General with the approval of the Social Security Board. The rate will range from \$1.50 to \$4 for each day of hospitalization over thirty but not exceeding ninety. If the insured is placed in an institution for the care of the "chronic sick" the rate will range from \$1.50 to \$3 a day. Instead of making such payments to the insured individual the Surgeon General, subject to the approval of the Social Security Board, may make contracts with participating hospitals for the payment of the reasonable cost of hospital service at rates neither less than the minimum nor more than the maximum rates specified such payment to be full reimbursement for the cost of essential hospital services including the use of ward or other least expensive facilities compatible with the proper care of the patient.

Insured persons will also be entitled to certain laboratory and other benefits, the nature and extent of which will be determined by the Surgeon General but which will include chemical, bacteriologic, pathologic, diagnostic and therapeutic x-ray and related laboratory services, physical therapy, special appliances prescribed by physicians, and eye glasses prescribed by a physician or other legally qualified practitioner.

#### TAXES TO PROVIDE BENEFITS

To finance the provisions of this bill, each included employer will be taxed annually at the rate of 6 per cent of his payroll excluding all remuneration paid to an employee in excess of \$3,000 a year, and each insured employee will be taxed 6 per cent annually of the wages received up to \$3,000. Self-employed persons will be required to pay 7 per cent of the market value of their services annually up to \$3,000. States and political subdivisions and their employees will be taxed at the rate of 3.5 per cent up to \$3,000 if such governmental units voluntarily by compact come within the coverage of the Social Security Act.

Of this total tax a certain amount will be credited to a "Medical Care and Hospitalization Account," an amount estimated as in excess of \$3,000,000,000 annually

#### GRANTS-IN-AID

Section 12 of the bill as previously indicated, provides grants-in-aid as a stimulus for medical education, research and for the prevention of disease and disability, in apparent recognition that the enactment of the bill will require such a stimulus. The Surgeon General of the Public Health Service will determine who will be the recipients of such grants and the specific amounts that will be granted. He will determine too whether a particular project is worthy of stimulation.

The enactment of this bill will destroy the private practice of medicine. It will create a political system of medicine dictated by a federal bureaucracy. It will lower the high health level of the people of the United States. Its enactment should be vigorously opposed.

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

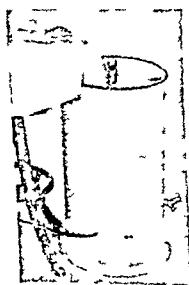
HOWARD A. CARTER, Secretary

### ROCKE HYDROTHERAPY FOOT AND ARM BATH ACCEPTABLE

Manufacturer William Roche, 2605 Noyes Street, Evanston, Ill.

The Roche Hydrotherapy Foot and Arm Bath is a device for the application of hot, whirling, aerated water (with a vibratory action) to the feet and arms. The apparatus consists of a tank 17 inches in diameter which is mounted on a base 34 inches in height, containing a one-fourth horsepower motor. Incorporated in the tank are a circulator unit, foot plate and air intake.

Eighteen gage steel with three coats of porcelain enamel is used in the construction of the tank. According to the manufacturer this material is used because it can be more easily obtained during the present emergency. The tank is protected on the outside by a steel skirt extending from the base to the top. The inside of the tank is white and the outside is gray. The circulator unit is constructed of die cast aluminum with self-oiling bronze bearings and is direct motor driven. The foot plate and air intake cover are of chrome or cadmium plated steel. A rubber tube with aluminum control valve comprises the air intake. The motor is rubber mounted with three conductor rubber covered cord and is fully grounded.



Roche Hydrotherapy Foot and Arm Bath

The steel tank with three coats of porcelain enamel, together with the steel skirt jacketing the tank, is said to tend to slower cooling of the liquid. The temperature of the liquid while in operation normally drops about 2 degrees in thirty minutes, temperature change also depends on room temperature. An immersion hot water heater is available.

The apparatus was investigated clinically by the Council in the physical therapy department of a large hospital. In this investigation the device was found to satisfy the claims made for it by the manufacturer.

The Council on Physical Therapy voted to accept the Roche Hydrotherapy Foot and Arm Bath for inclusion in its list of accepted devices.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONTRIBUTING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

### CHORIONIC GONADOTROPIN (See New and Non-official Remedies, 1943, p. 427)

The following dosage forms have been accepted

WINTHROP CHEMICAL CO., INC., NEW YORK

**Vials Korotrin 100 International Units 2 cc** A powdered preparation of chorionic gonadotropin admixed with sucrose which, when diluted with the accompanying 2 cc of sterile distilled water containing 0.2 per cent of metacresol, provides a solution having a potency of 50 international units per cubic centimeter. Marketed in boxes of 5 ampuls and 25 ampuls with diluent for each ampul.

**Vials Korotrin 500 International Units 2 cc** A powdered preparation of chorionic gonadotropin admixed with sucrose which, when diluted with the accompanying 2 cc of sterile distilled water containing 0.2 per cent of metacresol, provides a solution having a potency of 250 international units per cubic centimeter. Marketed in boxes of 5 ampuls and 25 ampuls with diluent for each ampul.

**Vials Korotrin 1,000 International Units 10 cc** A powdered preparation of chorionic gonadotropin admixed with sucrose which, when diluted with the accompanying 10 cc of sterile distilled water containing 0.2 per cent of metacresol, provides a solution having a potency of 100 international units per cubic centimeter. Marketed in packages containing 1 or 10 vials with 1 or 10 bottles of diluent.

**Vials Korotrin 5,000 International Units 10 cc** A powdered preparation of chorionic gonadotropin admixed with sucrose which, when diluted with the accompanying 50 cc of sterile distilled water containing 0.2 per cent of metacresol, provides a solution having a potency of 100 or 500 international units per cubic centimeter. Marketed in packages containing 1 or 10 vials with 1 or 10 bottles of diluent.

### DIETHYLSTILBESTROL (See New and Nonofficial Remedies, 1943, p. 403)

The following dosage forms have been accepted

THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO

**Tablets Diethylstilbestrol 0.5 mg and 1 mg**

**Sterilized Solution Diethylstilbestrol (in sesame oil) 1 mg per cc** 15 cc containing 0.5 per cent chlorobutanol

**Ampuls Sterilized Solution Diethylstilbestrol (in sesame oil) 1 mg per cc** 1 cc

### DIGITALIS (See New and Nonofficial Remedies, 1943, p. 289)

The following dosage forms have been accepted

BURROUGHS WELLCOME & CO., INC., NEW YORK

**Tabloid Digitalis Leaf 32 mg, 65 mg and 97 mg**

THE UPJOHN COMPANY, KALAMAZOO, MICH

**Ampoule Sterile Solution Digitalis Injection 2 cc and 10 cc** Each cubic centimeter contains 1/2 U.S.P. XII digitalis unit and alcohol 10 per cent as preservative and stabilizer in sterile phosphate buffered solution.

### SODIUM MORRHUATE (See New and Nonofficial Remedies, 1943, p. 310)

The following dosage form has been accepted

CHEPLIN BIOLOGICAL LABORATORIES, INC., SYRACUSE, N. Y.

**Ampoule Solution Sodium Morrhuate 5% W/V with Tricresol 0.3%** 2 cc. and 5 cc ampoules and 30 cc. vials. Each cubic centimeter contains sodium morrhuate 34 grain tricresol 0.3% (W/V) as a preservative double distilled water q. s.

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SATURDAY, NOVEMBER 13, 1943

## HYPERTENSION IN MILITARY SERVICE

Some persons when exposed to the emotional stress of a physical examination, have a temporary rise in blood pressure which subsides in later readings. Little significance is given to such a transient elevation in blood pressure. Physicians assume that, if one or more readings of blood pressure within the normal range are obtained, the possibility of hypertensive disease can be disregarded. However, due consideration should be given to the fact that in many hypertensive persons the level of blood pressure is variable. Wide fluctuations from normal to high levels may occur in intervals of a few hours, and elevations of blood pressure are readily precipitated by emotional strains. These cases apparently tend to develop ultimately into permanent hypertension. In 1,522 patients reviewed by Hines<sup>1</sup> ten to twenty years after the original examination, a high percentage of those presenting excessive variability of the normal blood pressure developed definite hypertensive disease. Master<sup>2</sup> reexamined a group of 50 persons who one to seven years previously had shown labile high blood pressure with fluctuations which included normal values. He found that 76 per cent presented definite permanent hypertensive levels. Rühl<sup>3</sup> as early as 1927 had interpreted the labile hypertension as the early stage of essential hypertension. There is no clear-cut line of delimitation between the normal person who shows occasionally an increase in blood pressure under various influences and the borderline hypertensive patient. Essentially the two represent different degrees of the same condition.

As would be expected in the light of these observations, the rules established by the Navy for acceptance and rejection of candidates have resulted in the acceptance for active duties of borderline hypertensive

patients. A number of instances in which this condition has led to the development of clinical symptoms and unfitness during active campaign is reported by Master.<sup>4</sup> The ideal solution would be to reject all persons presenting hypertensive levels at any one reading. However, when statistical figures are considered the incidence of hypertension in the general population would be so high as to prevent the attainment of the minimum goal required by the armed forces.

Considering the implications of this difficult problem, Master suggests that a different approach be adopted. The question of fitness for active duties in the borderline cases is not so much dependent on the height and variability of the blood pressure as on the absence or presence of complications of hypertension. An uncomplicated mild hypertension is compatible with a high degree of physical activity and need not be a cause for rejection. A complete cardiovascular examination, including a roentgenogram of the chest, electrocardiograms before and after exercise tests, examination of the retinal vessels and renal function tests, is necessary in order to determine the presence of cardiac enlargement, myocardial damage, coronary disease, arteriolar lesions and renal insufficiency. On these criteria and not on blood pressure measurements alone should the physician base his judgment as to the suitability of candidates for military service.

## CARCINOGENIC TRANSFORMATION OF FIBROBLASTS IN CULTURE FLASKS

Earle and Voegtlin<sup>1</sup> of the National Cancer Institute have demonstrated that rat and mouse fibroblasts grown outside the body in a medium containing methylcholanthrene, a carcinogenic chemical, are changed into cells which resemble the cells in cultures of sarcoma induced by the injection of methylcholanthrene into the subcutaneous tissue of rats. This transformation appeared to be irreversible. Now Earle<sup>2</sup> reports that sarcoma can be produced by the injection of fibroblasts subjected to the action of methylcholanthrene in culture flasks. When mouse fibroblasts had been cultured in a medium of horse serum, extract of chick embryo and salt solution for 291 days, purified methylcholanthrene was added to the cultures in the proportion of 1 microgram to each cubic centimeter of culture fluid. The cultures were then carried on for different periods, 6, 32, 111, 184 and 406 days, at the end of which they were continued without methylcholanthrene for various periods. The first apparent effect of the carcinogen was

4 Master, A. M. Cardiovascular Problems in the War Hypertension and the Navy, Bull New York Acad Med 19 704 (Oct) 1943.

1 Earle, W. R., and Voegtlin, Carl. The Mode of Action of Methylcholanthrene on Cultures of Normal Tissues. Am J Cancer 71 33 (Nov) 1938. A Further Study of the Mode of Action of Methylcholanthrene on Normal Tissue Cultures. Pub Health Rep 55 13 (Feb 23) 1940.

2 Earle, W. R. Changes Induced in a Strain of Fibroblasts from Strain C3H Mouse by the Action of 20 Methylcholanthrene (Interim Report), J Nat Cancer Inst 3 555 (June) 1943.

1 Hines, E. A., Jr. Range of Normal Blood Pressure and Subsequent Development of Hypertension. A Follow Up of 1,522 Patients, J A M A 115 271 (July 27) 1940.

2 Master, A. M. Borderline Hypertension and the Navy During the Emergency. Incidence of Hypertension Among the General Population, U S Nav M Bull 41 52 (Jan) 1943.

3 Rühl, A. Wie weit ist der genuine arterielle Hochdruck bedingt? Deutsches Arch f klin Med 156 129, 1927.

to slow down the rate of the increase in the size of the cell clumps. Later the cells were changed in shape and became increasingly coherent laterally forming ribbons and sheets. These changes in the cells continued in successive cultures after the addition of methylcholanthrene to the culture fluid was discontinued. Two cell strains subjected to the carcinogen for 6 and 32 days respectively have been carried on in carcinogen free cultures for about a year without any loss of the induced characteristics. Some months after morphologic changes were noted in the carcinogen cultures control cultures began to present similar changes. Whether this change in the control cultures was due to the accidental introduction of traces of methylcholanthrene or not will be considered in a later report. "It is thought likely that such trace contamination did occur" but it must have been extremely slight in view of all the precautions against contamination.

On injection into mice (strain C3H) of carcinogen treated cultures of mouse fibroblasts at varied intervals after the withdrawal of the carcinogen, sarcomatous tumors arose at the sites of injections, often as early as 9 days after the injection, and caused death within a few weeks, with or without metastasis. Such tumors were subinoculated successfully. Injections of control cultures with altered cells gave similar results. Nettleship<sup>3</sup> describes the characteristics of the neoplasms which grew from the inoculation of altered fibroblast cultures. The structure was similar to that of the various forms of spindle cell sarcoma in man. Earle and Nettleship both point out that short exposure of cultured fibroblasts to the carcinogen produced cells of a comparatively low neoplastic activity and slightly changed in structure. No metastasis occurred from tumors from these cells. On somewhat longer exposure the cells became more greatly altered morphologically and there was an increased invasiveness into the surrounding tissues. A number of tumors showed metastases. On still longer exposure of the cells to the carcinogen the cell structure of the tumors arising from them was even more greatly changed, the invasiveness was at least as great, but fewer metastases occurred.

The tumors described arose by the multiplication of implanted cells which came from cultures carried on for many months after exposure to methylcholanthrene. It is not likely that the cells carried over any of the carcinogen to which their remote ancestors were exposed. The implanted cells were cancerous, that is, sarcomatous cells which multiplied as such on implantation in living mice. After the change from normal fibroblasts under carcinogenic influences, all subsequent generations were cancerous in greater or lesser degree. This change remained irreversible. While it is not difficult to make normal cells and their descendants cancerous either *in vivo* or *in vitro*, it is not yet known how cancerous cells can be made normal again, that is,

no doubt the secret of cancer. The results of the remarkable experiments briefly recounted suggest ways and means for direct attacks on the problems of the irreversibility of the cancer cell.

## Current Comment

### EPINEPHRINE-LIKE SUBSTANCES IN THE HEART MUSCLE AND SUDDEN DEATH

The cause of unexpected sudden death can be determined only by thorough postmortem examination the results of which are interpreted in the light of the history of the victim and of the circumstances under which he died. In many such cases chemical methods may be of great value. In an athletic student aged 21 who was found dead in bed the only abnormality discovered by Raab<sup>1</sup> was an excessive amount of epinephrine-like substances or catechols in the heart muscle. Death was not caused by structural changes, by laryngeal obstruction or by poisoning as commonly understood. Raab argues that the death was due to excess of epinephrine-like substances on the basis of the following general considerations. In rats cardiac death takes place when the concentration of such substances in the myocardium exceeds a certain limit, in a series of patients who died from cardiac failure, particularly in cases of hypertension, angina pectoris, uremia and adrenal tumor, he found in the majority an abnormally high accumulation of epinephrine or of epinephrine-like catechols in the heart muscle and, finally, experimental production of fatal heart failure by means of epinephrine and related amines. Raab points out that in human beings, as well as in animals, "severe cardiac episodes and death" have followed the injection of epinephrine hydrochloride, also that ventricular fibrillation, which is regarded as a common cause of sudden cardiac death, may be produced by epinephrine. He notes too the not infrequent reports of rapid death of patients with adrenal tumor, with hemorrhagic necrosis and other lesions of the adrenals. This group, by the way, appears to include cases of death from adrenal insufficiency as well as cases of hyperepinephrinemia. The concentration of epinephrine-like catechols in the heart muscle of the athletic student examined by Raab was not only above the physiologic maximum but the highest in a series of 54 human hearts, normal and abnormal. According to Raab "the most famous case of sudden death of an apparently healthy athlete from 'exhaustion' occurred two thousand four hundred and thirty-three years ago when the marathon runner collapsed, dead, on his arrival in Athens, after having shouted the message of victory over the Persians. It appears most probable from present knowledge that his heart succumbed to ventricular fibrillation due to an acute excessive accumulation of sympathomimetic amines in the myocardium." No doubt the chemical examination of the heart muscle will prove helpful in explaining the nature of sudden deaths, particularly in the case of athletes, but eventually in other cases as well.

<sup>3</sup> Nettleship, Under on Morphology of Sarcomas Derived from Fibroblasts Previously Treated with 20 Methylcholanthrene *in Vitro* (Summary Report) J Nat Cancer Inst 3:559 (June) 1943

<sup>1</sup> Raab Wilhelm. Sudden Death of a Young Athlete with an Excessive Concentration of Epinephrine-like Substances in the Heart Muscle, Arch Path 36:388 (Oct) 1943

## DOCTORS AT WAR TO BE RESUMED

Arrangements have been completed with the National Broadcasting Company to resume the series of broadcasts entitled *Doctors at War*. This will be the fourth series of broadcasts under the general title of *Doctors at War* and will be the ninth annual series of dramatized health programs presented cooperatively by the American Medical Association and the National Broadcasting Company. Owing to radio commitments in connection with the war, the opening of the series has been postponed until January 8. Broadcasts will be given on Saturday afternoons at 5 o'clock Eastern War Time (4 o'clock Central, 3 o'clock Mountain, 2 o'clock Pacific War Time). The series will run for twenty-six weeks. The Medical Department of the United States Army and the Bureau of Medicine and Surgery of the United States Navy have agreed to permit doctors in the armed forces to participate in the programs. The medical departments of both the Army and the Navy will assist in the technical preparations for the broadcasts.

## DEVELOPMENT OF RESISTANT PNEUMOCOCCI DURING SULFONAMIDE TREATMENT

Experimental evidence that the capacity to acquire resistance to sulfonamide drugs occurs in vivo was offered by MacLean and his associates<sup>1</sup> in 1939. Pneumococci of infected mice treated with sulfapyridine establish an increasing tolerance to the drug. Lowell, Strauss and Finland<sup>2</sup> in 1940 demonstrated the development of resistance in pneumococci obtained from patients treated with sulfonamide drugs. Sulfonamide sensitive organisms were isolated in 2 cases of pneumonia prior to treatment. After several days of drug therapy and again during a relapse of the pulmonary infection, pneumococci of the same type were isolated and found to be sulfonamide resistant. Recently Hamburger and his colleagues<sup>3</sup> studied sulfonamide sensitivity of pneumococci isolated from a great number of patients both before and after sulfonamide therapy. In none of 168 patients were strains of pneumococci isolated before treatment significantly resistant to the drug. The organisms obtained during or after treatment were definitely more resistant than those obtained before treatment in only 4 of 72 cases treated for less than three weeks. In each of 3 cases treated for long periods (forty-seven days or more) resistant pneumococci developed during treatment. This suggests that sulfonamide resistant organisms may be produced regularly during the clinical use of these drugs. Lesions such as occur in unresolved pneumonia, in which the complete eradication of the bacteria requires prolonged and increased concentration of sulfonamides, and in

endocarditis, in which bacteria have only limited exposure to the drugs, offer the ideal conditions for the development of drug fastness. As pointed out by Hamburger and his associates, even though the development of sulfonamide resistant organisms occurs in a relatively small number of cases, this result may constitute a serious hazard in the future.

## THE SURVIVAL TIME OF HUMAN SPERMATOZOA

One of the serious obstacles to the scientific evaluation of chemical contraceptives has been the absence heretofore of any uniform method of determining the survival time of human spermatozoa. Brown and Gamble,<sup>1</sup> in a series of communications, report the satisfactory use of potassium acid phthalate as a spermicidal agent. This agent is prepared as a watery solution with a known acidity of  $p_H 4.0$ . A 28 per cent solution mixed with an equal quantity of semen has been found to give spermicidal times of convenient length. When the spermicidal times are measured at ordinary room temperature the results are arbitrarily referred to as the "phthalate time." Variations in temperature exert a considerable effect on the phthalate time. At body temperature the relative spermicidal times vary significantly from those at room temperature. Variations in phthalate time of different semen specimens have been also found large. Nevertheless this method appears to permit evaluation of the relative spermicidal activities of commercial contraceptives, and a number of such preparations have already been tested by this means. Although this apparently represents a definite addition to scientific method, the several variables attached to the procedure indicate that the conclusions must be cautiously accepted and further careful studies at control attempted.

## IMMEDIATE TREATMENT OF WOUNDS AND BURNS

Elsewhere in this issue (page 675) appears an article on the immediate treatment of wounds and burns based on military experience. This work will have far reaching effects on first aid in civilian as well as military life. Many lives can be saved, Gallagher claims, by the early utilization of simple sterile compression dressings to be applied to severe burns or other large surface wounds immediately at or near the scene of injury. The technic is simple and can be employed as a first aid measure by relatively untrained persons. Compression dressings may become standard equipment for all first aid kits. The proper application of these dressings should be made familiar to the police in squad cars, nurses' aides, street car and bus motormen and conductors, firemen, workers in industry and many others.

1 MacLean, I. H., Rogers, K. B., and Fleming, Alexander M. & B. 693 and Pneumococci, *Lancet* 1: 562 (March 11) 1939.  
2 Lowell, F. C., Strauss, Elias, and Finland, Maxwell. Observations on the Susceptibility of Pneumococci to Sulfapyridine, Sulfathiazole and Sulfamethylthiazole, *Ann. Int. Med.* 14: 1001 (Dec.) 1940.  
3 Hamburger, J. M., Schmidt, L. H., Sesler, C. L., Rueggsegger, J. M., and Gruben, E. S. The Occurrence of Sulfonamide Resistant Pneumococci in Clinical Practice, *J. Infect. Dis.* 73: 121 (July-Aug) 1943.

1 Brown, Royal L. and Gamble, Clarence J. Factors Influencing the Survival Time of Human Spermatozoa in a Solution of Potassium Acid Phthalate, *Human Fertil.* 5: 4 (March) 1943. Studies of Spermicidal Times of Contraceptive Materials *ibid.*, p. 9.

# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## ARMY

### EARLY RECOGNITION AND TREATMENT OF NEUROPSYCHIATRIC CONDITIONS IN THE COMBAT ZONE

The War Department, Washington, D. C., recently released Circular Letter No. 176, regarding the early recognition and treatment of neuropsychiatric conditions in the combat zone, which is as follows:

1 *General*—Any medical officer may be called on to treat neuropsychiatric casualties. Because of the shortage of neuro-psychiatrists, the burden of early recognition and treatment of these casualties will fall on medical officers without specialized training. The attention of all medical officers, therefore, is invited to their responsibility for the mental as well as physical health of military personnel.

2 *Incidence*—According to present figures, from 10 to 20 per cent of casualties developing in combat are neuropsychiatric and, in certain engagements, as high as 30 per cent are of this type. It has been found that, when these cases are properly recognized and treated at forward areas, up to 80 per cent can be returned successfully to combat duty, whereas, when improperly evaluated and unnecessarily evacuated to rear areas, only from 5 to 10 per cent can be returned to duty.

3 *Etiology*—a Ordinarily neuropsychiatric disorders are thought to occur only in weaklings or in individuals with personality defects. This is not true. Information at hand indicates that a significant proportion of the neuropsychiatric casualties are occurring in individuals who give no history suggesting predisposition. Under the extremes of stress and fatigue of modern combat, the most stable individual may reach his breaking point. Thus, the presence of neuropsychiatric disorder must be looked for in normal as well as predisposed individuals.

b Factors which precipitate psychiatric disorders are separation from home, regimentation, lack of freedom, lack of privacy, lack of feminine companionship, a feeling of not being appreciated and lack of confidence in leaders. In combat are added extreme fatigue, danger of death and mutilation, exposure to cold, heat, disease, isolation, confusion and hunger. The danger of being a coward, of losing self control, as well as responsibility for the lives of others, also plays a role. Insufficient understanding and conviction regarding the need to fight are also factors.

4 *Clinical Types and Diagnoses*—a Considerable confusion exists as the result of current use of diagnostic terms, such as 'operational fatigue,' "shell shock" and 'war neurosis.' There is no evidence that any new clinical entity has appeared in this war which would warrant the employment of these terms. It is directed that standard nomenclature for psychiatric disorders be utilized wherever possible.

b In certain theaters it has been found that the term "psychoneurosis" produced in the patient's mind the idea of war causation and incurability and thus materially interfered with recovery. The term 'exhaustion,' on the other hand, implied to the patient nonspecific etiology, natural occurrence and speedy recovery. It was also in a measure true in that in the majority of cases this exhaustion was a strong contributory factor. If it is found expedient to use the term "exhaustion" as a preliminary diagnosis for combat neuropsychiatric casualties, the term should

be employed only on the emergency medical tag (M. D. Form 52b) and the case redesignated with the proper psychiatric term on the field medical record (M. D. Form 52c). The use of the term 'exhaustion' for psychoneurosis will be confined to cases developing under enemy action. Cases of exhaustion free from psychiatric components and essentially "physical" in nature will be qualified with an appropriate term in addition to the word 'exhaustion' for purposes of differentiation.

c Psychiatric casualties fall into the following main groups and should be so labeled:

- (1) *Psychoneuroses* These comprise the vast majority of neuropsychiatric casualties in the combat zone. They occur either in a normal or an emotionally unstable individual. Underlying domestic difficulties frequently play a role. The types of psychoneuroses encountered are as follows:
  - (a) *Anxiety* The anxiety type is the most common. The anxiety symptoms show pronounced variations in severity, but certain symptoms are common to all of them. The most striking of these manifestations is the inappropriate reaction to any sudden sound, sudden movement or the sound of motors of any description. When these stimuli occur, the patient immediately concentrates all attention on the sound or, in more severe cases, may immediately run or seek cover of some sort and exhibit all the symptoms of a minor panic state. This reaction cannot be said to be abnormal qualitatively, since it is the normal reaction, to a lesser degree, of all men who have experienced combat conditions, but the quantitative response is clearly exaggerated. With this abnormal response there is usually a variable degree of mental confusion, tachycardia, tremors and, if severe, vasomotor reactions of the sympathetic type are evident. In addition, they manifest all of the anxiety reactions evident in civil life, namely, night terrors, insomnia, irritability, inability to concentrate, tremor and somatic symptoms of the visceral type.
  - (b) *Hysteria* The hysterical reactions of paralysis, anesthesia, deafness, blindness and aphonia, so common in the last war, are notable for their rarity. Of the hysterical reactions seen, the rhythmic reflex tremors, repetitive dodging and avoiding movement, amnesias and stupor reactions are by far the most common. These manifestations are extremely dramatic in character and in general show a very poor response to therapy in that, when they are resolved, anxiety or other hysterical manifestations replace them or they recur under very minor stress. Some of these cases are distinguished from true psychotic reactions with great difficulty. They may show clearcut hallucinatory reactions, thought block, retardation, decidedly childish behavior and little insight.
  - (c) *Psychasthenia, neurasthenia and reactive depression* are seldom seen and when seen do not respond rapidly.
- (2) *Psychoses* Psychoses rarely occur in normal individuals but may be precipitated in unstable individuals by stress of battle. The clinical pictures do not differ from those seen in the zone of interior. When the manifestations are



bizarre and dramatic, or when hallucinations and delusions are present detection is not difficult. Psychoses may also be manifested merely by overtalkativeness, overactivity, distractibility, depression, apathy, indifference, carelessness in the care of clothes and eating habits or by undue suspiciousness or complexes on particular subjects such as the government or religion. Psychoses also occur which appear to be full blown cases of schizophrenia but differ from the true disease by clearing up in a matter of days or weeks.

(3) **Psychopathic Personality** Psychopathic personalities with homosexuality, emotional instability or asocial and amoral trends are of course revealed but not caused by the stress of battle. Individuals with these personality defects are more likely to become psychiatric casualties than are "normal" individuals.

(4) **Mental Deficiency** Limited intelligence also is revealed rather than caused by combat and may be mistaken for hysterical confusion or stupor.

(5) **Organic Neurologic Disease** **Concussion Due to Blast** An individual may be within a few feet of a bursting shell and suffer no organic damage, whereas another individual many yards from the same burst may be killed outright by the concussion. The individual who has suffered organic damage from blast almost invariably gives a history of clear loss of consciousness, having his breath knocked out, coughing up bloody sputum or bleeding from the ears and nose. On examination he may show fissuring of the skin, flash burn, perforated or hemorrhagic eardrums, conjunctival hemorrhage, signs of intrathoracic or intra-abdominal pathologic changes, focal or general signs of organic damage of the central nervous system.

5 **Malingering**—A common error is to mistake psychoneurosis for malingering. It is difficult for many to accept the fact that malingering and psychoneurosis are distinct clinical entities. Treatment effective for one is utterly useless and even harmful for the other. Malingering is the conscious, deliberate exaggeration or pretense of an illness for the purpose of escaping duty. Psychoneurosis is an actual illness. By definition, a malingerer lies about his symptoms. A person with psychoneurosis either tells the truth or what he firmly believes is the truth. It may be true that neither wants to return to duty, but the malingerer is aware that he could go back if he chose, whereas a person with psychoneurosis either is actually unable to return to duty or sincerely believes so.

6 **Disposition**—a It is highly important to avoid indiscriminate evacuation. If a case can be treated adequately in forward areas, the prognosis is, as a rule, far better. On the other hand, delay in evacuating cases for which specialized treatment in a base area is necessary may prove disastrous to the patient and harmful to the efficiency and morale of the unit.

b The criterion for selection of cases is the length of time which will be necessary to return a given case to effective duty. In general, the evacuation policy is to retain at the level of the evacuation hospital only those who require five days' treatment or less. All other cases must be treated in hospitals further removed from the front. In a general way, the accompanying table, based on actual field experience, may serve as a guide.

7 **Treatment**—a Treatment of neuropsychiatric cases developing in the combat zone is based on four cardinal principles.

- (1) Early selection of cases which with treatment may be returned promptly to duty.
- (2) Treatment of these cases in the combat zone.
- (3) The rapid initiation of sedation in all cases.
- (4) Recognition that psychiatric casualties are not malingerers needing punishment but sick men needing treatment.

b **Treatment in the Division Area** Battalion or regimental medical officers can return many mild cases to duty in a few hours by means of discussion, reassurances and short rest periods in the unit rest area. Heavy sedation should be initiated when the patient is first seen. This heavy sedation acts to raise the stimulus threshold, decreases the anxiety reaction and

decreases the abnormal suggestibility. The dose given must not be sufficiently high to convert a sitting case into a litter case. The sedation of choice is sodium amytal 6 to 9 grains (0.4 to 0.6 Gm) orally or an equivalent dose of a similar rapidly acting sedative. Phenobarbital  $4\frac{1}{2}$  grains (0.3 Gm) may be used, but the slowness of its action is a disadvantage in an acutely excited patient. Intravenous medication is to be avoided in forward areas because it converts a sitting into a litter patient and it is only rarely necessary. Morphine should not be used. If there is delay in the collecting or clearing station (and the patient cannot immediately be returned to duty), further sedation is given to keep him in a drowsy state. Doses of sodium amytal up to 15 grains (1 Gm) or phenobarbital up to 8 grains (0.5 Gm) in twenty-four hours may be given with safety.

c **Treatment at the Evacuation Hospital** Immediately on arrival, a rapid examination of the patient is made in order to classify him either for further evacuation on criteria previously discussed or retention in the hospital for treatment. Those retained should be sent to a separate neuropsychiatric ward, allowed to wash, have the ward rules explained to them and a more exhaustive history and physical examination given. On the basis of this more complete examination, those men with

Evacuation Policy for Psychiatric Cases

Retain	Evacuate Immediately	Doubtful
1 All psycho neuroses of the anxiety type except the most severe	1 All psychoses 2 All organic neurologic disorders 3 All psychiatric repeaters 4 Psychoneuroses with visceral somatic symptoms	1 Moderately severe psychoneuroses of hysteria type 2 Minimal concussion due to blast 3 Mild psychopaths of criminal and aggressive types
2 Mild psycho neuroses of the hysteria type	5 All severe mental defectives 6 All severe psychoneuroses of the hysteria type (stupors, amnesias, reflex tremors and ties) 7 Severe psychoneuroses of the anxiety type 8 Severe and moderate reactive depressions and psychasthenias 9 Definite psychopathic personality 10 Most cases of concussion due to blast 11 Severe mental defectives	4 Moderate mental defectives 5 Mild reactive depressions

profound disturbances are evacuated the following day. Those remaining, whose prognosis seems good, are given explanations for their symptoms, strong reassurance and suggestions and are then sent to bed for two or three days. While in the ward they are given phenobarbital routinely and additional sodium amytal, if necessary, so that most of their time is spent sleeping. All patients are required to be up for each meal, which they get by standing in line with the up-patients, and to keep their own bed and immediate ward area in order. These steps are taken deliberately to maintain a sense of discipline and to discharge any idea of serious or physical illness. All therapeutic discussion is carried out in the open ward with the idea of repetitive mass treatment effect. Intravenous barbiturate catharsis and suggestions may be used in selected cases. Sedation is discontinued for a full day before discharge, and during this time the decision is made whether to return the patient for further duty or to evacuate him to the communication zone. This decision is based on numerous factors, but response to the direct questions "How do you feel now?" and "Do you want to return to your unit for duty?" are very often the deciding factors. There is no use in returning a man who boldly states that he is certain that he will have further trouble. Little attention is paid to new or minor symptoms except to minimize them and give strong reassurance. No case should be kept in the evacuation hospital over five days.

For the Surgeon General

ROBERT J. CARPENTER  
Lieutenant Colonel Medical Corp.  
Executive Officer

## BOLLING FIELD BASE HOSPITAL

Until a few years ago Bolling Field, D C, was served by a small dispensary station and was otherwise dependent on Walter Reed General Hospital for cases requiring hospitalization. Col James F Brooke, base surgeon and senior flight surgeon, who arrived at Bolling Field about five years ago and who is at present in command of the base hospital, deserves credit for his efforts which made possible the building of the new hospital. When the hospital was opened in May 1941 the main barracks, which had formerly housed the dispensary, was turned into the flight surgeon's office, where Lieut Col Bernard L Jarman, chief of the flight surgeons' section, is now in charge. Among others on the hospital staff at present are Capt Floyd Fortuin, psychiatrist, Capt Spenser C Flo, who is in charge of the surgical section, Capt Floyd K Hurt, x-ray specialist, who directs this department at the hospital, and Major Timothy F Moran, chief of the eye, ear, nose and throat section.

## ARMY SURGEON CITED BY NAVY

Capt Beverly D Hairfield, M C, U S Army, formerly of Charlottesville, Va, received a special citation from the Navy for his work during the Sicilian invasion, having been detached from the evacuation hospital when he volunteered for the assignment. Dr Hairfield graduated from Vanderbilt University School of Medicine, Nashville, in 1939. He entered the service July 1, 1942, when he was commissioned a first lieu-

tenant, and was recently promoted to captain. Regularly assigned to an evacuation hospital which has been in North Africa, Dr Hairfield has been in the surgical division. He landed in Casablanca in the invasion of North Africa and moved close behind the advancing lines to Bizerte and Tunis.

## FLIGHT SURGEONS' ASSISTANTS

A class of ninety-six flight surgeons assistants completed the course in aviation medicine at the School of Aviation Medicine, Randolph Field, Texas, October 9. Brig Gen Eugen G Reinartz, U S Army, is commandant of the school.

## ARMY PERSONALS

A letter from Capt Charles H Fleck, dated September 23, was recently received by the public safety director of Altoona, Pa, in which was enclosed a Jap souvenir, presumably a chart for temperature and pulse readings, 15 by 12 inches in size and of exceedingly fine, white paper, evidently made of rice. Dr Fleck also stated that when his contingent took possession of an island after the Japs had fled they found that the enemy had left behind most of their possessions except their arms. They had dug caves and tunnels, and their medical and other stores were found intact by the allied soldiers. Dr Fleck is in the medical corps and in service in General Douglas MacArthur's army in the south Pacific. He graduated from George Washington University School of Medicine Washington, D C, in 1932 and entered the service early in 1943.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS,  
DENTISTS AND VETERINARIANSHOSPITALS NEEDING INTERNS  
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan 1, 1944.

1 Prospective interns who have not yet obtained a hospital appointment should communicate with these institutions either directly or through the office of the dean of their medical school. Assistant residents and residents should direct their applications to the hospital superintendent in the usual manner.

2 Institutions having a shortage of interns or residents are again invited to make their needs known to the Council on Medical Education and Hospitals. In reporting shortages, hospitals should indicate the number of interns, assistant residents and residents needed to complete their quotas for Jan 1, 1944.

Hospitals Reporting Vacancies for  
Interns or Residents

## ALABAMA

St Vincent's Hospital Birmingham Capacity 131 admissions 3 687  
Sister Marina, R N Superintendent (mixed resident)  
St Margaret's Hospital Montgomery Capacity 168 admissions  
4 990 Sister Roberta DeGruin R N administrator (mixed res)

## ARKANSAS

Leon A Levi Memorial Hospital Hot Springs Capacity 75 admissions 845  
Regina H Kaplan Administrator (mixed resident)

## CALIFORNIA

Greens Eye Hospital San Francisco Capacity 35 admissions 1 063  
Miss Marian I Hamilton Superintendent (resident ophthalmologist)  
Mt Zion Hospital San Francisco Capacity 189 admissions 4 866  
Dr J A Katzev Medical Director (intern)  
Shriners Hospital for Crippled Children San Francisco Capacity 60  
admissions 216 Mrs Gertrude R Folendorf R N Superintendent  
(resident orthopedist)

## CONNECTICUT

Bridgeport Hospital Bridgeport Capacity 416 admissions 10 744  
Mr Oliver H Barthe Superintendent (intern)  
New Britain General Hospital New Britain Capacity 265 admissions  
6 826 Dr H Weston Benjamin Managing Director (int & res)  
Hospital of St Raphael New Haven Conn Capacity 280 admissions  
145 Sister Rose Aless Superintendent (intern)

The Stamford Hospital Stamford Capacity 324 admissions, 6 352  
Dr Charles H Young Superintendent (intern and resident)  
Waterbury Hospital Waterbury Capacity 369 admissions, 7,765  
Aida E Creer R N Superintendent (intern)

## DELAWARE

St Francis Hospital, Wilmington Capacity 137, admissions 1 874  
Sr M Illuminata Superintendent (intern)

## GEORGIA

The Crawford W Long Memorial Hospital Atlanta Capacity 269  
admissions 8 662 Dr L C Fischer Administrator (int & res)  
Grady Memorial Hospital Atlanta Capacity, 721 admissions 13 557  
residents)  
The Piedmont Hospital Atlanta Capacity 147 admissions 4 276  
Mr George R Burt Superintendent (interns)  
Saint Joseph's Infirmary Atlanta Capacity 158 admissions 4 841  
Sister Cornile, Superintendent (intern)

## ILLINOIS

Henrotin Hospital Chicago Capacity 129 admissions 3 139 Veronica  
Miller Superintendent (intern and resident)  
Loretto Hospital Chicago Capacity 159 admissions 4 235 Sr M  
Stephanie R N Superintendent (intern)  
Women and Children's Hospital Chicago Capacity 125 admissions  
2 697 Mrs Edna H Nelson Superintendent (intern women)  
Pleasant View Sanatorium East St Louis Capacity 98 admissions  
178 Dr Robinson Bosworth Superintendent (resident tuberculosis)  
The Little Company of Mary Hospital Evergreen Park Capacity  
281 admissions 8 189 Mother M Dunstan Superintendent (intern  
and resident obstetrician)  
The Methodist Hospital of Central Ill Peoria Capacity 240 admis  
sions 6 240 Dr C S Woods Superintendent (intern)

## INDIANA

St Catherine Hospital East Chicago Capacity 344 admissions 9 043  
Sister M Cordula Superintendent (intern)  
The Methodist Hospital Gary Capacity 140 admissions, 5 943  
Rev James Lawson Superintendent (intern)  
St Margaret Hospital Hammond Capacity 281 admissions 8 035  
Sr M Vincentiana Superintendent (intern)

## IOWA

St Luke's Methodist Hospital Cedar Rapids Capacity 175 admis  
sions 5 707 Karl P Meister Superintendent (mixed resident)

## KANSAS

Bethany Hospital Kansas City Capacity 180 admissions 4 793  
Ethel L Hastings R N Superintendent (mixed resident)  
Providence Hospital Kansas City Capacity 110 admissions 2 773  
Sister Mary George R N Superintendent (intern)  
The Wichita Hospital Wichita Capacity 145 admissions 3 777  
Sister M Agnes Superintendent (intern)

## KENTUCKY

St Elizabeth Hospital Covington Capacity, 335, admissions, 5,730  
Sister Mary Moccoque, Administrator (intern)  
Jewish Hospital, Louisville Capacity, 90 admissions, 2,587 Mr  
Walter T Bailey, Superintendent (resident, mixed)

## LOUISIANA

North Louisiana Sanitarium Shreveport Capacity 114 admissions,  
1,693 Mrs Jessie W Sanford R.N. Superintendent (intern)  
Fri State Hospital Shreveport Capacity 140 admissions, 1,634 Mrs  
Louise G. Lee R.N., Superintendent (intern)

## MARYLAND

St Agnes Hospital Baltimore Capacity 218, admissions, 1,994  
Sister Rosanna, R.N., Administrator (intern)

## MASSACHUSETTS

Brookline Hospital Brookline Capacity 155, admissions, 2,872 Dr  
F. M. Hollister Superintendent (intern)  
Cambridge City Hospital, Cambridge Capacity, 100 admissions, 6,632  
Gertrude D. Stapleton R.N. Superintendent (intern)  
Union Hospital Fall River Capacity 156 admissions, 1,725 Miss  
Jeanie J. Smithies R.N. Superintendent (intern)  
Holyoke Hospital Holyoke Capacity 155 admissions, 2,915 Mr  
S. T. Byrne Superintendent (intern)  
Lynn Hospital Lynn Capacity 232 admissions, 6,473 Mr Dan  
Irwin Administrator (intern)  
St Luke Hospital Pittsfield Capacity, 200 admissions, 3,531  
Sister M. Louise R.N. Superintendent (intern)  
The Waltham Hospital Waltham Capacity 215 admissions, 1,172  
Mr Walter K. Amesbury Administrator (intern)  
Worcester-Hahnemann Hospital Worcester Capacity 150, admissions,  
1,158 Mrs M. Kahn R.N. Superintendent (intern)  
Saint Vincent Hospital Worcester Capacity, 313, admissions, 5,934  
Sister M. Loreto, Superintendent (intern and resident)

## MICHIGAN

The Grace Hospital Detroit Capacity, 555, admissions, 16,677 Dr  
Edmund I. Collins, Medical Director (intern)  
Mount Carmel Mercy Hospital, Detroit Capacity, 550 admissions,  
20,078 Sister M. Nicholas Superintendent (intern and resident)  
Bodgett Memorial Hospital, Grand Rapids Capacity, 170, admissions,  
1,553 Mr William W. Colton, Director (intern)

## MISSOURI

St Mary's Hospital, Kansas City Capacity, 182, admissions, 5,103  
Sister Mary Athanasia, Superintendent (intern)  
Christian Hospital, St. Louis Capacity, 145, admissions, 2,760 Agnes  
Hemm R.N., Superintendent (resident)

## NEBRASKA

Lincoln General Hospital, Lincoln Capacity 203 admissions, 4,262  
Mr Herbert F. Hammond Administrator (intern)  
St Elizabeth Hospital, Lincoln Capacity, 200, admissions, 5,252  
Ven Sr M. Asella, R.N., Superintendent (intern)

## NEW JERSEY

Elizabeth General Hospital, Elizabeth Capacity, 250, admissions, 5,523  
Mr W. Malcolm MacLeod, Superintendent (intern)  
Englewood Hospital, Englewood Capacity, 238, admissions, 4,893  
Victoria Smith Superintendent (intern)  
St Francis Hospital, Jersey City Capacity, 228, admissions, 4,370  
Sister Christiana Superintendent (intern)  
Monmouth Memorial Hospital, Long Branch Capacity, 254 admissions,  
6,020 Mr O. N. Auer, Director (intern)  
Newark Beth Israel Hospital, Newark Capacity, 463, admissions,  
12,159 Mr I. E. Behrman, Director (intern)

## NEW YORK

Memorial Hospital, Albany Capacity, 146, admissions, 3,485 Ellen  
P. Young, R.N., Superintendent (intern and resident)  
St Peter's Hospital, Albany Capacity, 159, admissions, 4,000 Sister  
Mary Esther, Superintendent (intern)  
Brooklyn Eye and Ear Hospital, Brooklyn Capacity, 143, admissions,  
7,279 Mr Henry J. Williams Superintendent (resident otologist)  
Wyckoff Heights Hospital of Brooklyn, Brooklyn Capacity, 199, admis-  
sions, 4,337 Louis Schenkweiler, Superintendent (intern)  
Charles S. Wilson Memorial Hospital Johnson City Capacity, 350,  
admissions, 6,074 Mr Robert L. Eckelberger, Administrator (intern)  
Metropolitan Hospital, Welfare Island, New York Capacity, 1,111,  
admissions, 10,899 Dr Alexander W. Kruger, Med Supt (int)  
St Clare's Hospital, New York Capacity, 405 admissions, 7,603  
Mother Mary Alice, R.N., Superintendent (intern)  
Triboro Hospital, Jamaica, Long Island Capacity, 557 admissions  
1,112 Dr Henry I. Fineberg, Medical Supt (res thc)  
United Hospital, Port Chester Capacity, 214, admissions, 5,089 Mr  
Carl P. Wright Jr., Superintendent (intern)  
St Mary's Hospital, Rochester Capacity, 257 admissions, 9,785  
Sister Martina, Superintendent (intern and resident)  
Crouse Irving Hospital, Syracuse Capacity, 240, admissions, 6,450  
Dr Carl E. Muench, Superintendent (intern)

## NORTH CAROLINA

Charlotte Memorial Hospital Capacity, 325 capacity, 6,706 Mr  
Carl I. Flath, Administrator (intern)  
Highsmith Hospital, Fayetteville Capacity, 132, admissions, 4,236  
Dr W. T. Ramey, Medical Director (resident mixed)

## OHIO

Aultman Hospital, Canton Capacity, 214, admissions, 5,744 Mr  
James W. Stephan, Director (intern)  
St Mary's Hospital, Cincinnati Capacity, 230, admissions, 5,114  
Sister Theonilla, Superintendent (intern and resident)  
Lutheran Hospital, Cleveland Capacity, 137, admissions, 4,121 Mr  
Lee S. Trapher, Superintendent (intern)  
St Alexis Hospital, Cleveland Capacity, 220, admissions, 7,673  
Sister M. Flanagan, R.N., Superintendent (intern)  
Mercy Hospital, Hamilton Capacity, 230, admissions, 4,754 Sister  
Mary Benignus, Superintendent (resident mixed)  
Lucas County General Hospital, Toledo Capacity, 325, admissions,  
7,215 Roland E. Gregg, Superintendent (intern)  
Mercy Hospital, Toledo Capacity, 353, admissions, 8,240 Sister  
Mary Aquin, Superintendent (intern)  
The Toledo Hospital, Toledo Capacity, 325, admissions, 7,236 Wilson  
L. Benfer, Superintendent (intern)

## PENNSYLVANIA

Itzgerald Mercy Hospital, Darby Capacity, 251, admissions, 5,577  
Dr C. T. McCarthy, Medical Director (intern)  
Erston Hospital Erston Capacity, 220 admissions, 5,178 S. Chester  
Fazio, Superintendent (intern and resident)  
Harrisburg Hospital, Harrisburg Capacity, 264, admissions, 6,540  
W. S. Kohlhas, Superintendent (intern)  
Harrisburg Polyclinic Hospital Harrisburg Capacity, 195, admissions,  
4,370 Mr Paul H. Stauffer, Manager (intern)  
Saint Joseph's Hospital, Lancaster Capacity, 265, admissions, 4,972  
Sister M. Philiberti, Superintendent (intern)  
McKeesport Hospital, McKeesport Capacity 325, admissions, 6,313  
William A. Hucker, Superintendent (intern)  
The Babies' Hospital of Philadelphia Philadelphia Capacity 15,  
admissions, 311 Laura E. McClure, Medical Director (resident  
pediatrician)  
Northeastern Hospital of Philadelphia, Philadelphia Capacity, 102,  
admissions, 2,921 A. H. Brittingham, Superintendent (intern)  
Saint Mary's Hospital, Philadelphia Capacity, 250, admissions,  
4,541 Sister Mary Gertrude Superintendent (intern)  
St Margaret Memorial Hospital, Pittsburgh Capacity, 150, admis-  
sions, 2,886 Adele M. Polk, R.N., Superintendent (intern)  
Community General Hospital, Reading Capacity, 134, admissions,  
2,637 Olin L. Evans Superintendent (intern)  
The Hahnemann Hospital, Scranton Capacity, 125, admissions, 2,632  
L. R. Robbins, Superintendent (intern)  
Mercy Hospital, Wilkes Barre Capacity, 220 admissions, 4,586  
Sister Mary Avellino, R.N., Superintendent (intern)

## RHODE ISLAND

St Joseph's Hospital, Providence Capacity, 360, admissions, 7,883  
Mother M. Evangelist (intern)

## SOUTH CAROLINA

Greenville General Hospital, Greenville Capacity, 315, admissions,  
7,007 J. B. Norman, Superintendent (intern)

## TENNESSEE

St Thomas Hospital, Nashville Capacity, 211, admissions, 6,699  
Sister Lydia, Superintendent (intern)

## TEXAS

Methodist Hospital of Dallas Capacity 206, admissions, 5,345  
E. B. Germany, Chairman, Administration Committee (intern)  
Medical and Surgical Memorial Hospital, San Antonio Capacity,  
157, admissions, 5,440 Mrs Alfreda P. Hassell, R.N., Super-  
intendent (intern)  
King's Daughters Hospital, Temple Capacity, 124, admissions, 2,711  
Ruby B. Gilbert, Superintendent (intern)

## UTAH

Thomas D. Dee Memorial Hospital, Ogden Capacity, 260, admissions,  
6,965 Lawrence H. Evans, Superintendent (intern)

## VIRGINIA

The Chesapeake and Ohio Hospital, Clifton Forge Capacity, 146  
admissions, 4,000 Miss Louise M. Reynolds, R.N., Superintendent  
(intern and resident surgery)  
Elizabeth Buxton Hospital, Newport News Capacity, 149 admissions,  
4,375 Dr Russell Buxton, Superintendent (mixed residents)

## WASHINGTON

Pierce County Hospital, Tacoma Capacity, 239 admissions, 2,776  
Dr Burton A. Brown, Administrator (intern)

## WEST VIRGINIA

St Francis Hospital, Charleston Capacity, 118, admissions, 3,602  
Sister M. Consilia, Administrator (mixed residents)  
The Camden Clark Hospital, Parkersburg Capacity, 183 admissions,  
3,533 Mrs Grace M. Short, R.N., Superintendent (intern)

## WISCONSIN

St Francis Hospital, La Crosse Capacity, 292, admissions, 5,518  
Sister M. Fridoline, R.N., Superintendent (intern)  
Milwaukee County Hospital Milwaukee Capacity, 1,075, admissions,  
12,092 H. W. Sargeant, Superintendent (intern)  
Mercy Hospital, Oshkosh Capacity, 224 admissions, 4,783 Sister  
M. Laurentina Superintendent (intern)  
St Mary's Hospital, Racine Capacity, 271 admissions, 5,396 Sister  
M. Bonaventure, Superintendent (intern)

## MISCELLANEOUS

### HOUSE COMMITTEE DENIES FUNDS FOR RELOCATED PHYSICIANS

Attention was directed in THE JOURNAL, October 16, to the fact that supplemental estimates had been submitted by the President to the Congress for additional funds to enable the United States Public Health Service, either through its own personnel or by the payment of monthly stipends to civilian physicians, to provide medical services in certain critical areas. The House Committee on Appropriations has now reported to the House the First Supplemental National Defense Appropriation Bill for the fiscal year ending June 30, 1944, H R 3598, and has failed to include therein the additional appropriation requested. In explanation of its failure to provide the additional sums, the committee in its report said:

"The budget request contains an item of \$1,000,000 for emergency medical care to provide doctors for areas, principally war industry areas, where the number of civilian physicians and dentists is inadequate for normal medical attention of the population. The amount contemplated \$573,000 for salaries and travel of 300 commissioned officers of the Public Health Service for such assignments and \$375,000 for three months' pay (\$750 each) and travel expenses (\$500 each) for the relocation of 300 private physicians. The committee has not approved this request.

"Undoubtedly a critical situation exists in many areas due to the recruitment for the armed forces of approximately 50,000 doctors. The committee is advised that there are approximately 185,000 doctors in the United States counting those up to 101 years of age. Of these the armed forces have taken 50,000, leaving 135,000 doctors in the country available for the civilian population. An estimate made to the committee by a prominent medical authority indicates that some 40,000 to 50,000 of the 135,000 are ineffective practitioners, leaving approximately 85,000 to 95,000 effective physicians to do the work formerly done by the larger number. The Public Health Service advises that there are in the United States at this time some 213 communities that need physicians and dentists with a minimum need of 295 physicians and 53 dentists. This list is printed commencing on page 979 of the hearings. The survey of need throughout the United States is still incomplete. Surgeon General Parran has advised that in his opinion the situation in many areas is acute.

The committee in rejecting the budget request does not minimize the need or the seriousness of the situations which exist. It does hesitate to inaugurate a program of this character with federal funds to provide direct medical attention to the civilian population with physicians paid by the federal government. The committee has the opinion that out of the cooperative efforts of the federal government, the medical associations, the state departments of health and the communities themselves there will and should come a concerted and spontaneous effort to provide this need. Most of it is in war industry areas and it is inconceivable that such communities working with the industries, the affected population and state and local authority cannot inaugurate and maintain an adequate public spirited program financially sound, to serve this need. If the affected areas cannot and will not solve their local needs it may be necessary for the federal government in the interest of the general public health to step in but until then the committee feels that federal funds should be withheld under the contemplated procedure."

### WARTIME GRADUATE MEDICAL MEETINGS

A Wartime Graduate Medical Meeting was held Friday October 29 at the O'Reilly General Hospital in Springfield, Mo. for the medical officers of O'Reilly, Fort Leonard Wood, Camp Crowder and the civilian doctors of the Eighth Council District of the Missouri State Medical Association. The program included the following papers: Penicillin Therapy, Major Edward P. Burch, Present Day Status of the Sulfonamides, Dr. Paul Hageman, Tropical Diseases and Malaria, Dr. Russell Blattner, Trauma of the Abdomen, Dr. L. P. Engel, Reconstructive Surgery of War Wounds, Major William S. Kiskaden,

Psychiatric Problems in General Hospitals, Capt. Clarence M. Schrier, Low Back Pain and Disability, Orthopedic Point of View, Dr. Frank D. Dickson and Capt. William H. McRide.

The attendance was 300, about equally divided between medical officers and civilian doctors. Among the civilian group were men from all parts of the state, with councilors and officers of the state association well represented.

### GERMAN DRUGS AND PHARMACEUTICALS SEIZED

According to the Office of War Information, Alien Property Custodian Leo T. Crowley announced on October 21 the seizure by his agents at San Juan, Puerto Rico of twenty-five cases of German drugs and pharmaceuticals estimated to have a sales value of more than \$100,000. The seized medicinal products which originated in La Quimica Bayer, S. A., of Buenos Aires, Argentina, a wholly owned subsidiary of I. G. Farbenindustrie of Germany, were consigned to the German Bayer subsidiary in Venezuela. The seizure of this cargo is a major blow at the German Bayer organization in Venezuela which has not received a shipment since October 1942 and which consequently is almost without supplies. The merchandise in the seized cargo is in sufficient volume to have carried their business for almost a year. The financial loss to the Bayer subsidiary in Argentina as a result of the seizure is also considerable. Assurances have been given to the Venezuelan government that the seizure will not be allowed to jeopardize the public health in that country.

### MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

The Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York City, presented medical and surgical equipment to set up a battle dressing station on the cruiser the U. S. S. *Boston* to Rear Admiral Luther Sheldon Jr. (MC), U. S. N., who accepted the donation in the name of the Secretary of the Navy, Frank Knox. The equipment consisted of an emergency medical field set, an operating kit and supplemental instruments.

More than \$1,000 worth of surgical equipment was also donated by the Medical and Surgical Relief Committee to the French Red Cross in Algiers, North Africa, to help rehabilitate wounded French soldiers and to relieve the shortage of critical medical supplies. This donation makes a total of more than \$8,000 worth of medical and surgical equipment sent by the committee to North Africa during the past five months.

### PUBLIC HEALTH UNDER HITLER

According to the *Frankfurter Zeitung* of August 21 a report from Berlin says that over 5,500 factories today are cared for by works doctors. The question has been repeatedly raised whether the workers of these factories are under an obligation to let themselves be examined by the works doctor on demand in the case of inability to work. According to the present conception of law this obligation exists only if it is explicitly laid down in the wages and factory regulations or in individual labor contracts. A general obligation to submit to an examination by the works doctor did not exist until now. The Office for Social Self Responsibility of the DAF has expressed its opinion that this conception can no longer be maintained. The employer is responsible for the orderly working effort of his workers. Therefore he must be able, if necessary, to let the works doctor establish whether the worker is capable for work or not. The worker's duty of loyalty therefore demands that he submit to examination by the works doctor.

Iolya Plovdiv, of July 9 states that in autumn the chief public health directorate will open a hospital in Sofia for children suffering from infantile paralysis. Children whose parents cannot look after them properly will be treated there.

# ORGANIZATION SECTION

## OFFICIAL NOTES

### ANNUAL CONFERENCE OF SECRETARIES AND EDITORS

The Annual Conference of Secretaries and Editors of Constituent State Medical Associations will be held at the offices of the Association in Chicago on November 19 and 20. The program will be as follows:

FRIDAY, NOVEMBER 19, 10 A M

Call to Order. Roger L Lee, Chairman of the Board of Trustees of the American Medical Association.

Address: James I. Pugh, President of the American Medical Association.

Problems Relating to Assignment of Duties of Military Surgeons. George F. Hull, Deputy Surgeon General, United States Army.

Hospital Training of Medical Graduates. Victor Johnson, Secretary, Council on Medical Education and Hospitals of the American Medical Association.

12:30 p m. Lunch at the Kensington, corner of Ontario and Rush streets.

FRIDAY, NOVEMBER 19, 2 P M

Address: Herman I. Kretschmer, President Elect of the American Medical Association.

Cooperative Relationship of Procurement and Assignment Service and State Medical Associations. Harold S. Diehl, member, Directing Board, Procurement and Assignment Service for Physicians, Dentists and Veterinarians.

The War Participation Committee as a Coordinating Agency. Walter I. Donaldson, chairman, War Participation Committee of the American Medical Association.

The Work of the Council on Medical Service and Public Relations. Louis H. Bauer, chairman, Council on Medical Service and Public Relations of the American Medical Association.

FRIDAY, NOVEMBER 19, 6:30 P M

DINNER MEETING OF EDITORS OF STATE MEDICAL JOURNALS  
PALMER HOUSE, CRYSTAL ROOM

Wingate M. Johnson, editor of the North Carolina Medical Journal, presiding.

The Council on Pharmacy and Chemistry. Austin E. Smith, Secretary, Council on Pharmacy and Chemistry of the American Medical Association.  
The Cooperative Medical Advertising Bureau. Open discussion.

SATURDAY, NOVEMBER 20, 9:30 A M

Medical Legislation in Congress. J. W. Holloway Jr., director, Bureau of Legal Medicine and Legislation of the American Medical Association.  
Obstetric and Pediatric Care for the Wives and Children of Service Men. L. I. Arnold Foster, secretary of the Michigan State Medical Society.

### ELECTRICAL TRANSCRIPTIONS IN HEAVY DEMAND

Electrical transcriptions for radio broadcasting for local medical societies prepared by the Bureau of Health Education in two series, American Medicine Serves the World at War and Before the Doctor Comes, became available September 1.

The entire supply available is now in use. An advance schedule is being maintained. Medical societies and auxiliaries desiring the use of transcriptions should file applications for advance dates with the Bureau of Health Education.

The series Before the Doctor Comes consists of sixteen broadcasts in interview form giving advice to the mother as to what to do and what not to do under certain circumstances "before the doctor comes." The series American Medicine Serves the World at War began with six interviews dealing with wartime problems and how they are being solved in various localities. Two additional broadcasts will soon be added to the series, which will be augmented from time to time as opportunity arises.

The Bureau of Health Education is beginning preparations for a third series of transcriptions entitled Contagious Diseases in the Home. This series should be ready approximately Feb 15, 1944.

## MEDICAL LEGISLATION

### MEDICAL BILLS IN CONGRESS

*Change in Status*—H. R. 3598 has passed the House, making appropriations to supply deficiencies in certain appropriations for the fiscal year ending June 30, 1944 and to provide supplemental appropriations. As reported to and passed by the House, this bill fails to appropriate the amount requested by the President for emergency medical care to provide doctors and dentists for areas where the number of civilian physicians and dentists is inadequate for normal medical and dental attention of the population. The bill does include a supplemental appropriation of \$7,500,000 for the training of nurses and an appropriation of \$10,356,000 to provide additional hospital and domiciliary facilities for veterans. The committee report indicates that this amount will be expended to provide facilities for neuropsychiatric patients.

*Bills Introduced*—H. Con. Res. 51, submitted by Representative Schaffler, West Virginia, proposes to request the Social Security Board to create a special advisory council to investi-

gate the extension of the federal old age and survivors insurance system to include persons in the armed forces, and also the extension of unemployment allowances after termination of military service. H. R. 3603, introduced by Representative Summers, Texas, proposes to regulate the commitment of insane persons to veterans' and other United States institutions. H. R. 3610, introduced by Representative Rowan, Illinois, provides for a program of research in universities, colleges and other institutions of higher learning, for the prevention of the pollution of the waters of the United States and to establish a Water Pollution Control and Sewage Utilization Board, to be composed of the Secretary of Agriculture, the Surgeon General of the Public Health Service and one other person to be appointed jointly by the Secretary of Agriculture and the Surgeon General. H. R. 3623, introduced by Representative Rogers, Massachusetts, proposes to establish a permanent medical service in the Veterans Administration which will constitute a component part of the military forces of the United States.

## WOMAN'S AUXILIARY

### Kansas

The Wyandotte County Medical Auxiliary recently held a dessert luncheon and book review, at which time they reported fifteen new members.

The Sedgwick County auxiliary decided to hold only three meetings during the year. Mrs. James Hibbard, Wichita, is the new president.

At a meeting of the Kansas auxiliary recently the following officers were elected:

Mrs. E. E. Tippin, Wichita, president; Mrs. Leo J. Schaefer, Salina, president-elect; Mrs. C. D. Blake, Hayes, first vice president; Mrs. M. A. Brawley, Frankfort, second vice president; Mrs. H. L. Regier, Kansas City, secretary; and Mr. E. N. Robertson, Concordia, treasurer.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SPENDING FOR THIS DEPARTMENT ITEM OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### ARKANSAS

**Dr Pelouze to Lecture on Gonorrhea**—Dr Percy S. Pelouze, associate professor of urology, University of Pennsylvania School of Medicine, Philadelphia, and special consultant for the gonorrhea control program of the U. S. Public Health Service, will address county and district medical societies in Arkansas, March 13-24, under the auspices of the public health service.

**District Meetings**—The Fifth Council District Medical Society was addressed in Camden, October 7, by Drs. Henry King Wade, Hot Springs National Park, on "Cancer of the Prostate"; Joseph F. Shuffield, Little Rock, "Fractures of the Hip"; Byron L. Robinson, Little Rock, "Medical Education," and William R. Brooksher, Fort Smith, "The Wagner-Murray Bill."—The First Council District Medical Society of Northeast Arkansas held its eighty-second semiannual meeting in Jonesboro, October 21, with the following speakers: Capt. Louis J. Benton, M. C. A. U. S., on "Some Uses and Disuses of the Sulfonamides"; Lieut. Harry Cohen, M. C. A. U. S., "Practical Consideration in Treatment of Early Syphilis"; Dr. Pearl W. Lutterloh, Jonesboro, "Highlights of the Wagner Bill," and Dr. Robert H. Willett, Jonesboro, "Relative Value of Deep X-Ray Therapy in Lobar Pneumonia."

### CALIFORNIA

**Dr. Wagner Placed in Charge of Tuberculosis Control**—Dr. William F. Wagner, resident physician at Olive View Sanatorium, Olive View, has been appointed chief of the division of tuberculosis control in the San Francisco city and county department of health.

**Medical Missionary Repatriated**—Dr. Ralph C. Lewis, Shunteh Hopeh, China, medical missionary to China, is expected to be among the exchange prisoners aboard the *Gripsholm* newspapers recently reported. Dr. Lewis was with the American Presbyterian Mission, Hugh O'Neill and Grace Talcott Memorial Hospital, Shunteh.

**Vesalius Celebration**—The California Academy of Sciences met on October 6 at the University of California Medical School, San Francisco, to observe the 400th anniversary of the publication by Vesalius of "De Humani Corporis Fabrica." The principal address was delivered by Dr. John B. De C. M. Saunders, chairman of the department of anatomy, on "Andreas Vesalius, the Anatomist."

**Latin American Gives Herzstein Lectures**—Dr. Oscar Ivanissevich, professor of surgery and director of the Surgical Institute of the University of Buenos Aires, will deliver the Morris Herzstein Medical Lectures for 1943 in San Francisco in November under the auspices of the medical schools of Stanford University and the University of California. Dr. Ivanissevich, who is serving as exchange professor of surgery at Stanford University School of Medicine during October and November, will speak November 15 on "General Consideration of Echinococcosis," November 17 on "Echinococcosis of the Liver," and November 19 on "Echinococcosis of the Lung."

### COLORADO

**State Medical Election**—Dr. Edward R. Mugrage, Denver, was chosen president-elect of the Colorado State Medical Society at the recent annual meeting of the house of delegates in September and Dr. George P. Lingenfelter, Denver, was installed as president. Dr. George M. Myers, Pueblo, was chosen vice president. Dr. John S. Bouslog, Denver, is secretary.

**The Friedman Lectures**—Dr. Walter S. Maclay, medical officer in charge of the Mill Hill Emergency Hospital, London, England, delivered the Friedman Lectures on November 2 and 3 under the auspices of the National Jewish Hospital, Denver, in cooperation with the Medical Society of the City and County of Denver and the University of Colorado School of Medicine, Denver. The first lecture was entitled "Newer Developments in the Neuroses—Their Significance in General Medicine" and a second in the form of a conference, conducted by Drs. Maclay,

Bradford J. Murphy and Charles A. Rimer, Denver, on "Psychosomatic Problems." Dr. Maclay is touring the United States under the auspices of the American Psychiatric Association.

### ILLINOIS

**Dr. Earle Returns from Latin America**—Dr. Walter C. Earle, who has been supervising a federally financed health and sanitation program in Latin America, principally on malaria, has returned as director of the Chicago Urban Public Health District. During his absence his work was carried on by Dr. Raymond A. Brokaw, Springfield, director of the division of cancer control of the state department of public health.

**Physician Repatriated**—Dr. Albert M. Dunlap, native of Saxony, who had practiced medicine in China since 1910, is being repatriated. He is expected to arrive aboard the *Gripsholm* in New York about December 2. Dr. Dunlap graduated at Harvard Medical School, Boston, in 1910, going to China the same year. Four years later Dr. Dunlap joined the Peiping Union Medical College, Peking, serving as professor of otolaryngology and from 1926 to 1928 as dean of the college.

**Dr. Watson Named Chief Medical Officer**—Dr. James Watson, director of the division of mental hygiene, North Carolina State Board of Charities and Public Welfare, Raleigh, has been appointed chief medical officer in the Illinois State Department of Public Welfare to succeed Dr. Conrad S. Sommer, who recently became deputy director of the mental hygiene service in the department of public welfare (*THE JOURNAL*, October 23, p. 495). Dr. Watson, in his position as chief medical officer, will be responsible for the medical care and treatment of patients in state hospitals. His new appointment will be effective December 1.

### Chicago

**Meeting on Tropical Diseases**—A joint meeting of the Chicago Medical Society and Aux. Plaines Branch, November 17, will be devoted to a consideration of tropical diseases. Lieut. John E. Choisser (MC), U. S. Naval Reserve, will speak on "Filariasis" and Lieut. Philip A. Arling (MC), U. S. Naval Reserve, "Malaria."

**The Bacon Lectures**—Dr. Louis E. Phancof, professor of gynecology, Tufts College Medical School, Boston, will deliver the Charles Sumner Bacon Lectures for 1943-1944 at the University of Illinois College of Medicine, December 1-2. Dr. Phancof's subjects will be "Some Notes on the Life of J. Marion Sims, and on the History of Vesico-Vaginal Fistula" and "The Management of Complete Lacerations of the Perineum and Recto-Vaginal Fistula."

**Course in Electrocardiographic Interpretation**—A course in electrocardiographic interpretation for graduate physicians will be given at Michael Reese Hospital by Dr. Louis N. Katz, director of cardiovascular research. The class will meet each week starting Thursday, February 17, for twelve weeks from 7 to 9 p. m. Further information and a copy of the program may be obtained on application to the Cardiovascular Department, Michael Reese Hospital.

**Meeting of Bacteriologists**—The fall meeting of the Society of Illinois Bacteriologists will be held in the Chicago Illini Union, November 19. The speakers will be John C. Sylvester, Ph.D., North Chicago, Ill., on "Penicillin Production and Clinical Value," Albert Milzer, Ph.D., and Drs. Philip Lewin and Sidney O. Levinson, co-authors, "The Effect of Fatigue, Chilling and Trauma on Resistance to Experimental Polymyelitis," and Dr. Henry M. Lemon, Henry Wise, M.S., and Dr. Morton Hamburger, Chanute Field, Ill., co-authors, "A Study of the Bacterial Contents of the Air of Army Barracks."

**Personal**—Dr. Herman L. Kretschmer, President-Elect of the American Medical Association, received the honorary degree of doctor of science from Marquette University School of Medicine, Milwaukee, during its commemoration exercises, October 18. Dr. Kretschmer gave the commencement address, entitled "Medical Education: The War and You."—Dr. William W. Bauer, Director of the Bureau of Health Education of the American Medical Association, has been elected to the governing council of the American Public Health Association for a three year term expiring in 1946.—Dr. Raymond J. L. Norrby has been appointed assistant to Dr. William H. Haines, director of the Cook County Behaviour Clinic.

**Anatomists Honored**—Reuben M. Strong, Ph.D., professor and chairman of the department of anatomy at Loyola University School of Medicine, and Thesle T. Job, Ph.D., professor of anatomy, were honored at a dinner in the Medinah Club, October 31, given by the student body, marking their



completion of twenty-five years as members of the faculty. Speakers at the dinner included Dr. Raymond B. Allen, dean, University of Illinois College of Medicine, Dr. Basil C. H. Harvey, professor emeritus of anatomy, University of Chicago School of Medicine, Leslie B. Arce, Ph.D., embryologist, Dr. John I. Keeley, assistant clinical professor of surgery at Loyola, and Rev. Joseph M. Egan, S.T., president of Loyola.

**Dr. Anderson Joins American Medical Association**—Dr. George K. Anderson, technical aide, division of medical sciences of the National Research Council, Washington, D. C., became Secretary of the Council on Foods and Nutrition of the American Medical Association November 4. Dr. Anderson graduated at the University of Rochester School of Medicine and Dentistry, Rochester, N. Y., in 1938, serving his internship at the Strong Memorial Hospital in Rochester. After he completed residencies at the Children's Hospital, Cincinnati and at the Strong Memorial Hospital, Dr. Anderson served as pediatric consultant for the North Carolina State Board of Health and professor of pediatrics at the University of North Carolina School of Public Health, Chapel Hill.

**Graduate Course in Endocrinology**—On October 11-16 a graduate course in endocrinology was given as a part of a postgraduate program of the American College of Physicians in cooperation with the University of Illinois College of Medicine and the Presbyterian Hospital under the direction of Dr. Willard O. Thompson. Seventy-four registrations represented the following states and Canadian provinces: California, Colorado, Delaware, Florida, Illinois, Indiana, Iowa, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Nebraska, New Mexico, Ohio, Pennsylvania, South Dakota, Texas, Utah, Wisconsin, Alberta and Ontario. Most of the attendants at the course are engaged in the practice of internal medicine in their respective communities and many are working in special clinics devoted to the study of endocrine diseases.

## INDIANA

**Personal**—Dr. Herman M. Baker, Evansville, was chosen president of the Indiana State Board of Health at its meeting recently. Dr. Baker has been a member of the board for a number of years and has also previously served as president. —Dr. William D. Weis, Crown Point, health commissioner of Lake County, on September 4 was elected president of the Old Settlers and Historical Association. —Dr. Bertis C. Gwaltney, Fort Branch, health officer of Gibson County, has been appointed assistant collaborating epidemiologist of Indiana.

**Stream Pollution Board**—The creation of a state stream pollution control board was made possible under the enactment of 1943 legislation. Members of the board include Leo Besozzi, consulting engineer of Hammond, George C. Hillenbrand, manufacturer, Batesville, Joseph L. Quinn, technical secretary of the board, appointed by the state board of health, Cecil K. Calvert, bacteriologist, superintendent of purification, Indianapolis Water Company, Hugh J. Barnhart, director, state department of conservation, and Dr. Thurman B. Rice, Indianapolis, chairman, acting state health commissioner, as ex officio member.

## IOWA

**Interprofessional Meeting**—Miss Stella Scott, R.N., Iowa City, was reelected president of the Iowa Interprofessional Association at its meeting in Des Moines, October 6, and Dr. Alonzo L. Jenks Jr., Des Moines, secretary. Dr. John W. Billingsley, Newton, discussed the Wagner-Murray-Dingell bill and Dr. Walter L. Bierring, state health officer, Des Moines, the history of chemotherapy.

**State Mental Hygiene Association Proposed**—Dr. Norman D. Render, Clarinda, has been named chairman of a committee to develop an Iowa State Mental Hygiene Association. A number of superintendents of state institutions under the state board of control recently met in a preliminary session with Dr. Walter L. Bierring, state health officer, to discuss the possibilities of a state society, but final organization will not be effected until spring.

**Personal**—Howard Reynolds, Ph.D., assistant professor of home economics, University of Arkansas, Fayetteville, has been appointed assistant professor of bacteriology at Iowa State College of Agriculture and Mechanic Arts, Ames, he will also be in charge of research on food bacteriology for the Iowa Agricultural Experiment Station. Lester O. Krampitz, Ph.D., assistant in physiology of the Rockefeller Institute for Medical Research, New York, resigned on September 1 to accept an appointment as research associate at Iowa State College to have charge of the study of penicillin carried out by the Industrial Science Research Institute. —Dr. Frank M. Fuller, Keokuk, since 1925 a member of the Iowa State Board of

Medical Examiners, has resigned. He has been succeeded by Dr. Arthur D. Woods, State Center. Dr. Fuller, a former president of the state medical society, was secretary of the state board from 1925 to 1937.

## MARYLAND

**Rheumatic Fever and Rheumatic Heart Disease Reportable**—On September 23 rheumatic fever was added to the list of reportable diseases by the state department of health. A release from the state department of health states that among children between the ages of 5 and 14 years of age in Maryland rheumatic fever and rheumatic heart disease caused more deaths than any other disease except tuberculosis. The release states further that in the United States in 1941 there were 497 deaths from rheumatic fever between the ages of 5 to 12 and 1,206 deaths in the same age group from tuberculosis. In Maryland for the same year there were 13 deaths in the age group from 5 to 14 from rheumatic fever and 30 deaths from tuberculosis.

**Five Year Morbidity Study Ends**—The U. S. Public Health Service and the Milbank Memorial Fund have concluded a five year morbidity study in wards 6 and 7 of the Eastern Health District. Miss Jean Downes of the fund supervised the work, which was carried out in cooperation with the Johns Hopkins School of Hygiene and Public Health and the Baltimore Department of Public Health. The chief aims of the study were to ascertain the maximum amount of illness in a population composed of families and to learn more about the chronic diseases which are a major cause of disability. To achieve these aims a responsible member of each family in the study was asked to give information concerning the illnesses in the family to a field worker, who made a visit once a month. Slightly more than 2,000 families participated in the study. The records of sickness, which were collected over a period of five years, are strictly confidential and are to be used for statistical purposes only.

## MASSACHUSETTS

**License Revoked**—The Massachusetts Board of Registration in Medicine revoked the license of Dr. Theodore Rosen, Brookline, October 6, because of "gross misconduct in the practice of his profession as shown by his conviction in court."

**Alumni Lecture**—Brig. Gen. Raymond W. Bliss, M.C., U. S. Army, assistant to the surgeon general, Washington, D. C., will deliver the Tufts Medical Alumni Lecture, November 17, at the medical school, Boston. His subject will be "Plans and Operations of the Surgeon General's Office."

## MICHIGAN

**Changes in Health Officers**—Dr. Charles F. Atkinson, Indian River, has been appointed medical director of district number 1 of the state health department located at Lake City. —Dr. Albert F. Litzenburger, Boyne City, has been appointed director of district health unit number 3 with headquarters in Charlevoix and serving Charlevoix, Emmet, Antrim and Otsego counties. —Dr. Thomas S. Davies has been named health commissioner of the Grosse Pointe townships, succeeding Dr. Benjamin H. Warren, resigned.

**Training Course in Industrial Hygiene for Plant Safety Personnel**—The Michigan Industrial Hygiene Society and the School of Public Health of the University of Michigan, Ann Arbor, cooperated in an "in-service training course in industrial hygiene for plant safety personnel," October 19-21. Among the speakers were:

Henry F. Vaughan, Dr. P.H., Ann Arbor, Orientation  
Dr. Clarence D. Selby, Detroit, The Significance of Industrial Hygiene  
O. F. Lehman, Detroit, The Relationship of the Safety Engineer to Industrial Hygiene  
Royd R. Sayers, medical director U. S. Public Health Service, Environmental Aspects of Industrial Hygiene  
William G. Frederick, Sc.D., Detroit, Control of Solvent Vapors and Acid Mists  
Helmuth H. Schrenk, Ph.D., Pittsburgh, Control of Smokes, Fumes and Gases  
J. J. Bloomfield, senior sanitary engineer, U. S. Public Health Service, Evaluation and Control of Dust  
W. N. Witheridge, Detroit, Industrial Ventilation Practices  
J. A. Purdy, Detroit, Personal Protective Clothing and Equipment  
Louis Schwartz, medical director U. S. Public Health Service, Causative Agents of Industrial Dermatitis  
Herbert G. Dyktor, Lansing, Plant Sanitation  
W. L. Lovett, Detroit, Maintenance and Its Relation to Safety and Health  
A. C. Funke, Detroit, How to Make a Survey for Health Hazards  
John W. Gibson, Detroit, How to Sell Industrial Hygiene to the Worker  
Dr. Kenneth E. Markuson, Lansing, How to Utilize the Resources of Official and Private Industrial Hygiene Agencies

**Mental Hygiene Unit for Marquette**—The fifth mental hygiene unit to be established under the state's program will be established in Marquette. Recently only two cities submitted bids for this unit, Marquette and Escanaba. (The

JOURNAL, September 18 p 158) The state will submit about \$12,000 in professional salaries to the new child guidance clinic while the host county will be expected to provide about \$3,000 worth of quarters, equipment and secretarial services. All the clinics are organized and supervised by the Michigan State Hospital Commission. Their functions are for the diagnosis and treatment of behavior and personality disorders of children and the promotion of preventive and educational programs.

### MINNESOTA

**The Bell Lecture**—Dr John B. Barnwell, associate professor of internal medicine, University of Michigan Medical School, Ann Arbor, will present the tenth annual John W. Bell Lecture, November 29, Minneapolis, on "Tuberculosis Contacts in Hospital Personnel." The Bell Lecture is sponsored jointly by the Hennepin County Tuberculosis Association and the Hennepin County Medical Society.

### MISSOURI

**The Barnard Lecture**—Clarence C. Little, Sc.D., Bar Harbor, Maine, will deliver the annual Barnard Free Skin and Cancer Hospital Lecture before the St. Louis Medical Society, November 16, on "Influence of Heredity in Human Cancer."

**Personal**—An honorary degree of doctor of science was given Dr. Joseph Grindon Sr., St. Louis, by St. Louis University at a surprise party in honor of his eighty-fifth birthday on August 20. Dr. Grindon was guest at a dinner given in his honor by the St. Louis Dermatological Society at the Coronado Hotel, St. Louis, August 30. — Dr. Sherwood Moore, director of the Edward Mallinckrodt Institute of Radiology of Washington University, St. Louis, and president of the American Roentgen Ray Society, has been appointed a member of the National Advisory Cancer Council by Surg. Gen. Thomas Parran of the U. S. Public Health Service.

### NEW YORK

**Graduate Lectures**—Dr. Joseph Ernest Del Monaco, associate professor of clinical surgery, Syracuse University College of Medicine, Syracuse, will discuss "Plasma Therapy and Whole Blood Transfusion" before the Tompkins County Medical Society, Ithaca, November 16. Dr. Forrest O. J. Young, associate professor of surgery (plastic surgery), University of Rochester School of Medicine and Dentistry, Rochester, discussed "The Early and Late Treatment of Burns" before the Steuben County Medical Society on November 11 in Bath. The lectures are presented under the joint auspices of the state medical society and the state department of health.

### New York City

**Mobile X-Ray Unit for Paderewski Hospital**—A complete mobile x-ray laboratory is available for eventual use at the Paderewski Polish Hospital, Edinburgh, Scotland. It was developed by the Westinghouse X-Ray Division and purchased by donations from sixty-five American cities.

**Division of Industrial Hygiene Created**—Dr. Nathan Millman, Brooklyn, has been appointed director of the new division of industrial hygiene established as a joint program of the state department of labor, the New York City Health Department and the U. S. Public Health Service. An experimental program for six months will be carried out in the Astoria Long Island, area.

**The Second Harvey Lecture**—Francis J. W. Roughton, Ph.D., fellow of Trinity College and lecturer in physicochemical aspects of physiology, Cambridge University, Cambridge, England, will deliver the second Harvey Society Lecture of the current series at the New York Academy of Medicine, November 18. Dr. Roughton's subject will be "Recent Work on the Respiratory Chemistry of the Blood."

**Columbia University News**—Recent appointments to Columbia University College of Physicians and Surgeons include those of Drs. Conrad Berens as professor of clinical ophthalmology and James M. Smith as professor of clinical otolaryngology. Donald H. Cook, Ph.D., of the School of Tropical Medicine at San Juan, P. R., has been appointed visiting professor of chemistry at Columbia University. The university has received 103 cash gifts totaling more than \$199,000 to finance research in medicine, chemistry and allied sciences as well as to support studies in economics, history, philosophy and statistics. A contribution of \$23,310 from the Commonwealth Fund will be used to finance studies in the department of obstetrics and gynecology.

**Personal**—Col. George Brehr, chief medical officer, U. S. Office of Civilian Defense, Washington, D. C., and a member of the public health council of the state of New York, has been elected a member of the board of managers of the State Charities Aid Association. — The Bronx Council of the American Jewish Congress has presented Dr. Thomas H. Curtin, president of the Bronx Interfaith Council, with its good citizen award for 1943 in recognition of his efforts toward bringing about "better understanding among men of all faiths." — Dr. Oswald S. Lowsky recently returned from a lecture tour of Central American countries. He conducted conferences and operative clinics in Tegucigalpa, Honduras, San Salvador, Guatemala and Mexico.

**Report of Cancer Clinics**—Of 654 persons examined in the cancer prevention clinics of Memorial Hospital for the Treatment of Cancer and Allied Diseases during a period of twenty-eight months, 263 came without complaint or symptoms. According to the *Bulletin* of the American Society for the Control of Cancer 49 were found to have malignant tumors, 162 had benign tumors, 25 had other serious diseases such as heart disease, gastric ulcers and tuberculosis, and 155 were without demonstrable evidence of disease. Of those who applied for examinations 75 per cent were found to have cancer, the majority having malignant tumors in the early stages. Of the total group who came to the clinic 29 per cent had benign tumors, 30 per cent had constitutional diseases and 33 per cent showed no disease. Of the 263 who applied but who were unaware of any symptom of disease at the time of their first visit, 4 had malignant tumors, 50 had benign lesions, 15 had some type of serious disease and 194 had no evidence of disease. Revisits to the clinic within a year amounted to 60 per cent. Ten per cent returned in six months.

### OHIO

**The Lower Lecture**—Dr. Irvine H. Page, director, Lilly Clinic, Indianapolis City Hospital, Indianapolis, will deliver the annual Lower Lecture before the Academy of Medicine of Cleveland, November 19. His subject will be "The Nature of Hypertension."

**New Health Council**—The Columbus Council of Social Agencies has organized a health council to promote the coordination of public and private health work and to aid in securing continuity of program. Under the plan eight members of the Columbus Academy of Medicine will serve as members of the new health council. Drs. George T. Harding, president of the academy, William D. Inglis, president-elect, George J. Heer, Jonathan Forman, Francis A. Riebel, Clifford C. Sherburne, president, Ohio State Medical Association, Charles W. Pavey and Donald F. Bowers. Dr. Russel G. Means, formerly president of the academy, is chairman of the health council and is one of the eight additional members named by the council of social agencies. Included in the latter group also is Dr. Nelson C. Dysart, health commissioner of Columbus. The combined sixteen members are to select the remaining five persons composing the full membership of the council. Other objectives of the new group are:

To serve as a forum for discussion of health, sickness problems, policies and plans.

To develop new standards of service and to improve present standards through joint study of special problems.

To secure improvement in existing health facilities and services and the establishment of new and additional health facilities or services where needed.

To assist the official and nonofficial agencies in bringing their personnel to a level which meets acceptable standard qualifications.

To cooperate with official and nonofficial health agencies for the provision of refresher courses and in-service training with allocation of time and financial assistance for such purposes if necessary for additional education to meet the standards of national health agencies.

To prevent duplication of effort.

To give moral support to health departments and to aid in community health education in cooperation with the medical and dental societies and other participating agencies.

**Society Presents Plan for Obstetric Care of Service Men's Wives**—The Montgomery County Medical Society adopted a resolution, October 13, urging the establishment of a private antepartum clinic at the Good Samaritan Miriam Valley and St. Elizabeth hospitals, Dayton, under direct supervision of a staff obstetrician, for wives of enlisted men participating in the Emergency Maternity and Infant Care Program. The resolution declares that the program is placing an added strain on "already overtaxed medical service facilities" in the community and points out that the use of the clinic will in no way interfere with patients employing their own private physicians. Practicing physicians with requisite hospital privileges may refer patients to the private antepartum clinic. They will receive a complete report of the history, physical and laboratory results,

and the referring physician or his associate must be in attendance at the delivery. A list of participating physicians who are approved for obstetric practice in the hospitals shall be available at the city of Dayton and the Montgomery County Health departments. In the event that an applicant for care has no physician, she shall be privileged to select a physician from the prepared list. If no selection is made she shall be referred by the health department to the hospital private antepartum clinic of her choice and the attending staff obstetrician on duty shall make the necessary arrangement for her care. The resolution affirms the agreement of the society with the present purpose of the Emergency Maternity and Infant Care Program namely to offer assistance to the wives and children of boys in the armed forces to record its disagreement with the method of application, viewing with alarm the 'spread of bureaucracy in any field'.

### PENNSYLVANIA

**Tuberculosis Fellowships Awarded**—The Pennsylvania Tuberculosis Society awarded scholarships to Drs. Philip L. Rettew, Morristown and Thomas G. McQueen, Mifflinsburg. The scholarships will enable the physicians to participate in a postgraduate course in the Trudeau School of Tuberculosis at Saranac Lake, N. Y. Usually only one award is made by the society, but this year two were presented, the Trudeau School made one award available. Dr. Rettew graduated at the University of Pennsylvania School of Medicine, Philadelphia in 1941 and Dr. McQueen at the University of Cincinnati College of Medicine in 1929.

#### Philadelphia

**Ophthalmic Postgraduate Conferences**—On November 4 the eye section of the Philadelphia County Medical Society started a series of postgraduate conferences with Drs. Alfred Cowan and Sidney L. Olsho discussing "The Diagnosis of Corneal Diseases" and "Practical Points in the Refraction of the Eye" respectively. Others in the series include:

- Drs. Wilfred F. Fry, Pathology and Corneal Diseases, and Isaac S. Friedman, The Newer Techniques in Ocular Refraction, December 16.
- Dr. George F. J. Kelly, Practical Points Pertaining to Perimetry, and Edmund B. Spaeth, Intracocular Foreign Bodies, January 20.
- Drs. Walter I. Illie, Retrobulbar Neuritis, and James S. Shipman, Rationale of the Use of Sulfur Drugs in Ophthalmology, February 17.
- Drs. Francis H. Adler, Effect of the War Gases on the Eye, and Louis Lehrfeld, Treatment of Glaucoma, March 16.

**Annual Dinner of Ex-Resident and Resident Physicians**—The fifty-seventh annual dinner of the Association of Ex-Resident and Resident Physicians of the Philadelphia General Hospital will be held on December 7 at the Warwick Hotel with Lieut. Comdr. Thomas F. Duhigg (MC), U. S. Navy, retired, president of the association presiding. Dr. William Pepper, dean of the University of Pennsylvania School of Medicine, will be the guest of honor. Other guests will be Capt. Joseph A. Biello (MC), U. S. Navy, Major Bernard Samuel, Col. Samuel S. Creighton, M. C., U. S. Army, retired, Col. Henry Becuukes, M. C., A. U. S., Capt. Abraham H. Allen (MC), U. S. Navy, Dr. Hubley R. Owen, director of health of the city, Dr. William G. Turnbull, superintendent of the Philadelphia General Hospital, Dr. Herbert M. Goddard, coroner for the county of Philadelphia, and Dr. Frank M. Cline. Ex-residents who do not receive notices of the annual dinner are requested to send their correct addresses to the secretary, Dr. George Wilson, 133 South 36th Street.

**County Society Resumes Examinations of Members**—The Commission on Physicians' Health, appointed by the Philadelphia County Medical Society in 1941, recently decided to revive its program to hold periodic health examinations of its members. This activity was temporarily discarded in the spring because of the number of physicians of the vicinity who are in the armed forces and because of the death of the chairman of the commission, Dr. James Alexander Clarke Jr. Dr. Myer Solis-Cohen is the new chairman of the commission. *Philadelphia Medicine*, official bulletin of the society, on October 23 carried an announcement outlining the objectives of the program as follows: to preserve the health of each member, to set an example for one's patient and to the public, thereby stimulating periodic physical examinations among them, to find out more about the early beginnings of disease and to prevent illness. Groups of qualified physicians in every branch of medicine will examine members of the society periodically at no expense to those examined, the results to be kept in strict professional confidence. It was pointed out, however, that the investigation will be undertaken only if a sufficient number of physicians register to make it a worthwhile scientific contribution to medical knowledge.

### TEXAS

**Ordinance Provides Dogs for Baylor University**—On September 29 the city council of Houston passed an ordinance "directing that all dogs taken up and impounded and not redeemed or purchased as provided for in said ordinance shall be delivered to the Baylor University College of Medicine, Houston, in such numbers as requested by the college for use in the educational and research program of the college." The action was said to be taken after some opposition had been shown concerning the disposition of these animals to the college of medicine.

### WEST VIRGINIA

**Refractory Tuberculosis Patients to Be Detained**—The Public Health Council of West Virginia at a meeting in Charleston, October 25-27, went on record as defining tuberculosis contagious and subject to quarantine and requested the board of control to take the necessary steps for the detention in the state tuberculosis sanatoriums of "refractory or rebellious patients." It was brought out at the meeting that a number of patients had already left one of the state institutions prematurely, against the advice and without the consent of the members of the staff, to accept work in nearby defense plants. The action was taken by the public health council after the attorney general had ruled such a step legal.

**Health Council Reduces Internship**—The public health council, cooperating with the federation of state licensing boards, has reduced the period of minimum internship required by license from twelve to nine months. The action was taken at Charleston, October 25-27. The council, in the resolution, declined to accept the recommendation of the council of the West Virginia State Medical Association that temporary permits to practice medicine be granted for the duration to graduates of unrecognized schools in order that medical care might be provided in certain areas where a doctor shortage is found to exist (*THE JOURNAL*, October 23, p. 497). The council felt that the legal difficulties involved would render the successful operation of such a plan impossible. The state medical association recommendation made it clear that such a permit granted would be revoked absolutely not later than six months after the cessation of hostilities. The council will meet in Charleston, January 3-5, to examine applicants for licensure.

### PHILIPPINE ISLANDS

**Dr. Whitacre Repatriated**—Dr. Frank E. Whitacre, professor and head of the department of gynecology and obstetrics at Peiping Union Medical College, Peking, China, is reported to be repatriated on the *Gripsholm* arriving in New York about December 2. Dr. Whitacre has been interned by the Japanese since 1942. He was formerly associated with the Chicago Lyng-In Hospital of the University of Chicago and the Tennessee State Medical Association in connection with the Commonwealth Fund postgraduate education program.

### GENERAL

**Special Society Elections**—Dr. Claude W. Munger, medical director of St. Luke's Hospital, New York, was named president-elect of the American College of Hospital Administrators at its meeting in Buffalo in September. Dr. Robert H. Bishop Jr., medical director of the University Hospitals, Cleveland, was installed as president. Dr. John J. Sippi, county health officer, San Joaquin County, Stockton, Calif., was in October named president-elect of the American Public Health Association and Dr. Felix J. Underwood, secretary of the state board of health, Jackson, Miss., was installed as president.

**Compulsory Premarital Physical Examinations for Tuberculosis**—No states require a premarital physical examination for tuberculosis, according to the *Bulletin of the National Tuberculosis Association*. Three states, Washington, North Carolina and North Dakota, have legislation which prevents persons from marrying who have infectious tuberculosis, and three other states, Delaware, Indiana and Pennsylvania have general laws covering the marriage of persons with a transmissible disease. Tuberculosis is not specified in these laws, it was stated, but would be covered by the term "transmissible disease."

**Academy of Tropical Medicine**—The American Academy of Tropical Medicine will meet in Cincinnati, November 17, at the Gibson Hotel. Lieut. Col. Thomas T. Mackie, M. C., A. U. S., will act as toastmaster at the association's 41st annual dinner. Dr. Lewis W. Hackett, Buenos Aires, Argentina, will deliver his presidential address on "The South American Scene." Dr. Charles F. Craig, San Antonio, Texas,

be awarded the Theobald Smith Gold Medal of the George Washington University School of Medicine, Washington D C at this session, the presentation to be made by Dr Herbert C Clark, Panama, Republic of Panama

**Schering Prizes for Undergraduate Study**—"Hormones and Cancer" is the theme of the third nationwide competition for the Schering Award three major prizes of a total value of \$1,000 going to the undergraduate medical students who submit the best critical dissertations on the subject. The Schering Award was established by the Schering Corporation in 1941 for the purpose of encouraging a wider interest in current endocrinologic developments among undergraduate medical students. The competition is sponsored and administered by the Association of Internes and Medical Students, and participation is limited to undergraduate medical students in the United States and Canada. All manuscripts must be submitted not later than Jan 15 1944. Communications should be addressed to "The Interne," 7 East 42d Street, New York 17

**Borden Award in Nutrition**—The American Institute of Nutrition announces that nominations are now being received for the Borden Award in Nutrition given in recognition of distinctive research by investigators in the United States and Canada, which has emphasized the nutritive significance of the components of milk or of dairy products. The award will be made primarily for the publication of specific papers, but the judges may recommend that it be given for important contributions over an extended period of time. The award may be divided between two or more investigators. Employees of the Borden Company are not eligible for this honor. To be considered for the award, nominations must be in the hands of the chairman of the nominating committee Henry A Mattill, Ph D, University of Iowa, Iowa City, by Feb 1, 1944. The nominations should be accompanied by such data relative to the nominee and his research as will facilitate consideration for the award.

**National Malaria Society**—The National Malaria Society will meet at the Gibson Hotel, Cincinnati, November 16-18. A joint session of the society with the American Society of Tropical Medicine, Thursday, will consist of a symposium on "A National Program for the Control of Malaria." Included among the speakers on the program will be

Dr Felix J Underwood Jackson Miss, Malaria Prevention Activities of State Boards of Health  
Dr Lewis W Hackett Buenos Aires Argentina Spleen Measurement in Malaria and Its Recording  
C W Kruse assistant engineer A D Hess malariologist and R L Metcalf assistant entomologist Tennessee Valley Authority, Wilson Dam Ala. Airplane Dusting for the Control of Anopheles Quadrimaculatus on Impounded Waters  
James C Andrews Ph D, and William E Cornatzer S M Chapel Hill N C The Absorption of Quinine Salts from Isolated Intestinal Loops of Dogs

Brig Gen James S Simmons M C, U S Army, will deliver his presidential address, Thursday, on "American Mobilization to Combat Wartime Hazards of Malaria"

**Society of Tropical Medicine**—The American Society of Tropical Medicine will meet in Cincinnati, November 15-18, at the Gibson Hotel. Among the speakers will be

Dr Clarence A Mills and Esther S Cottingham M T Cincinnati, Influence of Vitamin Intake on Phagocytic Activity  
Dr Harold W Brown Thomas J Brooks Jr M S and Emanuel Waletzky Ph D Chapel Hill N C The Treatment of Canine Heartworm (Dirofilaria immitis) with Anthiomaline  
Dr Henry Hanson Jacksonville Fla Malaria in High Altitudes  
Dr Herbert C Clark Panama Republic of Panama The Age Level for the Peak of Acquired Immunity to Malaria as Reflected by Labor Forces  
Dr Dimas de Rivas Philadelphia Amebiasis of the Uterus  
Drs Ira Muir Clapper and Gordon B Myers Detroit The Protean Manifestations of Weil's Disease

Col George R Callender M C, U S Army, will deliver the eighth Charles Franklin Craig Lecture on Tropical Medicine entitled "Diarrheal Diseases." Dr Noel Paul Hudson, Columbus Ohio will deliver his presidential address on "A Broader Perspective for Bacteriology" at the annual luncheon on Wednesday.

**Industrial Hygiene Personnel**—On August 4 recommendations concerning the assignment of industrial hygiene personnel were adopted by the sanitary engineering committee which will allow each state with an industrial population of less than 500,000 one industrial hygiene engineer, states with 500,000 or more workers two such engineers and one such industrial hygiene engineer for each additional 500,000 workers. The action stemmed from resolutions presented at the War Conference on Industrial Health in Rochester, N Y, in May, which urged that consideration be given to the present shortage of industrial hygiene personnel. At a meeting in Washington in July J J Bloomfield, senior sanitary engineer, division of industrial hygiene National Institute of Health Bethesda Md, stated that there is a total of 257 professional industrial hygiene

personnel in all of the state and local units of whom 59 are officers on loan from the public health service. The problem of securing engineers and chemists was the major need considered at this meeting since there are only 187 now in service in these units. It was pointed out that the loss of even one man from the division of industrial hygiene in most states would seriously jeopardize the program. Under the new setup the procurement and assignment service for sanitary engineers of the War Manpower Commission will now operate under its new definition of essentiality, so that only those engineers declared available under the new definition of essentiality would be permitted to accept a commission in any one of the services. It is felt that the statistical basis used which allots a certain number of engineers according to the size of the labor force in each state, should work no hardship on any industrial area, with one exception. This exception is the county of St Louis and the committee felt that rather than complicate its new simple definition, and since only one place was involved, it would give favorable consideration to making an exception in the case of St Louis County, allowing the county to have one industrial hygiene engineer in addition to the chief sanitary engineer already allowed under the original ruling. It would seem, therefore that the engineering personnel now operating in the various state and local industrial hygiene units have fair assurance that they will continue at their present posts, at least as far as the industrial hygiene engineering needs of the war agencies are concerned. The army, navy and public health service and maritime commission are at present not recruiting any additional personnel in the field of industrial hygiene engineering, but in the future should any one of these need additional personnel of this type such personnel would have to clear first through the procurement and assignment service for sanitary engineers of the War Manpower Commission.

**Nutritional Research Program**—The National Live Stock and Meat Board has announced that it will support the following research program for the 1943-1944 period

Dr Paul R Cannon, chairman department of pathology, University of Chicago School of Medicine The Influence of Dietary Protein on the Regeneration of Blood Proteins and the Resulting Capacity to Fabricate Antibodies  
Conrad A Elvehjem Ph D professor of biochemistry, and Frank M Strong Ph D associate professor of biochemistry University of Wisconsin, Madison Investigation of the Amino Acid Content of Meats  
Dr Elvehjem The Vitamin Content of Meats and the Nutrition of Vitamins During Cooking  
Ruth M Leaverton Ph D associate professor of human nutrition research, University of Nebraska Lincoln, Blood Regeneration in Women Blood Donors  
Evelyn G Halliday Ph D associate professor of food and food chemistry and Winifred F Hinman M S instructor in food chemistry University of Chicago Retention of B Vitamins in Braising Beef  
Sylvia Cover Ph D foods specialist and Paul B Pearson Ph D professor of animal nutrition experimental station, Agricultural and Mechanical College of Texas College Station Retention of B Vitamins During the Roasting of Meat  
George O Burr Ph D professor and director, division of physiologic chemistry University of Minnesota Minneapolis Fat Metabolism and Essential Unsaturated Fatty Acids  
Dr Arild E Hansen associate professor of pediatrics, University of Minnesota Medical School Minneapolis Fat Metabolism in Relation to Human Nutrition  
Paul L Day Ph D professor of physiologic chemistry, University of Arkansas School of Medicine Little Rock Nutritional Cryptopenia and Vitamin M in the Nutrition of the Monkey and Related Studies

**Baruch Committee on Physical Medicine**—On October 30 the first meeting of the Baruch Committee on Physical Medicine was held in New York. Officers chosen at the session include Dr Ray Lyman Wilbur, chancellor, Stanford University, Calif, chairman, William T Sanger, LL D, president of the Medical College of Virginia, Richmond, vice chairman and Dr Frank H Krusen medical director of the School of Physical Medicine, Mayo Clinic, Rochester, Minn, director-secretary. Other members of the committee are Dr John S Coulter, Chicago Dr Kristian G Hansson, New York, Dr Carl R Comstock, Saratoga Springs, N Y Capt Charles F Behrens (MC), U S Navy, and Lieut Col Benjamin A Strickland Jr, M C, U S Army. Nine special committees and their respective chairmen were appointed as follows

Occupational Therapy Dr Hansson  
Polio-myelitis Dr Wilbur  
Basic Research Dr Sanger  
Clinical Research Dr Coulter  
Publicity Dr Wilbur  
Hydrology and Health Resorts Dr Comstock  
Prevention Dr Hansson  
Teaching Dr Krusen  
Rehabilitation Captain Behrens

The main office for the Baruch Committee on Physical Medicine will be at 597 Madison Avenue, New York. The activities of the various committees will constitute a survey of the field of physical medicine to determine its potentialities ending it is proposed, in the establishment of a school of physical therapy for its study and teaching (THE JOURNAL November 6 p 648)

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Sept. 25, 1943

#### The President of the British Medical Association

The vacancy created by the sudden death of Sir Beckwith Whitehouse, president of the British Medical Association, has been filled by the appointment of Lord Dawson, a former president, who held office at the centenary meeting of 1932. This reappointment of a president is unprecedented. Not only is Lord Dawson a leading consultant, but he has an unequalled command of medical politics.

In his address on assuming the presidency of the association Lord Dawson said that in the shaping and organizing of the proposed new medical service doctors must have an important voice. Changes would be deep and fundamental and would affect all members of the profession, no other nation comparably placed had undertaken so big an endeavor. The service must be built in stages. If properly designed, its administrative direction would not interfere with the freedom of the profession, and the minister had promised that the medical profession would have a large share in such administration. He thought that the local administrative body should be a joint board embracing several major local authorities with vocational advisory bodies attached. We wanted the same essential service for all, namely the best, but without dull uniformity. A comprehensive service, free to all citizens, did not necessarily involve a full time salaried service for all doctors, nor was it necessarily incompatible with private practice. Although he believed that more earnings in the future would be derived from salary and less from fees, Lord Dawson said, he was far from convinced that any uniform system of service or payment would meet conditions so multifarious as those attaching to medical practice, and any emergence of official and unofficial groups of doctors would, in his opinion, be disastrous. He recalled one of the evil consequences of the fact that the Ministry of Health did not accept the advice of leaders of the profession in 1929. This was responsible for the existence of two sets of hospitals and two groups of doctors in many towns. If the ministry had accepted the profession's advice and instituted machinery for progressive coordination of local government and voluntary services, we would be much nearer our goal today.

#### Remarkable Health of British Troops in the War

In his Ludwig Mond lecture at Manchester University Sir Edward Mellanby stated that in this war the health of the British navy, army and air force had been so good as to represent a remarkable achievement. He contrasted this war with Napoleon's invasion of Russia and the French expedition to the Crimea, in which the losses due to illness exceeded those due to wounds and often were more than half the number of soldiers engaged. But even the Eighth Army during its three years in Egypt, Libya and Tunisia, where it has been fighting under conditions ideal for the development of dysentery, typhoid, cholera, smallpox and typhus, has been conspicuously free from disease. Protection by inoculation against typhoid, paratyphoid, cholera, smallpox, tetanus and yellow fever was given to troops before leaving this country. This protection has proved most effective. Much greater protection has been given to our troops by typhoid vaccination than the Italians and Germans have given to theirs. This is reflected in the high rate of these diseases among Italian and German prisoners in our hands as compared to that among our men who were prisoners of the Italians. When the Italian and German prisoners were inoculated with our vaccine, typhoid fever ceased abruptly, and thereafter the endemic rate remained low. Our T A B vaccine

made from strains rich in the Vi antigen proved much more effective than the Italian vaccine made from nonvirulent strains. The Vi antigen was a discovery of a British research worker. The incidence of dysentery, even in the fly swarming western desert, remained relatively low among British troops, and those affected reacted well to recently discovered drugs. The incidence of tetanus among British troops in the Middle East was 0.013 per cent whereas in the South African force, in which active immunization had not been carried out, the incidence was 0.16 per cent—twelve times greater. The incidence of dysentery in the western desert also remained low among British troops and those affected responded well to modern treatment. On the other hand, the incidence among Germans and Italians was much higher. It was said that our success at El Alamein was partly due to the enfeeblement of enemy troops by widespread dysentery. Our success in controlling disease was partly due to recent research, for which our medical scientists have not received due credit.

#### "The Running Ear" and the Ruptured Drum in the Army

Men with disorders of the ear are so numerous in the army that the *Army Medical Department Bulletin* publishes the recommendation that every case of the sort should be assessed by an otologist, so that the medical officer may know its exact nature and appropriate treatment. Otologists are requested to classify chronic otitis media as active, quiescent or healed. Broadly speaking, patients with active otitis media need treatment and are fit only for home service, quiescent otitis media needs prophylactic measures and these patients should usually be placed in category B or C. Healed otitis media should be categorized according to the standard of healing. The vast majority of soldiers with discharging ears can be suitably employed in the army. Meticulous cleansing of the external auditory meatus is important. As a rule the ears are best kept dry by insufflation of boric acid and iodine or sulfonamide powder.

Every medical officer should know how to prevent infection of the middle ear when the drum is ruptured. A high proportion (50 per cent) of those injured by blast sustain rupture of the drum. In many this is overlooked because of absence of symptoms or because of more serious wounds. If there is the least chance that the drum has been injured, no drops of any description should be permitted to enter the ear, and on no account should the ear be washed out with a syringe. No manipulations, except under complete asepsis, should be made in the meatus, which must be protected by a sterile dressing of cotton wool. The patient should be told not to blow his nose. If infection of the ear is anticipated, the prophylactic sulfonamide should be given by mouth, and the patient should be seen by the otologist.

## Marriages

- PAUL CALVIN JENKS, Burlington, Vt., to Miss Patricia Bickelhaupt of Hammond, N. Y., in New York, September 25.  
NATHANIEL ROSCOE SPENCER, Washington, D. C., to Miss Barrier Mae Walsworth of Monroe, La., October 23.  
NORMAN W. RAUSCH, Orange, N. J., to Miss Adele D. Hinklemann of West Hartford, Conn., in August.  
RUFUS HENRY ALIDREDGE, New Orleans, to Miss Mary Elizabeth Barrett of Hammond, La., October 30.  
BENJAMIN FRANKLIN LEVY to Miss Joyce Ann Cantor, both of Syracuse, N. Y., in Ithaca, September 18.  
GEORGE WILLCOX BROWN, Marietta, Ga., to Miss Betty Andrews of Augusta, September 4.  
WARREN FRANCIS SMITH, Oak Park, Ill., to Miss Barbara O'Malley of Chicago recently.  
HERMAN GLADSTONE, Chicago, to Miss Madge Willstätter " New York, October 17.



## Deaths

**Wright Clarkson** of Petersburg, Va., Medical College of Virginia, Richmond, 1912, Army Medical School 1918, specialist certified by the American Board of Radiology, Inc., member of the House of Delegates of the American Medical Association 1935, 1936, 1938, 1939 and 1940 member of the American Roentgen Ray Society, Radiological Society of North America, Inc., American College of Radiology, American Radium Society, Southern Medical Association, and the Petersburg Medical Faculty, past president of the American Association for the Study of Neoplastic Diseases, a founder and president of the Virginia Radiological Society served as vice president of the Tri-State Medical Association of the Carolinas and Virginia a founder of the Fourth District Medical Society and chairman of its steering committee served in the medical corps of the U S Army during World War I in 1920 chief of x-ray service at the General Hospital number 41, New York, a lieutenant commander in the medical corps U S Naval Reserve, on the staffs of the John Randolph Hospital Hopewell, Petersburg and Central State hospitals, founder and president of the Virginia Cancer Foundation, trustee of the Southern College, radiology editor, *Southern Medicine and Surgery*, died in the Garfield Memorial Hospital, Washington, D C, October 17, aged 53, of leukemia

**Frank William Howard Taylor**, Los Angeles, College of Physicians and Surgeons, Los Angeles, 1917, also a lawyer, member of the California Medical Association, instructor in x-ray and electrotherapy at the University of Southern California, 1919-1920, instructor in military x-ray and chief roentgenologist, medical corps, U S Army, and later lieutenant commander in the U S Naval Reserve during World War I roentgenologist at the Clara Barton, French, Angelus and Roosevelt hospitals, Pottenger Sanitarium and the Veterans Administration Facility Sawtelle from 1919 to 1929, vice president of the Taylor Holding and Investment Corporation, medical consultant and medical director of the Southwest X-Ray and Clinical Laboratories author of "Lawyers' Text and Atlas of the Human Body" died July 2, aged 52, of coronary thrombosis

**Wilson Johnston** of Portland, Ore., Kentucky School of Medicine Louisville 1892 associate clinical professor of ophthalmology at the University of Oregon Medical School, specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology member of the House of Delegates of the American Medical Association in 1911, member of the American Academy of Ophthalmology and Otolaryngology Western Ophthalmological Society and the Pacific Coast Oto-Ophthalmological Society past president of the Oregon and Washington state medical societies formerly a member of the Washington State Board of Health fellow of the American College of Surgeons served during World War I, chairman for the procurement and assignment service, on the staff of the Coffey Memorial Hospital, died in Multnomah August 15 aged 75, of coronary thrombosis

**Robert Jesse Reynolds**, Potsdam, N Y, Columbia University College of Physicians and Surgeons, New York, 1915, member of the Medical Society of the State of New York, secretary of St Lawrence County Medical Society, served on the Mexican border in 1916 and as a captain in the medical corps of the 27th division in France during World War I, member and examining physician for draft board number 412 secretary of the staff of the Potsdam Hospital on the staff of the Stephen B Van Duzee Hospital Gouverneur, and the Massena Memorial Hospital a director of the Citizens National Bank and emergency medical director of St Lawrence County War Council died in Madrid August 14 aged 52, of coronary thrombosis

**Edgar Cannon Armstrong**, Laurel Miss, University of Nashville (Tenn) Medical Department 1908 member of the Mississippi State Medical Association died August 29, aged 61

**John T Bogard**, Mena Ark Memphis (Tenn) Hospital Medical College 1899 died August 20, aged 72

**Charles William Bower**, Lehighton, Pa University of Vermont College of Medicine Burlington 1879 University of Pennsylvania Department of Medicine, Philadelphia, 1880 died August 29 aged 88 of senility

**Charles F Brady**, Parsons Kan Keokuk (Iowa) Medical College College of Physicians and Surgeons, 1903 died August 13 aged 65 of coronary occlusion

**Charles E Caswell**, Wichita Kan Kansas Medical College Medical Department of Washburn College, Topeka, 1902,

member of the Kansas Medical Society, died recently, aged 73 of cerebral thrombosis and arteriosclerosis

**Frederick J Champney**, North Baltimore, Ohio, Detroit College of Medicine, 1893, died in Findlay August 17, aged 76 of pneumonia

**William H Chapman** of Blythe, Calif, University of Nebraska College of Medicine Omaha, 1902, member of the city council, school board and chamber of commerce physician for Riverside County and the Santa Fe Railroad, died in the Loma Linda Sanitarium and Hospital August 19, aged 66, of bronchopneumonia and hypertension

**Stephen Reaves Coleman**, Washington D C University of Texas School of Medicine Galveston 1917, on Sept 7, 1942 commissioned a major in the medical corps, Army of the United States, not on active duty served during World War I associated with the Veterans Administration on the staff of the Veterans Administration Facility, past president of the District of Columbia Urological Society, died August 30, aged 55, of hypertension

**Louis Joseph Cooke**, Minneapolis, University of Vermont College of Medicine Burlington, 1894, director of athletics at the University of Minnesota, formerly physical director of the Y M C A at Toledo, Ohio, Duluth, Burlington, Vt, and Minneapolis, on the staff of the University Hospitals, died August 19, aged 75, of hypertension

**Willis Hiram Corson**, Seattle, Cooper Medical College San Francisco, 1905 member of the Washington State Medical Association, served with the Italian army during World War I awarded the Italian Cross of Honor and a Chevalier of the Crown in recognition of exceptional service to the Italian people, formerly coroner of King County, at one time medical superintendent of the King County Hospital, died August 19, aged 64, of carcinoma of the larynx

**Robert Duval Cousins**, Beaumont, Texas, Fort Worth School of Medicine, Medical Department of Fort Worth University, 1902 died August 26, aged 68, of typhus and pneumonia

**Omar Legrand Cox** of Iola, Kan, Cotner University Medical Department, Lincoln, Neb, 1894, secretary and past president of the Allen County Medical Society, a captain in the medical corps of the U S Army during World War I, member of the State Board of Medical Registration and Examination, on the staff of St John's Hospital, died in the Veterans Administration Facility, Wichita, August 22, aged 76, of heart disease

**Mary Gamble Cummins**, Oak Bluffs, Mass the Hahnemann Medical College and Hospital, Chicago, 1893, at one time a member of the board of education of Paterson, N J died August 20, aged 73

**Emory S Deaver**, Monroe Ga Hospital Medical College, Atlanta, 1911, died August 25, aged 65, of heart disease

**William Emmett Denman**, Greenwood, Miss Memphis (Tenn) Hospital Medical College, 1907, member of the Mississippi State Medical Association and the American College of Chest Physicians, on the staff of the Greenwood-Lefflore Hospital, died August 28, aged 61, of coronary occlusion

**Edwin Strassbridge English**, Brevard, N C, University of the South Medical Department, Sewanee, Tenn 1900 past president of the Transylvania County Medical Society member of the Medical Society of the State of North Carolina on the staff of the Transylvania Community Hospital, died August 19, aged 75, of coronary thrombosis

**Charles Henry Gardner** of Senior Surgeon, U S Public Health Service, retired, Baltimore Columbian University Medical Department, Washington, D C, 1890 entered the U S Public Health Service on Jan 28, 1892, died in the U S Marine Hospital August 10, aged 78, of coronary thrombosis

**Eugene John Gay**, French Camp Calif, Drake University Medical Department, Des Moines, 1897, member of the California Medical Association on the staff of the San Joaquin General Hospital where he died recently aged 72 of rheumatic heart disease

**David Arnold Goldman**, St Louis St Louis University School of Medicine, 1935 member of the Medical Association of Georgia, began extended active duty as a first lieutenant in the medical reserve corps of the U S Army on Nov 5, 1940, honorably discharged Aug 17 1941 died in the Frisco Employees' Hospital August 25, aged 35, of multiple polyposis carcinoma

**Frank Starr Gregory** of Redwood City, Calif, Cooper Medical College, San Francisco, 1900, past president of the San Mateo County Medical Society, head of the Selective



Service Board at one time mayor of Pittsburg, on the staff of the Mills Memorial Hospital San Mateo, where he died August 21, aged 68, of myocardial infarction

**Paul Lee Hammond**, Bradley Ark St Louis College of Physicians and Surgeons 1917, Kansas City (Mo) College of Medicine and Surgery 1921 died August 6, aged 53

**John Windsor Harbarger**, Jackson Ohio Kentucky School of Medicine Louisville 1892 a captain in the medical corps of the U S Army during World War I died in the Veterans Administration Facility, Huntington, W Va, August 27, aged 76 of heart disease

**Henry Winston Harper** & Austin Texas University of Virginia Department of Medicine Charlottesville 1892 also a pharmacist and lawyer teacher of chemistry at the University of Texas from 1894 to 1943 and dean of the graduate school from 1915 to 1935 died in the Seton Hospital August 28, aged 84

**Charles Lewis Haywood Jr** & Elkin N C Harvard Medical School, Boston 1927, diplomate of the National Board of Medical Examiners fellow of the American College of Surgeons medical director of the Hugh Chatham Memorial Hospital, died August 22 aged 40 of coronary thrombosis

**Joseph Marion Heard**, Aberdeen, Miss Long Island College Hospital Brooklyn 1890, died August 25, aged 89, of intestinal hemorrhage

**Frederick Eric Hellbaum**, Bakersfield Calif, Stanford University School of Medicine, San Francisco, 1935, commissioned a captain in the medical corps Army of the United States Sept 2 1942 and honorably discharged Jan 16 1943, served as resident physician at the Kern General Hospital, on the staff of the Mercy Hospital, where he died September 4, aged 41 of coronary occlusion

**Robert Wing Hemingway** & Bend Ore, Rush Medical College Chicago, 1925, also a pharmacist, fellow of the American College of Surgeons, member of the staffs of St Charles and Lumbermen's hospitals, died August 27, aged 48, of coronary thrombosis

**Archibald Murphy Henry**, Brownwood, Texas, Louisville (Ky) Medical College, 1888, died July 1, aged 82

**Melvin K Henry** & Philadelphia, University of Pennsylvania Department of Medicine Philadelphia, 1893, formerly on the staff of the Frankford Hospital, died August 5, aged 72, of bronchial asthma and coronary thrombosis

**Wallace John Herriman**, Rochester, N Y University of the City of New York Medical Department, 1879, served as a surgeon, lieutenant commander in the U S Navy during World War I, died August 28 aged 85

**Albert James Hodgson**, Waukesha Wis, Rush Medical College, Chicago, 1886, member of the State Medical Society of Wisconsin, formerly secretary of the Waukesha County Medical Society awarded an honorary degree of doctor of science by Carroll College in 1916, died in the Summit Hospital, Oconomowoc, Wis, October 5, aged 84, of myocarditis

**Frederick F Holroyd**, Princeton, W Va, College of Physicians and Surgeons Baltimore, 1910, member of the West Virginia State Medical Association served during World War I, city health officer, chief physician for the Mercer County Jail, on the staff of the Mercer Memorial Hospital, died August 15, aged 57, of coronary thrombosis

**Jerry Morris Hyde** & Nelsonville, Ohio, Bellevue Hospital Medical College, New York, 1885, formerly examiner for several insurance companies, died August 26, aged 83, of cerebral hemorrhage

**George Tasker Imrie** & Rochester, N Y, Trinity Medical College, Toronto, Ont, Canada, 1902, member of the staff of the Park Avenue Hospital, died August 28, aged 71, of cerebral hemorrhage

**Oscar Lee Jones**, Fort Worth, Texas, University of Louisville (Ky) Medical Department, 1887, died in the Methodist Hospital August 21, aged 79, of heart disease

**Charles Wesley Larkins**, Cincinnati, Eclectic Medical College, Cincinnati, 1918, advisory member of Selective Service Board number 29, Westwood, past president of the Westwood Athletic Club, died in the Bethesda Hospital August 28, aged 54, of hypertension

**Charles Buchanan Law**, Mineral Wells, Texas, Memphis (Tenn) Hospital Medical College, 1913, served during World War I, died in the Nazareth Hospital August 24, aged 59, of coronary disease

**Charles Leali**, Kingsland, Ark, Missouri Medical College, St Louis, 1882, died July 29, aged 84

**Harry Hamilton Lewis**, Louisville, Ky, University of Louisville Medical Department, 1890, died August 7, aged 75, of carcinoma and arteriosclerosis

**Charles Day Lipscomb**, Quitman, Texas, Medical Department of Tulane University of Louisiana, New Orleans, 1902, served as health officer of Wood County, died in August, aged 77

**Clifford Athenus Lutgen** & Auburn, Neb, Lincoln Medical College of Cotner University, 1901, president of the Nemaha County Medical Society in 1936, president of the Nebraska Hospital Association in 1940, for many years a member of the city library board, member of the chamber of commerce, past president and charter member of the Auburn Kiwanis Club, medical director and owner of the Auburn Hospital, died August 15, aged 70, of virus pneumonia

**Will R McCamy**, Knoxville, Tenn, Chattanooga Medical College, 1901, member of the Tennessee State Medical Association, died August 6, aged 66, of pneumonia

**Joseph Hamilton McLeskey**, Charlotte, N C, University of Georgia Medical Department, Augusta, 1909, member of the Medical Society of the State of North Carolina, on the staffs of the Mercy and Presbyterian hospitals, died in Clemson College, S C, August 4, aged 59 of coronary thrombosis

**Frederick Henry Martin**, Libertyville, Ill, the Hahnemann Medical College and Hospital, Chicago, 1899, a captain in the medical corps of the U S Army during World War I, died in the Veterans Administration Facility, Downey, August 18, aged 71, of chronic myocarditis and arteriosclerosis

**Paul Dickinson Maxwell**, Utica, N Y, Syracuse University College of Medicine, 1938, member of the Medical Society of the State of New York, on the staff of the Rome State Hospital, died August 21, aged 31, of cerebral thrombosis

**Arthur S Monzingo** & Gig Harbor, Wash, Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1905, superintendent and owner of the Gig Harbor Hospital, where he died August 21, aged 66, of coronary thrombosis

**Charles Emory Morse** & La Junta, Colo, Denver and Gross College of Medicine, 1909, president of the staff of Menomite Hospital, died August 16, aged 63, of coronary thrombosis

**Edwin Smith Moss**, Williamsburg, Ky, Hospital College of Medicine, Louisville, 1881 member of the Kentucky State Medical Association president of the First National Bank for thirty-five years, for fifty years served as medical referee for Whitley County, chairman of the county board of health, for many years local surgeon for the Louisville and Nashville Railroad, died August 23, aged 83, of senility

**John J Moylan**, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1882, for many years chief of staff of St Mary's Hospital on the staffs of the Gerchman Dispensary and Hospital and St Joseph's Hospital, attending physician at the Little Sisters of the Poor Home for the Aged and the House of Good Shepherd, died August 2, aged 85

**Ralph Lyle Oppen**, O'Neill, Neb, University of Nebraska College of Medicine, Omaha, 1940, appointed a first lieutenant in the medical corps of the National Guard on Dec 23, 1940, assigned to the medical detachment, 134th Infantry, Camp Joseph T Robinson, Arkansas, on Feb 1, 1942 appointed a captain in the medical corps, Army of the United States, honorably discharged, May 5, 1943 because of physical disqualification, died August 6, aged 33, of cardiac decompensation

**John Thomas Pattison**, Langley, S C, University of Georgia Medical Department, Augusta, 1890, died in a hospital at Anderson August 19, aged 73

**Charles Elvie Peel**, Watseka Ill, Barnes Medical College, St Louis, 1906, formerly physician for the Illinois Central Railroad, died August 25, aged 74, of coronary thrombosis and bronchial asthma

**William Waldo Rambo** & Jefferson City, Mo Washington University School of Medicine, St Louis, 1926 for many years physician and surgeon for the Missouri State Penitentiary, died August 9, aged 50, of cerebral hemorrhage

**George Lawrence Ramsey**, Powhattan Point Ohio Ohio Medical University, Columbus, 1898 member of the Ohio State Medical Association, for many years president of the board of education, died in the City Hospital, Bellaire, August 29, aged 71

**Edgar Thomas Ray**, New York, Columbia University College of Physicians and Surgeons, New York, 1906 chief medical officer of the city of New York fire department during World War I, died in Brooklyn August 27, aged 71

**Matthew Simpson Reay**, Randolph, Utah College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1903 member of the Utah State Medical Association, member of the county Selective Service Board during World War I and II died in the Caribou County Hospital, Soda Springs, Idaho, August 6, aged 63

**Edward Clifton Rinehart** & Struthers, Ohio, Ohio State University College of Medicine, Columbus 1913, died in the Youngstown Hospital, North Side Unit, August 29, aged 56, of heart disease

**Isaac Burton Roberts**, Limerich Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1897, member of the Medical Society of the State of Pennsylvania, served overseas during World War I, school doctor in Haverford township for many years and adviser to the board of health, member of the staff of the Delaware County Hospital, Drexel Hill, where he died August 29 aged 68 of injuries received when the automobile in which he was driving was struck by a trolley car

**John William Rockefeller**, Loch Arbour, N J., College of Physicians and Surgeons, New York, 1890 died August 22, aged 73, of chronic myocarditis and intestinal neoplasm

**Holbert A. Rogers**, Jeffersonville, Ga Atlanta College of Physicians and Surgeons, 1909 died in the State Tuberculosis Sanatorium, Alto, August 7, aged 59, of tuberculosis

**Melville Erskine Rumwell**, Palo Alto, Calif., Cooper Medical College, San Francisco, 1895 formerly associate clinical professor of surgery at the Stanford University School of Medicine one of the first appointees on the board of the state industrial accident commission and for many years served with the state compensation insurance fund, formerly visiting physician at the Crocker Home and medical director of the Olympic Club died August 3 aged 70

**Charles T. Schrader**, Bristow, Okla., Hospital College of Medicine, Louisville, Ky, 1905, member of the Oklahoma State Medical Association mayor of Bristow for three terms, on the staff of the Cowart-Sisler Hospital died August 27, aged 64 of angina pectoris

**Edwin Forrest Sibley** & Kingston, N Y Albany Medical College 1903, served in the medical corps of the U S Army during World War I on the staffs of Benedictine Hospital and the Kingston Hospital died in the Albany Hospital August 24, aged 64 of general arteriosclerosis and coronary sclerosis

**Hans Eugen Simmel**, Warren, Ohio, Friedrich-Wilhelms-Universität Medizinische Fakultät Berlin, Prussia, Germany, 1914 on the staff of the Warren City Hospital, died in Colorado Springs, Colo., August 23 aged 52, of peritonitis

**Emery Singer**, Avenel, N J University of Kolozsvár, Hungary 1911 died in the General Hospital, Perth Amboy August 23 aged 57 of coronary thrombosis

**R B Slater**, Craig Colo St Louis College of Physicians and Surgeons 1921, also a pharmacist secretary of the school board, on the staff of the Solandt Memorial Hospital Hayden died in Jackson Wyo August 13, aged 52, of coronary thrombosis

**Harry Wilbur Smith**, Norridgewock, Maine Dartmouth Medical School, Hanover, N H, 1900 member of the Maine Medical Association school physician library trustee, a member of the town advisory committee, on the staff of the Redington Memorial Hospital Skowhegan died August 19, aged 73 of cerebral hemorrhage

**Francis George Speidel** & Washington D C, George Washington University School of Medicine Washington 1917 served in the U S Navy during World War I member of the staffs of the George Washington University Doctors Eastern Dispensary and Casualty Childrens and the Central Dispensary and Emergency hospitals died in Richmond, Va., August 30 aged 51 of acute myocarditis

**Sam Houston Spruwell**, Gouldbusk, Texas, University of Texas School of Medicine Galveston 1907 died August 27, aged 66 of chronic myocarditis and chronic nephritis

**Zella White Stewart**, Iowa City Cornell University Medical College New York 1904 member of the American Association for the Study of Allergy died August 4, aged 65 of cerebral hemorrhage and hypertension

**Alexander Williamson Stirling**, Baldwin, Ga., M B University of Edinburgh Faculty of Medicine Scotland 1880 and M D in 1887, member of the Medical Association of Georgia fellow of the American College of Surgeons formerly on the staffs of the Wesley Memorial Hospital Presbyterian Hospital and Tabernacle Infirmary Atlanta died August 16 aged 85

**Bernhardt Kurt Stumberg**, St Charles, Mo Maryland Medical College, Baltimore 1900 member of the Missouri

State Medical Association, veteran of the Spanish American War and World War I, on the staff of St Joseph's Hospital medical director of the Lindenwood College, died August 20 aged 67, of coronary occlusion

**John Samuel Talley**, Frouthman N C University of North Carolina School of Medicine, Raleigh 1909 member of the Medical Society of the State of North Carolina past president and vice president of the Irdeell Alexander Counties Medical Society, died in the Davis Hospital, Statesville, August 4, aged 63, of coronary occlusion

**Daniel Herman Tellman** & Presser N J Columbia University College of Physicians and Surgeons New York, 1923 on the staff of the Beth Israel Hospital died in the Memorial Hospital for the Treatment of Cancer and Allied Diseases New York, August 26, aged 41, of acute leukemia

**Albert S. Thompson** & Mount Horeb Wis., Minneapolis College of Physicians and Surgeons, 1902 for many years local health officer died in the Methodist Hospital, Madison August 28, aged 65, of coronary thrombosis

**Charles Urban Thralls**, Hymery, Ind., Illinois Medical College, Chicago, 1903, member of the Indiana State Medical Association on the staff of St Anthony's Hospital, Terre Haute, died August 23, aged 64 of Hodgkin's disease

**Richard E. Timberlake**, Youngsville, N C Jefferson Medical College of Philadelphia, 1908, examiner for several insurance companies, died August 10, aged 64 of cerebral hemorrhage

**William S. Tyson**, New Boston, Texas University of Nashville (Tenn.) Medical Department, 1908 for several terms served as health officer of Bowie County, died recently, aged 57, of heart disease

**George King Wassell**, Dallas, Texas, Northwestern University Medical School, Chicago, 1935, member of the State Medical Association of Texas instructor in surgery at the University of Michigan Medical School, Ann Arbor, from 1936 to 1938, assistant in clinical surgery at Baylor University College of Medicine from 1938 to 1943, assistant in clinical surgery at the Southwestern Medical Foundation School of Medicine dispensary surgeon, Baylor Hospital, died August 31, aged 33, of heart disease

**Walter Walton Watson**, Philadelphia, Medico-Chirurgical College of Philadelphia 1900, member of the Medical Society of the State of Pennsylvania, died August 13, aged 69

**Moses Weiss**, New York, Deutsche Universität Medizinische Fakultät Prague, Czechoslovakia, 1927, member of the Medical Society of the State of New York formerly president of the Balneological Society of Saratoga Springs died in the New England Baptist Hospital, Boston, August 8, aged 41, of recurrent carcinoma of the cecum with generalized metastases

**Arthur Henry Wilson**, Indianapolis Indiana Medical College School of Medicine of Purdue University, Indianapolis, 1907, served with the American Expeditionary Forces during World War I lieutenant colonel in the medical reserve corps of the U S Army not on active duty, died August 3, aged 67, of hypertension

**James T. Windell**, Louisville, Ky., University of Louisville Medical Department 1892 member of the American Urological Association, died August 8, aged 78, of carcinoma

#### DIED WHILE IN MILITARY SERVICE

**Robert Carl Badertscher**, Bloomington Ind Indiana University School of Medicine, Indianapolis, 1940 member of the Indiana State Medical Association, commissioned a first lieutenant in the medical reserve corps of the U S Army on June 30 1940 beginning extended active duty on July 2 1941 commissioned a captain flight surgeon with the second photographic charting squadron died at Iquitos, Peru, in an airplane crash September 6 aged 27

**Eugene Winston Matlock** & Port Arthur Texas University of Texas School of Medicine Galveston 1922, past president of the Jefferson County Medical Society fellow of the American College of Surgeons member of the surgical staff at St Mary's Hospital, began extended active duty as a lieutenant commander in the medical corps of the U S Naval Reserve Sept 7, 1942 formerly stationed at the U S Naval Hospital at Corpus Christi and the U S Naval Training School at Norman Okla died in an airplane crash near Madisonville Feb 16 1943, aged 43

## Correspondence

## UNILATERAL NEPHRECTOMY AND HYPERTENSION

*To the Editor*—In *THE JOURNAL*, October 2, page 277, Weiss and Chasis rightfully infer from the failure of the removal of a chronic atrophic pyelonephritic kidney to lower the blood pressure of a patient with hypertension that the diseased kidney probably was not causally related to the hypertension. From the fact that the other kidney showed normal blood flow, glomerular filtration rate and maximal tubular excretory capacity, however, they conclude that the remaining kidney was not diseased or ischemic and therefore not responsible for the hypertension. That the remaining kidney was not ischemic is obvious but that it "cannot be indicted for this failure [of the nephrectomy to reduce the blood pressure in the patient] is not necessarily true.

The mechanism whereby constriction of the renal artery produces hypertension in experimental animals is still unsettled. Although a reduction in pulse pressure may be involved (Kohlstadt, K. G. and Page, I. H. Liberation of Renin by Perfusion of Kidneys Following Reduction of Pulse Pressure, *J. Labor Med* 72:201 [Aug.] 1940), local renin appears not to be (Marionfeld, C. J., and Wakerlin, G. E. The Effect of Sodium Cyanide on the Formation of the Pressor Substance of the Completely Ischemic Kidney, *Fed Proc* 2:32 [March 16] 1943). The evidence for increased liberation of renin into the circulation is suggestive but inconclusive (Page, I. H. Demonstration of the Liberation of Renin Into the Blood Stream from Kidneys of Animals Made Hypertensive by Cellophane Perinephritis, *Am J Physiol* 130:22 [July] 1940. Dell'oro, R., and Braun-Menendez, E. Dosaje de renina en la sangre de perros hipertensos por isquemia renal, *Rev Soc argent de biol* 18:65 [May] 1942), and the opposite view of a reduction in a postulated normal antipressor activity of the kidney has recently been stressed (Grollman, Arthur, and Rule, Colter. Experimentally Induced Hypertension in Parabolic Rats *Am J Physiol* 138:537 [March] 1943. Grollman, Arthur, Harrison, T. R., and Williams, J. R., Jr. Experimental Renal Hypertension in the Rat, *ibid* 139:293 [June] 1943). In any event renal ischemia is not necessary, as was formerly thought. Thus there is excellent evidence that experimental renal hypertension can occur with normal renal blood flow, glomerular filtration and maximal tubular excretory capacity (Corcoran, A. C., and Page, I. H. Renal Blood Flow in Experimental Renal Hypertension, *Am J Physiol* 135:361 [Jan.] 1942).

Moreover, recently moderate hypertension developed in 4 of our dogs following bilateral constriction of the renal arteries (Wakerlin, G. E., Moss, W. G., and Goldberg, M. L. Unpublished observations). Six to twelve months later one kidney was of normal or near normal size whereas the other was approximately two-thirds normal size. On the theory that the normal sized kidney was not contributing to the hypertension and possibly even exerting an antihypertensive effect, the larger kidney was removed in an effort to obtain a more pronounced hypertension. In each dog the blood pressure fell to a persistent near normotensive level. Other observations in our laboratory also point to the probability that a kidney which is rendered ischemic by renal artery constriction is less effective in producing a high level of chronic or benign (in contrast to malignant) experimental hypertension than one which maintains a normal or near normal blood flow after constriction.

The fact that unilateral nephrectomy has been successful in reducing the elevated blood pressure to normal in only 7 of 76 patients as quoted by Weiss and Chasis is not evidence against the possible involvement of the kidney directly or indirectly in the pathogenesis of essential hypertension but rather against the premature and sometimes misinterpreted application of incomplete laboratory results to pressing clinical problems. On the other hand, the numerous similarities between essential hypertension and experimental renal hypertension do not prove even a partial common pathogenesis. Only future work can determine whether essential hypertension is a generic classification, one group of which may be of renal origin.

Consequently, although the hypertension in the case reported by Weiss and Chasis may well not be on a renal basis, this possibility is not ruled out when the evidence presented is viewed in the light of recent experimental findings.

GEORGE E. WAKERLIN, M.D., Chicago  
Professor and Head, Department of Physiology,  
Chicago Colleges, University of Illinois

## DIPHTHERIA MORTALITY—TYPHOID CARRIERS—POLIOMYELITIS IN PREGNANCY

*To the Editor*—This is to commend you on the excellent editorial on "Diphtheria Mortality in the United States."

You call attention to the fact that Dr. J. C. Geiger of San Francisco has noticed a recent increase in deaths from diphtheria in older age groups. I thought you would be interested to know that during this year, to date, out of seven deaths from diphtheria in Los Angeles five were of persons over 40 years of age. As there were 13 patients over 40 years of age this makes a specific mortality rate of 38 per cent. During 1942 there were 27 patients over 40 years of age with diphtheria and seven deaths, or a specific mortality rate of 26 per cent. It would seem that diphtheria is being overlooked in the older age groups.

It may also interest you to know that 9 of the last 10 typhoid carriers discovered by our investigator are grandmothers.

It is noted in the September 25 issue of *THE JOURNAL* that Drs. Harmon and Hoyne reported 2 cases of poliomyelitis complicating pregnancy. It is interesting that the symptoms given in both of these cases point to bulbar poliomyelitis. Of 4 pregnant women admitted to the Los Angeles County General Hospital with poliomyelitis during the last few months, 3 had bulbar poliomyelitis, 2 of whom died. Both of the latter 2 delivered normal children before they died.

GEORGE M. UHL, M.D. Los Angeles

Health Officer

## VINCENT'S ANGINA OF THE TONSIL

*To the Editor*—In reference to a report (*THE JOURNAL* October 9, p. 341) titled "Treatment of Vincent's Angina of the Tonsil," Major C. S. Linton treats the gingival margins in the following manner: "When infection also was present about the gum margins, it was advised that the sulfathiazole tablet be moistened with a few drops of water to make a paste and this used to rub into the gum margins." In this preliminary report it is stated that the author in his search of the literature failed to find any use of sulfonamide drugs for this purpose. He also indicates that Spink in his book reports that sulfanilamides have been used in the treatment of Vincent's angina with no benefit from local administration.

May I call to your attention the fact that I reported beneficial results in June 1942 (Sulfa Drugs in Local Treatment of Necrotic Gingivitis [Vincent's infection] *New York Journal of Dentistry* 12 251 [June] 1942). I also reported them in Miller's Textbook of Periodontology (ed 2, Philadelphia Blakiston Company, 1943, chapter XVII). In both of these publications I indicated the use of a sulfonamide paste.

WILLIAM M. GRANT, DDS, New York  
Assistant Professor of Periodontology  
New York University College of Dentistry

### STERNAL TRANSFUSIONS IN BURNS

To the Editor—This communication is prompted by a quotation printed on page 815 of the July 17 issue of THE JOURNAL. The quotation is taken from a pamphlet entitled "Treatment of Burns and Prevention of Wound Infections," published by the Medical Division of the Office of Civilian Defense. In a discussion of the technique of administering plasma we are told that "it must never be administered by any other than the intravenous route."

The published reports on infusions via the bone marrow of Tocantins and O'Neill (THE JOURNAL Oct 11 1941) and of Doud (*ibid*, Dec 12, 1942) testify to the feasibility of the bone marrow route for infusions of blood plasma, dextrose or saline



Administration of plasma through infusion needle into bone marrow of sternum

solution. This point bears emphasis because it is in just such cases of severe burns that superficial veins are apt to be either completely collapsed or involved in the burned area. Sternal bone marrow infusion presents an alternative route for fluid therapy. Plasma in such instances is life saving, and in that marrow infusion makes it available marrow infusion is life saving.

The procedure of sternal marrow infusion seems to be little known. Experience with it in war casualties has demonstrated its value and simplicity. The pamphlet quoted emphasizes the need for a rapid flow of a plasma infusion on occasion. A sternal infusion flows at a rate comparable to an intravenous infusion. The accompanying photograph illustrates our use of the procedure during the recent New Georgia campaign. The patient is a wounded Japanese prisoner.

SAMUEL L. LIEBERMAN,  
First Lieutenant M C, A U S

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Nov 6, page 655.

#### BOARDS OF MEDICAL EXAMINERS

- ALABAMA: Montgomery, June 20-22. Sec., Dr. B. T. Austin, 519 Dexter Ave., Montgomery.
- CALIFORNIA: *Written*, San Francisco, Nov. 16-18. Sec., Dr. Frederick M. Schenck, 1020 N. St., Sacramento.
- CONNECTICUT: *Endorsement*, New Haven, Nov. 23. Sec. to the Board, Dr. Crichton Barker, 258 Church St., New Haven.
- DELAWARE: *Written*, Dover, Jan. 11-13. *Endorsement*, Dover, Jan. 18. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.
- FLORIDA: *Endorsement*, Jacksonville, Nov. 22-23. Sec., Dr. William M. Rowlett, Box 766, Tampa.
- IDAHO: Boise, Jan. 11. Dir., Bureau of Occupational Licenses, Mrs. Lehi D. Painter, 355 State Capitol Bldg., Boise.
- IOWA: *Endorsement*, Iowa City, Dec. 27-29. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.
- KANSAS: *Endorsement*, Kansas City, Feb. 21. Sec., Board of Medical Registration and Examination, Dr. J. I. Haring, 905 N. Seventh St., Kansas City.
- KENTUCKY: Louisville, Dec. 6-8. Sec., State Board of Health, Dr. Philip L. Blackerby, 620 S. Third St., Louisville.
- LOUISIANA: New Orleans, Dec. 21-23. Sec., Dr. R. B. Harrison, 1507 Ibernia Bank Bldg., New Orleans.
- MARYLAND: *Endorsement*, Baltimore, Dec. 14-17. Sec., Dr. J. T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic*, Baltimore, Dec. 14-15. Sec., Dr. J. A. Lyons, 612 W. 40th St., Baltimore.
- MASSACHUSETTS: Boston, Nov. 16-19. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413 F. State House, Boston.
- MISSOURI: St. Louis, Nov. 15-17. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.
- NEW HAMPSHIRE: Concord, March 9-10. Sec., Board of Registration in Medicine, Dr. D. G. Smith, State House, Concord.
- NEW JERSEY: Feb. 15-16. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.
- NEW YORK: Albany, New York, Buffalo, and Syracuse, Jan. 24-27. Sec., Dr. R. R. Hunton, Education Bldg., Albany.
- NORTH CAROLINA: December. Sec., Dr. W. D. James Hamlet.
- NORTH DAKOTA: Grand Forks, Jan. 4-7. Sec., Dr. G. M. Williamson, 4 1/2 S. Third St., Grand Forks.
- OHIO: *Written*, Columbus, Dec. 13-15. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.
- OKLAHOMA: *Endorsement*, Oklahoma City, Dec. 27-29. Sec., Dr. J. D. Osborn Jr., Frederick.
- PENNSYLVANIA: Philadelphia and Pittsburgh, January. Act Sec., Bureau of Professional Licensing, Department of Public Instruction, Mrs. Marguerite G. Steiner, 358 Education Bldg., Harrisburg.
- SOUTH CAROLINA: Charleston, Dec. 20-22. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.
- SOUTH DAKOTA: *Endorsement*, Pierre, Jan. 18-19. Dir., Medical Licensure, State Board of Health, Dr. Gilbert Cottam, Pierre.
- VERMONT: Burlington, Dec. 16-18. Sec., Dr. F. J. Lawless, Richford.
- VIRGINIA: Richmond, Dec. 14-17. Sec., Dr. J. W. Preston, 309 Franklin Road, Roanoke.
- WISCONSIN: *Endorsement*, Madison, Dec. 13-15. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls.
- \* Basic Science Certificate required.
- BOARDS OF EXAMINERS IN THE BASIC SCIENCES
- ARIZONA: Tucson, Dec. 21. Sec., Dr. R. L. Nugent, Science Hall, University of Arizona, Tucson.
- NEW MEXICO: Feb. 7. Sec., Miss Pia Joerger, State Capitol, Santa Fe.
- OKLAHOMA: Oklahoma City, Nov. 29. Sec., Dr. J. D. Osborn Jr., Frederick.
- RHODE ISLAND: Providence, Nov. 17. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Building, Providence.
- SOUTH DAKOTA: Vermillion, December. Sec., Dr. G. M. Evans, Yankton.
- TENNESSEE: Nashville and Memphis, Dec. 10-11. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.
- WISCONSIN: Milwaukee, Dec. 4. Sec., Prof. Robert A. Bauer, 152 W. Wisconsin Ave., Milwaukee.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Acts—Right of Osteopath to Perform Minor Surgery.**—Thierfelder, who was licensed to practice osteopathy in Montana, was charged in a criminal information with practicing medicine without a license in that on a stated day he performed a tonsillectomy on a stated patient. The trial court held, apparently, that the osteopath was not guilty of practicing medicine without a license, since a licensed osteopath could legally perform a tonsillectomy in Montana, and directed the jury to return a verdict in the osteopath's favor. The state then appealed to the Supreme Court of Montana.

A section of the Montana osteopathic practice act enacted in 1901 (Laws 1901, p. 50 sec. 6) read, in part, as follows:

"The certificate provided for in Section five of this Act shall not authorize the holder thereof to prescribe drugs in the practice of osteopathy, nor (or) to perform major or operative surgery. And any person holding or attempting under this Act, who shall prescribe or use drugs in the practice of osteopathy, or who shall perform major, minor or operative surgery, shall be deemed guilty of a misdemeanor provided that nothing in this Act shall be so construed as to prohibit any legalized osteopath in this State from practicing major or operative surgery after having passed a satisfactory examination in surgery before the State Board of Medical Examiners of the State of Montana."

In 1905 (Laws 1905, page 109) this section was amended by deleting or omitting the word "minor" italicized above. The osteopath contended that the legislature by omitting "minor" in the 1905 amendment clearly intended to permit osteopaths to practice minor surgery, impliedly arguing, of course, that the performance of a tonsillectomy was minor surgery. The Supreme Court, however, refused to adopt such logic. The omission of "minor," said the court, in the 1905 amendment was obviously done to clarify the section and to make it uniform wherever it referred to operative surgery. According to all medical authorities "operative surgery" includes both major and minor surgery and we have no doubt the legislative assembly believed the term "minor" was superfluous.

In 1907 the section of the medical practice act, in effect, defining the practice of medicine was amended (Laws 1907, chapter 101) by adding the following proviso:

Provided, however, that nothing in this section shall be construed to restrain or restrict any legally licensed osteopathic practitioner practicing under the laws of this state.

The osteopath apparently contended that the effect of this proviso was to render the provisions of the medical practice act inapplicable to the activities carried on by a legally licensed osteopath. The Supreme Court, however, did not believe that the proviso adopted in 1907 in any way broadened the power of licensed osteopathic practitioners. In support of its holding it quoted from its prior decision in *State v. Dodd*, decided in 1915, and reported in 149 P. 481, reading in part, as follows:

Counsel for appellant insists that the effect of that section, with the proviso quoted [referring to the proviso under discussion here], is to deny to every person, except osteopaths, the right to practice medicine or surgery in Montana, and that, in excepting osteopaths from the operation of its provisions, those persons thus favored are free to engage in the practice of medicine and surgery without having to submit to the ordeal of an examination and without having the certificate required of every other one who seeks to engage in like practice.

The proviso in section 1591 [referring to the proviso under discussion here] is a harmless piece of legislation. It did not affect the status of osteopathic practitioners in the least. They were confined thereafter, as theretofore, to the practice of osteopathy and forbidden to practice medicine or surgery without the certificate from the state board of medical examiners required of everyone who seeks to engage in such practice.

[The section of the osteopathic practice act defining osteopathy provides] "Every person shall be deemed practicing osteopathy within the meaning of this act who shall, treat, cure, alleviate or relieve any ailment or disease of either mind or body, or cure or relieve any fracture or dislocation or abnormal condition, or bodily injury or any fracture or misplacement or manipulation or method of manipulating any deformity, by any treatment, or manipulation or parts, by the use of the human body or any of its limbs, muscles or parts, by the use of the hands, or mechanical appliances, in an effort or attempt to relieve any pressure, obstruction, misplacement or defect, in any bone, muscle, ligament, nerve, vessel, organ or part of the body." Within the entire scope of his practice, the osteopath is confined to treatment by the use of the hands or mechanical appliances.

The court then quoted from *State v. Wood*, 165 P. 592, as follows:

In *State v. Dodd* [citation omitted], we considered these statutes at length and concluded that the practice of medicine and surgery does not include the practice of osteopathy, and that the practice of osteopathy does not include the practice of medicine or surgery, that the Legislature has grouped all persons practicing the healing art into two distinct classes, (1) physicians and surgeons, and (2) osteopathic practitioners and that the so-called proviso added to section 1591 above [referring to the proviso discussed in this case] "did not affect the status of osteopathic practitioners in the least. They were confined thereafter, as theretofore, to the practice of osteopathy and forbidden to practice medicine or surgery without the certificate from the state board of medical examiners required of everyone who seeks to engage in such practice." We are more than ever confirmed in the correctness of those conclusions. The so-called proviso found in section 1591 [referring to the proviso quoted in this case], and the like provision in section 1603b [referring apparently to the section of the osteopathic practice act stating the scope of the license to practice osteopathy], were doubtless enacted out of abundance of caution and to emphasize the legislative intention that neither school of practice should be held to infringe upon the other.

The attorney general, continued the Supreme Court, the attorney who appeared as *amicus curiae* in the argument of this case before this court and this court itself are in accord on the propositions that operative surgery includes all surgery and that the omission of the word "minor" in the 1905 amendment to the osteopathic practice act does not authorize osteopaths to perform surgery of any kind, either minor or major. We think it is clear that osteopaths have no right to perform surgical operations on human beings unless they are licensed to do so by the state board of medical examiners.

The osteopath next contended that if he was guilty of any offense at all it was that of practicing surgery without a license, whereas he was charged in the information with practicing medicine without a license. The practice of medicine and the practice of surgery, answered the court, are considered as one under our statutes and under long acceptance by people generally, and there is no authority that we have found to justify any different notion about what practicing medicine means. Surgery is described by various authorities as follows:

"That branch of medical science, art, and practice, which is concerned with the correction of deformities and defects, the repair of injuries and diagnosis and cure of disease, the relief of suffering, and the prolongation of life, by manual and instrumental operations." *Webster's New International Dictionary*.

"There cannot be a complete separation between the practice of medicine and surgery, as they are developed by modern science, and understood by the most learned in the two professions, the principles of both are the same throughout, and no one is qualified to practice either who does not properly understand the fundamental principles of both." *2 Bouv. Law Dict., Revue's Third Revision*, p. 3209.

"Therapy of a distinctively operative kind, such as cutting operations." *Century Dictionary and Cyclopedia*.

"The art, practice, or work of treating diseases, injuries, or deformities by manual operation or mechanical appliances, the branch of medicine that is concerned with such treatment." *New Century Dictionary*.

"The branch of healing art that resorts to manual operations or mechanical appliances for the treatment of injuries, deformities, or internal morbid conditions." *Standard Dictionary*.

The judgment of the trial court in favor of the defendant osteopath was accordingly reversed and a new trial was ordered.—*State v. Thierfelder*, 132 P. (2d) 1035 (Mont., 1943).

## Society Proceedings

### COMING MEETINGS

- American Society of Anesthetists, New York, Dec. 9. Dr. McKinnie L. Phelps, 745 Fifth Ave., New York 22, Acting Secretary.
- American Society of Tropical Medicine, Cincinnati, Nov. 16-18. Dr. J. S. D'Antoni, 1430 Tulane Ave., New Orleans, 13, Secretary.
- American Therapeutic Society, Cincinnati, Nov. 15. Dr. Oscar B. Hunter, 1835 Ely St. N.W., Washington, D.C., Secretary.
- Annual Conference of Secretaries and Editors of Constituent State Medical Associations, Chicago, Nov. 19-20. Dr. Olin West, 533 North Dearborn St., Chicago 10, Secretary.
- Association for Research in Nervous and Mental Diseases, New York, Dec. 17-18. Dr. Thomas E. Bamford Jr., 115 East 82d St., New York 28, Secretary.
- Eastern Section, American Federation for Clinical Research, New York, Dec. 4. Dr. Charles H. Wheeler, 345 East 68th St., New York Act. Secretary.
- Radiological Society of North America, Chicago, Nov. 29-Dec. 3. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N.Y., Secretary.
- Seaboard Medical Association, Richmond, Va., Nov. 30-Dec. 2. Dr. Clarence P. Jones, 3117 West Avenue, Newport News, Va., Secretary.
- Society for the Study of Asthma and Allied Conditions, New York, Dec. 4. Dr. W. C. Sprim, 116 East 53d St., New York, Secretary.
- Southern Surgical Association, New Orleans, Dec. 7-9. Dr. A. Ochsner, 1430 Tulane Ave., New Orleans, Secretary.
- Southern Medical Association, Cincinnati, November 16-18. M. C. Loran, Empire Building, Birmingham, Alabama, Secretary.

## Current Medical Literature

## AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1913 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

## American Heart Journal, St. Louis

26 147 290 (Aug) 1943

- \*Glucose Deficiency as Factor in Production of Symptoms Referable to Cardiovascular System. T. R. Harrison and R. M. Finks—p. 147. Effect on Man of Potassium Administration in Relation to Digitalis Glycosides with Special Reference to Blood Serum Potassium. Electrocardiogram and Ectopic Beats. J. J. Sampson, E. C. Alberton and B. Kondo—p. 164.
- \*Embolism and Secondary Thrombosis of Bifurcation of Aorta. A. Coronary Occlusion with Endomyocardial Infarction. B. Mitral Stenosis with Atrial Fibrillation. G. R. Herrmann, J. G. Willis, W. F. McKinley and L. Karotkin—p. 180.
- Electrocardiographic Changes During Pneumoencephalography. M. W. Bick and B. S. Epstein—p. 200.
- \*Variation in Circulatory and Respiratory Responses to Carotid Sinus Stimulation in Man. M. Galdston, R. Goldstein and J. M. Steele—p. 213.
- Effect of High Protein Diet and Urea Administration on Blood Pressure of Normal Dogs and of Dogs with Experimental Renal Hypertension. J. L. Guerrant, J. K. Scott and J. E. Wood Jr.—p. 232.
- Cardiac Complications in Acute Glomerulonephritis. H. M. Odel and W. S. Tinney—p. 239.
- Pressor Action of Paredrine. Further Observations. A. Iglauder and W. E. Mollie—p. 247.
- Electrocardiographic Manifestations of Early Acute Cor Pulmonale. C. H. Scheffley and T. J. Dry—p. 264.
- Coronary Thrombosis and Myocardial Infarction in Youth. Report of Case with Autopsy in 19 Year Old Male. L. Zacks—p. 269.

**Dextrose Deficiency and Cardiovascular Symptoms.**—Harrison and Finks emphasize the relationship of certain disturbances of cardiovascular function to a metabolic disorder characterized by the following features: (1) The symptoms practically always occur two or more hours after meals, (2) they can usually be reproduced by the injection of insulin, (3) they can be relieved by the ingestion of dextrose and—in large measure—prevented by dietary regulation, and (4) at the time the symptoms occur the level of the blood sugar is usually either slightly subnormal or within the lower limits of the normal range. The disturbance of carbohydrate metabolism which is responsible for these symptoms has been designated as 'relative hypoglycemia'. It is a common factor in the production of symptoms referable to the circulatory system and has been found in 31 of the latest 204 patients with cardiovascular complaints seen by the authors. Relative hypoglycemia may produce manifestations identical with those observed in patients with cardiac neurosis. The two conditions are difficult to differentiate and they frequently coexist. Relative hypoglycemia may be a 'trigger' factor in precipitating various arrhythmias (including paroxysmal tachycardia) as well as attacks of angina pectoris, hypertensive encephalopathy, carotid sinus syncope and circulatory disturbances associated with the menopause. Relative hypoglycemia is frequently associated with pain in the chest which is nonanginal in character. Occasionally in patients with typical effort angina it induces attacks of angina pectoris at rest. The circulatory manifestations of relative hypoglycemia are the same as those observed after the experimental or therapeutic administration of insulin. They appear to be related to two mechanisms: release of epinephrine and alterations comparable to those which occur in anoxia. The increased venous return so brought about causes an augmented cardiac output and the typical signs of the 'overactive heart'. The attempt to reproduce the symptoms in a given case by insulin administration is a more valuable diagnostic method for certain patients than the dextrose tolerance test. Both methods are less important than the history. When relative hypoglycemia is causing symptoms benefit can usually be obtained by the use of a diet which is poor in carbohydrates

and rich in protein with intermediate feedings. Observation of the response to such a diet is therefore at times a helpful diagnostic measure.

**Embolism and Secondary Thrombosis of Bifurcation of Aorta.**—Herrmann and his collaborators report 5 cases of saddle embolus at the bifurcation of the aorta, with one recovery, and necropsy studies in 3 cases. The first 2 patients were elderly men with hypertensive arteriolar disease, atherosclerosis, coronary thrombosis and endomyocardial infarction and mural thrombi. These thrombi gave rise to emboli which lodged at the bifurcation of the atherosclerotic aorta, followed by secondary thrombosis. The third patient was an elderly woman with rheumatic mitral stenosis and insufficiency, atrial fibrillation, vegetative endocarditis, hypertensive arteriolar disease and mural thrombi in all of the heart chambers. An embolus, probably from the left atrium, saddled the bifurcation of the aorta. Arteriosclerosis of the aorta near the bifurcation apparently was responsible for massive, secondary thrombosis. The last 2 patients were younger persons with rheumatic mitral stenosis and insufficiency and atrial fibrillation. They apparently had less aortic disease and survived longer after the emboli lodged at the aortic bifurcation. Both subsequently had cerebral embolism, 1 died and 1 survived. Conservative medical treatment was practiced in all instances. Heparinization and surgical intervention would probably have been successful in some of the cases. The authors stress that patients with coronary occlusion and myocardial infarction and those with rheumatic mitral disease and auricular fibrillation or verrucous endocarditis are candidates for saddle embolism. The bifurcation of the aorta, iliacs or other great arteries are not uncommon sites for the lodgment of relatively large emboli. The secondary aortic thromboses that follow in atherosclerotic aortas are most serious. The occurrence of abdominal cramps should lead one to suspect movement of the emboli down the aorta. Sudden sharp pains in one leg and then in the other, followed by paresthesias, coldness, blanching, lowered skin temperatures and absent or greatly decreased femoral pulses should lead one to suspect lodgment of an embolus at the bifurcation of the aorta. Oscillometric studies are confirmatory of the absence of pulsations. When the embolus is small and the obstruction incomplete, a much less clearcut clinical picture is presented. Papaverine hydrochloride in a dose of 0.032 Gm ( $\frac{1}{8}$  grain) intravenously should be started as soon after the onset as possible. Morphine is used to control the pain. Whisky should be administered freely. Passive movements, postural exercises and passive vascular exercise are to be undertaken. Lumbar sympathetic block should be produced to relieve pain and cause maximum peripheral vasodilatation. In elderly persons because of the great likelihood of secondary thrombosis, heparinization should be instituted. Heparinization followed by dicumarol may some day become a routine emergency procedure in the treatment of all cases of massive coronary thrombosis. The patients with rheumatic heart disease seem to have the best prognosis as far as saddle embolism is concerned.

**Responses to Carotid Sinus Stimulation in Man.**—Galdston and his associates review the history of research on carotid sinus stimulation, giving particular attention to the investigations of Weiss and his co-workers, who distinguished three types of syncope resulting from carotid sinus stimulation. The first, in which syncope is accompanied by definite slowing of the heart rate or asystole and a consequent fall in arterial pressure, is designated the 'vagal type', the second, in which a pronounced fall in arterial pressure occurs without significant slowing of the heart the 'depressor type' and the third, in which there is syncope without either slowing of the heart or fall in arterial pressure, the 'cerebral type'. The authors studied the relationships in point of time, between changes in arterial pressure, pulse rate, venous pressure, respiration and the onset of syncope and convulsions. One hundred persons were examined, 26 of whom presented a sensitive carotid sinus reflex. Of these, 17 regularly had convulsive seizures on stimulation of the carotid sinus. The common circulatory response in the 17 persons was slowing of the heart and asystole (vagal response) with a fall in arterial pressure (depressor response). A pure vagal response was next most common. A pure depressor response was not observed except when the patient was



under the influence of atropine. Paradrine hydrobromide prevented to a large degree the depressor responses. Two patients had convulsions without significant circulatory change (cerebral type). In 3 other patients syncope and convulsions persisted when circulatory changes were inhibited by the administration of atropine or paradrine. Hyperpnea is the regular respiratory response to digital pressure in the region of the carotid sinus. Its occurrence is independent of the circulatory response. It is independent of age or sex. It is not prevented by barbiturate anesthesia, but local infiltration of the region about the carotid sinus and carotid body with procaine hydrochloride abolishes it. Prolonged stimulation is often followed by a phasic type of respiration similar to Cheyne-Stokes breathing. Evidence is presented that hyperpnea after pressure on the neck in the region of the carotid sinus in man may be caused by a disturbance of the blood supply to the carotid body rather than by mechanical stimulation of the carotid sinus.

### American Journal of Public Health, New York

33 1043-1186 (Sept.) 1943

- Child as Wartime Problem. R. H. Parry—p. 1043  
Laboratory Examination of Latent and Drunken. Utensils. R. L. France, J. I. Fuller and W. I. Cassidy—p. 1051  
Venereal Disease Epidemiology. Third Service Command. Analysis of 101 Contract Reports. I. W. Norris, A. I. Doyle and A. P. Isbrandt—p. 1065  
Course of Serologic Tests During Therapeutic Malaria in Patients with Sphulir. H. I. Kaplan and I. J. Brightman—p. 1073  
Effect of Activated Sludge Process of Sewage Treatment on Poliomyelitis Virus. H. J. Carlson, G. M. Ridenour and C. I. McKhann Jr.—p. 1083  
Tuberculosis Survey Among Employees of Santiago Chile. B. Viel and J. A. Jelic—p. 1088  
Public Health and Economic Aspects of Pneumonia—Comparison with Presulfonamide Years. H. E. Langerleider, H. W. Steinhaus and R. S. Gubier—p. 1093  
Industrial Eye Health Problems. H. S. Kuhn—p. 1103  
Jettison Toxoid and Its Use for Active Immunization. D. T. Fraser, D. I. Macfearn, M. D. Orr, H. C. Plummer and I. O. Wishart—p. 1107  
Use of Current Birth Certificates in Planning a Maternal and Child Health Program. W. C. Welling, Martha L. Clifford and E. T. Fracy—p. 1115

**Effect of Activated Sludge Process on Poliomyelitis Virus**—Carlson and his associates investigated the effect of the activated sludge process as used in municipal sewage disposal plants on the removal or inactivation of a mouse adapted strain of poliomyelitis virus. Virus suspension 1:300 was used in sludge concentrations of 1,100, 2,200 and 3,300 parts per million with aeration periods of zero, six and nine hours. The results indicate that activated sludge in amounts as low as 1,100 parts per million with six hours' aeration will remove or inactivate the virus to a sufficient extent to reduce greatly infectivity for mice injected intracerebrally. Heavier concentrations of sludge with longer aeration periods largely eliminate infectivity.

### Archives of Dermatology and Syphilology, Chicago

48 251-358 (Sept.) 1943

- Halowax Acne ("Cable Rash"). Cutaneous Eruption in Marine Electricians Due to Certain Chlorinated Naphthalenes and Diphenyls. C. K. Good and N. Pensky—p. 251  
Cutaneous Tests with Hen's Egg White Fractions in Atopic Infantile Eczema. S. E. Dikowsky, R. Hecht, A. G. Cole and Belle Levin—p. 258  
Collloid Pseudomulum. Review of Its Nomenclature and Report of Case. H. L. Arnold Jr.—p. 262  
Keratoderma Chimericum (Haxthausen). Hypoestrogenic Keratoderma. T. W. Lynch—p. 270  
Mosaic Fungus. Cholesterol Intercellular Artefact. T. Cornbleet, H. C. Schorr and H. Popper—p. 282  
Pityriasis Rubra Pilaris of Familial Type. Experiences in Therapy with Carotene and Vitamin A. A. L. Weiner and A. A. Levin—p. 288  
Blood Level and Excretion of Arsenic Following Single Injections of Chlorarsen. H. B. Henning and R. H. Kampmeier—p. 297  
Treatment of Acne Vulgaris with Comedones by Monoterminal Electrodesiccation. R. Noulard—p. 302  
Incidence of Psoriasis Among Population at Large. E. Gahrn—p. 305  
Changes in Finger Nails in Pulmonary Tuberculosis. A. L. Banyai and A. V. Cadden—p. 306  
Yellow Dermographia. V. J. Derbes and H. T. Engelhardt—p. 310

**Hypoestrogenic Keratodermitis**—Lynch describes 10 cases of hypoestrogenic keratodermitis. Microscopic changes as seen in a study of 5 specimens presented a greater degree of inflammatory reaction than was noted in the case studied by

Haxthausen. Swelling of the collagenous fibers and degeneration of the elastin were also noted. In most cases a favorable effect resulted from administration of diethylstilbestrol for as short a period as one or two weeks. To obtain a cure the treatment had to be continued for several months. It is not possible to point out clinical or microscopic features which allow differentiation of hypoestrogenic keratodermitis from neurodermatitis. It is the author's belief that the palmar and plantar eruption described by Brooke and known as keratoderma chimericum (Haxthausen) is a form of variant of neurodermatitis. The eruption is associated with a disturbed estrogenic activity in so large a proportion of cases that one is forced to regard the association as of major etiologic significance. The favorable clinical response to administration of estrogens is more striking than the occasional moderately favorable influence of these agents on the more common forms of neurodermatitis. These reasons lead Lynch to believe that the disease will be recognized more generally and treated more intelligently if such cases are described under another title rather than under the broad and frequently misunderstood term "neurodermatitis." Because the disease occurs also in women who have evidence of endocrine disorder but are not approaching or passing through the climacteric and because the term keratoderma is not acceptable to authorities on nomenclature, Lynch suggests that "hypoestrogenic keratodermitis of the palms and soles" is a more suitable title than the terms applied by Brooke or by Haxthausen.

### Canadian Medical Association Journal, Montreal

49 161-250 (Sept.) 1943

- Effect of Surgical Operations on Blood Pressure. J. D. Adamson and Sara Dubo—p. 161  
Some Aspects of Sterility. J. S. Henry—p. 167  
Fractures of Metacarpals Treated by New Method. H. R. C. Norman—p. 173  
Case of Carcinoma of Nasopharynx. V. de Boissiere—p. 176  
Radiation Treatment of Cancer of Cervix. N. A. McCormick—p. 178  
Problem of Varicose Disease. G. A. Holland—p. 184  
Diabetes Mellitus Associated with Addison's Disease. N. W. Nix—p. 189  
Some Observations on Panama Passage. W. A. Paddon—p. 191  
Epidermolysis Bullosa with Digestive Disturbances. M. J. M. LaSalle—p. 194  
Indications for Drug Therapy in Heart Disease. S. U. Page—p. 195  
Simplified Classification of Skin Diseases. K. A. Baird—p. 200

### Effect of Surgical Operations on Blood Pressure

Adamson and Dubo direct attention to the spontaneous, non-therapeutic, oscillation in blood pressure, because it has been frequently overlooked in judging therapeutic effects. The most recent innovation in the treatment of essential hypertension is sympathectomy. According to some reports, gratifying results have been obtained. All postoperative improvement, whether objective or subjective, is usually attributed to the specific effect of the operation. In view of the known lability of blood pressure and the effect of suggestion on symptoms, these claims demand critical examination. Volkmann and Flaxman have produced evidence to show that symptomatic relief and reduction in blood pressure resulting from nonspecific surgical measures, e.g. hysterectomy, prostatectomy and cholecystectomy, in the presence of essential hypertension are similar to and sometimes better than those obtained by extensive sympathectomy, splanchnic nerve section or celiac ganglionectomy. The authors determined blood pressure changes associated with major nonspecific operations and compared them with those claimed for various sympathectomy operations. The blood pressures of 208 patients before and after major operations and 28 additional patients with hypertension who were not operated on were followed during hospitalization. There was a definite reduction in blood pressure in all cases which was similar in the two groups. Alleged specific effects must be measured against known non-specific effects which take place concurrently with all surgical operations. Careful and prolonged observation under various conditions must be made before and after sympathectomy before definite conclusions can be arrived at.

**Radiation Treatment of Cancer of Cervix**—McCormick reviews the different methods in the treatment of cervical cancer and shows that the combination of x-rays and radium is the best. He describes the technique of this treatment and reviews observations in 135 cases. He arrives at the following conclusions:

clusions 1 Carcinoma of the cervix should be treated by radiotherapeutic methods without previous surgical intervention and with as little manipulative trauma as possible 2 Roentgen irradiation must be adequate and given without thought of expense 3 This can be achieved with modern 200 kilovolt equipment, but only by the use of long skin target distances and heavy filtration 4 The roentgen irradiation is followed by radium treatment 5 The expense of the patient is comparable to that of any major surgical procedure 6 The results in all but the most hopelessly advanced cases are encouraging, and superior to earlier methods of treatment 7 Patients living and apparently free from cancer at the end of three years may reasonably be expected to remain well for at least a five year period 8 Fifty per cent of patients treated as described are living normal lives five years later

### Indiana State Medical Assn. Journal, Indianapolis 36 425-534 (Sept) 1943

- Ninth Naval District Medical Services H I Dollard—p 425  
History of Organized Anesthesia in Indiana F T Roubenger—p 428  
Surgical Management of Perforative Appendicitis W C Reed, B Word and C C Brock—p 437  
Determination of Prognosis in Glomerulonephritis by Clinical Methods P C Dietz—p 441  
Head Injuries Followed by Postconcussional Syndrome I W Painter—p 445  
Absorption of Sulfanilamide from Burned Surfaces M P Welborn—p 447

### Journal of Allergy, St Louis 14 437-506 (Sept) 1943

- Contact Reactions in Atopy III Contact Reactions in Various Atopic Illnesses M Albert and M Walzer—p 437  
Electrophoretic Studies on Chemical Fractionation of Ragweed Pollen Extracts J M Newell—p 444  
Volumetric Incidence of Atmospheric Allergens I Specific Gravity of Pollen Grains O C Durham—p 455  
Effect on Sodium Potassium and Thiosulfate Ions on Anaphylaxis R G Carlson and R W Whitehead—p 462  
Welmann Reaction in Bronchial Asthma Susan C Dees, with technical assistance of Susan Spell—p 469  
Dermatitis Due to Resin Finished Shorts and Fabrics Investigation of Cause Pathogenesis and Related Phenomena Observed in 10 Cases H Keil—p 477  
Use of Aminophylline Rectal Suppositories in Treatment of Bronchial Asthma Preliminary Report Susan C Dees—p 492  
Plasma Treatment of Severe Near Fatal Anaphylactic Shock A H Reynolds—p 495

### Journal of Aviation Medicine, St Paul 14 157-232 (Aug) 1943

- Study of Effects of Airplane Transportation of 200 Patients J H Fillsch J T Stotter and W R Lovelace II—p 162  
Steroid Excretion and Stress of Flying G Pincus and H Hoagland—p 173  
Organ Weight Body Weight Ratios in Dogs Following Exposures to Discontinuous Anoxia E J Van Lier and J C Stickney—p 194  
Interesting Application of Basic Science to Aviation Medicine F E Randall and A. Damon—p 200  
Observations on Results of Indoctrination of Aviation Personnel in Use of Oxygen Equipment in Low Pressure Chamber at Pensacola Florida H A Smedal—p 206  
Treatment of Aero Otitis Media by Redecompression H A Smedal H R Bierman and J L Lilienthal Jr—p 211  
Present Trends in Teaching at Army School of Aviation Medicine C E Kossman—p 216

**Treatment of Aero-Otitis Media by Redecompression.**—Smedal and his associates report that of more than 10,000 individuals who have been subjected to rapid changes in barometric pressure in the low pressure chamber at the U S Naval Air Training Center Pensacola, Fla., approximately 12 per cent have developed "ear block" during descent or recompression in the chamber, and many of the same group presented symptoms and signs of aero otitis media. The precipitating event which precedes the development of aero otitis media is an increase in the ambient pressure without compensatory ventilation of the middle ear by way of the eustachian tube. The resultant relative vacuum is responsible for the vascular hyperemia and fluid exudation within the middle ear, and thus for the symptoms. The treatment by redecompression consisted of a rapid ascent in the low pressure chamber to a pressure altitude which permitted voluntary ventilation of the affected middle ear. In the individuals studied this altitude averaged 5,000 feet but varied from 3,000 to 8,000 feet. It proved necessary to urge each patient to maintain voluntary ventilation of the middle ear by frequent swallowing or a modified Valsalva

maneuver because the course of aero otitis media was marked by periodic recurrences of reduced pressure within the middle ear and the characteristic accompaniments of pain, sense of fullness and diminished hearing acuity. In 27 of a group of 33 men with severe aero otitis media, this form of treatment has effected immediate relief of symptoms and rapid resolution of the process. The failures occurred in patients who for any reason were unable to effect or to maintain aeration of the middle ear during and after redecompression. The simplicity of treatment by redecompression recommends its use in preference to catheterization of the eustachian tube.

### Journal of Immunology, Baltimore 47 89-180 (Aug) 1943

- Chemistry of Pollen Extracts II Phosphotungstic Acid as Protein Precipitant in Standardization of Ragweed Pollen Extract L A Brown and N Benoit—p 89  
Mouse Protective Test is Uniform Method of Assay for Antibacterial and Antiviral Serums P A Little—p 97  
Specificity of Antibodies to Antigens Containing Two Different Determinant Groups I Hurovitz and I Schwerin—p 111  
Studies on Specific Mechanism of Serum Sickness III Passive Sensitization with Antibody Contained in Serum Sickness Convalescent Serum S Karelitz and A Glorin—p 121  
Relationship of Protein Reserves to Antibody Production I Effects of Low Protein Diet and of Plasmapheresis on Formation of Agglutinins P R Cannon W E Chase and R W Wissler—p 133  
Inheritance of Agglutinogen of Chicken Erythrocyte C Olson Jr—p 149  
Agglutination of Hemophilus Pertussis Phase I, for Skin Testing Theoretical Considerations and Simple Method of Preparation J Smolens and S Mudd—p 155  
Immunologic Studies of Pollinosis IV Relationship Between Thermostable Antibody in Circulation and Clinical Immunity Mary Hewitt Lovelless—p 165

### Journal of the Mount Sinai Hospital, New York 10 341-388 (July-Aug) 1943

- Pharmacology and Toxicology of Sulfonamides L P Pick—p 343  
Retroperitoneal Teratoid Tumors in Infancy and Childhood E E Arnheim—p 355  
Significance of Somatic Stigmatization in Childhood R Wagner—p 365

### Journal of Nervous and Mental Disease, New York 98 229-342 (Sept) 1943

- Alterations in Communicability Content of Thought and Affective Response During Irritative (Camphor) Therapy E Friedman—p 229  
Agranulocytosis Following Malarial Therapy in General Paresis. T J Heldt and G A Goder—p 248  
Principle of Evolution of Nervous Function W Riese—p 255  
Mental Symptoms in Multiple Sclerosis Study of 28 Cases with Review of Literature C Sugar and R Nadell—p 267  
Neuropsychiatric View of German Culture Treatment of Germany R M Brickner and L V Lyons—p 281  
Psychiatry and Neurology One Hundred Years and Fifty Years Ago H Stanka—p 294

### Journal Pharmacology & Exper Therap, Baltimore 78 321-414 (Aug) 1943

- Blood Pressure and Respiratory Changes Produced by Strychnine Convulsions B E Abreu and R A Woodbury—p 321  
Effect of Cocaine on Inactivation of Epinephrine and Sympathin Clara Torda—p 331  
Influence of Low Concentrations of Cocaine on Metabolism of Phenol Clara Torda—p 336  
Comparative Toxicity of Chloral Alcoholate and Chloral Hydrate W L Adams—p 340  
Absorption of Quinine Sulfate and Quinine Dihydrochloride from Isolated Intestinal Loops of Dogs J C Andrews and C E Anderson—p 346  
Absorption Rates of Insulin Globin Insulin and Protamine Zinc Insulin Labeled with Radioactive Iodine L Reiner E H Lang J W Irvine Jr W Peacock and R D Evans—p 352  
Effects of Anesthetic Agents on Muscular Contraction E G Gross and S C Cullen—p 358  
Fate of Sulfonamides and p-Aminobenzoic Acid in Cold Blooded Animals R B Failey Jr R C Anderson F G Henderson and K K Chen—p 366  
Action of Riddelline P N Harris R C Anderson and K K Chen—p 372  
Inactivation of Cholinesterase by Morphine Difenidol Codeine and Desomorphine C I Wright and J C Sabine—p 375  
Reduction of 2,4,6-Trinitrotoluene by Animal Tissue in Vitro B B Westfall—p 386  
Conjugation in Vitro of Phenol by Guinea Pig Liver F Bernheim and Mary L C Bernheim—p 394  
Effect of Anesthesia on Lymph Flow (Local Procaine Ether Pentobarbital Sodium) H Polderman Jane D McCarrell and H K Beecher—p 400

## Journal of Urology, Baltimore

50 123-264 (Aug) 1943

- Renal Tetrapy Report of 2 Cases C I Rusche and J I Bray—p 123
- Secondary Pathologic Changes in Polycystic Kidney Disease R M Robbitt—p 131
- Surgical Management of Acute Renal Infections J Duff, H R Kenyon and I W Hauser—p 141
- Unilateral Renal Agenesis Anatomic Description of Specimen I H Diseler and B I Anson—p 155
- Ascites Operation for Its Relief Case Report C Ferguson—p 161
- Urinary Lithiasis Review of Quarter Century of Research I D Keyser—p 169
- Bactericidal Action of Stone Dissolving Agent 'Solution G' H R Sauer and I Neter—p 191
- Solution of Vesical Phosphate Calculi D J Abramson—p 197
- Metabolism of Citric Acid in Urolithiasis W W Scott, C Huggins and Bernice C Selman—p 202
- \*Total Cystectomy for Carcinoma of Bladder J F Priestley and G W Strom—p 210
- Cancer of Prostate Clinicopathologic Study of 31 Cases in Negroes W S Quinlan—p 228
- Blasatomyxosis of Epididymis Report of 4 Cases C I Jacobson Jr and M B Doherty—p 237
- Mesoblastoma of Epididymis and Tunica Vaginalis N Evans—p 249
- Tumors of Spermathecal Cord Report of Hemangioma H A Zide—p 255
- Sodium Mandelate an Intravenous Solution Available for Therapeutic Use G Carroll and K Coleman—p 258
- Cystoscopic Kidney Applicators I H Eaton—p 263

**Total Cystectomy for Carcinoma of Bladder**—Priestley and Strom reviewed the records of all cases in which total cystectomy for neoplasm was performed at the Mayo Clinic from 1910 to Aug 31, 1942 inclusive. In each of these cases a malignant lesion was demonstrated by pathologic examination of a specimen taken for biopsy prior to operation. The total number of patients operated on was 105. There were 51 patients who survived total cystectomy for carcinoma of the bladder. Of these 51 patients 26 have died since operation, 15 of these within the first postoperative year. The remainder died at intervals ranging from one to six and one-fourth years after operation. The cause of death was ascertained for 20 of this group of 26 patients. Metastasis was the cause of death of 16, whereas 4 died of renal failure. Of 13 who died because of metastasis, extension of the carcinoma beyond the bladder was noted at the time of operation. It appears unwise to perform cystectomy if the growth has extended so that its complete removal is questionable. There is a small group of patients who may die some time after operation because of pyelonephritis and its complications, but it is hoped that, as experience with ureterosigmoidostomy grows, the incidence of such renal complications will be reduced. Of the group of 51 patients who survived cystectomy, 24 are still alive and 1 could not be traced. The length of postoperative experience for this group of patients is too brief to permit an accurate estimate of ultimate survival rates. Seventeen have been operated on within the past year. Eight patients are living one to twenty-eight years after operation. Despite the comparatively high operative mortality rate associated with this procedure in years past, total cystectomy has appeared to be the only hope of cure in many cases of carcinoma of the bladder. Indications for the operation remain controversial and will be determined definitely only by more experience. Careful selection of patients and close attention to preoperative and postoperative care as well as to the fundamentals of operative technique have reduced the initial operative mortality rate to a point where total cystectomy can be considered a justifiable procedure.

## Maine Medical Association Journal, Portland

34 147-168 (Aug) 1943

- Emergency Medical Service A W Reggio—p 147
- Dementia Precox F C Tyson—p 151

## Nebraska State Medical Journal, Lincoln

28 273-304 (Sept) 1943

- Interpreting Paradoxical Reactions in Serology of Syphilis R L Kahn—p 276
- Psychoneuroses of War G A Young—p 280
- Should Most Gastric Ulcers Be Treated Surgically or Medically? J D Bisgard—p 285
- Traumatic Injuries of Urinary Tract Part I Straddle Injuries of the Urethra P Adams—p 288

## New England Journal of Medicine, Boston

229 309-352 (Aug 19) 1943

- \*Pulmonary Embolism Due to Quiet Venous Thromboses and Simulating Cardiac and Pulmonary Disease J Homans—p 309
- Health Examination of Adolescents J R Gallagher—p 315
- Nutritional Background of Patients with Rheumatoid Arthritis T B Byles, H Richardson and F C Hall—p 319
- Advances in Malaria Research (concluded) Q M Geiman—p 324

**Pulmonary Embolism Due to Quiet Venous Thrombosis**—Homans reports 11 cases of quiet thrombosis in the lower limb causing pulmonary embolism in ambulatory patients. Six similar cases are reported in which an old thrombophlebitis, an injury or an illness had preceded the thrombosis. Quiet thrombosis, or so-called phlebothrombosis, is a noninflammatory, reactionless process. It takes place in the deep veins of the legs, usually below the knees. The peculiar and dangerous quality of a quiet venous thrombosis lies in its decided tendency to form a loose, soft, detachable thrombus. The explanation of the lack of statistics warning the profession of the incidence of quiet thrombosis and consequent embolism lies in this, that the more silent the process the greater is the danger of embolism. A fatal pulmonary accident may come from a leg that even those most familiar with venous thrombosis must consider normal, and by contrast the great swollen leg of thrombophlebitis almost never causes embolism. The original thrombosis may pursue three courses: recovery without extension, development into phlegmasia alba dolens, and formation of a propagating thrombus with pulmonary embolism. Consideration of the cases presented shows that, since pulmonary infarction and embolism often simulate cardiac and pulmonary disease in ambulatory patients otherwise well, they must be considered in the differential diagnosis of many acute and recurrent thoracic disorders. Repeated embolism associated with quiet thrombosis is not rare, the dangerous or fatal quality of any one process is unpredictable, operative treatment to secure interruption of the thrombosed vein proximal to the source of embolism is always indicated. Conservative treatment, even if not followed by further embolism, is unlikely to prevent continuance or recurrence of the thrombosis. The use of heparin does not protect against repeated embolism and a fatal outcome.

229 353-386 (Aug 26) 1943

- \*Effect of Vitamin K<sub>1</sub> Oxide on Hypoprothrombinemia Induced by Dicumarol C S Davidson and Harriet MacDonald—p 353
- Cardiac Arrhythmias Following Pneumectomy C C Bailey and R H Betts—p 356
- Cardiac Arrhythmias Following Thoracic Surgery J H Currens, P D White and E D Churchill—p 360
- Bright's Diseases S E Bradley—p 364

**Vitamin K<sub>1</sub> Oxide in Hypoprothrombinemia Induced by Dicumarol**—Davidson and MacDonald show that dicumarol as an anticoagulant has advantages over heparin, such as activity when given by mouth and relatively low cost, but it has the serious disadvantage of lack of control. Several investigators have demonstrated that vitamin K has an action antagonistic to dicumarol. The authors were able to reverse the hypoprothrombinemia produced by dicumarol in 3 out of 4 patients by administration of large doses of vitamin K<sub>1</sub> oxide. It is probable that an inadequate amount of the vitamin was administered to the fourth patient. In 1 patient the administration of vitamin K<sub>1</sub> oxide prevented the subsequent establishment of a hypoprothrombinemia following the administration of dicumarol. The amount of vitamin K<sub>1</sub> oxide required to produce the desired effect varied considerably from patient to patient. No serious toxic manifestations were observed from the administration of large amounts of the vitamin. The only untoward action observed was transient headache and, in 1 patient, vomiting. It is suggested that the action of vitamin K<sub>1</sub> oxide in reversing the hypoprothrombinemia established by single doses of dicumarol may make the therapeutic use of this anticoagulant safer than it has been heretofore.

## New Jersey Medical Society Journal, Trenton

40 297-348 (Aug) 1943

- Fundus Lesions in Syphilis A Rados—p 304
- Report of Death After Tonsillectomy with Recommendations M J Fisher and C H Knauer—p 311
- Outline of Simple and Rapid Method of Operation

Oklahoma State Medical Assn Jour, Oklahoma City

36 323-368 (Aug) 1943

- Epidemic Poliomyelitis L W Hunt—p 323  
Plan for Use of Blood Plasma in Rural Communities A R Wiley  
—p 329  
Lower Abdominal Pain in Female C M Longstreth—p 330  
Recent Advances in Psychosomatic Medicine C E Leonard—p 334  
Epidemic Keratoconjunctivitis Summary of Recent Literature V C  
Myers—p 337

Pennsylvania Medical Journal, Harrisburg

46 1121-1248 (Aug) 1943

- Influence of Sensitivity and Immunity on Ocular Tuberculosis A C  
Woods—p 1133  
\*Early Diagnosis of Cancer of Colon W L Estes Jr—p 1139  
Elimination of Colostomy in Radical Treatment of Cancer of Large  
Bowel Based on Over 400 Cases W W Babcock and H E  
Bacon—p 1143  
Deformities of Duodenum Other Than Those Due to Ulcer J T  
Farrell Jr—p 1149  
Hodgkin's Disease in Dermatology and General Practice G J Bus  
man and J M Johnston—p 1153  
What Can Be Done for Child with Beginning Deafness? D MacFarlan  
—p 1157  
Differential Diagnosis of Edema of Optic Disk G B Gibson—  
p 1164  
Clinical Evaluation of Bactericidal Lamp (Gosztonyi) A Fisher  
—p 1166  
Hyperchronic Anemia in Chronic Biliary Dysfunction Response to Liver  
Therapy M G Colvin—p 1168  
Infectious Mononucleosis K M Houser—p 1173

**Early Diagnosis of Cancer of Colon**—Estes reviewed 40 proved cases of cancer of the large intestine to ascertain some criterion whereby cancer of the colon might be suspected from its first manifestations. He found that in 85 per cent the first complaint was abdominal pain or intermittent colic associated with constipation and relieved by the passage of gas or defecation not accompanied by obvious change in stools. After it was recognized that these symptoms are suggestive of cancer of the large intestine, a particularly exhaustive investigation of patients presenting these symptoms was undertaken. As a result, in the next one and a half years the resectability rate for cancer of the colon increased from 45 to 85 per cent. The author concludes that all persons, especially those over 40 years of age, with a change in bowel habit and with unexplained local abdominal pain, intermittent gas cramps or distention should be suspected of having a cancer of the colon until proved otherwise. Persons presenting these symptoms should have an exhaustive clinical survey including bimanual rectal and pelvic examination, sigmoidoscopy, x-ray study, test for occult blood in the stool and peritoneoscopy when indicated. If these cases are suspected and proper investigation made, cancer of the large intestine can be discovered in a sufficiently early stage to permit radical surgical resection and cure.

Public Health Reports, Washington, D C

58 1233-1264 (Aug 13) 1943

- \*Jaundice Following Administration of Human Serum J W Oliphant  
A G Gilliam and C L Larson—p 1233  
Toxic Effects of Atabrine and Sulfadiazine in Growing Rats C J  
Wright and R D Lillie—p 1242  
Sickness Absenteeism Among Male and Female Industrial Workers,  
1933-1942 Inclusive W M Gaffner—p 1250

58 1265-1292 (Aug 20) 1943

- Incidence and Prevalence of Cancer of Lung H T Dorn—p 1265  
Carbazon Treatment for Balantidium Coli Infections M D Young  
and K Burrows—p 1272  
Sickness Absenteeism Among Industrial Workers First Quarter of  
1943 with an Inquiry into Occurrence of Respiratory Diseases  
1934-1943 W M Gaffner—p 1273  
Mechanism of Antitoxic Immunity in Clostridium Perfringens (Welch)  
Infections in Guinea Pigs Sarah E Stewart—p 1277

58 1293-1328 (Aug 27) 1943

- Studies on Trichinosis XX Summary of Findings of Trichinella  
Spiralis in Random Sampling and Other Samplings of Population of  
the United States W H Wright K B Kerr and L Jacobs  
—p 1293

**Jaundice Following Administration of Human Serum**—Oliphant and his associates studied hepatitis following the use of yellow fever vaccine when an outbreak occurred in the Virgin Islands in the summer of 1942. A total of 11,358 individuals on the islands of St Thomas and St John was inocu-

lated with lot 331 yellow fever vaccine containing pooled human serum. The vaccinations were performed between March 4 and March 28, 1942. Jaundice was first noted in May. It was estimated that between 300 and 500 cases occurred. A survey revealed that among the vaccinated population the incidence of jaundice was 14.7 per cent. The disease varied from very mild to extremely severe cases. It seems evident from the prolonged incubation period and from the clinical symptoms that the disease under observation was identical with that previously described and designated as homologous serum jaundice. In experimental studies the authors produced jaundice by inoculation of two lots of yellow fever vaccine containing pooled human serum. Jaundice was produced by the inoculation of small amounts of filtered serum from 2 individuals and a group of 9 individuals who had previously received yellow fever vaccine containing human serum. The jaundice producing agent is filtrable and survives drying in vacuum storage for long periods in serum at 4 C and heating to 56 C for one-half hour in the dried state. Evidence is presented that the jaundice producing agent is present in the blood before jaundice appears but not two and one-half months after disappearance of jaundice. There was evidence suggesting that the jaundice producing agent may be neutralized by ultraviolet irradiation. The sexes are apparently equally susceptible. Transmission of this type of jaundice by ordinary contact has not occurred during this study. Attempts to produce jaundice in experimental animals and to develop a complement fixation test were unsuccessful. It was recognized in 1942 during an epidemic of jaundice in the United States Army that some agent in human serum employed as a diluent in yellow fever vaccine was probably responsible. The yellow fever vaccine now in use does not contain serum and so far has not produced jaundice.

Radiology, Syracuse, N Y

41 213-314 (Sept) 1943

- \*Preoperative Roentgen Therapy of Breast Carcinoma Analysis of Histologic Reaction and Roentgen Technique D S Dann and R Koritschoner—p 213  
Radiation Therapy in Carcinoma of Rectum and Sigmoid Experimental Study of 'Danger' Dose of Roentgen Rays for Intestinal Mucosa in Dogs and Analysis of 195 Cases Treated in State of Wisconsin General Hospital During 1928-1938 L A Pohle and B K Lovell—p 225  
Radiologic Exploration of Sinus Tracts, Fistulas and Infected Cavities H C Gage and E R Williams—p 233  
Roentgen Therapy for Bronchogenic Carcinoma E T Leddy—p 249  
Radium Treatment of Granular or Hypertrophied Lateral Pharyngeal Tonsillar Bands R E Fricke and P N Pastore—p 256  
Giant Cell Tumors Radiation Therapy and Late Results J Gershon Cohen—p 261  
Roentgen Therapy of Orbital Pituitary Portals for Progressive Exophthalmos Following Subtotal Thyroidectomy F B Mandeville—p 268  
Protection in Radiology An Exhibit Edith H Quimby and J Pool—p 272  
Types of Pulmonary Tuberculosis Which Demand Disqualification for Active Duty in Navy C H Warfield—p 282  
Some Considerations of Wartime Radiology in Navy C F Behrens—p 284  
Federal Regulations Affecting Allocation of X-Ray Equipment and Supplies R K Myers—p 288

**Preoperative Roentgen Therapy of Breast Carcinoma**—Analysis of 12 cases by Dann and Koritschoner reveals that complete sterilization of carcinoma of the breast and axillary nodes by fractionated irradiation has not been accomplished. Irradiation brings about a definite reduction in the size of the tumor and pronounced regressive changes, which may be due to the enhancement of the natural defensive reaction of the host. Operable carcinoma of the breast should be treated by radical amputation. The additional benefit derived from preoperative irradiation of operable carcinoma remains to be established. Inoperable carcinoma may become operable after irradiation. Radiation therapy is recommended in inoperable carcinoma, operable carcinoma for which operation is refused and operable carcinoma with physical conditions contraindicating operation. Further studies of the individual factors governing irradiation may disclose an improved technique for the treatment of carcinoma of the breast. The authors suggest that a comprehensive centrally controlled plan of investigation be inaugurated to establish the precise value of radiation therapy of breast carcinoma.

**South Carolina Medical Assn Journal, Florence**

39 175-204 (July) 1943

- Some Problems of Allergy in Childhood R A Miller—p 175  
 Review of and Case Report of Rocky Mountain Spotted Fever I L Power and M J Bojars—p 180  
 Observations in Shock Therapy C T Milling—p 182

39 205-224 (Aug) 1943

- Endoscopy Review of Cases R W Hanchel—p 205  
 Suppurative Appendicitis Case Report R M Pollitzer—p 209  
 Lymphoepithelioma G R Traub—p 210

**Southwestern Medicine, Phoenix, Ariz**

27 163-184 (July) 1943

- Herniation of the Intervertebral Disk (Fundamentals of Diagnosis and Treatment) I M Owens—p 165  
 Common Errors in Orthopedic Surgery J I Smith—p 171  
 Gallbladder Disease W W Haggart—p 173

**Tennessee State Medical Assn Journal, Nashville**

36 289-328 (Aug) 1943

- Medical Aspects of Chemical Warfare as Related to Civilian Defense R M Powell—p 289  
 Traumatic Pseudoecyst of the Pancreas C Harrison and I Cooper—p 299  
 Certain Complications of Treatment A Weinstein—p 305  
 Surgical Treatment of Peptic Ulcer G T Howard Jr—p 310  
 Acute Abdominal Symptoms Resulting from Black Widow Spider Bite H Wilson—p 311

**War Medicine, Chicago**

4 247-362 (Sept) 1943

- Ophthalmic Injuries of War I I Matthews—p 247  
 Atmospheric and Immersion Blast Injuries F A Thies—p 262  
 War Neuroses After Air Attack on Oahu Territory of Hawaii, Dec 7, 1941—p 270  
 Clinical Toxicity of Atrabrine Dihydrochloride (Quinacrine Hydrochloride U S P XII) Controlled Comparative Study of Toxicity of American and of Foreign Atrabrine When Administered in Doses Commonly Employed in Prophylaxis of Malaria E H Loughlin, R H Bennett, F Santora and S Mattucci—p 272  
 Measurement of Vibration Sense Method and Means A Roth—p 280  
 Comparison of One Hundred Army Psychiatric Patients and One Hundred Enlisted Men E G Billings, F G Ebaugh, D W Morison, L I O Kelly, Genevieve B Short and F C Golding—p 283  
 Primary Pulmonary Coccidioidomycosis Report of Epidemic of 75 Cases D M Goldstein and S Louie—p 299  
 Effect of Adrenal Cortical Extract on Altitude Tolerance of Normal and of Adrenalectomized Rats A E Johnson, M Eckman and B E Lowenstein—p 318  
 Spontaneous Pneumothorax G H Stein, E B McConkie and A J Kuehn—p 324  
 Night Blindness of War P H Wosika—p 331

**Primary Pulmonary Coccidioidomycosis**—Goldstein and Louie state that primary pulmonary coccidioidomycosis is a relatively uncommon but important infection. It is uncommon because its etiologic agent, *Coccidioides immitis*, must exist under certain climatic conditions which, according to present knowledge, occur in this country only in certain western states, notably California and Arizona. It is important because the disease is protracted despite its excellent prognosis. This importance becomes manifold at the present time because of the presence of many troops in or near areas where it is endemic. With the current flux of troops, bearing in mind the incubation period, one cannot emphasize too pointedly that this entity may present itself to the medical officers in foreign and in domestic stations aside from the regions where it is endemic. The authors report an epidemic of 75 cases of primary pulmonary coccidioidomycosis. The history reveals exposure in a region where coccidioidomycosis is endemic, with symptoms of pain in the chest, chills, fever and cough. Positive physical findings may or may not be present, but they are not in themselves diagnostic. It is suggested that cervical adenopathy with sore throat but without a pharyngitis may be an early characteristic of this disease. A positive cutaneous reaction to coccidioidin and x-ray appearances aid in establishing the diagnosis. A conclusive diagnosis is made by cultures of sputum and by serologic tests. The prognosis is excellent. Treatment is symptomatic, emphasis is placed on rest in bed, adequate intake of fluids, high calory and high vitamin diet, sedatives and anal-

gesics. The sedimentation rate was the primary factor in the determination of the resumption of activity by the patient, an arbitrary standard requiring a sedimentation rate of 15 mm or less in sixty minutes with complete absence of symptoms was established as the point at which a patient was allowed out of bed. Convalescent blood from two donors with high precipitin titers was used for transfusion of 2 patients who were critically ill. Both patients demonstrated immediate clinical improvement after the transfusions. Evaluation of this type of therapy cannot be deduced from these 2 isolated instances.

**Night Blindness of War**—According to Wosika, night blindness of war was first reported during the Crusades and since that time almost all major military efforts have been accompanied by night blindness, particularly wherever overstraining, heat, sun blinding, hunger and thirst have occurred. The first world war was responsible for much literature on this subject. The term night blindness of war embraces organic and idiopathic night blindness. In the literature poor dark adaptation as measured by instruments also has been included under this term. Malnutrition (lack of vitamin A) causes night blindness, xerosis and xerophthalmia. Therapeutic correction is simple, swift and sure. Poor dark adaptation does not seem related to night blindness, xerosis, xerophthalmia or food adequacy. Therapeutic correction is not successful even with huge supplemental doses of vitamin A. In the present state of knowledge of scotopic vision, night blindness and poor adaptation must be differentiated. It is suggested that further work with the rate and end values of dark adaptation concerning rods, cones and influences of the nervous system be performed in an attempt to establish a firm physiologic basis for dark adaptation tests. While dark adaptation tests do measure the ability to see in low luminosity, the controlling mechanism is not established, the relation to vitamin A is not clear and its usefulness in military medicine as regards night blindness of war must be questioned, although further refinements of technique may enhance the value of the test.

**Wisconsin Medical Journal, Madison**

42 881-1004 (Sept) 1943

- \*Trichinosis Epidemic in Rock County T L Vogel—p 909  
 New Prophylactic Measures in Tetanus C N Neupert—p 916  
 Treatment of Civilian War Injuries W H Cole—p 918  
 Colloid Carcinoma of Gastrointestinal Tract Occurrence in Boy Twelve Years Old with Production of Pseudomyxoma of Peritoneum J M King and J J Satory—p 925  
 Thirty-Five Year Survey of Appendicitis in Rock County T J Snodgrass, W A Munn and T Flarity—p 928  
 Thymic Tumor in Myasthenia Gravis Case Report E Haynes—p 932

**Trichinosis Epidemic**—A man complaining of muscle pain, swollen jaws and puffy eyes following a gastrointestinal upset was admitted to a Janesville hospital. A routine blood smear showed eosinophilia and suggested trichinosis. It was discovered that many members of the neighboring community were afflicted with similar complaints. The epidemic involved 28 patients from 13 families. There was a history of eating summer sausage obtained from a local butcher and followed in a week by illness. The sausage was made from contaminated pork. Since summer sausage is not treated by cooking or refrigeration, the encysted larvae were not killed. Symptoms referable to the gastrointestinal tract, the eyes and the muscles predominated. Chills and remittent fever with signs of meningial irritation were common. Cardiovascular signs, weight loss and cough were observed. The blood picture showed eosinophilia, the curve paralleling the course of the disease. Relative lymphopenia was common. Blood calcium was low in 2 cases. The acute phase lasted three or four weeks, with residual symptoms of weight loss, weakness and eosinophilia. Purging with castor oil and calomel was of doubtful benefit, it was probably started too late to be effective. Cod liver oil and calcium, with some parathyroid injection, were given in large doses in 1 case. Despite the low blood calcium, only 48 mg in 1 case and in another 44 mg, those without treatment did as well as those with it. No anemia developed though the red blood cells fell a few hundred thousand in the cases studied.

# FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## Brain, London

66 89-162 (June) 1943

- Afferent Areas in Brain of Ungulates E D Adrian—p 89  
Mode of Representation of Movements in the Motor Cortex with Special Reference to 'Convulsions Beginning Unilaterally' (Jackson) F M R Walshe—p 104  
Indirect Injuries of Optic Nerve J W A Turner—p 140  
Reflex Studies in Electrical Shock Procedure F T Kimo—p 152

## Journal of Royal Army Medical Corps, London

81 1-50 (July) 1943

- Case Showing Unusual Effects of Trauma J V Wilson—p 1  
\*Smallpox Treated with Sulfanilamide J D Cottrell and H T Knights—p 7  
Survey of Methods of Treatment of Tropical Ulcers A F McGill—p 16  
Occupational Therapy for Psychoneurotics in Hospital J T Wilde and C J Morgan—p 24  
Phenol and Camphor Treatment of Ringworm of Clabrous Skin An Interim Report G G Waldin—p 32

**Smallpox Treated with Sulfanilamide**—Cottrell and Knights report observations in 11 cases of smallpox which they observed in the course of a civilian epidemic of the disease, which occurred in an area in the Middle East Command. In the area in which the majority of the reviewed cases occurred, there were reported 444 cases, a figure estimated to represent about one third of the total incidence. The estimated mortality was about 20 per cent. Nine of the 11 cases occurred among British troops, the other 2 involved one of the authors and a Nursing Sister. In 4 of the 11 cases no vaccination scars could be detected. Of these 4, 3 were fatal. In all the others there were good "baby" scars. It is considered that the effect of a good "baby" vaccination is sufficiently long lasting demonstrably to modify the effect of an attack of smallpox occurring twenty to thirty years later. The treatment consisted in addition to general and symptomatic measures of administration of sulfanilamide. Treatment was commenced as soon as the vesicular stage was reached, and the average total dose was 22.5 Gm given over six days. The main, if not sole, effect of the sulfanilamide appeared to be the reduction of complications due to pyogenic organisms, no effect was detected on the essential virus. There was definite mitigation of suppuration in the skin lesions, a lessening of ocular complications and a reduced incidence of pulmonary complications. Instead of a true pustular stage there was a vesicular stage in which the vesicular fluid was slightly milky and not yellow even in cases with a fatal outcome. The process was later one of desiccation and desquamation rather than of the classic pustulation and scabbing.

## Lancet, London

2 179 210 (Aug 14) 1943

- Toxicity of Tannic Acid Experimental Investigation G R Cameron and R F Milton and J W Allen—p 179  
Formation of Red Blood Corpuscles F Duran Jorda—p 186  
Bone Grafting in Treatment of Fractured Tibia and Fibula J R Armstrong—p 188  
Delayed Recovery from Trilene Anesthesia S F Durrans—p 191  
Clinical Signs of Diphtheria in Inoculated Children C Neubauer—p 192

**Toxicity of Tannic Acid**—Cameron and his associates report an experimental investigation into the toxicity of tannic acid and the chances of its absorption from burned areas. Some information about the fate of tannic acid after it reaches the circulation is given and contrasted with the behavior of gallic acid. Experiments have been carried out on goats, rabbits, guinea pigs and rats, 250 animals being used in all. Tannic acid was obtained from seven different firms but one sample was employed for most of the experiments. This sample contained about 20 per cent gallic acid. The authors present experimental evidence that in animals tannic acid has injurious effects on the liver, capillaries and possibly on the bone marrow. After the introduction of small amounts of tannic acid directly into the blood stream or large amounts into the subcutaneous

tissues, animals show centrilobular necrosis in the liver, increased capillary permeability with leakage of plasma into the subcutaneous tissues, peritoneum and occasionally the lungs, and leukocytosis. Production of a reservoir of tannic acid in the tissues, as by subcutaneous injection, leads to continued absorption of small amounts into the blood and a serious intoxication. Treating a burnt surface may also be followed by absorption of tannic acid. With lapse of time the continuous bathing of the liver cells with blood containing tannic acid results in damage and destruction of certain tissues. The injurious effect cannot be attributed to gallic acid, which is rapidly removed from the blood and can be tolerated in large amounts. The authors point out that the chief criticism of tannic acid treatment of burns comes from the experimentalists. Caution must be exercised in applying to man without discrimination conclusions reached by the study of animals. They recognize that the ultimate decision for or against the tannic acid method must come from human experience, and they note that evidence is already accumulating which suggests the need for critical revision of this treatment.

## An Cated de Pat y Clin Tuberc, Buenos Aires

4 5-205 (June) 1942 Partial Index

- Allergy in Experimental Tuberculosis A R Arenas—p 72  
Michailow Test in the Diagnosis of Activity in Tuberculosis R T Vaccarezzi J C Rey, S F Erdstein and B Enquin—p 89  
\*Results of Artificial Pneumothorax Plus Pneumolysis in 300 Cases of Pulmonary Tuberculosis R T Vaccarezzi and T A Medici—p 111  
\*Relation of Tuberculous Meningitis to Organic Focal Tuberculosis R F Vaccarezzi F C Tuceri and J B Comez—p 146

**Artificial Pneumothorax and Pneumolysis**—Vaccarezzi and Medici state that artificial pneumothorax should be instituted early in the course of pulmonary tuberculosis. When pneumolysis is necessary it should be done three or four months after the pneumothorax. The Jacobaeus-Maurer type of operation is the most satisfactory. In 300 cases of pulmonary tuberculosis treated by this method and followed for a period of from one to three years, good results were observed in 77.3 per cent. This figure includes cases reported as apparently cured as well as those with a favorable course. There was no surgical mortality. Later in the course of the disease 7.3 per cent of the patients died. The efficiency of pneumothorax combined with pneumolysis is dependent on how early collapse therapy is instituted and on the completeness of the collapse obtained.

**Tuberculous Meningitis and Focal Tuberculosis**—The study of 90 patients of different ages with tuberculous meningitis showed that it constituted an isolated process in 34.4 per cent and was associated with focal lesions in 65.6 per cent. Focal pulmonary tuberculosis was present in 53.3 per cent. Of these cases 25.5 per cent were primary, 47.7 per cent secondary and 26.6 per cent tertiary tuberculosis. The infant was much more subject to the development of meningitis. Roentgenologic examination revealed fresh lesions of primary infection in 42.2 per cent, calcified lesions of primary infection in 11.1 per cent, juxtahilar infiltration in 6.6 per cent, fresh or calcified hilar shadows in 86.7 per cent and tertiary pulmonary tuberculosis in 26.4 per cent. In no case did the x-rays reveal a "healthy" lung.

## Arch Lat Amer de Card y Hemat, Mexico, D F

13 51-88 (March-April) 1943 Partial Index

- \*A Study of Liver Function in Cardiac Insufficiency I Chávez, B Sepulveda and I A Ortega—p 51  
Diagnostic Clues in Cardiovascular Clinic P D White—p 81

**Liver Function in Cardiac Insufficiency**—Chavez and his co-workers studied the liver function of 35 patients with heart disease, 30 of whom were decompensated. An increase of blood bilirubin and urobilinogen in the urine and a retention of bromosulphalein was observed in all patients with cardiac insufficiency. There was a very close correlation between the degree of liver dysfunction and the severity of heart insufficiency. In the compensated cardiac patients the liver tests were, as a rule, normal. In those with cardiac decompensation the blood bilirubin and urinary urobilinogen returned to normal and the bromosulphalein gave normal results when compensation was reestablished.



**Bol Inst de Med Exper p Cáncer, Buenos Aires**

19 410 818 (Dec) 1942 Partial Index

- Experimental Cancer Produced by Tobacco Tar Spindle Cell Sarcoma A H Roffo—p 501
- Tar from Extracted Tobacco and Decrease of Cancerization A H Roffo—p 431
- Experimental Gastric Cancerization by Injection of Oxidized Tars A H Roffo—p 503
- Female Sex Hormone in Precancerous States Its Determination in Fibroadenoma A H Roffo and A I Roffo Jr—p 559
- Ultra High Voltage Roentgen Therapy (100 to 600 kilovolts) Report of 2 Cases of Mediastinal Tumor Treated with Favorable Results A H Roffo and A I Roffo Jr—p 587
- Rapid Disappearance of Recurrent Spindle Cell Sarcoma Treated with Ultra High Voltage Roentgen Therapy (100 kilovolts) A H Roffo and A I Roffo Jr—p 599
- Roffo's Reaction in 1694 Patients Statistical and Clinical Results B G Stuckert—p 670
- Cancer Mortality in City of Buenos Aires During 1941 A H Roffo—p 675

**Extraction of Tar from Tobacco**—Roffo shows that the extraction of tobacco with organic solvents such as alcohol, chloroform, acetone, petroleum ether, paraffin and benzene removes from it substances generating carcinogenic hydrocarbons which are to be found particularly among the phytosterols. The carcinogenic action of these extracted tars has been slight when compared with that of whole tars. Smokers could be provided with tobacco the tar content of which would have only slight carcinogenic action but because the extracted tobacco would have lost much of its taste the author considers it doubtful that the tobacco would be acceptable.

**Ultra High Voltage Roentgen Therapy for Mediastinal Tumors**—The Roffos report 2 instances of ultra high voltage roentgen therapy. The first patient was a girl aged 18 with a large lymphosarcoma of the mediastinum and a metastasis in the lumbar vertebral column. She was treated with 600 kilovolts, receiving two series of 6,040 and 6,174 roentgens respectively. A year and seven months after completion of the treatment the patient was found cured clinically and roentgenologically. The second patient was a man aged 33 with a large mediastinal tumor and abdominal and lumbar metastases. He too was found well one year after treatment with ultra high voltage roentgen therapy.

**Deutsche medizinische Wochenschrift, Leipzig**

68 105-132 (Jan 30) 1942 Partial Index

- Prognosis of Arterial Hypertension W Weitz—p 105
- Hypertension is Cerebral Function A Sturm—p 110
- Vegetative Nervous System and Immunity L Gorczycki—p 114
- Therapeutic Attempts to Promote Local Blood Perfusion of Tissues in Varicose Crural Ulcers Kite Pezold—p 116
- Successful Roentgen Irradiation in Case of Pulmonary Echinococcus H Brodersen and A Buding—p 118

**Prognosis of Arterial Hypertension**—Weitz is concerned with a condition which Volhard designates as red hypertension. With the same degree of hypertension the threat to life is greater in younger than in older persons. The highest level of the mortality curve for persons with hypertension is about ten years below that of persons with normal blood pressure. The prognosis is to some extent determined by the treatment, particularly by the degree to which the patient follows the regulations of his mode of living. An enlarged heart indicates that hypertension has existed for some time, but, as a physiologic result, it does not make the prognosis more unfavorable. A systolic murmur over the apex is more frequent when there is insufficiency, but it is of no prognostic significance if other symptoms are absent. A rapid pulse is an unfavorable prognostic sign. Occasional extrasystoles are of no particular importance, but pulsus alternans is an unfavorable sign. The presence of cardiac insufficiency causes stasis in the pulmonary circulation and may signify relative insufficiency. Urinary changes (protein, erythrocytes and casts) indicate an unfavorable prognosis. Changes in the fundus oculi is a serious sign in patients with hypertension. Cerebral defects manifested by impairment of memory, neurasthenia and irritability indicate an unfavorable prognosis. A history of syphilis, the presence of obesity and diabetes render the prognosis less favorable.

**Therapy of Varicose Crural Ulcer**—Pezold stresses that only those measures constitute a causal therapy of crural ulcer which counteract the pathologic blood perfusion of the lower extremity that exists in this condition. At the dermatologic

clinic of the University of Berlin emphasis is placed on the dietetic treatment of Bommer, which provides large amounts of fruit juices, fruits and vegetables, and on physical therapy. The administration of adenosine triphosphoric acid and of ovarian extracts served as supporting measures. These latter substances promoted the therapeutic effects of the other treatments but had no effect when given alone. The author reviews observations on 25 women with varicose crural ulcers. Some were treated with Bommer's diet, hydrotherapeutic measures and the aforementioned supporting measures, others only with diet and hydrotherapy, and still others only with glandular extracts. The results were most favorable in the first group. The endocrine substances alone were without noticeable influence.

**Munchener medizinische Wochenschrift, Munich**

89 1-24 (Jan 2) 1942 Partial Index

- Observations on Sudden Heart Death H Zettel—p 1
- What Every Physician Should Know About Rectal Cancer Guleke—p 7
- Treatment of Sweat Gland Abscesses H J Lauber—p 11

**Sudden Heart Death**—Zettel reports the clinical histories and the postmortem findings of 14 patients, a number of them soldiers, who died suddenly. There were 2 cases of rupture of the aorta (one a ruptured aneurysm), 5 cases of valvular lesions or endocarditis and myocarditis, and 7 cases of coronary changes. The patients were exceptionally young, their ages varying between 22 and 47 years. In addition to the organic changes, functional factors played a part as eliciting causes in the sudden heart deaths. The question of impairment by military service is discussed. Careful attention should be given to the presence of circulatory disorders during the preinduction examination. Functional tests of the heart should be included in the general examination. In deciding the suitability for flying service, electrocardiographic studies should be made.

**Zentralblatt fur Bacteriologie, Jena**

148 1-64 (Nov 5) 1941 Partial Index

- Serum Against Hoof and Mouth Disease and Its Production O Waldmann, G Pfl, K O Hohobim and H Mohlmann—p 1
- Successful Transmission of Poliomyelitis Virus from Human Subjects to Ferrets F Patočka—p 15
- Infection Experiments on Various Intermediate Hosts of Bilharzia with a Single Miracidium of Bilharzia Mansoni and B Japonica H Vogel—p 29
- Cause of Rugate Growth Forms and of Phenomenon of Disintegration in Pseudomonas Pyocyanea S Fiala—p 58
- Human Amniotic Fluid as Bacterial Nutrient Medium S Roufogalis—p 61

**Transmission of Poliomyelitis Virus from Human Subjects to Ferrets**—Patočka reasoned that it would be desirable to find an animal other than the monkey for the transmission of the human virus, for this would make possible the production of vaccines for preventive immunization. The monkey virus is too close to the human and consequently is too dangerous for use in human subjects. The author took advantage of the poliomyelitis epidemic of October 1939 and inoculated a number of ferrets intracerebrally with the spinal cord tissue of fatal cases of poliomyelitis. In three different instances in which material was obtained from rapidly fatal cases ferrets developed fever, parietic symptoms and paralytic symptoms. Two ferrets died with symptoms of poliomyelitis. From one of these the virus could be transmitted to a second ferret, which died with the same symptoms after a longer period of incubation. Rabbits, guinea pigs and mice which were inoculated simultaneously with the ferrets failed to develop signs of the disease. Further studies excluded the possibility that the ferrets suffered from a nonspecific irritation of the central nervous system caused by heterogeneous spinal substance or from a spontaneous ferret encephalitis. The spinal cord of the ferrets showed considerable degeneration of the motor cells of the gray spinal substance, but the inflammatory changes were not quite adequate for poliomyelitis. The author explains this by the fact that the virus had taken root in a less susceptible species of animal. He admits that his experience was exceptional and that it will probably not be possible to transmit regularly the virus of human poliomyelitis to ferrets. The exceptional virulence of the virus was probably responsible for the successful transmission.

## Book Notices

**The Etiology of Delinquent and Criminal Behavior** A Planning Report for Research By Walter C. Reckless. Bulletin 8. Paper 14c. \$1.50. Pp. 169. New York: Social Science Research Council, 1933.

In this interesting monograph the author attempts an evaluation of the important contributions and theories on the causes of criminal behavior and suggests a plan for further research. "The present monograph then may be looked on as an attempt to promote unified effort by the different disciplines—psychiatry, psychology and sociology—engaged in the study of the causes of delinquency and criminal behavior." In the complex field of criminology, heredity, subnormal intelligence, mental abnormality, endocrines, physical types and mental types, i.e. 'typical criminal,' have been offered as the deciding factors largely by psychiatrists and other physicians. Sociologists, on the other hand, have emphasized economic conditions, environmental conditions, family situations and exposure to crime, to name a few of the factors held responsible for conflict with the law. The author describes each of these hypotheses and attempts to point out the fallacy of attempts to give them as the sole cause of crime or in some instances to have anything to do with criminal behavior. Throughout the manuscript, emphasis is placed on the author's view that none of the views which have been advanced to date can be accepted as the solution to the problem, but it is obvious that his prejudices favor sociological explanations. He proposes more controlled mass studies as the line of research most likely to give results. In this attempt it is assumed that exhaustive psychiatric studies to all individuals in the group could be added to the environmental data to be collected. This monograph is a valuable contribution to the field of criminology in its effort to bring together research work carried on to date with provocative opinions as to the value of each theory.

**A Critical Analysis of Collapse in Underground Workers on the Kolar Gold Field** By Anthony Caplan M.D. M.R.C.P. Reprinted from Bulletin No. 54 of the K. G. F. Mining and Metallurgical Society. Paper. Pp. 95 with 12 illustrations. Marikuppam P. O. Kolar Gold Field India. T. Williams, 1942.

This is a discussion of the results of an investigation of the mechanism of heat collapse and its contributory causes in the Ooregum Mysore, Champion Reef and Nundydroog mines of the Kolar Gold Field from Nov. 18, 1939 to Nov. 17, 1941. The factors observed that may have influenced the incidence of heat collapse were individual, seasonal and underground. Individual factors were determined by a careful history and physical examination of all cases (293) of alleged collapse in underground workers admitted during the two years to the Kolar Gold Field Hospital, irrespective of the mildness of the condition or its cause. Seasonal factors were determined by information on surface conditions obtained from the Kolar Gold Field Observatory. Information on underground factors, such as wet and dry bulb temperatures, humidity and velocity of air at the working places, was obtained from the mine superintendents.

The patients were classified into three groups according to whether their collapse was due entirely to underground conditions, partly to underground conditions and partly to individual factors or collapse was absent or unrelated to underground conditions. Two types of cases were determined clinically—mild and moderate and severe.

The most interesting data deal with the 200 cases in the second group in which the individual factors were unacclimatization, loss of acclimatization and disturbances of health. An unexpected lower incidence of collapse among unacclimatized new employees shows that acclimatization to hotter underground atmospheres existing on deeper levels cannot be developed by many months of continuous work on the cooler levels. Loss of acclimatization appeared to be much more important in predisposing to heat collapse than unacclimatization. The health disturbances that predisposed to collapse were febrile illnesses, after effects of celebrating festivals, food intake and nutrition, and water and chloride deficiency.

The pathologic physiology of collapse is discussed in terms of changes in the cardiovascular system and water and chloride metabolism. Many of the symptoms of collapse could be attributed to chloride deficiency. An interesting feature was the

correlation of the incidence of collapse with the rise and fall of surface dry and wet bulb temperatures and humidity which was clearly established and provided positive evidence of the deleterious effect of high surface humidity.

The great importance of ventilation is emphasized by the occurrence of collapse most frequently below 5,000 feet in dead ends supplied with upward air of low velocity. It is stated that, provided the dry bulb temperature is 110-120 F., a wet bulb of 90 F. or under denotes good ventilation and comfortable working conditions, 91-93 borderline working conditions, 94-95 poor ventilation, and 96 or over conditions highly conducive to collapse. The occurrence of collapse depended more on the nature of the working conditions than on the character of the work.

The problem of the mining engineer is to prevent the wet bulb temperature at the face rising above 93 F. The value of air refrigeration is demonstrated by the dramatic fall in the incidence of collapse in the Champion Reef mine after installation of the air conditioning plant and the general low incidence, throughout the two year period, of collapse in the air conditioned Ooregum mine. It is stated that surface air conditioning plants will reduce the incidence of heat collapse for some years, but with further development of the mines it again will become a major problem, taxing the ingenuity and resourcefulness of the mining engineer.

**The Human Eye in Anatomical Transparencies** Explanatory Text By Peter C. Kronfeld M.D. Director of Education The Illinois Eye and Ear Infirmary Chicago. Anatomical Transparencies By Gladys McHugh Medical Illustrator University of Chicago. The University of Chicago Historical Appendix By Stephen J. Polyak M.D. Professor of Anatomy The University of Chicago. Jadrakold. Price \$6.50. Pp. 99 with illustrations. Rochester New York: Bausch & Lomb Press, 1943.

A new method of graphic representation, namely three dimensional illustration on cellulose acetate, is utilized in this volume to present the finest representation of the anatomy of the eye thus far available. A series of paintings showing serial dissections of the eye and orbit from the front and from the side at twice natural size has been prepared by Miss Gladys McHugh and republished on cellulose acetate so that one can actually see the anatomy of the eye layer by layer. The colors are natural and have been faithfully reproduced except in the case of veins and nerves, which have been made blue and yellow to distinguish them from the arteries. The text prepared by Dr. Peter C. Kronfeld gives a detailed study of anatomy of the eye and in addition a most complete description of the anatomy as shown in Miss McHugh's illustrations. Finally the book includes a history of anatomic illustration of the eye by Dr. S. L. Polyak, a real contribution to medical history on a par with previous histories of medical illustrations such as that of Mortimer Frank. Every ophthalmologist and every teacher, particularly of the anatomy of this subject, will find this book invaluable. Indeed it is reported that the demand is already well beyond the available supply.

**Pharmacology, Materia Medica and Therapeutics** By Charles Solomon M.D. F.A.C.P. Associate Attending Physician and Chief of the Medical Clinic Jewish Hospital of Brooklyn. Collaborator Hazel Houston M.A. R.N. Instructor in Materia Medica School of Nursing Bellevue Hospital New York City. Fifth edition. Cloth. Price \$3.25. Pp. 823 with 91 illustrations. Philadelphia London & Montreal: J. B. Lippincott Company, 1943.

The author of Proverbs said "With all thy getting, get understanding." The authors of this book assume that the student nurse has ability and time to become omniscient. They present a pot-pourri complex enough to confuse a witch of Endor. That their presentation aids or gives time for understanding is questionable. They encourage the neophyte with this advice: "The student's mastery of materia medica will be greatly enhanced by her ability to connect the facts and theories in the subject with the facts and theories of related subjects."

The student will therefore do well to make an effort to relate what she learns in materia medica with what she has already learned in anatomy, physiology, chemistry and bacteriology. Wonderful words, but even the authors do not live up to them. In a discussion of some of the major present day problems, proprietary medicines receive the conventional condemnation. The authors give a list of the differences in price of proprietary and ethical drugs which is either not understood or is used as propaganda. For example, the difference in the price of aspirin and acetylsalicylic acid is a wholesale price and

does not affect the retail purchaser. They do not give the devil his due. They give a list of some common names for drugs or preparations such as Bashin's Mixture, Brown Mixture, Bulow's Solution, Channing's Solution, Clemen's Solution, Dalby's Circumcise, Warburg's Tincture and Zambicetti Solution. These names are worse than worthless and their use should receive the same condemnation as proprietary preparations. They retard scholarship by using time and space that should be given to more important subjects. Because the book contains so much unimportant matters the discussion and explanation of worth-while subjects is limited to brief and unsatisfactory statements. This applies particularly to the connection of physiology with pharmacologic action, the importance of which they emphasize in the first part of the book but neglect later. The book is clearly written and contains many fine illustrations and a lot of facts not found in many of the better known books on pharmacology. It has an elaborate general lex and an index of symptoms of most diseases.

**The Medical Use of Sulphonamides.** Medical Research Council War Memorandum No 10. Paper. Price 25 cents. 9d. Pp 46. New York: British Information Services. London: His Majesty's Stationery Office, 1943.

This booklet is a concise presentation of the present status of the sulphonamide compounds with a maximum of facts and a minimum of wasted words. The pages are crammed with information presented in a manner especially suitable for those who wish an accurate view of these agents without encountering confusing and frequently questionable details. The contents encompass an introduction and discussions on chemistry, pharmacology, general considerations governing the use of sulphonamides, questions of supply (in Great Britain) general scheme of dosage, regulation of dosage by the sulphonamide content of the patient's blood, treatment of specific infections, toxic reactions to sulphonamides, estimation of the concentration of sulphonamides in body fluids, bacteriologic studies and sterilization of sulfanilamide powder.

This memorandum has been prepared for the Therapeutic Requirements Committee (appointed by the Medical Research Council) by several well known authorities. Their attitude and conscientious approach to the subject is made evident by their preference for recognized nomenclature, "To avoid confusion and difficulties in supply, sulphonamide drugs should not be ordered or prescribed by proprietary or brand names," and prescribing in terms of the metric system, "Doses should be ordered and recorded in terms of grammes and not in terms of tablets, since not all the sulphonamide tablets issued commercially are of standard 0.5 gm content." The plea for use of recognized nomenclature is refreshing in a country where trade names are rampant, and should be well received and encouraged. The contributors list names under which sulfanilamide is sold or described, the number is greater than fifty for this single drug, an excellent reason for the use of scientific nomenclature.

**An Atlas of Anatomy in Two Volumes.** By J. C. Boileau Grant M.C. M.B. Ch.B. Professor of Anatomy in the University of Toronto, Toronto. Volume I: Upper Limb, Abdomen, Perineum, Pelvis and Lower Limb. Cloth. Price, \$5. Pp 214 with 227 illustrations. Baltimore: William Wood & Company, 1943.

Up to the year 1900 gross anatomy was the major study of preclinical medicine. There was ample time for it. Students dissected the body more than once. Atlases were of great help, and those then made corresponded with the practice of repeated dissection. They were "systematic," showing the bony, muscular, vascular and nervous systems separately. Now the time available for dissection is reduced. Only one dissection is possible. Grant's regional atlas is adapted to this change. Its illustrations show all the "systems" in each region. So the drawings are fewer. Spalteholz has over a thousand, Toldt over fifteen hundred. Grant covers all but the head, neck and thorax with two hundred and twenty-seven. The drawings are accurate and instructive, being carefully made from special preparations. They show more "relations" than did the older atlases, and the atlas is less expensive. The legends under some drawings are in one or two instances puzzling, e.g., on page 83 is "A stage in the exposure of the (common) bile duct, embryological approach." On page 87 are drawings of variations in the bile duct with the legend "Precocious bile passages." The atlas is good and should prove popular with students.

**The Common Form of Niacin Amide Deficiency Disease: Aniacinamidosis.** By William Kaufman Ph.D. M.D. Cloth. Price \$3. Pp 62. Bridgeport, Conn.: The Author, 1943.

"Aniacinamidosis" is proposed as the name of a disease which the author characterizes by the syndrome resulting from a deficiency of niacinamide as determined by an original "office study" of "more than 150 patients." No laboratory studies were made and no illustrations are included. The symptoms of the disease, as well as its pattern, are stated in detail. A symptom was not considered as characteristic of the disease unless it appeared in at least 30 of the patients studied, disappeared following niacinamide therapy, and reappeared on cessation of therapy. The book is valuable in that it lists the symptoms which may result from a niacinamide deficiency. However, neither the single symptoms listed nor the entire syndrome are sufficiently unique or characteristic for the disease to warrant a positive diagnosis on their presence in a patient. The book leaves the impression that niacinamide deficiencies are vastly more prevalent than generally believed and that the daily requirements of man are considerably higher than those indicated by legal regulations. The author rightly recognizes that a serious weakness in his contribution lies in the absence of objective laboratory studies on his patients. A limited but valuable bibliography is included.

**The Australian Army Medical Services in the War of 1914-1918. Volume III: Special Problems and Services.** By Colonel A. G. Butler D.S.O., V.D. B.A. Cloth. Pp 1103 with 85 illustrations. Canberra: Australian War Memorial, 1943.

With this volume Colonel Butler completes the task assigned him in writing the history of medical services of the Australian army in the war of 1914-1918. Section I discusses the technical problems of chemical warfare, moral and mental disorders, venereal disease, the influenza pandemic of 1918-1919 and the surgery of repair and rehabilitation. Section II is devoted to the medical services of the naval and the newly created air services. Section III describes dental service, nursing and physical therapy. Section IV continues the story of the invalid soldier, his return home, the medical problems of sea transportation, the reexamination and the technical problem of pensioning. Section V furnishes statistics on the total casualties sustained by all the belligerents. A special feature of this section is a detailed clinical analysis of the figures of mortality and morbidity comprising the life history of the Australian imperial force. The three volumes constitute a valuable contribution to the literature on military medicine.

**Problèmes de médecine de guerre.** Par Daniel Cordier. Collection "France Forever" sous la direction du Professeur Henri Laugier. Paper. Price, \$1.50. Pp 182 with illustrations. Montréal: Les Éditions de L'Arbre, 1943.

The text is a composite of four articles. They are concerned with the struggle against heat, methods of resuscitation, anesthesia and traumatic shock. The author, who has an international reputation as an experimental physiologist, has presented these subjects critically, clearly and concisely. Although particular emphasis has been placed on the relationships of fundamental physiologic principles to problems peculiar to war, this book would be a valuable addition to the library of the student, the physician and the physiologist. It merits translation.

**Air Borne Infection: Some Observations on Its Decline.** By Dwight O'Hara M.D., Professor of Preventive Medicine, Tufts College Medical School, Boston. Cloth. Price \$1.50. Pp 111 with 15 illustrations. New York: Commonwealth Fund, 1943.

This little book presents a readable discussion of certain air borne infections with explanations for the decline in incidence of diseases of this group. The book is not closely integrated, it places special emphasis on the experiences of Massachusetts. Neither of these remarks should be interpreted as fault finding, however, since the author makes no claim to exhaustive discussion. Apparently his main purpose in writing this book is to urge that preventive medicine be incorporated to a greater extent in medical practice and that it should not be operated as a detached specialty.

## Queries and Minor Notes

THE ANSWERS HEREF PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### MANAGEMENT OF VIRUS PNEUMONIA

To the Editor—Please advise me if you know of any treatment that will shorten the period of morbidity for virus pneumonia infections of the respiratory tract. During last winter we had many cases most of which acted like the persistent head colds alone or in combination with tracheitis and would persist from three to seven or eight weeks causing much discomfort. The sulfonamide drugs have no effect on this infection and I have been treating it as we treated colds before the sulfonamide drugs came on the market. — John D. Blackburn M.D., Thomaston Ga.

ANSWER—The inquirer is to be complimented on resisting the apparently irresistible urge to give some sulfonamide compound for the common cold and for the virus pneumonias. All who have studied the virus pneumonias carefully agree that chemotherapy is without special benefit. If a view (William Dameshek, THE JOURNAL Sept 11, 1943, p 77) recently expressed is correct, namely that sulfonamide compounds given to certain patients with virus pneumonia may bring about a hemolytic crisis, then chemotherapy for this disease is actually contraindicated.

There is no procedure known which will shorten the period of morbidity of the virus pneumonias. The statement that most cases lasted as long as three to eight weeks is somewhat at variance with general experience and leads one to suspect that some secondary infection like the common cold also affected this group of patients.

Several observers, chiefly roentgenologists, state that roentgen therapy aids in shortening the disease, but in the absence of control cases this must be accepted with reserve. Another group reports beneficial effects from the use of "convalescent" serum, with equally convincing evidence. In view of the apparent multiplicity of causes and of the lack of evidence of beneficial effect of convalescent serum in most other infections this approach would not seem to be promising. The use of penicillin has been reported in one case without beneficial effect.

In a benign, self-limiting disease, as represented by the majority of the virus pneumonias during the past year therapeutic restraint should be exercised.

### ERADICATION OF FLEAS FROM RESIDENCES

To the Editor—I should like to have some advice on how to eradicate fleas. I have a cocker spaniel and whenever he is kept out of the house for any length of time such as a vacation the house becomes infested with fleas. These pests are tiny black or brown and hard. They hop up from the floor where they seem to like rugs as their hangout. The bite itches and twenty-four hours later an intense itching develops that can be relieved only by scratching off the top of the bite with subsequent scarring. I have used pyrethrum rotenone sulfur and various other sprays all to no avail. The companies that do exterminating work say they know of no method that will absolutely eradicate fleas from the house. As long as the dog is in the house there is some decrease in the number of fleas but not enough to help one's peace. Frequent bathing of the dog helps slightly but the main trouble is getting rid of the fleas in the house. Can you advise me or refer me to some book?

L. M. Harris M.D., Columbus Ohio

ANSWER—Flea infested premises are largely restricted to those where one or several dogs or cats are kept and where there are suitable places for the propagation of these pests—usually there is a badly lighted basement under the house.

Breeding places for fleas should be eradicated. Basement storage places which are difficult to keep clean may be the first point of attack. After any needed cleanup has been finished dogs and cats should be removed from the premises for two weeks or more during which period suitable fly sprays that contain pyrethrum may be employed in the house, including the basement or adjacent quarters where fleas may propagate. Ordinary tallow candles may be placed on the floor at night and these surrounded with sheets of fly paper to aid further in the cleanup.

W. B. Herms (Medical and Veterinary Entomology, New York Macmillan Company) quotes Skinner, who recommends 'sprinkling the floor liberally with about 5 pounds of flake naphthalene and closing the room for twenty-four hours.' The toxic fumes are said to destroy the fleas in badly infested quarters without material injury.

### CONTACT DERMATITIS FROM RAGWEED FAMILY

To the Editor—I am afflicted with dermatitis venenata caused by *Iva xanthifolia*. The following treatments have been failures. Vaccine made from seeds sent to three laboratories at different times. The last time I took twenty-five hypodermic injections, saturated salicylic acid in alcohol, fluid extract of *Phytolacca* (poke root) 10 and 50 per cent balsam of Peru in castor oil, 50 per cent ichthammol in glycerin wearing a paper sack over my head when I am out and exposed to the weeds only the exposed parts of the face, neck and hands are affected. I shall be grateful to you for any treatment you may recommend.

M. D. Wyoming

ANSWER—Contact dermatitis or dermatitis venenata from *Iva xanthifolia* or burweed marsh elder, as the weed is usually designated is not uncommon. Two other members of this genus of the ragweed family *Iva angustifolia* (narrow leaved marsh elder) and *Iva axillaris* (small poverty weed) are also major skin sensitizing weeds. If a patient is allergic to one of these weeds he is usually also sensitive to the other two. The latter plant is a common weed in many sections of Wyoming.

Local treatment in weed eczema is merely palliative as is the case in contact dermatitis of other origin. In contact with the offending weed cannot be avoided, dermatitis will result and the only relief, until frost or a freeze kills the vegetation and gives temporary respite, will be from local applications. Wet dressings of boric acid, 1-20 Burrow's solution or phenolated calamine lotion are as satisfactory topical applications as any.

Varying degrees of relief can be obtained by the desensitizing treatment of the weed sensitive patient with the specific weed oil or oils. These specific oleoresins are usually best administered by the oral rather than the parenteral route.

Before specific therapy is instituted, a weed sensitive patient should be skin tested with all the common weeds in his environment. Weed sensitivity is usually polyvalent, the individual being sensitive to two or more allergenic weeds. Sensitivity to half a dozen or more common environmental weeds is not unusual. Most dermatologists are equipped with acetone extracts of the common weeds for patch testing. Some sixty uncovered tests can be applied in about ten minutes. After a latent period of approximately forty-eight hours skin reactions at the tested sites will reveal the number of weeds to which a patient is sensitive. All weeds giving positive skin tests should be included in the treatment set.

Experience has shown that it requires the ingestion or injection of approximately 2 cc of a specific weed oleoresin to reduce the sensitivity of a patient from the clinical to the sub-clinical stage. This amount is realized by the fractional ingestion of 1 ounce each of the 1/100, 1/50 and finally the 1/25 dilution of the oleoresin in corn oil. Oral treatment for weed sensitivity is outlined by Shelmire (Contact Dermatitis from Vegetation Patch Testing and Treatment with Plant Oleoresins, *South M J* 33:337 [April] 1940). Oral treatment sets containing the specific weed oils to which an individual is sensitive can be obtained commercially on prescription from the Graham Botanical Laboratory, Route 7, Willow Lane Dallas, Texas.

Hypodermic injections of the allergenic weed oils cause local reactions unless well diluted 1/100 or more in some inert vehicle as corn or peanut oil. To obtain a total of 2 cc of the specific oleoresin it would require some two hundred or more such injections. The ordinary weed sensitive patient has not the fortitude to submit to such prolonged therapy. This is especially true when it is realized that the same amount of allergenic oils can be ingested in a period of approximately three to four months. The amount of absorption of the specific oil is the same, regardless of the mode of introduction into the body.

### MORPHINE AND PULMONARY EDEMA

To the Editor—When morphine is generally acknowledged to be of considerable benefit in the treatment of pulmonary edema what is the evidence in support of the contention that this drug is contraindicated in those instances in which the edema results from the action of chemical lung irritants such as phosgene?

Lieutenant M. C. A. U. S.

ANSWER—Morphine may be of benefit in the treatment of some instances of incipient pulmonary edema. However, there is no adequate evidence that morphine is of benefit in a frank pulmonary edema from any cause, especially if cyanosis (hypoxia) is present. The consensus is against the use of morphine in the treatment of pulmonary edema due to chemical irritants. Most authors state definitely that morphine is contraindicated in pulmonary edema due to phosgene.

In commenting on this subject Sollmann (A Manual of Pharmacology ed 6 Philadelphia, W. B. Saunders Company

contractions throughout the intermenstrual period. Table 1 summarizes their findings. In a recent review of primary dysmenorrhea, Fremont-Smith<sup>6</sup> recognizes the importance of the experimental work of Sturgis,<sup>11</sup> Moir<sup>10</sup> and Wilson and Kurziok<sup>12</sup> and believes that the strong "luteal phase" contractions during the first two days of the menses are involved in the production of pain. Bickers<sup>13</sup> holds a similar point of view.

MATERIAL

During the past several months we have observed 41 female university students with dysmenorrhea of such severity as to incapacitate them. The age distribution, marital status, gravidity and pelvic findings are given in table 2. Sixteen of these patients had previously received glandular therapy and 2 had had dilation

TABLE 1—Uterine Motility (Kurziok)

	Tonus	Follicular Contractions	Luteal Contractions	Response to Pituitary Injection
Normal	Increased in follicular phase, decreased in luteal phase	+	+	Strong in luteal phase
Primary dysmenorrhea	Same	Same	Same	Same
Ovulatory menses (biopsy)	Same	Same	Same	Same
Anovulatory menses (biopsy)	Increased throughout the cycle	Same	Absent	Absent

TABLE 2—Primary Dysmenorrhea: Clinical Data

		Patients	
		Number	Per Cent
Age, years			
15-17		2	4.9
18-21		20	48.7
22-25		7	17.0
Over 25		12	29.2
Married		15	36.5
Nulligravida		40	97.5
Pelvic examination			
Uterus	Normal anterior	22	53.6
	Retroverted	14	34.1
	Decidedly anteverted	3	7.3
	Undeveloped	2	4.8
Adnexa	Normal	41	100.0

Note the lack of a consistent anatomic defect. Infertility was a complaint by four married patients, and examinations of their husbands disclosed sterility.

and curettage with little or no relief, 9 had had elective appendectomies. In 18 out of 20 patients the administration of diethylstilbestrol (1 mg daily for twenty days following the cessation of menstrual bleeding) resulted in the complete relief of pain at the next period. The two failures missed the expected period and one month later experienced typical painful menstruation—a phenomenon previously observed by Sturgis.<sup>11</sup> In 31 of these women, 55 endometrial biopsies were obtained two to four days before the onset of menses. Table 5 shows the microscopic results of these biopsies before and after treatment. In 2 patients severe uterine bleeding followed the administration of diethylstilbestrol and

in 1 case hospitalization for supportive transfusion was necessary. The dysmenorrhea was treated by one of the prescriptions given in table 3.

COMMENT

It is now generally agreed that there is no consistent anatomic lesion in patients suffering from primary dysmenorrhea and that earlier investigators have erred

TABLE 3—Prescriptions for Dysmenorrhea

Prescription 1		Prescription 2	
Acetylsalicylic acid	5 grains	Camphor monobromate	1/2 grain
Codeine	1/2 grain	Atropine sulfate	1/100 grain
Ergotrine	1 grain	Papaverine hydrochloride	1/4 grain
Atropine sulfate	1/100 grain	Acetophenetidin	3 grains
Made into one capsule		Acetylsalicylic acid	3 grains
		Made into one capsule	

It is believed that ergotrine aids the relief from cramps by increasing intrauterine tone (Kurziok, Moir and Bickers) and thus prevents the uterus from filling up, a condition which leads to uterine spasm and pain. The symptomatic relief obtained through these analgesics (prescriptions 1 and 2) is shown in table 4.

in attributing the cause directly or indirectly to some obvious or obscure anatomic finding, e. g. a retroverted anteverted or infantile uterus, cystic ovaries, presacral neuritis, defective uterine musculature or disturbed innervation. The presence of anatomic defects is apparently incidental and primary dysmenorrhea must be explained on some other basis.

The pain experienced in primary dysmenorrhea is evidently due to uterine contractions. This point of view is confirmed by the experimental work of Moir<sup>10</sup>, Kurziok<sup>4</sup> and Bickers,<sup>13</sup> who noted that maximum discomfort is experienced during the first two days of the menstrual period at the time of the strongest luteal contractions. Clinically, one can reproduce the typical cramplike pains of primary dysmenorrhea by inserting a sound within the uterus. Women have also noticed the similarity of these pains to labor pains and after-pains.

Kurziok<sup>4</sup> first observed that ovulation is a necessary precursor to painful menses. The presence of secretory endometrium (suction biopsy) in our patients and the similar report of Sturgis and his co-workers<sup>11</sup>

TABLE 4—Primary Dysmenorrhea: Results of Therapy in Twenty-Seven Patients Treated with Analgesics

	Distribution of Symptoms		Patients with Complete Relief		Patients with Partial Relief		Patients with No Relief	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Abdominal cramps	27	100.0	18	66.6	9	33.3	0	0.0
Backache	18	66.6	14	77.7	3	16.6	1	5.5
Headache	7	25.9	5	71.4	1	14.2	1	14.2
Gastrointestinal upsets	15	55.5	13	86.6	1	6.6	1	6.6
Syncope	1	3.7	1	100.0	0	0.0	0	0.0

Prescription 1 gave the most consistent relief from symptoms.

support this position. It is also true that the suppression of ovulation by diethylstilbestrol (or other estrogens) prevents the development of secretory endometrium and results in painless menstruation in patients with primary dysmenorrhea.

It is an old clinical observation that primary dysmenorrhea is often completely or partially relieved by childbearing. It is believed that this is due to free-

11 Sturgis and Albright<sup>7</sup> Sturgis<sup>8</sup> Sturgis and Meigs<sup>9</sup>  
12 Wilson, Leo, and Kurziok, Raphael Endocrinology 27:23-28 (July) 1940  
13 Bickers, William Primary Dysmenorrhea, Virginia M. Monthly 69:423-428 (Aug.) 1942

egress of the menstrual discharge into the vagina through the parous cervix. The accumulation of menstrual fluid within the uterine cavity stimulates 'luteal' contractions until the threshold is reached and pain results.<sup>14</sup> Instrumental dilation of the cervix cannot produce any permanent enlargement of the cervical canal. Obviously there is considerable difference in the permanent effect of a 10 centimeter fetal head and a 10 millimeter Hegar dilator. The Pozzi or Dudley operation (operative enlargement of the cervical canal) or the wearing of a stem pessary are advisedly condemned but it is admitted that they do relieve dysmenorrhea, presumably by inducing permanent enlargement of the cervical canal. It has been suggested that operative or parturient dilation of the canal destroys the nerve endings or ganglion cells within the cervix. The existence of ganglion cells within the cervical substance is open to question, although they are readily found within

## TREATMENT

Physicians err in treating primary dysmenorrhea on the principle that it is caused by organic disease or endocrine deficiency. Frequently such patients change from one physician to another and obtain a separate diagnosis from each. The emphasis on organic or functional defects creates a poor mental attitude. In addition, they have frequently approached the menarche already conditioned for a serious ordeal by overzealous relatives and friends. The first objective in treatment should be to assure the patient that she is absolutely normal and to explain in simple terms the basic physiology of menstrual distress.

The second therapeutic objective is the relief of pain. Usually this can be done with simple analgesics, particularly after the patient realizes the nature of her complaint. Prescriptions 1 and 2 recommended in table 4 are for the more severe cases. As a rule it is necessary

TABLE 5—Primary Dysmenorrhea Results of Administration of Diethylstilbestrol

Patient	First Menstrual Period		Treatment Diethyl stilbestrol	Second Menstrual Period		Third Menstrual Period	
	Endometrial Biopsy	Pain		Endometrial Biopsy	Pain	Endometrial Biopsy	Pain
M S	Secretory	Present	+	Proliferative	Absent	Secretory	Present
D R	Secretory	Present	+	Proliferative	Absent	Secretory	Present
T J	Secretory	Present	+	Proliferative	Absent	Secretory	Present
M S	Secretory	Present	+	Proliferative	Absent	Secretory	Present
E H	Secretory	Present	+	Proliferative	Absent*	Secretory	Present
S R	Secretory	Present	+	Proliferative	Absent	Secretory	Present
F Y	Secretory	Present	+	Proliferative	Absent	Not done	Present
S F	Secretory	Present	+	Proliferative	Absent	Not done	Present
A B	Secretory	Present	+	Proliferative	Absent	Not done	Present
A M	Secretory	Present	+	Proliferative	Absent	Not done	Present
V M	Secretory	Present	+	Proliferative	Absent	Not done	Present
R S	Secretory	Present	+	Proliferative	Absent†	Not done	Present
F M	Secretory	Present	+	Proliferative	Absent	Not done	Present
R H	Secretory	Present	+	Proliferative	Absent	Not done	Present
F R	Secretory	Present	+	Proliferative	Absent	Not done	Present
M H	Secretory	Present	+	Proliferative	Absent	Not done	Present
T T	Secretory	Present	+	Proliferative	Absent	Not done	Present
M C	Secretory	Present	+	Proliferative	Absent	Not done	Present

Severe bleeding necessitated bed rest for two days  
In 13 other patients endometrial biopsy disclosed secretory endometrium

† Severe uterine bleeding necessitated hospitalization for transfusions  
which was followed by painful menses

the parametrial tissues a location too remote to be affected by cervical dilation.

After the age of 30 years there may be incomplete shedding of the menstrual mucosa, and ovulatory cycles occur irregularly so that painful menses become less severe and less frequent. Except in isolated instances, as women approach the menopause menses are anovulatory and painless. However, some pain may be experienced by women with anovulatory cycles, provided bleeding is sufficient to distend the uterine cavity and stimulate contractions of large enough amplitude.

In primary dysmenorrhea, associated symptoms of backache, nausea, vomiting and headache can hardly be explained on an organic basis. Nausea, vomiting and spells of syncope are probably the nervous reaction of the patient to the pain. The backache may be produced by pelvic congestion or relaxation of pelvic joints. Premenstrual tension as evidenced by abdominal pain, irritability, headache, backache and nervousness, is also on a psychogenic basis and usually does not appear until some years after the patient has been suffering from dysmenorrhea.

only to relieve the pain for the first and second days of the menstrual period. If the patient can be carried along until she has borne a child or until the age of 30 years, medical treatment becomes less essential.

In our opinion operations such as hysterectomy, uterine suspension and presacral sympathectomy are unnecessary in the treatment of primary dysmenorrhea if the patient is properly handled. It is important to remember that encouraging results can be obtained in such patients with almost any kind of glandular product (even with placebos) owing to their psychotherapeutic effect.

## CONCLUSIONS

1 Women with primary dysmenorrhea have no consistent anatomic lesions or endocrine deficiencies.

2 Ovulation and a nulliparous cervix are two essential factors in producing primary dysmenorrhea, and they result in uterine distention which stimulates contractions of large enough amplitude to produce cramping pain.

3 The suppression of ovulation by estrogens to produce painless menses is of experimental interest but of questionable value and possibly dangerous.

14 Sturgis and Albrecht. Wilson and Kurzrock.



SIGNIFICANCE OF PHLEBOGRAPHY  
IN PHLEBOEMBOLISM

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Although visualization of the venous system is frequently referred to as venography, we believe that, since this is a hybrid word being derived from both Latin and Greek, phlebography should be used because it has a true Greek origin *φλέψ*, *phleps*, vein, and *γράφειν*, *graphein*, to write.

Few complications in medicine and surgery are as unpredictable, treacherous and dramatically tragic as the thromboembolic phenomena. Fatal pulmonary embolism in a patient apparently convalescing uneventfully and preparing to leave the hospital is a fearsome and pathetic catastrophe. Whereas the mortality rate in surgical patients has steadily decreased since the introduction of asepsis and continued improvement in surgical technique and anesthesia as well as the more recent development of the sulfonamides, little has actually been accomplished in the control of pulmonary embolism until relatively recently. Indeed there is some statistical evidence to support the belief that the thromboembolic incidence is increasing.<sup>1</sup> That the condition occurs with sufficient frequency to deserve the assiduous and intensive efforts of investigators has been clearly demonstrated by repeated observations. Thus Snell<sup>2</sup> at the Mayo Clinic and Dietrich<sup>3</sup> in Germany found that pulmonary embolism was considered the cause of death in approximately 8 per cent of all autopsies. In a statistical consideration of this subject Gibbon<sup>4</sup> was able to express the incidence of fatal pulmonary embolism as follows: Of every thousand patients admitted to the surgical wards, 1 will die of pulmonary embolism, of every thousand operated on, 2 will die from pulmonary embolism, and of every hundred postoperative deaths, eight will be due to pulmonary embolism. Other investigators<sup>5</sup> have found that of every 17 to 20 patients with clinical manifestations of thrombophlebitis 1 will die of pulmonary embolism and 1 in every 6 to 12 who had previous nonfatal embolism will die of a subsequent embolus. These figures demonstrate forcefully that the incidence and consequence of thromboembolic phenomena are of sufficient extent to deserve serious consideration.

Until recently, combative measures in pulmonary embolism have been singularly ineffective. The Trendelenburg operation, which consists of pulmonary embolectomy, has saved relatively few patients with massive pulmonary embolism and cannot be expected to improve the mortality appreciably. Accordingly it became necessary to attack the problem from another approach. This consists essentially in prophylaxis.

Since an embolus has its origin in a thrombus, prophylaxis should begin with measures designed to prevent intravascular thrombosis. No attempt, however, will be made here to discuss in detail this phase of the subject, as it has been adequately reviewed in previous publications.<sup>6</sup> Suffice it to say that, whereas such measures will undoubtedly decrease the incidence of thrombosis, they do not completely prevent its occurrence. Even the use of anticoagulants such as heparin and dicumarol have not been found completely satisfactory. Heparin has the disadvantages of being costly, requiring continuous or repeated intravenous injections and maintaining a constant anticoagulant effect with difficulty. Moreover, cases of pulmonary embolism during heparinization have been observed. Dicumarol, which is still in the experimental stage, also has distinct disadvantages. In view of the wide variations in susceptibility to the drug in different patients, the definite danger of hemorrhage associated with its use and the lack of conclusive evidence of its effectiveness for the present, dicumarol "cannot be regarded as a safe, efficacious and satisfactory prophylactic or therapeutic agent in intravascular thrombosis."<sup>8</sup> Whereas anticoagulants will prevent blood coagulation, their routine use prophylactically is not justified except possibly in the unusual cases in which there is a thrombosing tendency which can be determined by a history of previous thrombosis or a family history of repeated thromboses. Once a thrombus has formed, the use of anticoagulants will not protect against its detachment even though the blood coagulability is decreased. These realistic considerations permit comprehension of the rationale of prophylactic therapy of pulmonary embolism once intravascular thrombosis has occurred. Accordingly the direction of attack must be focused on the prevention of fragments of the thrombus from reaching the pulmonary vascular channels. Obviously the logical means of doing this is by blocking or ligating the venous channel central to the site of the thrombus.

That the value of proximal venous ligation in intravascular thrombosis has long been realized is shown by its interesting historical development. One of the earliest observers to realize the rationale of this procedure was Hunter,<sup>9</sup> who in 1793 successfully applied it clinically. However, Hunter apparently did not actually perform venous ligation but attempted to accomplish the same purpose by placing compression "upon the part of the vein just above the suppuration." Lee<sup>10</sup> in 1865 was possibly one of the earliest actually to ligate a vein above the thrombotic process. Approximately two decades later Kraussold<sup>11</sup> recorded the successful ligation of the femoral vein in a patient with suppurative thrombophlebitis following thigh amputation, and Zaufal<sup>12</sup> reported the successful ligation of the internal jugular vein in the treatment of pyemia originating in the internal ear. Apparently Freund<sup>13</sup> was one of the earliest surgeons to apply

From the Department of Surgery, Tulane University of Louisiana School of Medicine, and the Ochsner Clinic.  
1 Ochsner, Alton, and DeBakey, M. E. Thrombophlebitis and Phleboembolism, South Surgeon 8:269 (July) 1939.  
2 Snell, A. M. Relation of Obesity to Fatal Postoperative Pulmonary Embolism, Arch Surg 15:237 (Aug.) 1927.  
3 Dietrich, A. Einige bemerkenswerte Beobachtungen von Thrombose und Embolie, Chirurg 1:485 (April 15) 1929.  
4 Gibbon, J. H., Jr. Pulmonary Embolism. Review of Recent Contributions, Pennsylvania M. J. 42:877 (May) 1939.  
5 Barker, N. W., Nygaard, K. K., Walters, Waltman, and Priestley, J. T. A Statistical Study of Postoperative Venous Thrombus and Pulmonary Embolism, Proc Staff Meet, Mayo Clin 15:796 (Dec. 18) 1940. 16:33 (Jan. 15) 1941.

6 Ochsner and DeBakey, footnotes 1 and 18.  
7 Fine, Jacob, Frank, H. A., and Starr, Arnold. Recent Experience with Thrombophlebitis of the Lower Extremity and Pulmonary Embolism: The Value of Venography as a Diagnostic Aid, Ann Surg 116:574 (Oct.) 1942.  
8 DeBakey, Michael. Dicoumarin and Prophylactic Anticoagulants in Intravascular Thrombosis, editorial, Surgery 13:456 (March) 1943.  
9 Hunter, J. Observations on the Inflammation of the Internal Cava of Veins, Tr. Soc. Improve M. & Chir. Knowl. 1:18, 1793.  
10 Lee, H. The Surgical Treatment of Certain Cases of Acute Inflammation of the Veins, M. Times & Gaz 1:530, 1865.  
11 Kraussold, H. Ueber eine operative Methode zur Bekämpfung beginnender Pyämie, Arch f. klin. Chir. 22:965 1878.  
12 Zaufal, H. Sinusthrombose, Prag med. Wchnschr. 5:517 1902.  
13 Freund, W. A. Ueber die Methoden und Indikationen der Total-Exstirpation der Uterus speziell in Bezug auf die Behandlung der Uteruskarzinoms, Beitr. z. Geburtsh. u. Gynäk. 1:343 1872.

the method in gynecology. Although the procedures were unsuccessful in preventing a fatal termination, he performed in 1898 ligation and excision of the thrombosed ovarian vein and broad ligament in 2 cases. Perhaps Trendelenburg<sup>14</sup> in 1902 was the first to perform the procedure successfully in a case of puerperal infection. At the first operation he ligated the hypogastric vein, but because the patient continued to have chills he performed a second operation and ligated the ovarian veins. Of interest in this connection is the fact that at this time Trendelenburg expressed the opinion that vena caval ligation should not be considered in these cases because with such extensive thrombosis the procedure would be futile. Nine years later Trendelenburg<sup>15</sup> had apparently changed his mind, as he reported probably the first successful case of vena caval ligation for intravascular thrombosis. Subsequently the procedure was performed by a number of surgeons, as demonstrated by the collected series of 48 cases reported by Krotoski<sup>16</sup> in 1937. More recently Collins and his associates<sup>17</sup> at Tulane University have emphasized its value in suppurative pelvic thrombophlebitis. Ample evidence of the value of proximal venous ligation in intravascular thrombosis has been recorded by numerous other recent reports, which have been reviewed in a previous publication.<sup>18</sup>

Whereas it is now generally agreed that proximal venous ligation is definitive therapy in the prevention of pulmonary embolism, its practical application has been difficult. This is due to the frequent absence of precise criteria in determining or in predicting the possible occurrence of embolism. For this reason, some<sup>19</sup> have advocated routine division of the femoral vein in all patients who have or are suspected of having thrombophlebitis of the deep veins of the lower leg. This attitude may be questioned, for certainly pulmonary embolism infrequently occurs in thrombophlebitis and, when found, as we have previously emphasized, is due to the dislodgment of a coagulation thrombus proximal to the thrombophlebitic segment or to the liquefaction of the clot in suppurative thrombophlebitis. The clot resulting from the inflammatory reaction of the veins in thrombophlebitis is firmly attached to the vein wall and does not become loosened to form an embolus. Unless measures are taken to prevent it, however, a red clot or coagulation thrombus can develop in the vein proximal to the fixed white thrombus where stasis is likely to occur. In such an instance detachment of the red thrombus is possible, but this development can and should be prevented as soon as the thrombophlebitic process is detected.

On the other hand in intravenous clotting unassociated with inflammation of the vein, that is, phlebothrombosis, the clot is of the coagulation variety and is loosely attached to the vein wall, permitting its being loosened easily with the development of embolism.

Patients with thrombophlebitis have definite clinical manifestations such as fever, pain and swelling of the involved extremity whereas in patients with phlebothrombosis the symptoms and signs are minimal. As previously emphasized,<sup>18</sup> they may have a sense of impending disaster, exhibit a pulse rate out of proportion to anything else and have tenderness over the involved vein. The frequency of the occurrence of venous thrombosis is clearly demonstrated by numerous recent clinical and experimental investigations. Thus Roessle<sup>20</sup> in careful autopsies of 324 consecutive cases found that thrombosis had occurred in the deep veins of the calf in 88 persons over 20 years of age. Of this number 38 also had thrombosis in the femoral vein, in 10 of whom death was due to massive pulmonary embolism. Neumann,<sup>21</sup> in a similar study of 165 unslected patients dying from a variety of causes found thrombosis in 100. In 45 per cent thrombosis was present in the veins of the thigh with evidence of extension from a more distal process. Of the cases with thrombosis, 12 per cent showed massive pulmonary embolism and an additional 34 per cent showed multiple nonfatal emboli. Somewhat similar observations have been made by Bauer,<sup>22</sup> Hunter and his collaborators,<sup>23</sup> Frykholm<sup>24</sup> and others.

These and other reports emphasize the high incidence of the thromboembolic phenomenon and its treacherous nature. The latter feature is illustrated by the fact that frequently the first indication clinically of thrombosis is pulmonary infarction and too often this is fatal. This is especially likely to occur in certain forms of thrombosis. In previous publications we<sup>6</sup> have distinguished between two major types of intravascular thrombosis, namely, thrombophlebitis and phlebothrombosis. In the former the clotting is believed to be the result of injury to the vascular endothelium from mechanical trauma, bacterial invasion or chemical injury, whereas in the latter it may be due to venous stasis and to alterations in the cellular and fluid constituents of the blood that increase the clotting tendency. The clinical significance of this distinction lies in the fact that in thrombophlebitis the clot is usually firmly adherent to the vein wall and is therefore less likely to become detached and to result in embolism. In phlebothrombosis, on the other hand, the thrombus is loosely attached to the vessel and is more likely to cause embolism. Of particular importance also is the more insidious development of phlebothrombosis, and the frequent lack of indicative clinical manifestations of thrombophlebitis, i.e., pain, fever and swelling, are much less pronounced in phlebothrombosis and not infrequently even absent. The patient does not appear so sick in phlebothrombosis as in thrombophlebitis, but restlessness and anxiety in the former are frequently present. For these reasons a precise method of diagnosis of intravascular thrombosis is desirable. Herein lies the importance of phlebography. Much credit is due dos Santos<sup>25</sup> and his son for developing this procedure and directing

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16 Krotoski J. Zur Venenunterbindung bzw. extirpation bei der puerperalen Allgemeininfektion vom chirurgischen Standpunkt. Chirurg. 9: 45, 1937.

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22 Bauer G. A Venographic Study of Thromboembolic Problems. Acta chir. Scandinav. 84: 1, 1940.

23 Hunter W C, Sneed V D, Robertson T D, and Snyder G A. C. Thrombosis of the Deep Veins of the Leg. Its Clinical Significance as Exemplified in Three Hundred and Fifty One Autopsies. Arch. Int. Med. 68: 1 (July) 1941.

24 Frykholm Ragnar. Pathogenesis and Mechanical Prophylaxis of Venous Thrombosis. Surg. Gynec. & Obst. 71: 307 (Sept.) 1940.

25 dos Santos J. La phlebographie directe: conception technique premiers résultats. J. internat. de chir. 3: 625, 1938.

attention to its significance. Subsequently Bauer<sup>26</sup> elaborated the technique and emphasized further its value. Since then others<sup>27</sup> have presented further critical evaluation of the procedure and substantiated its value.

The technique of phlebography is so simple that it can be done easily by any one. Moreover, it is a relatively safe procedure. Although untoward effects of diodrast have been reported,<sup>28</sup> we believe that if used properly these can be prevented. The patient is placed on the x-ray table on his back with a 7 by 17 film under his leg and lower thigh. This should be placed so that the popliteal vein will be well visualized on the upper part of the film. A tourniquet is applied to the thigh just below the fossa ovalis and just tight enough to occlude the superficial circulation. This is done in order to shunt the contrast medium from the superficial veins into the deep veins. The leg and thigh are internally rotated in order to separate the shadows of the tibia and fibula and secure unobstructed visualization of the veins (fig 1). Twenty cc of 35 per cent diodrast solution is injected into any vein on the dorsum of the foot or ankle at the rate of 1 cc per second. Twenty seconds after the injection

Fig. 1—Diagrammatic drawing showing the position of the extremity during phlebography. The extremity is rotated medially to separate the shadows of the tibia and fibula. With the tourniquet placed high on the thigh tightly enough to compress the superficial veins, 25 cc of 35 per cent diodrast solution is injected into a dorsal vein of the foot.

is completed the film is exposed. If the standard supporting the x-ray tube is high enough to permit the tube to be 6 feet above the film, visualization of almost the entire lower extremity with one exposure will be feasible (fig 2). In such an instance a 7 by 17 film is placed under the leg and knee and a 14 by 17 film is placed above this under the thigh. The injection of the contrast medium is made in a similar manner, except that 25 cc of diodrast solution is injected and the exposure is made approximately thirty seconds after completion of the injection. Occasionally the veins on the dorsum of the foot may be so small that placing a needle into one is impossible. In such instances the external saphenous which is constantly present just behind the external malleolus, is easily found and cannulated.

If the side of involvement is unknown a single 14 by 17 film is placed behind both legs and lower thighs and injections are made simultaneously into a dorsal vein on each foot. In this way phlebograms of both

legs and popliteal areas can be obtained at the same time.

Normally both the deep and the superficial veins of the leg and thigh fill with the contrast substance and are clearly delineated on the film. Incomplete or irregular filling or absence of filling is an indication of thrombosis. If the deep veins are thrombosed, the superficial veins fill and are dilated. We have observed as have dos Santos<sup>28</sup> and Starr, Frank and Fine,<sup>29</sup> that resistance to injection, indicative of increased venous pressure above that expected with a tourniquet at the thigh, is present in cases of thrombosis. If a defect in the venous system is visualized, indicating the presence of a thrombus, steps should be taken immediately to prevent its detachment, either by ligating the vein above the site of the thrombus or by removing the thrombus. The latter method is preferred in cases in which the thrombus is in the femoral and extends into the iliacs.

#### REPORT OF CASES

CASE 1—Mrs H. C., aged 44, white, seven months pregnant, went into labor with breech presentation. Cramiotomy was necessary for delivery. The postpartum course was so uneventful that she was discharged on the sixth day. She remained in bed at home and on awakening on the morning of the eleventh day noted that her left leg was swollen considerably, ashen in color and painful to touch, especially in the calf. She returned to the hospital, where it was found that her temperature was 99.1° and pulse rate 90. There was considerable edema of the leg and thigh with tenderness in the calf and along the course of the femoral vein. Phlebothrombosis was suspected and confirmed by phlebography, which showed that the entire deep venous system was obliterated. Exploration of the femoral vein revealed a typical "red thrombus," which was aspirated from the vein both proximally and distally. Bleeding occurred from both ends of the vessel after aspiration of the clot. The vein was

ligated between the entrance of the vein profunda and the internal saphenous.

The patient remained without further symptoms after the ligation.

Lawen,<sup>30</sup> Kulenkampff,<sup>31</sup> Lange, Frund<sup>32</sup> and others have advocated various types of thrombectomy in the treatment of these cases. If a defect in the superficial venous system, the deep system or both is visualized, immediate operation should be done in order either to ligate the involved

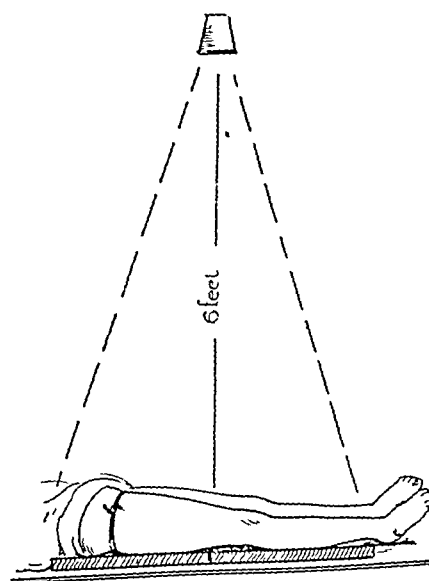


Fig. 2—Diagram showing the method of visualization of the venous system of the entire lower extremity with one exposure. By employing a tube film distance of 6 feet in which parallel rays will reach the film it is possible, with two films placed in tandem to visualize the venous system of the entire lower extremity.

vein above the thrombus or to remove the clot and ligate the vein, so that detachment of the clot with the development of embolism can be prevented. There is usually some edema and cyanosis of the extremity following ligation, which responds well to procaine hydrochloride sympathetic block and elevation. The

26 Dougherty, John, and Homans, John. Venography. A Clinical Study, Surg., Gynec. & Obst. 71: 697 (Dec.) 1940. Lindblom, K. Phlebographische Untersuchung des Unterschenkels bei Kontrastinjektion in eine subkutane Vene, Acta radiol. 22: 288, 1941. Welch, C. E. Faxon, H. H., and McGahey, C. E. Application of Phlebography to Therapy of Thrombosis and Embolism, Surgery 12: 163 (Aug.) 1942. Fine, Frank and Starr.  
27 Goldburgh, H. L., and Baer, Samuel. Death Following Intravenous Administration of Diodrast, J. A. M. A. 118: 1051 (March 28) 1942. Homans, John. Thrombosis as Complication of Venography (Using Diodrast), ibid. 119: 136 (May 9) 1942. Naternian, H. L., and Robinson, S. A. Cutaneous Test with Diodrast to Predict Allergic Systemic Reactions from Diodrast Given Intravenously, ibid. 119: 491 (June 6) 1942.

28 dos Santos, R. Phlebographie d'une veine cave inferieure avec iodurole 39: 586 1935.

tenderness over the thrombosed veins remains for a week or ten days and then subsides. There is usually a slight rise in temperature for a few days postoperatively.

CASE 2—Mrs M C, aged 59 white admitted to the surgical service, complained of a recurrent left femoral hernia which had been repaired three years previously only to recur three weeks prior to admission. With the exception of the hernia and moderate obesity, the physical examination and complete laboratory work-up were normal for a person of her age. A rather extensive hernia was repaired and the postoperative course was uneventful and afebrile until the seventh day. At this time an unaccountable fever occurred which persisted for two days. On the ninth postoperative day she complained of pain in the left heel. Tenderness was noted on pressure in the left calf, and pain was present in the calf on dorsiflexion of the foot. There was no swelling or discoloration of the extremity. Phlebosthrombosis was suspected, and phlebography revealed the presence of a clot in the deep veins of the leg (fig 3). Ligation of the femoral vein was done immediately distal to the internal



Fig. 3—Phlebogram in case 2 showing normal filling of the dilated superficial veins of the upper leg and the deep and superficial veins of the thigh but an absence of filling of the deep veins of the leg indicating the presence of a clot in this area.

saphenous. We believe, contrary to the opinion of Fine and his co-workers, who prefer to ligate just distal to the vena profunda, that generally all of the deep circulation should be occluded.

CASE 3—A G, a white man aged 59, was admitted to the hospital following a crushing injury in which he sustained a simple fracture of the right femur and fibula. Physical examination and laboratory studies were otherwise normal. The fracture was reduced by traction with a Steinmann pin inserted through the upper tibia, and a spica cast was applied. Three days later he developed sudden severe chest pain, fever to 103 F

29. Starr Arnold Frank H. A. and Fine Jacob. The Venographic Diagnosis of Thrombophlebitis of the Lower Extremities. J. A. M. A. 118: 1192 (April 4) 1942.
30. Lawen A. Thrombectomy in Venous Thrombosis and Arteriosclerosis. Internat. Abstr. Surg. 65: 348 1937.
31. Kulenkampf D. Die Verhütung schwerer oder tödlicher Embolien durch Ausraumung der Venenklappen. Zentralbl. f. Chir. 62: 1258 1938.
32. Lange K. Beitrag zur operativen Behandlung der blauen Venenthrombose. Zentralbl. f. Chir. 65: 2422 1938.
33. Freund H. Thrombektomie als Prophylaxe gegen Lungenembolie. Zentralbl. f. Chir. 64: 1202 1937.

and a pulse rate of 160. Examination and a portable chest x-ray film gave evidence of a pneumonic process at the right base. He was treated unsuccessfully with sulfathiazole and specific type vii pneumococcus serum for eleven days. At this time he again had sudden severe chest pain with elevation of pulse and temperature and pronounced dyspnea. He also com-



Fig. 4—Phlebogram in case 3 showing filling of the deep and superficial veins of the leg, popliteal area and lower thigh with a defect in the deep veins of the midthigh.

plained for the first time of pain in the right thigh. Phlebosthrombosis was suspected. The cast was removed and a phlebogram made (fig 4). A defect was visualized in the femoral vein, and ligation was done. Since this time he has been afebrile and has had a normal pulse and no respiratory symptoms or signs.

It is obvious, then, that this patient had phlebosthrombosis and two attacks of pulmonary infarction. This case illustrates that not all pulmonary infarctions are fatal. Even though almost three fourths of the patients with pulmonary embolism survive, the fact that in 30 per cent of patients the embolism is massive enough to be fatal emphasizes the potential gravity of every case of phlebosthrombosis.

CASE 4—Interestingly enough this patient also had pulmonary infarction, which was treated originally as a pneumonia. O. D. a Negro woman aged 29 was admitted to the gynecology ser-

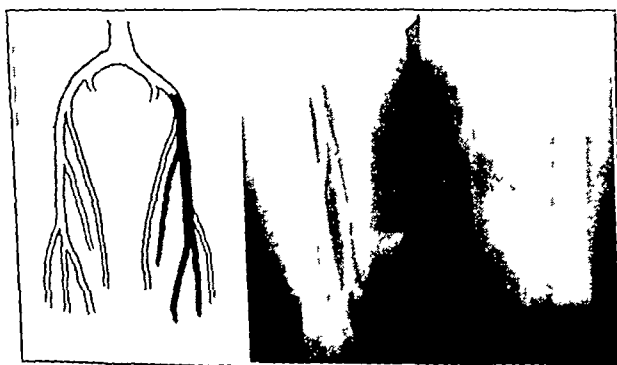


Fig. 5—Bilateral phlebogram in case 4. On the right side there is normal filling of the superficial and deep veins, whereas on the left there is an absence of filling of the deep veins. Because of blockage of the deep veins the superficial veins are abnormally prominent.

vice complaining of right lower quadrant pain. She was treated conservatively for pelvic inflammatory disease and discharged eleven days later with instructions to remain in bed at home. She returned four days later stating that two days after being home she had sudden severe sharp pain in the right chest and

difficulty in breathing. A physician was called who prescribed therapy without relief and advised hospitalization. The admission diagnosis was pneumonia because signs of consolidation were found at the right base and there was x-ray evidence of pneumonia. In light of subsequent findings this is now interpreted as an infarction. She recovered completely except for fluoroscopic evidence of thickened pleura and impaired diaphragm-



Fig. 6—Bilateral phlebograms in case 5. On the right side there is normal filling of both the deep and superficial veins, whereas on the left there is an absence of filling of the deep veins and also dilatation of the superficial veins indicating a thrombus in the deep venous system.

matic function noted eight days later. She was discharged after nineteen days in the hospital. She returned five days later to the gynecology service stating that for the past few days she had pain in the left thigh. This is the first time any complaint of any difficulty in the lower extremities could be found. Examination revealed moderate edema of the left leg and thigh with tenderness over the femoral vein and in the calf. A diagnosis of phlebothrombosis was made because the patient was relatively afebrile. Phlebograms were made which show normal filling of the right femoral, absence of the left femoral and presence of superficial left thigh veins (fig 5). Because of the

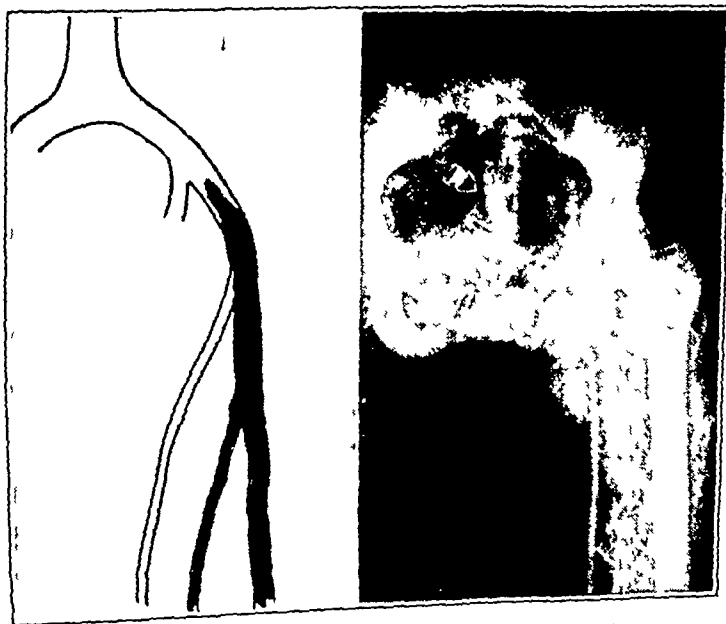


Fig. 7—Phlebogram in case 6 showing well filled long saphenous vein and dilatation of other superficial veins but absence of filling of the femoral, indicating the presence of a thrombus in the deep venous system.

previous infarction, the femoral vein was explored and found to contain a typical "red thrombus".

This case illustrates, how in many cases repeated nonfatal embolisms can occur. Fortunately, in spite of the delay in recognizing the true condition the infarctions were relatively small and the involved vein

was finally ligated before an embolism large enough to cause death broke loose.

CASE 5—Mrs A. L., aged 22, white, was admitted to the obstetric service near term with preeclamptic toxemia. She delivered two weeks after admission and was then transferred to the medical service for study because of a pronounced anemia. While there she developed a typical thrombophlebitis of the right lower extremity for which procaine sympathetic lumbar block was done on several occasions. Six days later, because of progression of her symptoms, consisting of increasing pyrexia and swelling, phlebograms were done which showed obliteration of the right femoral vein but a normal left femoral vein (fig 6). Because of considerable pelvic tenderness it was thought by the gynecologists that she had a pelvic thrombophlebitis, which was proved at operation. The inferior vena caval and the ovarian veins were ligated. The temperature returned to normal within ten days.

CASE 6—Mrs L. H., aged 23, white, was admitted to the gynecologic service complaining of flooding. A diagnosis of cervical erosion, hyperplastic endometrium and relaxed perineum was made and a dilation and curettage, conization of the cervix and posterior colporrhaphy were done. Postoperatively on the eighth day she developed fever, which was thought to be due to parametritis. On the twelfth postoperative day she

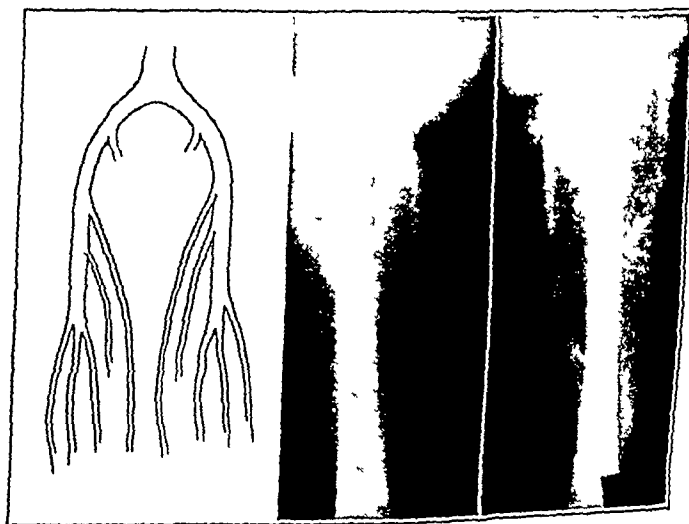


Fig. 8—Bilateral phlebograms in case 7 showing normal filling of both superficial and deep veins. Although clinically intravenous clotting was suspected, the normal filling of the veins, as demonstrated by phlebography, ruled out the presence of an intravenous clot. Patient's symptoms were subsequently found to be due to a cul de sac abscess.

complained of pain in the left thigh. It was noted that there was mild edema of the thigh and leg and tenderness along the course of the femoral vein. Phlebographic studies showed a complete femoroiliac obliteration (fig 7). Repeated lumbar sympathetic procaine blocks relieved the clinical manifestations of thrombophlebitis.

In cases of thrombophlebitis, ligation is unnecessary because here the clot is intimately attached to the vein wall and embolic phenomena rarely if ever occur.

CASE 7—Mrs L. H., aged 43, white, on her second postoperative day following a hysterectomy developed fever to 104 F, the pulse rate was 110. This persisted until the fifth day, when slight edema of the legs was noted. Pelvic or iliofemoral thrombophlebitis was suspected, and phlebograms were made. The deep veins were found to be normal (fig 8). Subsequently an abscess was detected in the cul-de-sac and drained resulting in relief of symptoms.

Thus it is demonstrated that often negative phlebograms are of considerable aid.

CASE 8—Mrs M. McI., aged 55, white, developed left thrombophlebitis following an injury resulting in excision and laceration of the colon. Phlebography demonstrated obliteration of the deep veins and dilatation of many superficial veins (fig 9).

Although phlebography demonstrated very clearly in this case the extent of the thrombophlebitic process we believe that this procedure is generally not necessary in thrombophlebitis in contradistinction to phlebotrombosis, in which accurate localization of the clot is essential in order that adequate therapy may be instituted

CASE 9—S G, a Negro woman aged 43, had an extensive carcinoma of the cervix. She had a definite internal sphenous thrombophlebitis and was suspected of having deep venous thrombosis. Phlebography, however, demonstrated a patent femoral vein (fig 10)

In superficial thrombosis the diagnosis is usually obvious because the vein is readily palpable and often visible. There is inflammatory reaction and tenderness along its course. Whereas embolism seldom follows thrombophlebitis of the superficial veins, it can complicate phlebotrombosis of this system. Because

in this case than usual. At operation a long red thrombus was sucked from the vein and ligation was done at the site of election.

This patient had not suffered embolic disturbances, but one can readily see what might have happened if the vein had not been ligated.



Fig 9—Phlebogram in case 8 showing complete absence of filling of the deep venous system with filling and dilatation of the superficial veins. In this case the intravenous clot was the result of thrombophlebitis and not phlebotrombosis.

of the innocuousness of and the ease with which ligation of the superficial veins can be done, it is indicated in all spontaneous intravenous clotting of the superficial veins of the thigh.

CASE 10—M J, a Negro woman aged 45 had a vaginal hysterectomy. The postoperative course was stormy because of pelvic peritonitis and a thrombophlebitis in the right iliofemoral vein was suspected. Lumbar sympathetic nerve blocks were done and apparently the thrombophlebitis cleared up. The pelvic infection improved and she was discharged. She returned with swelling of the leg and tenderness of the calf on the right side. Bilateral phlebography showed normal veins on the left and occlusion of the deep veins of the right leg with apparently a long clot extending into the popliteal and femoral veins (fig 11). Another phlebogram taken an hour later showed the same defect (fig 12). Because the filling defect in the popliteal and femoral veins was incomplete it was thought that the thrombus was lying loose in the vessel and therefore was even more likely to become detached than those in most cases of phlebotrombosis. Operation was considered even more urgent



Fig 10—Phlebogram in case 9. Although a deep vein thrombosis was suspected phlebography showed satisfactory filling of the deep veins but in absence of filling of the superficial veins indicating a thrombus in the long saphenous.

CASE 11—C J K, aged 60 was seen at his home on Jan 15, 1942 with the story that approximately five weeks previously he had developed pneumonia. He was treated by the usual

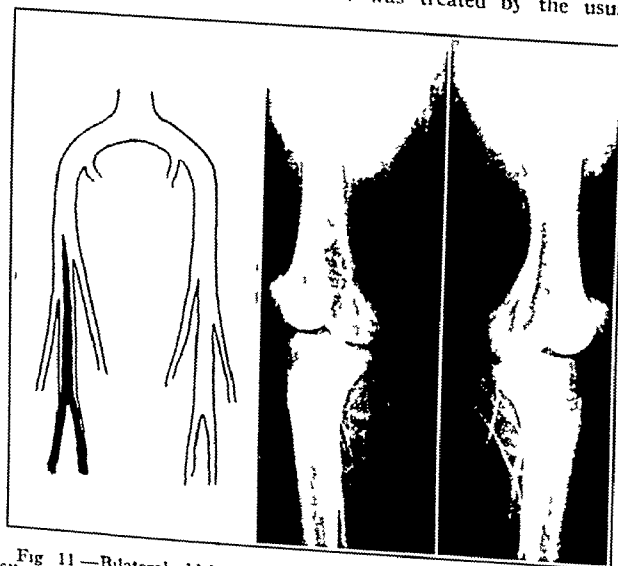


Fig 11—Bilateral phlebogram in case 10. On the left there is normal filling of both the deep and superficial veins whereas on the right there is filling of the deep veins of the thigh and the superficial veins of the legs but a defect of the deep veins of the leg and popliteal vein. The defect produced by the clot extending up into the saphenous can be well visualized.

methods and recovery was quite satisfactory except that he continued to have a rapid pulse subsequently. He developed another attack of pneumonia on the opposite side. This was associated with hemoptysis. Not until two more attacks had



occurred was it evident that the pulmonary lesion was infarction. Heparin was administered and blood coagulation varied between fifteen minutes and one hour. During the period of heparinization which lasted approximately ten days, two more emboli broke off. At the time he was extremely ill semicon-

scious and cyanotic in spite of the fact that he was in an oxygen tent. Careful examination failed to reveal any evidence of thrombosis. The patient was removed to the hospital. Bilateral phlebography was done by inserting a cannula into a dorsal vein on the dorsum of each foot, 125 cc of diodrast was injected into each foot simultaneously and an x-ray exposure was made of the two legs. Shortly after this plates were placed under the thigh and another 125 cc of diodrast was injected into the foot, x-ray exposures of the thigh being made. Examination of the phlebograms showed filling of all the veins except the short saphenous on the left (figs 13 and 14). The patient was taken to the operating room immediately and the upper end of the short saphenous vein was exposed. It was found to be collapsed and dissection down for a short distance disclosed that it was completely empty. Because of the poor condition of the patient it was decided not to extend the incision down until the thrombus was reached, but instead the vein was tied off. The extremities were wrapped with compression bandages from the toes to the groin, and active mobilization was started. Because of extensive pneumonitis he was given sulfonamides, which gradually brought down his temperature. His progress was uneventful from there on.

#### CONCLUSIONS

- 1 Phlebography is imperative in all cases of intravenous thrombosis in which the clot is not firmly attached to the vein wall, i e., in phlebothrombosis.
- 2 The procedure is simple, safe and informative.
- 3 Whenever in phlebothrombosis a defect in the venous system is demonstrated immediate operation

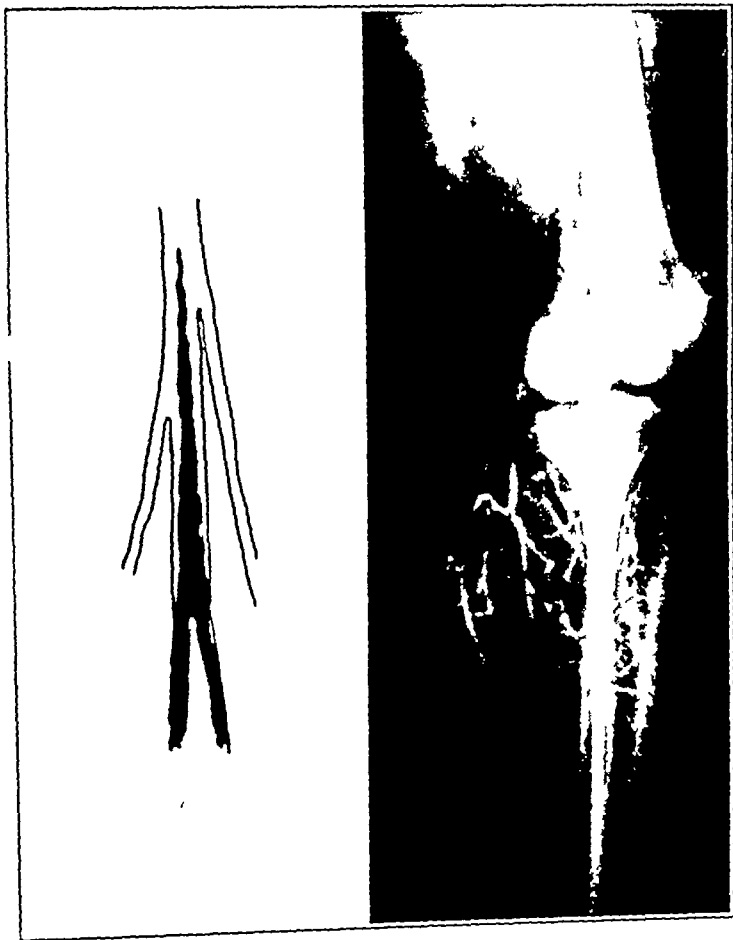


Fig 12—Phlebogram of the right leg in case 10 demonstrating normal filling of the superficial veins with dilatation of these veins of the calf but absence of filling of the deep veins of the leg and popliteal area with the defect extending up into the femoral

scious and cyanotic in spite of the fact that he was in an oxygen tent. Careful examination failed to reveal any evidence of thrombosis. The patient was removed to the hospital. Bilateral

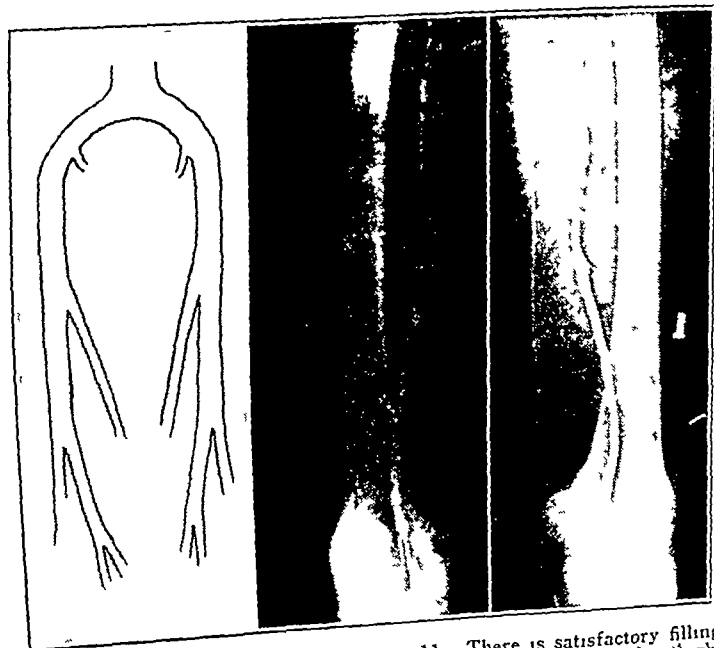


Fig 13—Bilateral phlebograms in case 11. There is satisfactory filling of the deep and superficial veins of the popliteal area and the thigh demonstrating an absence of clot in these areas.

phlebography was done by inserting a cannula into a dorsal vein on the dorsum of each foot, 125 cc of diodrast was injected into each foot simultaneously and an x-ray exposure was made of the two legs. Shortly after this plates were placed under

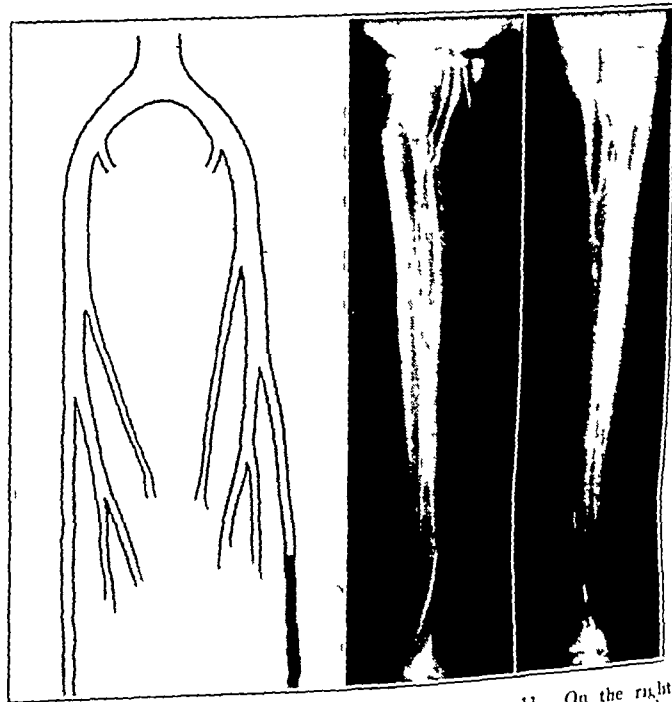


Fig 14—Bilateral phlebograms of the leg in case 11. On the right side there is normal filling of the superficial and deep veins. On the left however there is an absence of filling of the short saphenous in its lower portion indicating a thrombus in this area which was demonstrated at operation.

is imperative. This should consist of either ligation of the involved vein above the site of the thrombus or thrombectomy.

- 4 Only by the prompt recognition of intravenous thrombosis in phlebothrombosis and the institution of measures to prevent the detachment of the clot can the mortality rate from pulmonary embolism be decreased.

**Iron Used as Medicine**—Iron has been used as a medicine since ancient times. Dioskorides gave iron rust to women who were flooding. Water or wine in which a glowing piece of iron had been quenched was long used as a treatment for diarrhea and dysenteries. As one would expect, iron was used often for exorcising disease. A curious idea was that of the Romans, who drove nails into the walls of the temple of Jupiter in order to ward off epidemics. Perhaps with some what similar ideas the Germans in the last war drove nails into a wooden bust of Bismarck.—Alvarez, Walter C., in *Essays in Biology*, Berkeley, University of California Press 1943.

# LESIONS OF THE ESOPHAGUS IN GENERALIZED PROGRESSIVE SCLERODERMA

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Generalized or diffuse scleroderma is a disease well studied from the clinical and the microscopic point of view and certainly is a well defined clinical entity. It is not restricted to the skin and to the organs adjacent to the skin but is a generalized systemic disease of the connective tissue.

In most cases the process starts on the hands and feet with a somewhat later and slower involvement of the face.

Three stages can be distinguished clinically: the edematous, the indurative and the atrophic stage. The initial edema does not pit on pressure. The skin appears tense and cannot be folded. The face assumes a mask-like expression, the regular folds smooth out. In the second phase the skin hardens and stiffens. This is particularly pronounced on the fingers, on the dorsa of the hands and in the region of the ankles. Hyperpigmented and depigmented spots appear in this stage. In the third stage the tips of the fingers become smaller and pointed, and the fingers are immobilized in a flexed position. The face, the nose, the ears, and the lips become gradually smaller and thinner. Ectropion develops in consequence of the atrophy of the lids. All mucous membranes of the mouth (tongue, hard and soft palate and gums) may be involved in the indurative and atrophic process. Ulcers, probably due to tension and deficient circulation, develop mainly on the finger tips, the elbows and the ankles. Fibrosis of the lungs without any subjective symptoms is a common sign of the disease.

With regard to the initial signs, two types of the disease can be distinguished: the type starting with Raynaud-like signs and symptoms and the arthritic type, the latter starting with joint pains and stiffness because of primary scleroderma in the articulations. There are condensation and absorption of bone material and atrophy at the joint surfaces with rarefaction of the substantia spongiosa. However, these two types are often intermingled. In the arthritic type one may see acroasphyxia of the fingers at any time, and in the Raynaud type severe arthritis may develop. Calcium deposits in soft tissues are often recorded, and true calcinosis in combination with scleroderma was described as a special syndrome by Thibierge and Weissenbach.

Pathologically, the main feature of the disease is a peculiar change of the collagenous tissue usually designated as homogenization. After the edematous stage with the picture of swollen and loose fibers, has subsided, the collagenous fibrillae become thickened and less acidophilic than normal or even basophilic which means that the collagen assumes acid properties. In this dense fibrous connective tissue the fibroblasts are shrunken and less numerous than normal. The vessels are intensely involved by the fibrotic process.

The muscularis is completely replaced by connective tissue consisting of gross fibers. Also the elastica may disappear completely.

## LESIONS OF THE ESOPHAGUS IN GENERALIZED SCLERODERMA

Up to the present time little attention has been paid to the disturbance of esophageal function in diffuse scleroderma although it seems to be present in many cases and may be an early sign.

Difficulty in swallowing has been reported in 16 cases of diffuse scleroderma. A postmortem examination of the esophagus has been made in 3 cases, while an esophagoscopy examination made during life has been reported in only 1. No microscopic examination made during life has been reported.

In 1932 Fessler and Pohl<sup>1</sup> reported esophagoscopy findings in a single case. The mucosa down to a stricture at a depth of 32 cm was normal. The stricture appeared to be dense scar tissue narrowing the lumen so that a thin probe could not be passed. Although the mucosa in the stenosed part bled slightly, no gross ulceration or tumor was seen, and the firmness of the scar ruled out the possibility of spasm.

Ken Kure and his associates<sup>2</sup> described the microscopic changes in the esophagus of a patient examined post mortem as "dystrophic."

In 1931 Rake<sup>3</sup> described gross and microscopic postmortem findings in a case of scleroderma in which the roentgenologist had described contraction in the lower end of the esophagus six years earlier. Grossly the esophagus was dilated to 4.5 to 5 cm in width. The muscular coats were not visibly hypertrophied, but the mucosa was absent over the lower three fifths of the organ. The author did not state whether or not the patient had free acid in the stomach, so it is not known whether or not the loss of mucosa was the result of postmortem degeneration, peptic esophagitis or scleroderma. In the upper third erosions were present in an intact mucosa, but in the middle and lower thirds the mucosa was lacking. The submucosa was thickened and infiltrated with cells which were chiefly mononuclears with a few polymorphonuclear leukocytes; the changes were more extensive in the lower two thirds. Auerbach's intermuscular plexus was intact, and the ganglions and muscles appeared normal. A diagnosis of chronic ulcerative esophagitis was made.

Roentgenologic examinations of the esophagus have been made in 13 of the 16 reported cases. The descriptions have been somewhat sketchy. However, those given by Fessler and Pohl, Ken Kure and Weissenbach and his co-workers<sup>4</sup> have been fairly detailed. All of these authors described diffuse dilatation of the esophagus with the passage of the bolus slowed, especially when the patient was in the horizontal position. Hoelsi<sup>5</sup> presented a case in which the retardation of the bolus was noticed only at the cardia. Weissenbach and Fessler and Pohl<sup>1</sup> reported regional stenosis in the lower end of the esophagus. Fessler and Pohl also reviewed the

<sup>1</sup> Fessler A and Pohl R. Stenotic Process of the Esophagus in Scleroderma. *Dermat Ztschr* 63: 164-169, 1932.

<sup>2</sup> Kure Ken, Yamagata K, Tsukada S and Hiyoshi J. Passagion des Oesophagus bei Sklerodermie und Dystrophie musculorum progressiva. *Klin Wchnschr* 15: 516, 1936.

<sup>3</sup> Rake Geoffrey. On the Pathology and Pathogenesis of Scleroderma. *Bull Johns Hopkins Hosp* 48: 212, 1931.

<sup>4</sup> Weissenbach Henry and others. Progressive Scleroderma. Syndrome of Thibierge-Weissenbach. Ulcer of the Leg and Calcification of Soft Tissues. Esophageal Troubles. *Bull Soc franç de dermat et syph* 44: 2018-2037, 1937. Weissenbach Stewart and Hoelsi Henry. Functional Disturbances of the Esophagus and Esophageal Lesions in Scleroderma. *ibid* 44: 1060-1063, 1937.

<sup>5</sup> Hoelsi Henry. Functional Disturbances and Lesions of the Esophagus in Scleroderma. Thesis Paris Jouve & Cie 1937.

literature and found that the lesions in the esophagus had been termed cardiospasm (Nomland), esophagitis (Schwartz), diverticulum (Fihmann) and atony (Schmidt)

All of the 5 cases which form the basis of this report were clinically and histologically typical cases of diffuse



Fig. 1 (case 1)—On the left barium sulfate fills the lower end of the esophagus, showing the stenosis (arrow) at the upper border of the phrenic ampulla. On the right air is seen in the esophagus after most of the barium sulfate has passed through.

scleroderma. The patients were 3 men and 2 women. They presented clinical evidence of a disturbance of the swallowing mechanism, varying apparently only in the stage of the esophageal lesion. There was roentgenologic evidence of disturbed function of the esophagus in all 5 with a varying degree of stenosis in 3. Four of the patients were examined on one or more occasions by means of the esophagoscope, and biopsy was performed in 2 cases.

#### CASE HISTORIES AND SYMPTOMATOLOGY

Considerable variation in the severity and the time of onset of esophageal symptoms seems to be characteristic.

Only 1 of the 5 patients volunteered any complaints referable to swallowing. In the other 4 the symptoms were clearly brought out on questioning, but the comparative severity of the pain and discomfort from the cutaneous lesions caused the difficulty in swallowing to be overlooked.

In the first patient (S S), an unemployed man aged 40, the difficulty in swallowing preceded the complaints referable to the skin by one and a half years. The obstruction was apparently steadily progressive for seven years. Dilation had been done five years previously and repeated at irregular intervals. He had not complained of epigastric pain at any time. When first seen he was receiving feedings through a gastrostomy opening, with a string in the esophagus for retrograde dilation. At admission he displayed fully developed, easily recognizable generalized scleroderma with the characteristically stiff and atrophic appearance of the face and the hands. He gave a typical history of initial Raynaud-like signs and symptoms occurring five and a half years ago.

The second patient (J F), a man 48 years old, had suffered from generalized scleroderma for three years. He was under

the observation of the dermatology clinic of the University of Chicago for two and a half years. During this period he had an "arthritic" syndrome with typical sclerodermatic bone changes, Raynaud-like signs and symptoms, and severe ulceration on the finger tips, the elbows and the ankles. Thoracic sympathectomy was performed, but the operation had no beneficial effect whatever. His cutaneous disorder was clinically and histologically typical for scleroderma. On being questioned he admitted that he had had difficulty in swallowing. Solid food in particular seemed to stick and cause a fulness in the lower sternal region. The lower part of the esophagus was already stenosed to a diameter of about 6 mm.

The third patient (N S), a milkman aged 46, had noted numbness of fingers and hands to cold for about eighteen months. On admission he did not have typical scleroderma, but the shape and the pigmentary anomalies of the fingers and some spotted shiny areas on the upper part of the chest aroused suspicion. Neither solid edema nor atrophy was seen. However, in the course of one month's hospitalization there was progressive stiffening of the fingers, the dorsa of the hands and the chest. At a few spots definite signs of atrophy were seen. Microscopic examination of the skin revealed characteristic histologic changes. The patient also gave a history of pain beneath the sternum and in the epigastrium beginning eighteen months earlier. Pain came on about an hour after taking food, especially after consuming beer, "soda pop" and "hot dogs." It gradually became more frequent, lasted longer and was worse on lying down also on vomiting and bowel movements. A preparation containing chiefly magnesium carbonate and sodium bicarbonate or one designated as citrocarbonate gave relief.

The difficulty with cold hands was noticed about six months after the digestive complaints. Although the burning pain was always located behind the sternum from the epigastrium to the neck, it had been interpreted as due to gastric ulcer, until a review of the history and x-ray examination of the esophagus as well as an esophagoscopy were made. At this time an early degree of stenosis at the lower end of the esophagus was present.

The 2 women presented a less advanced symptom complex referable to the esophagus. The first of these (M G, aged 54) had had scleroderma for fifteen years and had been observed in the dermatology outpatient department for thirteen years; she had experienced difficulty in swallowing for over two years. Water was the worst offender and had to be swallowed slowly. A spasm of coughing frequently followed and there was a sensation of fullness for a few moments behind the sternum, more noticeable and prolonged on lying down. The patient had found that she had great difficulty in swallowing water while lying down.

The second (I N, aged 54), with scleroderma for six and a half years, which on admission extended over the whole body and face, gave a history of dysphagia on careful questioning.



Fig. 2 (case 2)—Patient in horizontal position. The esophagus remains dilated throughout. A moderate degree of stenosis (arrow) was present at the upper border of the ampulla.

6 The term acrosclerosis has not been used in this paper although all of our 5 cases fit the description of acrosclerosis given by J. Seller (Die Akrosklerosis [Sklerodaktylie] und deren Symptomenkomplex, nebst neueren Untersuchungen bei Sklerodermie, Arch f Dermat u Syph 163 343 365, 1931) and that by P. A. O'Leary and M. Waisman (Acrosclerosis, Arch Dermat & Syph 47 382 397 (March) 1943). We felt that what has been designated as acrosclerosis is identical with what always has been called diffuse or generalized scleroderma with sclerodactylia.

ing For over two years she had noticed heartburn a dull pain behind the sternum extending up to the neck in hour or so after eating occasionally was present in daytime but was more annoying at night On drinking a glass of water she had to stop and wait a few moments for it to go down A sensation of a load on her chest followed the drinking of a few mouthfuls, which she compared to the weight of "holding a baby in her



Fig 3 (case 3)—Two views of barium sulfate in the lower end of the esophagus showing moderate stenosis (arrows) at the upper border of the ampulla

arms' and which required a few moments to pass off On testing her ability to drink a glass of water while in the reclining position she had much difficulty in getting down more than a few sips She had noticed that lying on her left side would bring on the burning pain beneath the sternum"

#### RESULTS OF FLUOROSCOPY

On fluoroscopy each of the 3 men was found to have a localized narrowing of the esophagus about 4 or 5 cm above the level of the diaphragm (figs 1, 2 and 3) The narrowing was abrupt, measuring 2 or 3 cm in length and varying in width Some variation in width occurred with distention of the esophagus and with pulsation of the heart

In all 5 patients there were pronounced changes in the muscular movements<sup>8</sup> With the patient standing, barium sulfate passed from the pharynx to the stomach with some delay at the site of stricture but not at the cardia When the patient was placed in the horizontal position the barium sulfate entered the esophagus and

7 A sixth patient with generalized scleroderma (a patient of Drs Oppenheim and Cohen Chicago) did not volunteer complaints referable to the esophagus He had difficulty in swallowing in that fluids sometimes escaped up into the nasopharynx and the nose apparently because of stiffness of the soft palate Fluoroscopic and x-ray examination revealed complete absence of primary secondary and nearly all tertiary peristaltic waves of the esophagus Esophagoscopy showed no exudate or ulceration of the esophageal lining This apparently represents an early stage of the disease affecting the esophagus

8 Physiologists describe three types of muscular activity in the esophagus namely the primary secondary and tertiary waves in the primary wave is initiated by the act of deglutition and begins in the pharynx As it progresses down the esophagus a wave of inhibition precedes the wave of contraction so that the esophagus distends as the bolus is forced along As the wave of contraction passes the esophagus and leaves down as if to move his bowels after swallowing a bolus of a chicken mixture the closure of the cardia probably produced by the pinchcock action of the diaphragm offers resistance to the passage of the bolus The 1 or 4 centimeters of the esophagus above the stricture becomes considerably distended The primary peristaltic wave continues to hold his breath barium sulfate will regurgitate up the esophagus through a narrowing when the esophagus above relaxes This narrowing is seen only during the phase of regurgitation and not during the downward movement of the bolus

Secondary waves are similar to primary waves except that they originate in the middle of the esophagus usually at the level of the aortic arch Tertiary contractions are not clearly understood and are sometimes called curling They appear as irregular contractions of the lower half of the esophagus and last for not more than a second or two At the height of the contraction the esophagus has a beaded appearance

there remained As each successive bolus was taken the esophagus distended to receive it, reaching a width of approximately 4 to 5 cm The primary peristaltic wave which normally arises in the pharynx and travels the length of the esophagus with each act of deglutition traveled only down to about the level of the suprasternal notch In the 3 men and 1 woman the waves ceased entirely, but in the second woman (M G) it continued on down the esophagus as a wave insufficient in depth to propel the bolus along In its progression this shallow wave differed from the normal wave in that the esophagus behind the advancing peristaltic constriction did not remain contracted but distended immediately The shallowness of the wave and the immediate distention of the esophagus behind the advancing wave allowed barium sulfate in the esophagus ahead of the wave to regurgitate through the peristaltic constriction into the esophagus above as the peristaltic wave progressed toward the stomach

The failure of the esophagus below the level of the suprasternal notch to contract efficiently undoubtedly explains the retention of barium sulfate in the esophagus as long as the patient remained in a horizontal position Air which was also taken with the act of deglutition remained in the esophagus If at this stage of the examination the patient was raised to a sitting or a standing position, the bulk of the barium sulfate passed into the stomach, but the esophagus did not collapse completely the walls being separated by air within the lumen (fig 1) It seemed obvious that the emptying of the esophagus was caused by gravity rather than by contraction of the walls and that in the case of the strictures the rapidity of the emptying was slowed only because of the resistance offered by the strictures

While a woman (F N) was in the horizontal position, a small amount of barium sulfate was seen passing into the stomach during each expiration, but during inspiration the cardiac sphincter appeared firmly closed During the Valsalva experiment in this patient, instead of the cardiac sphincter pinching off the esophagus and the phrenic ampulla ballooning out as in the normal person, the cardiac sphincter opened, permitting passage of barium sulfate as a result of the increased intrathoracic pressure (fig 4) The narrowing seen at the upper level of the ampulla in this illustration was not constant and therefore was not interpreted as an early degree of stenosis



Fig 4 (case 5)—This view was taken during the Valsalva maneuver Barium sulfate is seen passing from the ampulla through the cardiac sphincter An apparent narrowing is seen at the upper border of the ampulla but no stenosis was demonstrated

If these patients were allowed to remain in the horizontal position after the esophagus filled and additional

There is a major responsibility involved in every decision that the psychiatrist makes regarding an inductee. For every case he approves for the Army which turns out to be a misfit or a psychiatric casualty, the cost in money and morale is incalculable. We know that the psychiatric casualties of the last war have occupied more beds in veterans' hospitals and have cost more money following discharge than all other cases together. Each man is estimated to have cost approximately \$30,000.<sup>4</sup> The cost in investment of time and equipment to train a soldier in a fighting unit only to have him break or become a misfit is an undetermined but undoubtedly a large figure. The cost to the unit in morale, particularly if it occurs in combat in a foreign land, is devastating. Equally important is the fact that these men often are indirectly a great loss to the home front. Undoubtedly there are many individuals whose adjustment to life may not have been entirely satisfactory even from their own point of view, but they have been an asset in the community; they have contributed in helpful occupations and if permitted to run their own lives and put in their eight hours a day could maintain their adjustment. When we make the mistake of forcing such a man into the Army with its discipline, its necessarily regimented way of life, its close proximity to people twenty-four hours a day, its many and varied threats, he cannot "take it" and he is not only lost to the community but lost to the Army and to himself.

It is important further that some consideration be given to the men who are turned down by the Army. The Surgeon General's Office issued a letter many months ago directing that every medical officer use the greatest consideration in turning a man down and suggested that advice be given the rejectee as to what help he might obtain. In a few larger communities social agencies are at work<sup>5</sup> in connection with the draft boards attempting to relocate these men and to provide them with advice and medical help in relation to their course following rejection.

Our great psychiatric problem, then, for the induction center is concerned with the fact that we are raising an immense army at great speed. We lack sufficient psychiatrists to examine the inductees adequately. It is the local draft board's responsibility, and through it every civilian physician, to aid not only in the selection of these men but in supplying medical and social histories about them. The opportunity to aid in the adjustment of the men who are returned by the induction board as unacceptable to the armed forces will also fall to the medical profession.

#### STATION HOSPITAL

Every civilian who comes into the Army must make radical readjustments and do so promptly if he is to fit into the organization. This adjustment is not easy and the result is that a large percentage of our breakdowns and our misfits, both physical and mental, make their appearance within the first few weeks.<sup>6</sup> Many

of these men can be salvaged and for this reason in each of our large basic training camps, which are called replacement training centers, there are special training units under the direction of a psychiatrist.<sup>7</sup> In these training units the individual is given special opportunities to fit into the program at a little slower pace. Many such individuals who fail too flagrantly are discharged at this point in their training. Those who need hospital care or attention are referred to the station hospital, and in the smaller camps and the camps for advanced training the hospital serves as the clearing agency as well as the treatment center.

In our Army hospitals there are two types of problems confronting psychiatrists, administrative and clinical. In many ways these are inseparable and they also apply to every other field of medicine as practiced in the Army.

A major administrative problem confronting every army psychiatrist is the discharge procedure from the Army. Approximately half the soldiers admitted to the neuropsychiatric sections of our hospitals are recognized as being unfit for the Army. These men constitute nearly one third the discharges for all causes. It is the psychiatrist's responsibility not only to study his case and work up the hospital record but to engineer the discharge of the patient. Since different procedures are necessary for officers and enlisted men and different methods of discharge prescribed for different types of psychiatric diagnoses, considerable experience is required to expedite the discharge and the actual disposition of the patient. And, further, each case requires considerable investment of time. This investment of time becomes a major consideration from two angles: the shortage of psychiatrists and the filling of the wards with long-time patients for whom there is little opportunity for rehabilitation as a soldier.

A considerable number of physicians have been assigned to neuropsychiatric sections who have never had either training or special experience in this field, but the shortage of men has made this necessary. This situation is an additional handicap for every one and the lack of familiarity with diagnostic experience often contributes to slowing the disposition of the patient. A constant headache for every army psychiatrist is the arrangement for and actual transfer of his psychotic patients to a civilian or government hospital. The mechanics of this transfer are such that a soldier may in some cases have to remain for months in the army hospital occupying space and time from the medical officer that should be given to the potential soldier who can be rehabilitated for army service.

Because of the geographic nature of this war with the combat zones in foreign lands, special care must be used to eliminate the unstable. Our discharge rate of psychiatric cases might be materially reduced if our induction boards could be adequately staffed with psychiatrists. As the situation now stands, the rate will probably increase. Until the very recent past, too many unstable individuals were undetected and many were kept in the Army on the probably correct assumption that in a relatively protected environment they could function fairly effectively. But there is no guaranty that a relatively protected environment can be provided.

4 Lewy, Ernest. Compensation for War Neuroses. *War Med* 1: 887 (Nov) 1941.  
5 Solomon, Alfred P. A Follow Up Study of Selectees Rejected for Psychiatric Reasons, Dis. Nerv. System 4: 78 (March) 1943.  
6 Simon, Alexander, Hagen, Margaret, and Hall, R. W. A Study of Specific Data in the Lives of One Hundred and Eighty Three Service Men Admitted to St. Elizabeths Hospital, *War Med* 1: 387 (May) 1941.  
7 Bailhe, William. A Summary of Two Hundred Neurological and Psychiatric Admissions to the Canadian Army Service Forces, *Am. J. Psychiat* 97: 753 (Jan) 1941. In the study by Col. H. M. Thomas Jr. of meningococcal meningitis and septicemia in the Fourth Service Command, it was found that twice as many cases of meningitis developed in new troops as occurred in seasoned troops, and the mortality was four times as great in the new troops.

7 Stilwell, L. E., and Schreiber, Julius. Neuropsychiatric Problems for a Replacement Training Center, *War Med* 2: 20 (Jan) 1941.  
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In March the War Department reported that too many men who were mentally unsuited for ordinary military duties had arrived overseas and again cautioned that special consideration must be given to eliminating such individuals. Until recently a soldier with a mild psychiatric problem could be placed on "limited duty," that is retained in the Army but not assigned to combat duty, but this classification is now eliminated. Probably necessitated by inadequate psychiatric judgment on the part of many medical officers, a directive has recently been issued that all soldiers in whom a mental diagnosis is made, unless they will be able to return to full duty, are to be definitely eliminated from the Army.

Another administrative problem confronting the army psychiatrist, probably more so than other specialists, is the treatment opportunities<sup>8</sup> for his patients. This is more of an administrative rather than clinical problem for the reasons that it is a question of time, facilities and assistants. In the army hospital all of these are at a great premium. Furthermore, the Army has as its chief aim the winning of the war. Consequently those individuals who cannot be made into fighting soldiers must be passed on to those established government, state and community agencies for their further care and treatment.

It is not to be construed, however, that treatment efforts are completely lacking in our neuropsychiatric setups. In the replacement training centers, the psychiatrist often spends several hours in psychotherapy with a soldier. In our active consultation and outpatient clinics in the hospital, psychotherapy is widely used. Many of our hospitals are equipped with prolonged immersion tubes and pack beds. The Surgeon General's Office is making plans at the present time for the assignment of available occupational therapists to our army hospitals.

In most of the installations in the Fourth Service Command we have instituted an organized and planned occupation and recreation program, utilizing the aid of the Red Cross workers, nurses and ward attendants. Recently approval has been given for the use of shock therapy by qualified psychiatrists. Partially to solve the problem of too few psychiatrists, group psychotherapy has been used with some success.<sup>9</sup> In order to increase the effectiveness of these therapeutic efforts the chief of the neuropsychiatric section in many of our hospitals in this command conducts a continuous training course in psychiatry for the nurses, ward attendants, occupational therapist and Red Cross workers.

In the clinical field there are many intriguing problems for the army psychiatrist. Various clinical pictures rarely encountered in civilian practice, present themselves in great numbers. Severe nostalgia is extremely common and is recognized as a clinical entity.<sup>10</sup> Enuresis in the adult is a common problem in the Army,<sup>11</sup> much more so than any one might have suspected. Somnambulism, particularly in the Navy, is

often a psychiatric problem, true malingering is probably rare, although except for special cases of compensation neurosis it is frequent in comparison with civilian practice.

Among the more severe mental reactions anxiety attacks are most common. The anxiety is often acute though not attached to specific ideas. Sometimes it is expressed in specific fears, undoubtedly it is often expressed in the form of somatic complaints. The most common acute psychotic episodes are schizophrenic in character. A special feature of many cases of this last type of illness has been the extremely short duration of the symptoms, lasting only a few days, or at most a couple of weeks.<sup>12</sup> The problem of feeble-mindedness<sup>13</sup> is an extremely important one. In view of the fact that we do not have labor battalions in this war, every man has to be able to be a fighting soldier or there is no place for him.

Individuals with psychosomatic complaints constitute a large portion of the practice in the gastrointestinal, cardiac and orthopedic services. These soldiers because of the nature of their complaints, are referred directly to these services. From various sources, particularly combat areas there is evidence that the gastrointestinal disturbances are probably most frequent. The importance of the psychologic factors in the production of even the peptic ulcer is summarized by Thomas<sup>14</sup> as follows: "When viewed in a broad way, the mass of experimental and clinical observations which have been published recently emphasize the large part that is played by psychic factors in the production and continuation of peptic ulcer. A study of cases of peptic ulcer in the Army lends further proof to this concept." The great majority of cases seen in our army hospital gastrointestinal wards have not progressed to the ulcer stage.<sup>15</sup> All represent fundamentally a total personality disturbance and as such are primarily psychiatric problems. If regarded as such and so treated, many of these soldiers may be salvaged.

The so-called neurocirculatory asthenia,<sup>16</sup> brought to light in the last war, continues to be a fairly frequent finding, although it is too often regarded as having an entirely organic basis. Every army orthopedist is confronted too frequently with a syndrome of low back pain in which he finds no anatomic or physiologic explanation. In many hospitals they are referred to the neuropsychiatric wards and unfortunately they are rarely salvageable for the Army. One of the most common problems in this group of psychosomatic disturbances is headache in which no organic or chemical pathologic condition can be determined. They often present very difficult diagnostic problems. All of these reactions call for the closest of team work between the internist and the psychiatrist. The enormous frequency of their occurrence in the Army affords an unusual opportunity for research in the age old somapsychic relationships.

<sup>8</sup> Forter W. C., Novak J. C. and Lemkau P. V. Therapeutic Considerations for Army Psychiatrists. *Mil Surgeon* 92: 372 (April) 1943.

<sup>9</sup> Hauptmann Alfred. Group Therapy for Psychoneuroses. *Dis Nerv System* 1: 22 (Jan.) 1943. Blair Donald. Group Psychotherapy for War Neuroses. *Psychiatry* 1: 204 (Feb. 13) 1944.

<sup>10</sup> Wittman C. I., Harris H. I. and Hunt W. A. Cryptic Naloxone. *Med* 3: 5 (Jan.) 1943.

<sup>11</sup> W. Swarth M. I. A Psychiatric Study of Persistent Enuresis in Adult. Text before the American Psychiatric Association. Detroit May 14, 1943.

<sup>12</sup> Klow S. D. Acute Psychoses in Selectees. *Illinois M J* 83: 125 (Feb.) 1943.

<sup>13</sup> Menninger W. C. The Problem of the Mentally Retarded and the Army. *Tr Am A Study Ment Deficiency* to be published.

<sup>14</sup> Thomas H. M. Jr. Peptic Ulcer in the Army. *South M J* 36: 287 (April) 1943.

<sup>15</sup> Skobbe J. S. Functional Gastrointestinal Diseases at Lawson General Hospital. *South M J* to be published. Dunn.

<sup>16</sup> Oppenheimer B. S. Neurocirculatory Asthenia and Related Problems in Military Medicine. *Bull New York Acad Med* 18: 367 (June) 1942.



transverse block. Such an expression is usually not clearly after an apparently normal cord has been exposed.

The problem occurs only when the level involved above the conus equinus or the conus medullaris. Many space occupying lesions below the spinal cord do not change the dynamics of the spinal fluid. Most of them are the herniated intervertebral cartilage. The level of the second lumbar vertebra was chosen arbitrarily to represent the lower limit of the spinal cord and no lesions at or below this level were included in the present study. Conditions such as multiple sclerosis, neurosyphilis, optic and virus infec-

a ruptured intervertebral cartilage or a tumor (table 1). In other words, 30 per cent of the patients in this series suspected of having a cord compressing lesion did have just such a pathologic condition, for which surgical measures are indicated, despite the absence of spinal block. Another 20 per cent (table 2) displayed a lesion in the nature of arachnoiditis or of pachymeningitis in which the separation of adhesions is known occasionally to result in mild improvement. The remaining 10 with exploration, or 50 per cent of the patients in this series (table 3), showed a normal appearance of the spinal cord atrophy of the cord or other noncompressing pathologic change. An occasional

TABLE 1—*Localized Cord Compressing Lesions*

No.	Pathologic Diagnosis	Protein Content, Mg. per 100 Cc.	Sensory Level	Sacral Anesthesia
1	Localized compressing lesion at D <sub>1</sub>	10	Concise C	Present
2	Localized compressing lesion at D <sub>2</sub>	20	Concise C <sub>5</sub>	Present
3	Localized compressing lesion at D <sub>3</sub>	1.5	Uncertain C <sub>4</sub> D	Present unilaterally
4	Localized compressing lesion at D <sub>4</sub>	0	Concise D <sub>10</sub>	Present
5	Localized compressing lesion at D <sub>5</sub>	100	Uncertain D <sub>8</sub> D <sub>10</sub>	Questionable
6	Localized compressing lesion at L <sub>1</sub>	4	Uncertain C <sub>4</sub> C <sub>5</sub>	Absent

TABLE 2—*Medullary Adhesions*

No.	Pathologic Diagnosis	Protein Content, Mg. per 100 Cc.	Sensory Level	Sacral Anesthesia
1	Adhesive arachnoiditis, atrophy and atrophy of the spinal cord	40	Uncertain	Present
2	Adhesive arachnoiditis	0	Uncertain	Present
3	Adhesive arachnoiditis and atrophy of the cord	50	Uncertain	Present unilaterally
4	Adhesive arachnoiditis	100	Concise C <sub>5</sub>	Present

TABLE 3—*Normal Appearance of Cord or "Intrinsic Cord Disease"*

No.	Pathologic Diagnosis	Protein Content, Mg. per 100 Cc.	Sensory Level	Sacral Anesthesia
7	Normal cord	4	Concise D <sub>12</sub>	Present
8	Normal cord	40	None (uncertain motor level)	Absent
9	Normal cord	55	Uncertain D <sub>5</sub>	Present
10	Normal cord	40	Uncertain C <sub>8</sub> D <sub>1</sub>	Absent
11	Atrophy of cord	5	Uncertain C <sub>5</sub>	Absent
12	Hematomyelia	65	Concise D <sub>10</sub>	Absent
13	Myelodysplasia	60	Uncertain C <sub>5</sub>	Present
14	Normal cord	40	Concise L <sub>2</sub>	Present
15	Acute myelitis	70	Concise D <sub>5</sub>	Present
16	Normal cord	90	Concise C <sub>5</sub>	Present

tion of the spinal cord, which sometimes produce a level lesion but cannot be expected to improve through surgical means, are not being considered.

In the neurologic service at Bellevue Hospital (Cornell Division) in New York during a thirteen year period, 1930 to 1942 inclusive, 20 patients suspected to have a compressing lesion of the spinal cord above the second lumbar vertebra were operated on in the presence of a perfectly normal Queckenstedt sign. The suspicion of the presence of a space occupying lesion was not strong with regard to some of these patients, but, since there was a doubt, surgical procedures were undertaken.

Of the 20 patients with an "open" spinal fluid system, 10 showed some pathologic process intruding on the spinal cord for which surgical intervention bore hope of improvement. Of these 10, 6 had a definite space occupying localized compressing lesion, such as

patient of this type, often referred to as having "intrinsic cord disease" is known to display in some mysterious fashion, considerable improvement after laminectomy,

TABLE 4—*Protein Content of Spinal Fluid*

	Cases in Which Content Was Normal to 45 Mg. per 100 Cc.	Cases in Which Content Was Elevated		
		Slightly Elevated 55-65 Mg. per 100 Cc.	Moderately Elevated 70-95 Mg. per 100 Cc.	Grossly Elevated 100-220 Mg. per 100 Cc.
Localized compressing lesion	2			4
Normal appearance of cord or intrinsic cord disease	6	3	2	1
Arachnoiditis	2	1		

despite the failure to find gross pathologic abnormality. Relationship of such a remission to the surgical procedure is certainly not proved but has been suggested.

Sachs and Glaser<sup>2</sup> reported occasional improvement after exploratory laminectomy on patients showing no pathologic changes ordinarily considered to be improved by the surgeon. They found that 8 of 33 patients of this type showed clinical recovery.

An attempt was made to correlate the operative findings with some of the more commonly emphasized physical and laboratory signs, namely the protein content of the spinal fluid, the presence or the absence of sacral anesthesia, and the sharpness of definition of the sensory level.

With regard to the values for protein, our study revealed that of the 6 cord compressing lesions 4 had produced a very high protein content in the spinal fluid and that 2, an extradural neoplasm and a herniated disk, were accompanied by normal protein values. As to the 4 cases showing meningeal adhesions, the protein content was within normal limits in 2, slightly elevated in 1 and definitely increased in 1. Of the 10 patients with an apparently normal cord or with intrinsic or other nonoperable disease of the cord 2 had moderately elevated and 3 slightly elevated protein values, and the

TABLE 5—Sacral Anesthesia

	Cases in Which Anesthesia Was		
	Present	Absent	Questionable
Localized compressing lesion	4	1	1
Normal appearance of cord or intrinsic cord disease	5	4	1 (unreported)
Arachnoiditis	4	0	0

TABLE 6—Definition of the Level

	Cases in Which Level Was	
	Concise	Uncertain
Localized compressing lesion	3	3
Normal appearance of cord or intrinsic cord disease	5	5
Arachnoiditis	1	3

remainder had values within normal limits. Although realizing the limitations of so small a series, we noted (table 4) that only the operable lesions in this group produced the very high protein levels.

With regard to the other correlations attempted, no such clearly defined trends are apparent. Sacral "saddle" anesthesia (table 5) was present with sufficient frequency in every one of the categories to be of little significance in the differential diagnosis. Again the cases were too few to support any definite conclusions. Similarly with the preciseness of the sensory level (table 6) each group had an equal distribution of patients with concise and patients with uncertain levels.

#### CONCLUSION

It is felt that this summation indicates the advisability of surgical exploration in a patient suspected of having a level lesion of the spinal cord despite the absence of spinal fluid block.

It is also seen that a high protein content of the spinal fluid (above 100 mg per hundred cubic centimeters) in such a patient is strongly suggestive of a localized compressing lesion, whereas the presence or the absence of sacral "saddle" anesthesia and the preciseness or the vagueness of the sensory level may not be of great significance in the diagnosis.

## 2-ANILINOETHANOL—AN INDUSTRIAL HAZARD

PRODUCTION OF METHHEMOGLOBINEMIA

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That aniline derivatives produce methemoglobinemia has been shown repeatedly by many investigators. The mechanism of this reaction has been reviewed by Bernheim.<sup>1</sup> One molecule of aniline combines with two of hemoglobin to give two molecules of methemoglobin and one of p-hydroxyaniline. To our knowledge it has not been shown that 2-anilinoethanol causes formation of methemoglobin but from analogy this might be expected to occur in the course of its metabolism in the body. That such is the case was suspected when 2 men in a commercial plant developed cyanosis while using this compound under the name "phenyl ethanolamine." No immediate means of testing the blood for methemoglobin was available in the local hospital, so that the etiologic agent of the cyanosis could not be definitely established. Both men rapidly recovered.

#### REPORT OF CASES

CASE 1—S. R., a Lithuanian aged 52, began work at 7 a. m. on Nov. 27, 1942 washing bearings with "mineral seal oil" containing 0.5 per cent "phenyl ethanolamine." He had been working for six years at the same task using the mineral seal oil, but on this day a sample admixed with 2-anilinoethanol was employed for the first time. At 2 p. m. a fellow worker noted that there was a bluish discoloration of the patient's lips and of the lobes of his ears. He continued at work until 4 p. m., at which time he had a mild occipital headache and a "feeling" that he was "taking a cold." He took two compound cathartic pills and continued at work until 5:30 p. m., at which time he quit work and went to see a physician. Although not acutely ill, he was sent to a hospital because of the cyanosis. He was put to bed and oxygen administered. The cyanosis progressed until about 11 p. m., then gradually subsided and had entirely disappeared twenty-four hours after admission.

Physical examination gave essentially negative results except for the profound cyanosis involving both skin and mucous membranes. The blood was a deep brownish blue, and the urine was dark. Routine studies revealed no abnormalities of the urine or the blood. Recovery was rapid and complete.

CASE 2—M. C. Q., a white married man aged 53, began working at 12 noon on Nov. 27, 1942 with the same solution as described in the preceding case. At 6 p. m. a fellow worker noted that the patient's lips, nose and ears were blue. The patient was asymptomatic except for slight dizziness and mild pains in the muscles of his legs. When he reported to the first aid nurse at 8:45 p. m. it was necessary for him to sit upright to breathe. He arrived at the hospital at 10 p. m. at which time oxygen was administered. His cyanosis progressed until 1 a. m. and then receded steadily until it was entirely gone twenty-four hours after he entered the hospital. Physical examination revealed no abnormalities other than cyanosis and dyspnea. The urine was normal. The blood was dark brownish blue but otherwise showed no abnormalities.

From the Laboratories of Pharmacology and Toxicology, Yale University School of Medicine.

Dr. Albert S. Gray and Dr. Crit. Pharris of the Connecticut State Department of Health Bureau of Industrial Hygiene assisted in obtaining the chemicals studied. Technical assistance was given by Miss Ruth Jaffe and Mr. Vincent Tucker. The manufacturer cooperated by supplying immediately samples of the commercial material and by preparing specially purified material for further study.

<sup>1</sup> Bernheim, Frederick. "The Interaction of Drugs and Cell Catalysts." Minneapolis: Burgess Publishing Company, 1942.

A 31 Kg dog was allowed to breathe the atmosphere from a 500 cc beaker held over its mouth and nose. Into this beaker was sprayed 2 cc of 2-aminoethanol in 10 cc of ethyl ether. Cardiac blood samples revealed methemoglobin concentrations of 20.8 and 48 per cent at intervals of one hour fifteen minutes and four hours forty-five minutes respectively.

In the rabbits and the mice negligible amounts of methemoglobin were formed when 2-aminoethanol was injected intravenously. We are informed, however, by the manufacturer that recent observations indicate that rats are susceptible.

Blood from treated dogs when examined by a hand spectroscope showed spectral bands corresponding with those of methemoglobin prepared in vitro by adding potassium ferricyanide to normal blood.

The experiments described were conducted with the commercial product as marketed. Methemoglobin curves similar to those shown in the chart, however, were obtained when purified 2-aminoethanol was employed. It is evident therefore, that this compound is the agent producing the methemoglobinemia, and not a contaminant present in the crude material.

**Chemical Tests**—Alles<sup>2</sup> has discussed the formulas of two phenylethanalamines, i. e.,  $\alpha$ -phenyl,  $\beta$ -aminoethanol ( $C_6H_5CHOHCH_2NH_2$ ) and  $\beta$ -phenyl,  $\beta$ -aminoethanol ( $CH_2OHCH(C_6H_5)NH_2$ ). Either of these compounds is a primary amine and should react with nitrous acid to yield elementary gaseous nitrogen. When this test was applied to the substance under discussion, however, no gas was evolved. Furthermore, a reddish oil was formed, insoluble in water at pH 2.5 under conditions which readily dissolved the original so-called phenyl ethanolamine. In short, this substance did not behave like a primary amine. Furthermore, on boiling with chloroform and potassium hydroxide the compound gave no disagreeable isonitrile odor. The most likely interpretation therefore, is that the substance is a secondary amine, i. e., 2-aminoethanol ( $C_6H_5NHCH_2CH_2OH$ ). It is a colorless liquid with a density of 1.114 g./cm. per cubic centimeter, boiling at 286° C. It is only slightly soluble in water but is soluble in alcohol. A comparison of the properties of the substance under discussion showed good agreement with the anticipated findings.

#### COMMENT

It is hoped that the reporting of these cases will call the attention of physicians in industrial practice to the necessity of critically investigating the structure and properties of new compounds. The name phenyl ethanolamine would naturally identify the compound in question as an epinephrine-like substance<sup>3</sup> and therefore is quite misleading. If the compound had been named however, as an aniline derivative or if the chemical formula had been placed on the label, an error of this nature should not have occurred.

On discussing the problem with Dr. G. A. Alles, he kindly consented to our quoting the following:

It is unfortunate that the term phenyl ethanolamine has come to be applied commercially to ethanolaniline or 2-aminoethanol. The term ethanolaniline is far more suitable to indicate the special chemical properties of the compound among types of amino alcohols now manufactured and used industrially. From the standpoint of its toxicology also the name ethanolaniline would readily bring to the minds of those with elementary pharmacological knowledge its potential toxicities in industrial use. Certainly if the nomenclature of phenyl ethanolamine be persisted in the compound should always be designated as N-phenyl ethanolamine to distinguish this compound from the earlier described and used  $\alpha$ - and  $\beta$ -phenyl ethanolamines.

This problem of nomenclature arises from the long established custom of giving greater importance to oxygen than nitrogen in the systematic naming of organic compounds. This

emphasis is particularly unfortunate in the group under consideration because the amino character of these compounds so completely dominates their properties for industrial use and determines their characteristic physiological activities.

#### CONCLUSIONS

An oil mixture containing 2-aminoethanol (improperly named "phenyl ethanolamine") caused cyanosis in 2 factory employees using it. This substance likewise produced cyanosis in dogs but not in rabbits and mice. As established in dogs, the presence of methemoglobinemia is the cause of the cyanosis.

Because this problem of toxicity is likely to arise repeatedly as new industrial uses are found for the many related chemical substances which will be available this example has been cited.

The hazard of such intoxication of human beings might be mitigated if special care was taken that similar substances are named as aniline derivatives. At least a cautionary label should be applied to warn industrial safety committees of the danger.

333 Cedar Street

### Clinical Notes, Suggestions and New Instruments

#### FAILURE OF SULFACUANIDINE THERAPY IN THE CONTROL OF AN INSTITUTIONAL TYPHOID CARRIER

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State Board of Health and Surgeon (R) U. S.  
Public Health Service  
DOVER, DEL.  
AND  
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Assistant Physician, Delaware State Hospital  
FARMHURST, DEL.

#### REASON FOR ATTEMPTING CHEMOTHERAPEUTIC CONTROL

In spite of routine typhoid inoculation of all patients and personnel 4 cases of typhoid occurred in the Delaware State Hospital during the period 1934-1942. This is a hospital for nervous and mental diseases its annual average census ranging from 1,180 to 1,200 patients. The entire population of the hospital had been immunized against typhoid in 1933, when 4 cases occurred in Ward B East, routine admission immunization being instituted at the same time. All immunizations were the usual three subcutaneous injections of a standard triple typhoid vaccine.

In 1933 typhoid developed in a graduate nurse on duty in Ward B East. In 1937 a male patient contracted the disease. He did not live in Ward B East, which is a women's ward, but did help in the hospital laundry serving that ward. In 1938 a female attendant in Ward B East came down with typhoid and on Oct. 2, 1942 a woman patient was found to have the disease. She had been admitted to the hospital in March 1941 at which time she received the usual admission immunization against typhoid. She had been a patient in Ward B East since April 1942. Being feeble-minded in a state of advanced mental deterioration extremely confused and untidy she never left the ward for social activities. For six months prior to the onset of her typhoid she had no visitors and had not been exposed to any outside contacts whatever. She died on October 7, autopsy revealing Pick's disease as well as typhoid.

It seemed probable that the source of infection of this patient would be found in the ward itself. A systematic search for a carrier was therefore instituted by one of us (T. P. B.) beginning with those persons both patients and staff who were known to have had some connection with the ward at each of the various times when typhoid infection occurred. Eberthella

Alls, G. A. Comparative Action of Phenyl Ethanolamine J. Pharmacol. Exper. Therap. 122, 121 (June) 1937.  
1. Described as compound 3509 in the Handbook of Chemistry and Physics, 24th ed., Chemical Rubber Publishing Company, 1941-1942.



infant weighed 4 pounds 4 ounces (1,928 Gm) and measured 18 inches (46 cm) in length

Nonprojectile vomiting occurred shortly after the infant was fed some dextrose solution. The vomitus was bile stained and without fecal odor. Fluoroscopic and roentgenographic examination revealed moderate gaseous distention of the stomach and duodenum, which ended abruptly in the region of the duodenojejunal flexure (fig 1). The remainder of the alimentary tract was entirely devoid of gas. Barium was not used in these studies. Liberal amounts of parenteral fluids were administered during the next twenty four hours. Vitamin K was injected intramuscularly. The stomach was lavaged clear immediately preceding the operative procedure.

The operation was performed by one of us (T S W) on August 29. With the patient under open drop ether anesthesia, a 6 cm upper right rectus incision was made. A dilated loop of small intestine bulged into the wound after the peritoneal cavity was opened. Further examination revealed the stomach, duodenum and proximal jejunum to be dilated with some thickening of the intestinal wall in these regions (fig 2). Approximately 10 cm below the ligament of Treitz the jejunum ended blindly. The next portion of bowel was an isolated loop approximately 4 cm in length. This was followed by a section of bowel 17 cm in length which also ended blindly at either end. Just proximal to its distal end there was a bulging caused by inspissated meconium (fig 3). On the antimesenteric side of the intestine in this area there was pronounced thinning of its musculature, and a small point of perforation was visualized. Both these blind loops of intestine were supported by individual mesenteries. They were completely separated from each other and from the other portions of the bowel. At the proximal end of the remaining loops of small intestine there were two areas of stenosis. Distal to these stenotic areas no further evidence of

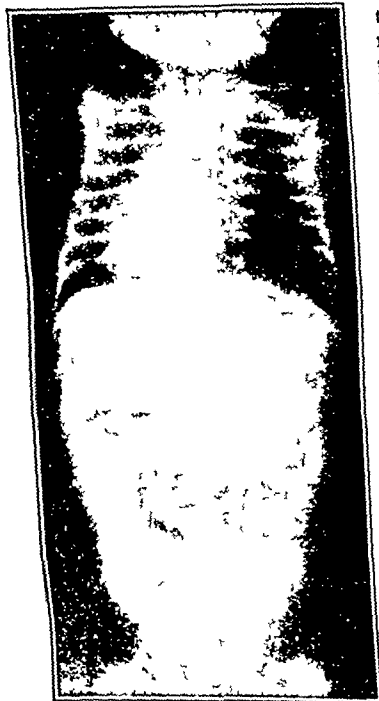


Fig 1—Thin flat film of the abdomen. Infant was held in an upside down position. The two smaller shadows on the left side of the abdomen are due to air present in the stomach. The larger curved shadow in the center of the abdomen represents air in the small intestine. The smaller end of this shadow is just above the point of obstruction. Note the absence of air in the remainder of the film.

atresia or stenosis was found in the small or large bowel. The intestine in these regions was completely collapsed but appeared to be patent.

The small uncomplicated isolated loop of jejunum was left undisturbed. The 17 cm loop of jejunum containing the perforation was resected (fig 3). Liquid petrolatum was then injected into the lumen of the uninvolved distal small intestine and seen to pass readily through the remaining portions of the small bowel. This was done to dilate the distal intestine preparatory to making the anastomosis. While this procedure was being carried out the mesentery of the proximal portion of the distal small intestine was torn loose for a distance of 3 cm. This necessitated resection of this portion of the small intestine which procedure was carried out just below the stenotic areas. The distal stump was cauterized with the actual cautery, inverted and closed with a number 00 chromic catgut suture passed on an atraumatic needle. Bleeding vessels in the mesentery were tied with number 00000 chromic catgut

sutures. This end of the small bowel was then sutured side to side with the upper dilated jejunum by continuous sutures of number 00 chromic catgut passed on atraumatic needles. The upper and lower loops were then opened. The anastomosis was made by a continuous stitch through the entire intestinal wall posteriorly. The suture was locked at either angle and

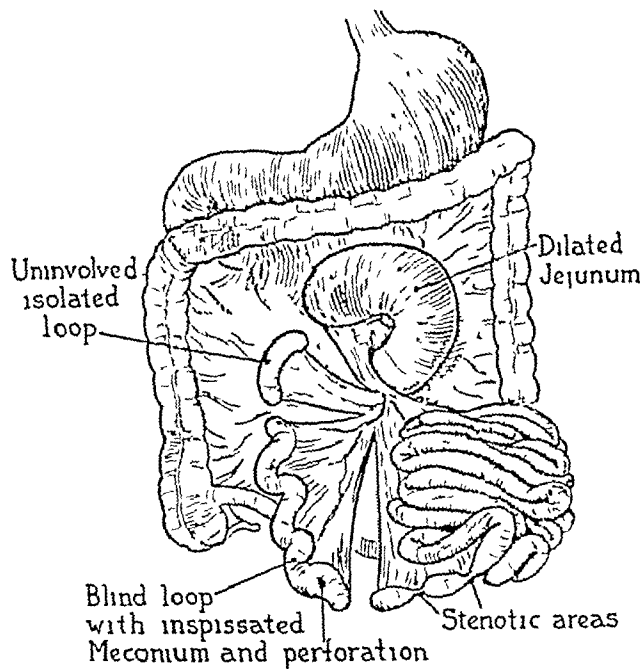


Fig 2—Diagrammatic sketch of the abdominal findings at the time of operation.

brought anteriorly as a Connell stitch. A number 00 chromic catgut suture on an atraumatic needle was used for this procedure. The anastomosis was reinforced anteriorly with a number 00000 chromic catgut suture. The peritoneum was closed with a continuous suture of number 000 chromic catgut.

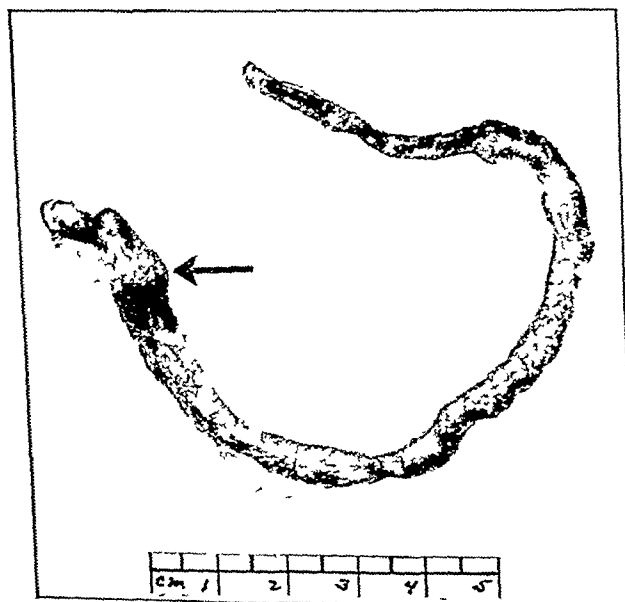


Fig 3—The 17 centimeter isolated loop of jejunum which was resected because of perforation. Arrow indicates point of perforation.

Closure of the anterior rectus sheath was carried out in a similar manner. Retention sutures of number 1 silk were placed through the anterior rectus sheath. A continuous number 0 silk suture was used for the skin closure. The retention sutures were then tied. The duration of the operative



procedure was two hour. The patient was returned to the room in good condition.

The infant was placed immediately in a heated bed. Nothing was given by mouth during the first three postoperative days. Parenteral fluids were administered in liberal amounts. Small amounts of plasma or whole blood were given almost daily. Vitamins C and K were injected intramuscularly. The stomach was treated at regular intervals. The patient's general

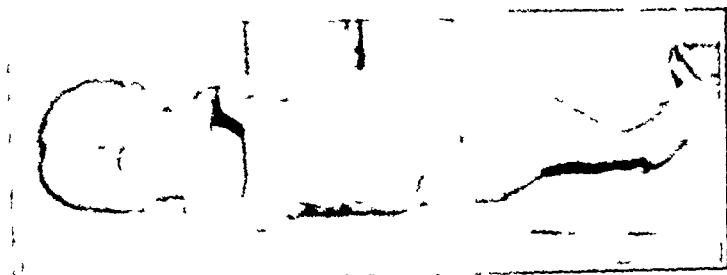


Fig. 4—Anastomosis of the small intestine.

condition was good. The temperature of the skin was good and there was no evidence of infection. Slight respiratory distress was noted but there was no tracheal vomiting. The lungs were clear on palpation.

At the end of the third postoperative day small amounts of sterile distilled water solution were given by gavage. At the end of the fourth postoperative day brown mucoid material was passed by rectum approximately twenty hours after the operation. Two days later a small amount of yellowish green mucoid material was passed, indicating patency of the anastomosis. The infant weighed 4 pounds 7 ounces (2013 Gm) at this time.

On the fifth postoperative day the infant was started on gavage feedings of sterile water every three hours followed the next hour by a formula composed of breast milk and barley water. The amount of the formula given was increased every four feedings. Two days later the infant developed a moderate generalized edema. The skin and retention sutures had cut through and were loose. The edges of the wound had separated but the interior rectus sheath remained firm. The wound was closed by means of an adhesive dressing. The infant's weight was 4 pounds 13 ounces (2153 Gm). The amounts of the parenteral fluids were reduced until the edema had disappeared. Bottle feedings were started and readily taken on the eighth postoperative day. The stools had increased to six to seven a day had become watery and contained mucus as compared to the yellow pasty breast milk stools which were present during the first few days of these feedings. The diarrhea continued even after the breast milk had been lactified. Parenteral fluids were increased again on the twelfth postoperative day when evidence of dehydration reappeared.

A protein milk formula was started on the thirteenth postoperative day. During the first five days of this feeding the infant lost 7 ounces (198 Gm) in weight. It was observed at this time that the white blood cell count had increased up to 37,000 from its former range of 14,000-17,000. The stools had decreased in number and were of firmer consistency but chalky white. Urine specimens gave positive tests for bile. The jaundice, which had practically disappeared, increased in intensity. The infant appeared much weaker and required continuous external heat to maintain a normal body temperature. His breathing became rapid and shallow, and he was occasionally cyanotic. At one time he showed a definite carpopedal spasm. Sulfadiazine was started with the idea that this setback might have been of a septic nature. The white blood cell count fell promptly to its former levels following the administration of this drug. Calcium gluconate was injected intramuscularly and a preparation of crystalline vitamin D was added to the formula. Bile salts and vitamin K were administered because of the biliary obstruction. Most of the feedings had to be given by gavage during this period.

By the end of the third postoperative week the infant had made considerable improvement (fig. 4). Whole powdered milk was gradually substituted in the formula for corresponding

amounts of the protein milk. The infant became stronger and was able to take feedings by bottle once more. The stools were better digested and numbered from three to five a day. They appeared to contain bile but a positive laboratory test for this substance could not be obtained. The jaundice had decreased somewhat in intensity but bile was still detectable in the urine. The bile salts, calcium gluconate, sulfadiazine and vitamin K were discontinued. There was a steady gain in weight to 5 pounds 6 ounces (2,438 Gm) on the fortieth postoperative day.

During the next one and a half weeks there was an increase in the number of stools to six to seven a day. They became loose and were fatty in consistency. Parenteral fluids were given intensively but failed to stop a weight loss to 4 pounds 15 ounces (2,240 Gm). A protein milk formula was again instituted. This along with the administration of bile salts, brought about control of the diarrhea.

From this point the patient progressed very satisfactorily. Whole powdered milk eventually replaced protein milk completely in the formula. Lactose was gradually added to the formula and was tolerated well. Cereal was started one week before discharge from the hospital. Bile salts were discontinued after they had been given for a period of four weeks. Jaundice gradually decreased and had disappeared entirely by the end of the second postoperative month. The stools became small, were normal in consistency and contained bile. However, they numbered four to five daily until the last two hospital weeks, when they decreased to two a day. The last positive test for bile in the urine occurred on the sixty-third postoperative day. There was a steady gain in weight up to 7 pounds 4 ounces (3,288 Gm) at the time of his discharge on



Fig. 5—Appearance of the patient at the age of 10 months.

the one hundred and ninth hospital day. He had developed a diastasis recti at the operative site, which was controlled by an abdominal binder. Otherwise the discharge examination was essentially normal.

The patient was seen again at the age of 6½ months. At this time he was in excellent health and weighed 15¼ pounds (6,917 Gm). He had had varicella during the preceding month. There had been no evidence of dietary intolerance. No signs or symptoms referable to the gastrointestinal tract had

been observed. The remainder of the physical examination was negative except for the distasis recti. When seen on June 29, 1943 at the age of 10 months, the patient appeared in excellent health (figure 5). He had recently undergone an attack of rubeola without difficulty. Examination was again negative except for the weakness of the abdominal wall due to the distasis recti. The feeding and developmental history was within normal limits. He now weighed 18 pounds (8.2 Kg) and measured 30½ inches (76 cm) in length.

## COMMENT

Since several reviews on intestinal atresia had appeared in the recent literature,<sup>7</sup> discussion will be limited to those factors believed important in the successful outcome of the present case.

The first essential in increasing the number of successfully treated cases of intestinal atresia rests in its early recognition clinically. While some of these infants have lived as long as three weeks without surgical treatment the average age at death is 6 days.<sup>8</sup> Therefore the obstetrician who is most likely to come in contact with these cases first should be well acquainted with its early clinical manifestations. Persistent vomiting of all feedings from birth along with the absence of stools should always suggest the possibility of intestinal atresia. Other clinical findings vary with the location of the lesion and these are well discussed in the aforementioned reviews. The early recognition of congenital intestinal obstruction in the present case permitted us to operate while the infant was still in an excellent state of hydration and nutrition.

Röntgenology is of great aid in the diagnosis and localization of intestinal atresia. Adequate information may be obtained from a plain flat film of the abdomen.<sup>9</sup> Sufficient contrast material is provided by the large amounts of air swallowed by newborn infants. In the presence of intestinal atresia the swallowed air is unable to progress beyond the point of the obstruction. The dilated outline of the portion of the intestine above the atresia and the absence of gas in the distal bowel are usually clearly demarcated. The use of a barium contrast meal in most instances is unnecessary. It has been stressed that such studies may be detrimental.<sup>10</sup> Barium can easily plug and obstruct the undilated portion of intestine beyond the atresia once the anastomosis has been made. Another objection is that the inclusion of barium within the anastomosis would delay or even prevent its healing. This point needs emphasis as cases in which barium studies have been done continue to appear in the literature and in our own personal experience.

The need for adequate maintenance of fluids and electrolytes in infant surgery has become well recognized in recent years. It has been rightly emphasized that operation should be delayed in the presence of dehydration until restoration of tissue fluids and electrolytes has been accomplished.<sup>11</sup> The recognition of this fact has materially influenced the operative successes in the newborn period. That infants in a state of good nutrition and hydration can withstand major surgical procedures of long duration is amply demonstrated in the present case. The administration of parenteral fluids postoperatively in the treatment of cases of atresia is especially important. Oral feedings are not given in the immediate postoperative period in order to permit healing of the anastomosis without enteric irritation. Thus the entire maintenance of tissue fluids and electrolytes is dependent on their parenteral administration.

Recent investigations<sup>12</sup> have revealed an elevated prothrombin clotting time in the newborn period particularly in premature infants even when clinical evidence of hemorrhagic disease is

lacking. Many studies have revealed the efficacy of vitamin K in the therapy of this bleeding tendency.<sup>12</sup> Patients undergoing any operative procedure in the neonatal period should receive adequate parenteral administration of vitamin K preoperatively and for a short period in the postoperative course as a routine procedure.

There are recorded instances in which an anastomosis has been performed for what at operation appeared to be a simple atresia to find at necropsy that multiple atretic lesions had been present.<sup>13</sup> At the time of the operation therefore it is essential to explore the entire intestinal tract completely. In some cases the extent of the abnormalities will preclude any operative attempt. However the successful treatment of multiple lesions, illustrated in the present case will be possible in certain instances.

There is general agreement at the present time that the operation of choice is a side to side anastomosis.<sup>14</sup> The small distal intestine precludes the use of an end to end anastomotic procedure. Except for a few cases, enterostomy has been invariably fatal. I add has stressed a minimal amount of surgery at the time of the primary operation. He advises leaving uncomplicated isolated loops intact. Their removal at a later date is recommended because of possible cyst formation. The presence of gangrenous or perforated intestine necessitates resection of the involved bowel. These principles were followed in the present case. The small uncomplicated blind loop of jejunum was left undisturbed while the larger isolated loop containing the perforation was resected. At the time of the present writing there has been no evidence of cyst formation in the blind loop still remaining in the abdomen.

Definite evidence of biliary obstruction appeared in our case during the third postoperative week. This persisted and did not completely clear until the end of the second postoperative month. Stetten<sup>15</sup> reported biliary obstruction occurring earlier and of shorter duration following a duodenojejunostomy for an atresia at the duodenojejunal junction. In his case there was also protracted vomiting postoperatively. There was temptation for further surgery in both these cases. That they were functional disturbances was proved by the subsequent clinical course in both instances. We therefore believe that secondary operations for apparent operative complications in the early postoperative period should be entered on with considerable hesitancy.

A severe diarrhea developed in our infant several days after starting a breast milk formula. Stetten<sup>15</sup> had a similar experience in his case. The diarrhea was promptly brought under control when a protein milk formula was instituted in both of these cases. This would seem to indicate that protein milk is preferable to breast milk as the postoperative feeding.

Our infant received twenty-five transfusions of either whole blood or plasma by vein during the first four postoperative weeks. These provided adequate nutrition during a period when the oral intake was insufficient. There is no question that these repeated transfusions played a large role in the successful outcome of the present complicated case.

## SUMMARY

Multiple atresias (aplasias) of the small intestine of a premature infant were given surgical treatment successfully. A small isolated loop of jejunum was left undisturbed. A larger blind loop of jejunum was resected. This loop contained a perforation caused by inspissated meconium. The proximal end of the distal small intestine containing two areas of stenosis, was resected because its mesentery was torn during the operative procedure. A side to side anastomosis was made between the distal intestinal stump and the proximal dilated jejunum. A prolonged period of biliary obstruction and two episodes of severe diarrhea complicated the postoperative course.

Wangensteen O H. Intestinal Obstruction. Springfield Ill. Charles C Thomas Publisher 1941 p 261. Todd and Gross.<sup>8</sup> Cohen.<sup>9</sup>  
Todd W I. Donovan F J and Gross R F. Panel Discussion on Intestinal Obstruction in Infancy. J Pediat 21: 264 (Aug) 1942.  
Wangensteen O H. Cohen.<sup>9</sup> Todd and Gross.<sup>8</sup>  
McIntgomery A H. Diseases of the Small Intestine. Cecum, Iliotermum and Omentum in Brennenmann Joseph. Practice of Pediatrics. Hagerstown Md. W B Saunders Company Inc. 1943 vol 3 p 8. Cohen.<sup>9</sup>  
Todd W I. Cohen.<sup>9</sup> Todd and Gross.<sup>8</sup>  
Kut K and Lischer H C. The Prothrombin in the Blood of Newborn Mature and Immature Infant. J A M A 114: 749 (March 1940).

12 Waddell W W Jr and Guerry D III. The Role of Vitamin K in the Etiology, Prevention and Treatment of Hemorrhage in the Newborn Infant. J Pediat 15: 802 (Dec) 1939.  
13 Stetten DeW. Duodenojejunostomy for Congenital Intrinsic Total Atresia at the Duodenojejunal Junction. Ann Surg 111: 583 (April) 1940.



The radiation output of the Westinghouse bactericidal tube at various wave bands is shown by the accompanying table of energy distribution

The electrical input power required to operate the C-I unit is approximately 50 watts

When a unit is installed, the purchaser should make sure that a sufficient number of lamps are used to produce the correct amount of intensity in the enclosure and that they are arranged correctly so as not to cause harm to the occupants. The Council cannot undertake the supervision or assume the responsibility for satisfactory performance of any particular installation

The Council on Physical Therapy voted to include the Westinghouse C-I Bactericidal Lamp in its list of accepted devices

## WESTINGHOUSE CONSTANT INTENSITY STERILAMP UNITS

(Operating Room, Hospital Nursery and  
Hospital Ward Models)

### WITHDRAWAL OF ACCEPTANCE

Manufacturer Westinghouse Electric and Manufacturing Company, Radio and X-Ray Division, Baltimore

The Westinghouse Constant Intensity Sterilamp Units, Operating Room, Hospital Nursery and Hospital Ward Models, were announced as acceptable to the Council in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION of May 2 1942. The units were declared to be a useful supplementary measure of asepsis in hospital nurseries, wards and operating rooms where conditions are carefully controlled

At the time the Constant Intensity Sterilamp units were submitted by the Radio and X-Ray Division of the Westinghouse Electric and Manufacturing Company for consideration by the Council, it was asserted that the complete term "Constant Intensity Sterilamp Units" would be used only for the hospital units, and that this distinction would serve to differentiate between the devices used for accepted purposes and the Sterilamps publicized for other purposes. This has been found to be an impractical arrangement and has proved to be misleading to the profession and to the public

The term 'Sterilamp' has been widely publicized by the Westinghouse Electric and Manufacturing Company. Through extensive publicity it has been presented to the public as a designation for an apparatus that will kill bacteria in lavatories, bakeries, breweries, wineries, canneries, restaurants and so on. It is also claimed to aid in the tenderizing of meat. Such uses are stated in paid advertisements for the Westinghouse Electric and Manufacturing Company. Moreover, publicity for the name Sterilamp and for the apparatus is also solicited by the firm in another manner: an active 'news service' for the company distributes among various lay and professional publications news stories concerning the device. These stories are prepared in such a manner that they may be inserted in the regular columns of the magazine; photographs also are furnished. The items are naturally of a somewhat sensational nature and many of them appear to be finding a place in widely read publications

An advertisement in *Science* for Oct 16, 1942 shows a hospital operating room scene (the operating team without adequate protection) and carries the headline 'Abandon hope all Germs who enter here'. In the body of the advertisement after a description of the unit it reads: 'The commercial applications of the Sterilamp are practically endless. It is used in the Tenderay process for tenderizing meat and in bakeries, breweries, wineries, canneries, restaurants, biological laboratories, lavatories wherever air borne bacteria must be killed or controlled. This advertisement definitely couples the hospital and the commercial uses of the Sterilamp

The similarity in the names of the accepted Constant Intensity Sterilamp Units accepted for hospital use and the Sterilamp employed for purposes which have not been submitted for acceptance to the Council and the overlapping publicity are considered misleading. The public has no means of discerning an application acceptable to the Council from one that has not been considered by it

The Council voted to withdraw the acceptance of the Westinghouse Constant Intensity Sterilamp Units

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NON-OFFICIAL REMEDIES. A COPY OF THE RULES OF WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUGUST 1, 1943. J. D. SECRETARY

**EPHEDRINE HYDROCHLORIDE** (See New and Nonofficial Remedies, 1943, p 255)

The following dosage form has been accepted

BURROUGHS WILCOX & Co, Inc, New York

Solution Ephedrine Hydrochloride, 3 per cent. Preserved with chlorobutanol 0.5 per cent, 1 fluidounce and 1 pint bottles

**LIVER INJECTION** (See New and Nonofficial Remedies, 1943, p 392)

The following dosage forms have been accepted

THE UPJOHN COMPANY, KALAMAZOO, MICH

Liver Extract for Parenteral Use, 5 U S P Units per Cc. 2 cc ampul and 10 cc rubber capped vial. A sterile aqueous solution of liver preserved with 0.5 per cent phenol

Liver Extract for Parenteral Use, 10 U S P Units per Cc. 1 cc and 1½ cc ampuls and 10 cc rubber capped vial. A sterile aqueous solution of liver preserved with 0.5 per cent phenol

**PROCAINE HYDROCHLORIDE** (See New and Nonofficial Remedies, 1943, p 82)

The following dosage form has been accepted

THE UPJOHN COMPANY, KALAMAZOO, MICH

Sterile Solution Procaine Hydrochloride 2%, 30 cc rubber capped vials and 100 cc bottles. Each cubic centimeter contains chlorobutanol 50 mg, procaine hydrochloride 20 mg, sodium bisulfite 10 mg, sodium chloride 84 mg

**SULFANILAMIDE** (See New and Nonofficial Remedies 1943, p 175)

The following dosage forms have been accepted

AMERICAN PHARMACEUTICAL Co, Inc, New York

Sulfanilamide (Powder) 1 ounce, 4 ounce and 1 pound packages

PITMAN-MOORE Co, INDIANAPOLIS

Tablets Sulfanilamide 0.324 Gm (5 grains)

**THIAMINE HYDROCHLORIDE** (See New and Nonofficial Remedies, 1943, p 590)

The following additional dosage form has been accepted

SCHIEFFELIN & Co, New York

Tablets Thiamine Hydrochloride 10 mg

**ARSPHENAMINE** (See New and Nonofficial Remedies 1943, p 198)

The following additional dosage forms have been accepted

MERCK & Co, INC, NEW YORK

Ampules Arspenamine 10 Gm and 30 Gm

**NEOARSPHENAMINE** (See New and Nonofficial Remedies 1943, p 203)

The following additional dosage forms have been accepted

MERCK & Co, INC, NEW YORK

Ampules Neoarsphenamine 30 Gm and 45 Gm

**PHENOBARBITAL** (See New and Nonofficial Remedies 1943, p 502)

The following dosage forms have been accepted

AMERICAN PHARMACEUTICAL Co, INC, NEW YORK

Tablets Phenobarbital 0.032 Gm, 0.016 Gm and 0.1 Gm

THE WARREN-TEED PRODUCTS Co, COLUMBUS, OHIO

Tablets Phenobarbital 1/16 Gm, 1/32 Gm, 1/8 Gm, 1/4 Gm, 1/2 Gm, 1 Gm, 2 Gm, 3 Gm, 4 Gm, 5 Gm, 10 Gm, 15 Gm, 20 Gm, 25 Gm, 30 Gm, 40 Gm, 50 Gm, 60 Gm, 70 Gm, 80 Gm, 90 Gm, 100 Gm

THE JOURNAL OF THE  
AMERICAN MEDICAL ASSOCIATION

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SATURDAY NOVEMBER 20 1943

SOUND MEDICAL PRINCIPLES FOR  
MEDICAL PRACTICE

Elsewhere in this issue<sup>1</sup> appear the principles to govern the evolution of medical practice adopted by the Representative Committee of the British Medical Association and by representatives of many official bodies in Great Britain. This group comprised representatives of general practice, consultant and specialistic practice, public health, rural practice, medical staffs of provincial nonteaching hospitals and others. Special emphasis should be placed on the principle that the health of the people depends primarily on the social and environmental conditions under which they work, and that improvement and extension of measures to satisfy these needs should precede or accompany any future organization of medical service. Also fundamental is the principle that the efficiency of any medical service depends primarily on medical and scientific knowledge, which, in turn, is based on medical education.

The British group establishes the principle that the function of the state should be to coordinate existing provisions, both official and nonofficial, to augment these where necessary, and to secure that they are available without economic barriers. Supplementary to this is the statement that the state should confine itself within these wide limits, invading the personal freedom of both citizen and doctor only to the extent which the satisfaction of these functions demands. The platform of the American Medical Association likewise emphasizes the importance of an agency of the federal government, under which shall be coordinated and administered all medical and health functions of the federal government, exclusive of those of the Army and Navy, and the allotment of such funds as the Congress may make available to any state in actual need for the prevention of disease, the promotion of health and the care of the sick *on proof of such need*. The medical profession has not opposed appropriations by Congress of funds for medical purposes. It asks that the need be shown and that funds be locally rather than nationally administered.

The British Representative Committee again insists on free choice as between doctor and patient as fundamental to sound medical practice and states emphatically that it is not in the public interest that the state should invade the doctor-patient relationship. It is, no doubt, for this reason that the Representative Committee says that it is not in the public interest that the state should convert the medical profession into a salaried branch of central or local government service.

The Representative Committee of the British Medical Association advocates as a step forward in Great Britain the extension of the National Health Insurance Plan to include the dependents of insured persons and others of like economic status and to cover consultant and specialistic services and laboratory and hospital facilities, as well as general practitioner services. This statement indicates at once how completely lacking has been the National Health Insurance Plan in approximating anything resembling the quality of medical service that prevails in the United States. This recommendation again emphasizes that the National Health Insurance Plan of Great Britain covers wage earners up to a certain level of income only, that it has *not* included the dependents, that it has *not* included others than wage earners of low economic status, that it has *not* provided consultant and specialistic service, or hospital facilities or laboratory service. The gradual development of prepayment plans in the United States has recognized the need for such services. The medical profession has approved prepayment plans to cover the costs of hospitalization, and also prepayment plans on a cash indemnity basis for meeting the costs of medical care. Certainly the gradual evolution in the practice of medicine that has taken place in this country has led to higher standards of medical practice and of medical service than are elsewhere available. The maintenance of the quality of the service is fundamental in any health program.

The American Medical Association, through its House of Delegates, its Board of Trustees and its Council on Medical Service and Public Relations, has urged again and again the continuing evolution of medical practice, based on sound experimentation. Already many state and county medical societies, many industries and many insurance bodies have set up experiments of this type, some of which have already proved to be unsound. In this connection, therefore, the final recommendations of the Representative Committee of the British Medical Association, and of the Medical Planning Commission, deserve increased emphasis. They say

There should be initiated, by arrangement and agreement between the government and the profession, organized experiments in the methods of practice, such as group practice, including health centers of different kinds, which should extend to general practitioner hospital units attached to general hospital. Future developments in group practice should depend on the results of such clinical and administrative experimentation.

1 British Medical Association on Beveridge Plan, this issue, p 777

Only by such controlled scientific experimentation can a sound system of medical service to meet the needs of all the persons in the community be developed

### KETONES AS FUEL FOR MUSCLE CONTRACTION

Following the proposal of the now widely accepted theory of beta oxidation of fatty acids and the accumulation of supporting evidence, the view developed that there is an obligate coupling of oxidative reactions in the metabolism of fat and carbohydrate. The oft repeated aphorism that "Fats burn in the flame of the carbohydrates" was refined to the extent that 1 mole of dextrose was said to promote the oxidation of 2 moles of fatty acid without the production of ketone bodies. The latter compounds were tacitly considered products of the imperfect combustion of fat, without value to the organism and the removal of which was attended with more or less disturbance in the acid-base balance of the body and at times with actual tissue damage.

Further study of the metabolism of fat in the light of the implications of the theory of beta oxidation early indicated that other modes of oxidation of fatty acids are also operative in the organism. Now the position of ketone bodies has changed from that of a waste side-product of abnormal fat metabolism to that of a normal breakdown product of fats which in turn is utilized by the organism. Thus it has been shown that the muscle in a normal animal removes ketones from a perfusion fluid or from blood<sup>1</sup> and that this takes place also in the tissue of diabetic organisms.<sup>2</sup> In a recent report<sup>3</sup> data both on human subjects and on experimental animals are cited to show again that ketones can serve as fuel for muscular activity. On ordinary balanced diets containing carbohydrate, vigorous exercise was accompanied by little if any decrease in blood ketone level. On a diet producing ketosis, however, a drop in concentration of ketones in the blood occurred during work with a rise following cessation of muscular activity.

The current view regarding the metabolic significance of ketones does not regard these compounds as accidental products of incomplete combustion of fats but rather as normal intermediates in fat metabolism constructively being produced by the liver<sup>4</sup> and thence distributed to the tissues as fuel for work. When there is a lack of liver glycogen ketones become of major importance in the production of heat and mechanical energy by the muscles under these conditions the liver

apparently overproduces ketones, which accounts for the appearance of these compounds in the urine in ketosis. According to the newer views carbohydrate still influences the oxidation of fat, not however, in an obligate coupled reaction but because it is the preferred fuel for muscle action, the two are oxidized side by side, but in the absence of carbohydrate the emergency need for fuel is met by the accentuation of ketone production from fat. The locus of the influence of carbohydrate on fat metabolism appears to be essentially in the liver rather than in the tissues.

### Current Comment

#### GUESSING AT PHYSICIANS' INCOMES

The U S Department of Commerce recently issued a release on the incomes of physicians of which the following sentence has been widely published and discussed: "The average gross income reported for 1941 was \$8,524, and the average net income \$5,047." Analysis of the methods by which these figures were obtained reveals that they are little more than guesses. The full report of the study on which they are based is printed in the "Survey of Current Business," issued by the Bureau of Foreign and Domestic Commerce of the U S Department of Commerce, October 1943, pages 16 to 20. From this we learn that "questionnaires were sent to a representative sample of physicians who were requested to give information relating to gross and net incomes, costs of practice, age, type of practice, employees, pay rolls and other selected items during the period from 1936 through 1941." A total of 1,898 returned questionnaires were used, about 1 per cent of the 180,496 physicians reported in the American Medical Directory for 1942, when the survey was made. One hundred of these questionnaires from the Southwest were excluded because of "a strong bias in the sample from Texas." For apparently the same reason the returns from Illinois, Indiana and Michigan were not included. There is no explanation of the method by which the sample was selected or any proof that it was representative. It is admitted that there were "special difficulties arising from the impracticability of obtaining a full representation of those of the younger doctors who were withdrawn from independent practice into the armed forces prior to the summer of 1942," but this is purported to have been allowed for by "weighting." In the summary table, returns from only twenty-one states are listed. Among those omitted, in addition to those previously mentioned, are Florida, North Carolina, South Carolina, Tennessee, Minnesota, Missouri and Wisconsin. On this very small foundation, nevertheless, is built an inverted pyramid of deductions, conclusions, diagrams and classifications based on income by age, localities, size of city and gradation of income, all given to the final dollar or to a decimal fraction, which gives a semblance of accuracy which the foundation of facts is entirely too slight to support.

1. Sawyer J. and Crumbrum A. *Biochem. Ztschr.* **201** 464 1928  
2. Chalkoff, I. I. and Soskin Samuel. *Am. J. Physiol.* **87** 58 (Nov.) 1928  
3. Mixenkron Moller, A. *Ztschr. f. physiol. Chem.* **253** 261 1938  
4. Neufeld A. H. and Ross W. D. *Am. J. Physiol.* **138** 747 (April) 1943  
5. Mirsky I. A. *Am. J. Physiol.* **116** 110 (June) 1936 Barnes  
6. H. Drury D. R. (coll. P. O. and Wick A. N.) *ibid.* **130** 144 (July) 1940  
7. Crumbrum L. A. Sawyer J. H. R. and Ehm G. J. *ibid.* **131** 10 (Nov.) 1940



### SCHIRSON RESTORED LICENSE TO PRACTICE MEDICINE IN NEW JERSEY

The notorious career of Henry J. Schirson, self-styled plastic surgeon, has been repeatedly exposed in *The Journal*. A medical abstract appearing in this issue (page 790) deals with the action of the Court of Errors and Appeals of New Jersey concerning this unscrupulous charlatan. The court has just reversed the order of the Board of Medical Examiners of that state which had previously revoked Schirson's license to practice medicine. Schirson at the time of revocation of his license to practice by the Board of Medical Examiners was serving a term in a federal penitentiary for having been convicted of obtaining assets from the estate of a bankrupt for making a false oath in support of his claims and for perjury. He had been previously convicted of a similar offense. The court's decision was that under the law Schirson had not been "convicted" whereas if he had been found guilty or had been found guilty after a trial, he would have been considered "convicted of a crime involving moral turpitude" and the Board of Medical Examiners would have been within its statutory rights in revoking his license. The order of the Court of Errors and Appeals seems difficult to reconcile with common sense. Now who can protect the public against this charlatan? Obviously any one with a lustrous record, such as that of Schirson, should never have been granted a license in the first place!

### POSTWAR DANGERS OF TROPICAL PARASITIC DISEASES

The section of parasitology of the New York Academy of Sciences held a conference last March on parasitic diseases in relation to the war. Current and postwar problems associated with tropical and parasitic diseases were considered.<sup>1</sup> At the end of his discussion of the clinical features of tropical parasitic diseases in war operations Lieutenant Colonel Mackie of the Army Medical School, Washington, D. C., emphasized the postwar dangers from those diseases in the United States. He said:

It is inevitable that numerous carriers and individuals with latent infections will be scattered over the country following demobilization. Certain of these conditions will be transmissible and will subsequently appear in persons who have not been out of the country. Furthermore, the clinical picture attending the combination of familiar endemic disease such as pneumonia with one of these less familiar parasitic infections may be most bizarre and atypical. Each obscures the characteristic features of the other. Contrary to the classic dictum of medical teaching against multiplicity of diagnoses, it must be recognized a priori that such multiplicity will occur and must be promptly recognized. There is urgent need for the inclusion of much more parasitology and tropical medicine in the curricula of our medical schools.

In the discussion the suggestion was made that medical schools should insist on entomology and parasitology as part of the entrance requirements, also that principles of biology might well be taught in colleges from the study of parasites and their vectors rather than from

the more conventional entomology. The menace of tropical diseases in the postwar period presents a challenge to medical schools, public health agencies, medical societies and individual physicians.

### THE ETIOLOGY OF HYPERTENSION

Significant studies from this country, England and Argentina have focused attention on renal ischemia and a resulting humoral mechanism as a significant factor in the etiology of "essential hypertension." Many clinical workers have been skeptical of claims that renal ischemia is the only factor involved. Now important evidence is presented by Gregory, Lindley and Levine<sup>1</sup> that essential hypertension may be a general symptom which may be caused by vasomotor as well as renal factors. These Texas investigators show that spinal anesthesia, which has little effect on the blood pressure of normal people, may produce a profound fall in the blood pressure of patients with essential hypertension. Correction of renal ischemia in experimental hypertension produced by the Goldblatt method is followed by a fall of elevated blood pressure after several hours or days. Spinal anesthesia, however, produces a fall in blood pressure of patients with essential hypertension within a few minutes. When the local anesthetic action has worn off, the blood pressure of hypertensive patients returns in a few moments to the usual level for those patients. This rapidity of action suggests a nervous mechanism. The functional integrity of the peripheral vasoconstrictor apparatus of such hypertensive patients is shown by the usual vasoconstrictor action of epinephrine at a time when their blood pressure is at the lowest levels as a result of the spinal anesthesia. Essential hypertension may apparently have a vasomotor cause of central nervous system origin as well as a possible humoral cause involving the kidneys.

### ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

The Annual Congress on Medical Education and Licensure will be held in the Palmer House in Chicago, Feb. 14 and 15, 1944. The program for the first day will be under the auspices of the Council on Medical Education and Hospitals of the American Medical Association, for the second day under the auspices of the Federation of State Medical Boards. At the first annual conference of the Council on Medical Education in 1902 its chairman, Dr. Arthur Dean Bevan, reported "Your committee finds that the American Medical Association was founded for the purpose of elevating medical education in the United States" and that "this is still the most important function of the American Medical Association." The annual congress has exerted a powerful influence in improving the quality of medical education. The current important problems lend special significance to this next congress. All who are concerned with medical education in wartime and in the peace to follow should plan to attend.

1 Stunkard, H. W., Coggeshall, L. T., Mackie, T. T., Matheson, Robert, and Stoll, N. R. Parasitic Diseases and American Participation in the War, *Ann. New York Acad. Sc.* 44: 189 (Sept. 30) 1943.

1 Gregory, Raymond, Lindley, E. L., and Levine, Harry. Studies on Hypertension. II. The Effect of Spinal Anesthesia on the Blood Pressure of Hypertensive Patients. Its Possible Bearing on the Pathogenesis of Essential Hypertension, *Texas Rep. Biol. & Med.* 1: 167 (No. 2) 1942.

# MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

## ARMY

### DISTINGUISHED SERVICE MEDAL TO GENERAL MAGEE

By direction of the President, a Distinguished Service Medal was awarded by the War Department to Major General James C Magee, United States Army, "for exceptionally distinguished and meritorious service in a position of great responsibility as Surgeon General of the Army for four years terminating May 31, 1943." The citation states: "His far sighted and dynamic energy was greatly responsible for our soldiers being able thus far to emerge from battle with the lowest mortality rate among the wounded in our history. The Army has benefited greatly from his eagerness to avail himself of the most expert advice and data from the civilian medical profession in the fields of research against epidemics. General Magee foresaw and prevented a dangerous shortage of surgical instruments by pressing the development of domestic manufacture, resulting in an ample supply and improved quality of these vital materials. Under his guidance the Army's battle against the acquisition of venereal disease produced the lowest rate of infection in the Army's history."

### AVIATION MEDICAL EXAMINERS

Graduation exercises were held at the School of Aviation Medicine, Randolph Field, Texas, on October 7 following completion of the course for aviation medical examiners. The didactic portion of the course was conducted at the School of Aviation Medicine, Randolph Field, Texas, and the practical portion of the course at the three army air forces classification centers. The list of students graduating follows:

ALABAMA		Milton Lerner 1st Lieut, Olive View	
John L Branch Major, Montgomery	Mont	Frank E Lones, Captain Paso Robles	
William DeVlaming Captain, Birmingham		Robert G Lukens 1st Lieut Sanitarium	
Archibald M Gaulocher Captain, Montgomery		William W Mills 1st Lieut, San Mateo	
Virgil S Gully 1st Lieut, Butler		Carl E Nemethi, 1st Lieut, Los Angeles	
Bennett J LaCour Jr Captain, Birmingham		Edmund W Overstreet Captain San Francisco	
ARIZONA		Glenn A. Pope, Captain Oakland	
Frederick W Knight Captain, Sanford		Thomas B Rhone, Captain Orange	
ARKANSAS		Phillip E Svec 1st Lieut, Los Angeles	
Ross Bizzell Captain, Little Rock		Neville T Ussher, Major, Santa Barbara	
William M Woods Captain, Huntington		Richard W Walt, Captain San Bernardino	
CALIFORNIA		Frank W Wilks Captain, Hagginswood	
John H Austin 1st Lieut, Banning		William T Zimmermann, Captain, Los Angeles	
Howard F Evans 1st Lieut, Beverly Hills		COLORADO	
Robert H Finley Jr Captain, San Francisco		George M Harrison 1st Lieut, Denver	
Antonio J Franzl Major, San Francisco		Frank B Olsen 1st Lieut, Urayan	
Walter W Herrmann, Major, Grass Valley		Howard C Smith Captain, Colorado Springs	
Nathan S Hintt Captain, Los Angeles		CONNECTICUT	
William S Ireton Captain, Tulare		Donald L. Ferris Captain, Greenwich	
Samuel A Irvin Captain, Los Angeles		John S Hathaway Captain, New Haven	
Richard B Jones Major, San Francisco		Charles E. Windus, Captain, New Haven	
Richard V Lee 1st Lieut, Col Palo Alto			

### DELAWARE

Hans F Burkhardt, Captain, Wilmington

### DISTRICT OF COLUMBIA

John B Brady, Captain, Washington  
William R Coleman Captain, Washington  
Fratris I Duff 1st Lieut Col, Washington

### FLORIDA

Major William O Beddingfield  
Major Savannah  
John M Hulsey Jr Major, Gainesville  
Edmond H Kalmon Jr, Major, Albany  
Wesley R Pennington 1st Lieut, Marion  
William G Simmons Captain, Sylkuma

### IDAHO

Howard E Baughman, Captain, Council Falls  
Harvey A Hitch, 1st Lieut, Idaho Falls  
Richard C Kaar, Captain, Burley  
Samuel D Simpson, Captain, Caldwell

### ILLINOIS

Charles F Alderson, Captain, East St Louis  
Soddie J Barkett, Captain, Cairo  
John B Beare, Captain, Chester  
James W Clark, Major, Chicago  
Howard D Countryman, Major, Rockford  
Joseph A Davis 1st Lieut, Chicago  
Joseph C Ehrlich Captain, Chicago  
Edward A Fahnestock, Captain, Bridgeport  
Harry L Faulkner, Major, Chicago  
Roy L Kenward, Captain, Melvin  
Philip J Lopresti, 1st Lieut, Chicago  
Herman L Mishkin, Captain, Chicago  
Jean H Motier 1st Lieut, Chicago  
Samuel C Noto 1st Lieut, Chicago  
Herbert P Rasche 1st Lieut, Maywood  
Keith Rhea Major, Clinton  
Morton Simons Major, Chicago  
Guy L Tourney, 1st Lieut, Quincy  
John W Vertuno Captain, Melrose Park  
Max I Vinneour Captain, Chicago  
Hugh H Worsley 1st Lieut, Chicago

### INDIANA

Dale D Dickson Captain, Letts  
Forest M Kendall 1st Lieut, Alexandria  
Milo O Lundt Captain, Elkhart  
George W Macy, Captain, Columbus  
Richard C Miller Captain, North Vernon  
Harold D Pyle Major, South Bend  
Ames R Templeton Captain, South Bend  
Fred L Toumey Captain, Ridgeville

### IOWA

Luther C Hickerson, 1st Lieut, Brooklyn  
Philip C Keil 1st Lieut, Iowa City  
Roland T Smith 1st Lieut, Des Moines

### KANSAS

William C Furber, Captain, Wichita  
Joseph H Johnson Captain, Ft Dorado

### KENTUCKY

Robert C Bock Captain, Louisville  
Eugene J Burns, Major, Louisville  
Charles L Roser Jr, Major, Louisville  
Robert W Smith 1st Lieut, Owensboro  
Marion C Spradlin, Captain, Somerset  
Woodford B Troutman Major, Louisville

### LOUISIANA

Louis E Chauvin, 1st Lieut, Abbeville  
Wilbur I Edgerton, Captain, Simmesport  
Jack R Frank, 1st Lieut, Crowley  
John W Henrickson, 1st Lieut, New Orleans  
David W Kennedy Captain, Vivian  
Frank M Lhotka 1st Lieut, New Orleans  
Jack G Miller, Captain, New Orleans  
Harold J Sabatier, 1st Lieut, Elton  
Cecil L Sinclair, 1st Lieut, New Orleans

### MAINE

Kenneth A LaTourette, Captain, Farmington  
Edward A McFarland, 1st Lieut, Lewiston

### MARYLAND

Nicolas C Camara Peon 1st Lieut, Baltimore  
Harold E Houch Captain, Galena  
Frederick S Wolf Captain, Baltimore

### MASSACHUSETTS

Kenneth V Dalton 1st Lieut, Weymouth  
Bernard J Doyle 1st Lieut, East Hampton  
Herman Felsen 1st Lieut, East Hampton  
Irvin F Hermann Captain, Boston  
Raymond W Latham 1st Lieut, Boston  
Everett T Tomb Major, Framingham  
Sidney R Wilker Captain, Cambridge

### MICHIGAN

Homer C Coppock 1st Lieut, Grand Rapids  
William D Frostic Captain, Wadonette  
Howard H Gradis 1st Lieut, Eloise  
Earl E Hamilton, Captain, Traverse City

W. N. H. ... Captain Yale  
... 1st Lieut. Ann  
W. K. I. ... Captain Hart  
... 1st Lieut. Mar  
... 1st Lieut. May  
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## NEW MEXICO

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## NEW YORK

Irving H. Beckwith Major, White Plains  
Richard C. Blackwell, Captain New York  
Metrol F. Brickner, 1st Lieut., Gloversville  
Donald W. Brundage, Captain, Putnam  
John N. Daly, Captain, Jamaica  
Herman J. Dick, 1st Lieut., Syracuse  
Isidore I. Epstein, Captain, Brooklyn  
Robert M. Fisher, Captain, New York  
Frank J. Frigala, Captain, New York  
William J. Garthland, 1st Lieut., St Albans  
Daniel L. Goldstein, Major, New York  
Rex F. Greer, Major, Castle Point  
Morton M. Halpern, 1st Lieut., Brooklyn  
Frederick A. Hill, Captain, Brooklyn  
Arthur H. Horowitz, 1st Lieut., Floral Park  
Seymour A. Horowitz, 1st Lieut., New York  
William C. Karl, 1st Lieut., Gloversville  
August M. Kleeman Jr, 1st Lieut., Warwick  
Charles Klein, 1st Lieut., New York

Frederick I. Landau Jr, Captain  
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Joseph Levitsky, 1st Lieut., Philadelphia  
Marlin C. Moore, 1st Lieut., Mount Carmel  
Joseph D. Moslan, Captain, Scranton  
Jerome J. Rubin, 1st Lieut., Philadelphia  
Wilfred H. Winey, 1st Lieut., Johnstown  
Robert H. Yockey, 1st Lieut., Butler  
Robert B. Zerbe Major, Tremont

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Dan H. Byram, Captain, Port Arthur  
Charles L. Concklin, 1st Lieut., Corpus Christi  
Richard H. Driessel, 1st Lieut., Fort Worth  
John W. Eschenbrenner Jr Major, Fort Worth  
Robert M. Johnson, Major, Houston  
S. Braswell Locker, 1st Lieut., San Antonio  
Anthony M. Orlando, Captain, San Antonio  
Guy L. Pattillo, Captain, Abilene  
Herbert M. Sanford, Captain, Perryton  
Thomas J. Scanio 1st Lieut., West  
John R. Shupp, Captain, Cranfills Gap  
William S. Warren, 1st Lieut., Center  
Byron P. York, Major, Houston

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## MEDICAL UNIT BEHIND FRONT LINES

With the Fifth Army in Italy and within sight and sound of the battle, a group consisting of 22 doctors, 18 nurses and 58 enlisted men in the U S Army is working immediately behind our front lines doing major operations that are saving the lives of many American soldiers. This field hospital, under the command of Major Samuel A. Hanser of St Louis and his administrative officer Lieut Robert Bremmman of Harrisburg, Pa is divided into three platoons which leap frog each other as the army advances. Dr Hanser has taken the three platoons of 6 doctors and 6 nurses each, and 2 roving surgeon specialists, to within a few miles of the front to handle severely wounded cases. When a man is hit the litter bearers and first aid men search him out and he receives what treatment the field dressing station affords. If his condition is such that he is able to ride over roads cut into ruts and ruts by bombs and mines, he will be taken by ambulance to the evacuation hospital, 10 or 15 miles behind the lines. However, if he is suffering from shock or loss of blood or exposure, or is so severely wounded that he cannot survive that ride, he will be taken the 2 or 3 miles to the field hospital, where he can get instant expert attention. Although the hospital is equipped with the materials and instruments of a large city hospital, these doctors and nurses eat and sleep in unfloored tents and work under the most difficult circumstances. While the new emergency field service loses more men than other hospitals because it receives the most serious cases, its courageous staff has the great satisfaction of knowing that hundreds of lives are being saved through its work.

VETERAN ARMY NURSE DIES AT  
WALTER REED HOSPITAL

The War Department announced on September 10 the death of Major Emily H. Weder, Army Nurse Corps, assistant to the principal chief nurse at Walter Reed General Hospital Washington, D C. Major Weder, formerly of Philadelphia entered the Army Nurse Corps on Jan 5, 1918.

## CAPTAIN LAYDEN AWARDED VALOR MEDAL

Capt Milton J Layden, flight surgeon in the Army Air Force, has been awarded the Soldier's Medal for valor. The citation which accompanied the award said "The Soldier's Medal is being awarded for the outstanding heroism of Captain Layden in the face of imminent danger. He voluntarily rendered heroic assistance at the scene of an appalling disaster occasioned by a terrific explosion of bombs. Trucks loaded with bombs were burning furiously, but despite the danger of imminent explosion Captain Layden labored to give all possible aid and assistance to the injured. Charred and maimed bodies were treated unmindful of the warning given him that further explosions would occur. He was forced to withdraw by order of superior authority. The heroism, valor and courage in the

face of great danger reflects great credit on Captain Layden and the armed forces of the United States." Dr Layden graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons Baltimore, in 1939. He enlisted in the army in October 1940 and received his wings from the School of Aviation Medicine, Randolph Field Texas.

## PRISONER OF THE JAPANESE

According to information received by his father and published in the *Detroit Free Press* September 18, Capt Robert K Whiteley, formerly of Detroit, is being held a prisoner of war by the Japanese in the Philippine Islands. Captain Whiteley graduated from the University of Michigan Medical School, Ann Arbor, in 1933.

## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

### HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan 1, 1944

1 Prospective interns who have not yet obtained a hospital appointment should communicate with these institutions either directly or through the office of the dean of their medical school. Assistant residents and residents should direct their applications to the hospital superintendent in the usual manner.

2 Institutions having a shortage of interns or residents are again invited to make their needs known to the Council on Medical Education and Hospitals. In reporting shortages, hospitals should indicate the number of interns, assistant residents and residents needed to complete their quotas for Jan 1, 1944.

### Hospitals Reporting Vacancies for Interns or Residents

(Continuation of list in THE JOURNAL November 13 pp 707-708)

#### CALIFORNIA

St Joseph's Hospital San Francisco Capacity 289 admissions 7 014  
Sister Mary Raymond R N Superintendent (interns 2 residents)

#### CONNECTICUT

St Vincent's Hospital Bridgeport Capacity, 325 admissions, 9 000  
Sister Louise Superintendent (3 interns)

#### ILLINOIS

Belmont Community Hospital Chicago Capacity 125 admissions, 3 399 Mrs Gertrude T Scofield Superintendent (3 interns)  
Englewood Hospital Chicago Capacity 187 admissions 5 263 A R Zutter Superintendent (4 interns)  
Hospital of St Anthony de Padua Chicago Capacity, 269 admissions 7 041 Sister Alberta R N Superintendent (3 interns)  
St Bernard's Hospital Chicago Capacity 242 admissions 7 401 Mother Cecelia Murray R N Superintendent (intern)  
St Elizabeth Hospital Chicago Capacity 307 admissions 10 777 Sister M Vetusa Superintendent (3 interns)

#### INDIANA

St Joseph's Hospital South Bend Capacity 192 admissions 4 494  
Sister Mary Ellen R N Superintendent (2 interns)

#### KENTUCKY

St Mary and Elizabeth Hospital Louisville Capacity 205 admissions 4 817 Sister Ludovica R N Superintendent (intern)

#### MAINE

1 intern Maine General Hospital Bangor Capacity 243 admissions 5 467 Dr Allan Craig Medical Director (4 interns)

#### MARYLAND

Maryland General Hospital Baltimore Capacity 264 admissions 5 509 Stuart B Crawford Superintendent (6 interns)

#### MICHIGAN

St Joseph's Mercy Hospital Ann Arbor Capacity 250 admissions 5 991 Sister M Philippa Superintendent (interns residents)  
Saginaw General Hospital Saginaw Capacity 166 admissions 4 896 Kate J Hurl Superintendent (2 interns)  
St Mary's Hospital Saginaw Capacity 204 admissions 5 318 Sister Electa P N Superintendent (2 interns 1 resident)

#### MINNESOTA

St Mary's Hospital Minneapolis Capacity 320 admissions 9 291  
Sister M Conchessa Superintendent (6 interns)

#### MISSOURI

St Joseph's Hospital St Joseph Capacity 168 admissions 3 023  
Sister Emily R N Superintendent (1 intern 1 resident)  
St Louis City Hospital St Louis Capacity 1 127 admissions 15 013  
Mr Clinton T Smith Superintendent (residents—med OB G)

#### MONTANA

Murray Hospital Clinic Butte Capacity 120 admissions 3 013  
Mr W H Rex Business Manager (2 interns)

#### NEW JERSEY

St Peter's General Hospital New Brunswick Capacity 227 admissions 6 034 Sister R Ietelher Superintendent (2 interns 1 resident)  
Perth Amboy General Hospital Perth Amboy Capacity 197 admissions 4 932 Mr George C Schluck Superintendent (3 interns)

#### NEW YORK

The Kingston Hospital Kingston Capacity 118 admissions 2 839  
Jessie P Allan Superintendent (resident—mixed)  
New Rochelle Hospital New Rochelle Capacity 309 admissions 6 516  
Alex E Norton Superintendent (resident)  
Jewish Memorial Hospital New York Capacity 217 admissions 4 994 Louis Miller Superintendent (3 interns)  
New York Infirmary New York Capacity 160 admissions 2 595  
Miss M Marion Smith Administrator (5 interns residents—Med OB Surg—women only)

#### OHIO

St Mary's Hospital Cincinnati Capacity 230 admissions, 5 114  
Sister Theonilla R N Superintendent (4 interns)  
Lutheran Hospital Cleveland Capacity 137 admissions 4 121 Lee S Lampher Superintendent (3 interns)

#### PENNSYLVANIA

The Woman's Hospital of Philadelphia Philadelphia Capacity 166 admissions 2 887 Dora Ruland M D Medical Director (3 interns resident—medicine)  
Passavant Hospital Pittsburgh Capacity 120 admissions 2 203  
Sr Martha Pretzlaff Superintendent (3 interns)  
Sewickley Valley Hospital Sewickley Capacity 185 admissions 3 931  
Miss Helen Pratt Superintendent (4 interns)

#### RHODE ISLAND

Charles V Chapin Hospital Providence Admissions 760 (psy) Dr William Hindle Superintendent (resident—psychiatry)

#### TENNESSEE

St Joseph Hospital Memphis Capacity 297 admissions 8 670  
Sister M Sponsaria Superintendent (4 interns)

#### UTAH

St Mark's Hospital Salt Lake City Capacity 164 admissions 4 286  
O V Wardrop Superintendent (4 interns)

#### VIRGINIA

Norfolk General Hospital Norfolk Capacity 333 admissions 9 584  
Mr W P Earney Superintendent (interns)

#### WASHINGTON

Sacred Heart Hospital Spokane Capacity 368 admissions 9 274  
Sister Henrietta Superior (8 interns)  
St Joseph's Hospital Tacoma Capacity 344 admissions 6 853 Sister M Patricia Francis (interns)

#### WEST VIRGINIA

Wheeling Hospital Wheeling Capacity 236 admissions 4 387 Sister Mary Ruth Administrator (interns)

## MISCELLANEOUS

## SOVIET SURGERY

[Note: The following article is abstracted from *Medicine and the War*, accepted by the Soviet Scientific Information Committee for publication in *Soviet Medicine*.]

During the war of 1914-1918 and the civil war which followed the introduction of surgical work in pre-revolutionary Russia was revealed. Russian surgeons were enthusiastic and would do anything to enable them to organize the work of the war. The theoretical training of a high order which obtained in the universities and the clinics. The Soviet Government established a number of surgical clinics and hospitals. Specialized centers were established for the production of surgical instruments and for the production of various branches of surgery. The first specialized surgical college and the first specialized surgical hospital were established. The first specialized surgical hospital was established in all capital republics and in the provinces. In the place of the specialized surgical institutions were established. In the provinces the following specialized institutions were established: general surgery, abdominal surgery, thoracic surgery, vascular surgery, and other specialized institutions. The treatment of patients was given priority in the development of surgery.

## ABDOMINAL SURGERY

Until 1918 operations for hernia and appendicitis were considered to be minor attacks. Operations on the liver, stomach and other organs were performed only in university clinics. By 1924 abdominal operations were resumed, great advances had been made and operations of this type were being carried out by many surgeons.

Professor Ushensky announced that he had performed fifteen hundred operations on the stomach and intestine, he is by no means the only surgeon in this field. Material has been accumulated on the shortcomings of these operations and the trend favors resection of ulcers.

By 1929 first aid service had been organized for all Soviet cities. This also opened an era of urgent surgical treatment for ulcers of the stomach and intestine and for acute appendicitis with immediate closing of the wound. Successes achieved in this field made urgent surgical treatment popular in village hospitals. In Paris in 1930 S. Yudin read a paper on fifteen hundred resections for perforating ulcers. The death rate for operations on the appendix was very small, no more than 2 per cent. Operations for abdominal hemorrhages were less successful. There were but few surgeons who favored this operation including Spasokukotsky and S. Yudin. Later success with this operation was connected with widespread employment of blood transfusions.

In the year preceding the war a large number of branches of the Central Institute for Blood Transfusions (Prof. A. Bogdanov) were reestablished and arrangements made for preserving blood. The methods had been thoroughly studied and proved before the war in hundreds of thousands of cases in various diseases. During the present war the whole front and all the hospitals have been supplied with all the blood they ask for. In 1928 a proposal was made that surgeons wash their hands in 0.5 per cent solution of ammonia (Spasokukotsky, Kochergin). The proposal was widely adopted.

More than a thousand surgeons all over the Soviet Union have confirmed the value of the method and at the same time have shown that suppuration intervenes in only 2 or 3 per cent of abdominal operations.

A large number of successful operations for cancer of the lower part of the alimentary canal—larger than any other country—have been carried out by using artificial alimentary tubes.

## THORACIC SURGERY

During the war of 1914-1918 there were a large number of deaths from pulmonary wounds and complications. This attracted wide attention among surgeons (Burdenko, Spasokukotsky, Grekov, Lumberg). They established the fact that pleurisy is a secondary phenomenon which heals normally when

the original nidus has been properly treated. When these methods were applied to war conditions a greatly decreased death rate ensued. In a special hospital for thoracic surgery Lumberg reduced the death rate 5 per cent in the wards as early as 1939.

## CRANIAL SURGERY

A method of healing brain suppuration by perforation has been developed and has met with considerable success. Bakulev developed a strict routine, encephalography, punching the skull, drawing off pus and replacing it with air.

A number of neurosurgical institutes (Burdenko, Bakulev, Polenov, Gumnovich and Shramov) have been established, and surgeons' views on the subject have been changed. The five thousand operations performed in the Burdenko Institute with 7 per cent mortality are an inspiration to Soviet surgeons.

The danger of tetanus has been removed completely. Gas gangrene has almost disappeared. The precept "closed wounds" during the war of 1914-1917 was taken up later by first aid stations where operations were done and wounds immediately stitched. All doctors have adopted these methods with excellent results (85 to 90 per cent). Primary treatment with excision of all shattered bloodless tissue attained even greater significance. This accounts for the light form of gas gangrene and the reduction in the number of amputations and made possible the use of plaster splints, invaluable when patients are being transported.

With fractures surgeons now think not only of setting bones correctly but also of the most rapid way to return the limb to its functions.

## HUGE HOSPITAL PLANE DEDICATED

The *Spirit of Norwood*, the Douglas Sky-master purchased with war bonds sold during the month of October in the Norwood Park area (Ill.), was dedicated on November 3 at the Douglas plant. The plane made its army acceptance flight on November 2 over the neighborhoods where the bond buyers reside. The hospital ship is equipped to carry 52 litter beds, 4 doctors and a crew of 6. The cost of the ship was \$500,000, but the communities raised \$766,880. Picture postcards of the ship will be sent to the 1,200 men and women in service from the area to show them "we're doing what we can here at home." The drive included the communities of Edgewood, Rosedale and Higgins as well as Norwood Park, Ill.

## PUBLIC HEALTH UNDER HITLER

The Duisburg edition of the *National Zeitung* of August 7 features a notice reminding the population once more that midwives, dental practitioners, nurses, masseurs and fumigation staffs are not allowed to leave the town without permits from the Health Office and their professional organizations.

NPD of August 21 reports from Kiev that the building of a number of hospitals in the Ukraine has begun as part of the extensive scheme for improving health conditions in the occupied eastern territories. The first seven hospitals in the biggest towns of the country will be ready by Christmas.

*Le Petit Dauphinois* of August 21 published the following official notice: "The Regional Director of Public Health of Lyons informs doctors in the departments belonging to the Lyons health area that antipoliomyelitis serum may be obtained in the case of an emergency day and night, including Sundays, from the health inspector of the Rhone and Lyons region."

According to *Le Petit Journal* of August 24, at Grasset's request Professors Alajouane and Rohmer, the well known poliomyelitis specialists, lectured to a large audience of local doctors in Clermont-Ferrand hospital lecture room in order to enable them to fight the disease efficiently.

*Dies* of July 3 states that the number of doctors in Bulgaria is about 3,500.

# ORGANIZATION SECTION

## BRITISH MEDICAL ASSOCIATION ON BEVERIDGE PLAN

The government has promised to issue a "white paper" setting forth the official proposals in regard to the medical provisions of the Beveridge report and to give opportunity for full discussion by the medical profession before any legislation is enacted. This "white paper" had not appeared when the annual representative meeting of the British Medical Association, which is comparable to the House of Delegates of the American Medical Association met September 21-23. Although much of the time of the meeting was given to discussion of 'The Future of Medical Services,' there was no definite legislative proposal available for consideration, and action was limited to statements of principles and general positions. The attitude of the meeting was shown by a vote of 200 to 10 in favor of the resolution that 'In the opinion of the Representative body the creating of a whole time salaried state medical service is not in the best interest of the community.'

The Representative Committee, which had been appointed to study the whole subject and which had previously submitted a report, presented its recommendations, which, with some amendments, were adopted in the following form:<sup>1</sup>

(A) (To be embodied in a preamble recalling the principles set out in the 'General Medical Service for the Nation')  
1 The system of medical service should be directed to the achievement of positive health and the prevention of disease no less than to the relief of sickness. 2 There should be available for every individual the services of a general practitioner or a family doctor of his own choice. 3 Consultants and specialists, laboratory services, and all necessary auxiliary services, together with institutional provision when required, should be available for the individual patient, normally through the agency of the family doctor. 4 The several parts of the complete medical service should be closely coordinated and developed by the application of a planned national health policy acceptable to the profession as a whole.

(B) The health of the people depends primarily on the social and environmental conditions under which they live and work, on security against fear and want, on nutritional standards, on educational facilities and on the facilities for exercise and leisure. The improvement and extension of measures to satisfy these needs should precede or accompany any future organization of medical services.

(C) The efficiency of a country's medical services, both preventive and curative, depends on the available medical and scientific knowledge on the character and extent of medical education on the sufficiency and quality of personnel on facilities for treatment and on the absence of any economic barriers that impede the utilization of such services. Thus, in order to improve the country's medical services, the facilities and resources for medical research should be greatly increased and methods devised for their adequate application, medical education both undergraduate and postgraduate should be maintained on a high standard and be adapted to modern needs, there should be sufficiency of personnel and institutional accommodation, and wherever economic barriers prevent an individual taking advantage of medical services such barriers should be removed.

(D) Subject to these general and overriding considerations, the functions of the state should be to coordinate existing provision both official and unofficial, to augment it where necessary and to secure that it is available without economic barrier to all who need it. The state should confine itself within these wide limits invading the personal freedom of both citizen and doctor only to the extent which the satisfaction of these functional demands.

(I) It is not in the public interest that the state should convert the medical profession into a salaried branch of central or local government service. The state should not assume control

of doctors rendering individual or personal health service. The profession rejects any proposal for the control of the future medical service by local authorities as at present constituted.

(I) Free choice as between doctor and patient should be preserved as a basic principle of future health services and no administrative structure should be approved which does not both permit and encourage such free choice.

(G) It is not in the public interest that the state should invade the doctor-patient relationship. The loyalty and obligation of a doctor rendering personal health service to an individual patient should be to that patient and to none other.

(H) Free choice of doctor should be reinforced by a method of remuneration which relates remuneration to the amount of work done or the number of persons for whom responsibility is accepted.

(I) Every member of the community should be free to consult the doctor of his choice either officially as when he consults the doctor he has selected under an official service, or privately, as when he consults some other doctor, whether that doctor is a member of an official service or not. Nothing should be done to encourage the splitting of the medical profession into two groups—the official doctors and the unofficial doctors.

(J) Consultants and specialists should normally be attached to the hospital. For those persons who wish to be treated in private accommodations, whether part of a hospital or not, private consulting practice should continue.

(K) The central administrative structure should be a corporate body concerned only with civilian health services and should be responsible for all civilian health services. This central administrative body should be advised on medical matters, including personnel, by a medical advisory committee representative of the medical profession which should be at liberty to publish its findings. Locally, new administrative bodies, responsible to the central authority, should cover wide areas and should be representative directly or indirectly of the community served and in appropriate proportion, of the local medical profession and voluntary hospitals. They should be advised on medical matters, including personnel, by local medical advisory committees representative of the local medical profession which should be at liberty to publish their findings. These administrative changes should be regarded as foundation changes to be agreed before other changes are initiated.

(L) All branches of medical practice should be regarded as a single service, and it is undesirable that a detailed scheme for general practitioners should be framed and put into operation without corresponding arrangements for other branches of practice.

(M) Pending the consideration and completion of the foundation administrative changes mentioned in K, as a step toward the satisfaction of assumption B there should be extension of national health insurance to include dependents of insured persons and others of like economic status and to cover consultant and specialist services and laboratory and hospital facilities as well as general practitioner service. The service should be improved from time to time as recommended by the profession. Those persons with incomes above an agreed limit could if Parliament decides to make the service available to every member of the community be permitted to become voluntary contributors to the extended service. A reconstruction of insurance committees would be necessary.

(N) There should be initiated by arrangement and agreement between the government and the profession, organized experiments in the methods of practice, such as group practice, including health centers of different kinds which should extend to general practitioner hospital units attached to general hospitals. Future developments in group practice should depend on the results of such clinical and administrative experimentation.

<sup>1</sup> *Lancet* 475 (Oct. 2) 1943



## OFFICIAL NOTES

COUNCIL ON MEDICAL EDUCATION  
AND HOSPITALS

Dr. Walter I. Lammie, secretary of the Federation of State Medical Boards, has reported that all of the state medical boards require the completion of a twelve-month internship before a license will be approved by official action the acceptance of a nine-month internship in a civilian hospital as a condition for a license subsequent medical service with the armed forces in the three months that could be completed in a civilian hospital.

At the first meeting of the Council on Medical Education and Hospitals on November 7 were the following:

The Annual Conference on Medical Education and Licensure will be held at the Palmer House in Chicago on Feb. 14 and 15, 1944.

In order to better inform medical students, the Council has decided to develop a directory of programs of medical education.

A flexible and elastic relation must exist between the student and the school so that every effort should be made to allow freedom of choice to operate between the student and the school and the decision is to his assignment.

The group charged with the duty of selecting students for medical education include representatives of the medical schools of the district and that the actual assignment of a student to a specific medical school be subject to the approval of that school.

The general principles herewith suggested be as nearly uniform as possible throughout the country.

The study of postwar hospital facilities for the training of returning medical officers will be continued. Information received to date indicates that large numbers of places will be made available. A preliminary report of the findings will be published shortly.

The University of Texas Medical Branch, at Galveston was removed from its probationary status.

The Bowman Gray School of Medicine, at Winston-Salem, N. C. was transferred to the list of medical schools approved by the Council for the full four-year course. This school has been an approved school of the basic medical sciences.

The following internships and residencies were approved by the Council:

## Hospitals Approved for Internships

Lutheran Hospital Fort Wayne, Ind.  
St. Joseph Hospital Fort Wayne, Ind.  
Flint Goodrich Hospital, New Orleans  
St. Joseph's Mercy Hospital, Ann Arbor, Mich.  
Memorial Hospital, New York City  
Easton Hospital, Easton, Pa.  
Hospital of St. Vincent de Paul, Norfolk, Va.

## Approved Residencies

*Anesthesiology*  
Mount Sinai Hospital, New York City  
Temple University Hospital, Philadelphia

## Internal Medicine

Chesapeake and Ohio Hospital, Huntington, W. Va.  
Gouverneur Hospital, New York City  
Hospital of the Women's Medical College, Philadelphia

## Mixed Residencies

Wyandotte General Hospital, Wyandotte, Mich.  
Wyoming County Community Hospital, Warsaw, N. Y.  
Mercy Hospital, Charlotte, N. C.  
Crisce Hospital, Cleveland  
Women's Hospital, Cleveland

## Surgery

University of Virginia Hospital, Charlottesville, Va.

## Ophthalmology

Hospital of the Protestant Episcopal Church, Philadelphia

## Surgery

St. Mary's Hospital, San Francisco  
Charles Godwin Jennings Hospital, Detroit  
Gouverneur Hospital, New York City  
Hospital of the Protestant Episcopal Church, Philadelphia  
Johnston Wilkes Hospital, Richmond, Va.  
St. Luke's Hospital, Milwaukee

## Tuberculosis

Lake County Tuberculosis Sanatorium, Waukegan, Ill.  
Hamilton County Tuberculosis Sanatorium, Cincinnati

## Schools for Clinical Laboratory Technicians Approved

Jefferson Hospital, Birmingham, Ala.  
St. Francis Hospital, Evanston, Ill.  
Salem Hospital, Salem, Mass.  
University Hospital, Ann Arbor, Mich.  
St. Anthony's Hospital, St. Louis  
Newark City Hospital, Newark, N. J.  
Presbyterian Hospital, Newark, N. J.  
Philadelphia General Hospital, Philadelphia  
St. Agnes Hospital, Philadelphia  
Medical and Surgical Memorial Hospital, San Antonio, Texas  
University of Vermont College of Medicine, Burlington, Vt.

## School for Physical Therapy Technicians Approved

Duke Hospital, Durham, N. C.

## School of Occupational Therapy Approved

Richmond Professional Institute, Richmond, Va.

## School for Medical Record Librarians Approved

Mercy College, Detroit

VICTOR JOHNSON, M.D., Secretary

## THE 1944 CHICAGO SESSION

## The Scientific Exhibit

The Scientific Exhibit will be held on the fourth floor of the Palmer House in the Exhibition Hall and adjoining spaces. The Board of Trustees has authorized three special exhibits on fractures, burns and the newer anti-infective agents. Other features will include groups of exhibits on heart disease, tropical medicine, industrial health and poliomyelitis.

Representatives to the Scientific Exhibit have been appointed by each section of the Scientific Assembly and they are already at work to make the Scientific Exhibit a noteworthy demonstration in graduate medical instruction.

Application blanks for space may be obtained by writing to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago 10, Ill.

## MEDICAL LEGISLATION

## MEDICAL BILLS IN CONGRESS

**Change in Status**—Subcommittee No. 2 of the House Committee on the Judiciary held public hearings, November 10, on H. R. 786, the Tolan bill to permit chiropractors to treat the beneficiaries of the United States Employees' Compensation Act. Dr. Barney J. Hein of Toledo, Ohio, and Dr. Wilburt C. Davison, dean, Duke University School of Medicine, appeared as witnesses for and at the request of the American Medical Association in opposition to the enactment of the bill. Representative A. L. Miller of Nebraska, a doctor of medicine and a former health officer of his state, also protested against the bill, the protest being lodged at the request of the Nebraska State Medical Association.

**Bills Introduced**—S. 1506, introduced, by request, by Senator Clark, Missouri, provides for further rehabilitation of honorably

discharged World War II veterans. S. 1507, introduced, by request, by Senator Clark, Missouri, and H. R. 3634, introduced by Representative Rankin, Mississippi, propose to make further provision for the education of honorably discharged World War II veterans.

S. 1509, introduced by Senator Thomas, Utah, provides for the education and training of members of the armed forces and the merchant marine after their discharge or conclusion of service.

## DISTRICT OF COLUMBIA

**Bill Introduced**—H. R. 3619, introduced by Representative Randolph, West Virginia, proposes to amend the existing law regulating the disposal of dead human bodies in the District of Columbia.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Dr William Dock Named Professor of Medicine**—Dr William Dock, since 1940 professor of pathology at Cornell University Medical College, New York, has been appointed professor and chairman of the department of medicine at the University of Southern California School of Medicine Los Angeles. Prior to joining the Cornell faculty, Dr Dock was assistant professor of medicine at Stanford University School of Medicine and later professor of pathology.

**Typhoid Grandmothers**—The Los Angeles City Health Department has reported recently that, of 21 cases of typhoid reported to that department in the last sixteen months, 11 have been traced definitely to carriers, according to *California's Health*. In 10 of these 11 cases, the infection had been acquired from grandmothers. It is suggested that several factors may be involved (1) that these grandmothers lived through a period in which typhoid was rampant in the United States (2) that grandmothers are frequently active in the preparation of food in the home and (3) that they lived in a day and age when sanitation was not considered of as great importance as it is considered today. It is known that about 2 per cent of persons who have typhoid become permanent carriers. In the course of the department's investigation it was found that a 68 year old grandmother who had typhoid at the age of 17 was responsible for 4 cases of the disease that appeared within her immediate family during the last forty years, 1 of which resulted fatally.

### GEORGIA

**Personal**—Dr Young H. Yarbrough, assistant superintendent of the Milledgeville State Hospital, Milledgeville, has been appointed medical superintendent to succeed Dr Lovick P. Longino, effective September 1. The latter, who has been connected with the hospital since 1906, resigned because of ill health.

### ILLINOIS

**License Restored**—The Illinois State Board of Registration in Medicine has restored the license to practice medicine in Illinois of Dr Delbert R. Blender, Chicago. Dr Blender's license had been revoked on June 22.

### Chicago

**Annual Meeting of Institute of Medicine**—The twenty-eighth annual meeting of the Institute of Medicine of Chicago will be held at the Palmer House December 7. Dr Frederick B. Noyes will deliver the presidential address on "Personal Recollections of a Leader, Greene Varduman Black. His Development and Influence."

**Changes in the Faculty at Loyola**—George F. Simmons, Ph.D. and Arthur J. Gatz, Ph.D., are among the new appointments to the Loyola University School of Medicine. Promotions at the school include:

David S. Jones, Ph.D. to assistant professor of anatomy  
Dr John L. Keeley to associate clinical professor of surgery  
Dr Mary C. Patras to assistant professor of physiology  
Dr George A. Hellmuth to assistant clinical professor of medicine  
Dr Leo A. Kaplan to assistant clinical professor in neurology and psychiatry

**Alumni Election**—On November 4, Dr Howard B. Carroll was reelected president of the Northwestern University Medical Alumni Association for the third term. Other officers are Drs Clarence G. Shetron, vice president in charge of foundation and century plan; Frederick W. Merrifield, vice president in charge of activities; Sumner L. S. Koch, vice president in charge of achievement; Everett C. Moulton, Fort Smith, Ark., vice president in charge of placements; Samuel C. Stanton, Hinsdale, Ill., statistician; and Harold E. Davis, secretary and treasurer.

**Dr Piszczek Surveys Poliomyelitis Epidemic Areas**—At the request of the National Foundation for Infantile Paralysis, Dr Edward A. Piszczek, director of the Cook County Public Health Unit, started on November 1 to survey the states included in the recent poliomyelitis epidemic areas. The purpose of the survey is to observe the treatments and treatment of poliomyelitis in the various areas with the objective, it is reported, of standardizing the treatment. The states which Dr Piszczek will visit include Kansas, Colorado, Utah, Washington, Oregon, California, Arizona, Texas, Oklahoma and Arkansas.

### KENTUCKY

**First Annual Meeting on Mental Hygiene**—The Kentucky Mental Hygiene Association held its first annual meeting in Louisville on November 19. On September 25 the society held the first statewide mental hygiene meeting in Kentucky, also in Louisville, at which Dr Edward I. Linds, associate professor of psychiatry, University of Louisville School of Medicine discussed a general mental hygiene program and emphasized the importance of public and private organizations working together and the collaboration between educational, professional and religious groups. Other speakers on the program included W. A. Frost, state commissioner of welfare; Dr S. Spriford Ackerly, director of the mental hygiene clinic, Louisville; Dr Addie M. Lyon, Frankfort, director of the state division of hospitals and mental hygiene; and Dr Isham Kimbrell, superintendent of the Central State Hospital, Frankfort. Rev. George J. O'Brien, chaplain of St. Joseph Hospital, Lexington, is president of the state mental hygiene association. Since the organization of the state group, seven counties have already become represented in its membership. Fayette County has organized the first county unit with headquarters in Lexington. Jefferson County, which has the largest population of any Kentucky county, has a representation of 23 members who contemplate early organization of a unit in Louisville. The Kentucky Mental Hygiene Association was organized in response to a request made by Dr Lyon in his address before the Kentucky Psychiatric Association in Louisville in January 1942 in which he emphasized the need for a mental hygiene association that would extend into every section of the state with a program that could be adapted to the needs and resources of the varying communities. Membership in the association is composed of lay and professional persons who are interested in promoting mental health. There are three classifications of members: active members who pay an annual membership fee of \$1.50 (50 cents of which is returned to the county unit), patron members who contribute \$100 or more, and honorary membership conferred by a two thirds vote of the membership. All members enrolling within the first twelve months are charter members.

### MARYLAND

**Fifty Years of Medicine at Johns Hopkins**—On October 2 Johns Hopkins University School of Medicine, Baltimore, observed its fiftieth anniversary. In view of the war no formal exercises were held to celebrate the event, instead a booklet was published and distributed to graduates and friends of the school as a memento of the occasion. The booklet contains a brief account of the founding of the school and its achievements during the last fifty years and photographs of illustrious physicians and scientists present and former members of the staff, who participated in the school's progress. It discusses the development of the various departments individually and the scope of the school as a whole, pointing out that the opening of the medical school marked a new departure in medical education in America because it was the first medical school in this country to open with all its professors in the preclinical branches on a full time or university basis.

### MICHIGAN

**University Awards Kellogg Prize**—Dr Henry E. C. Everett, a member of the 1943 graduating class, University of Michigan Medical School, Ann Arbor, was recently presented with the Kellogg Medical Prize for highest scholastic achievement. Dr Everett will serve his internship at the City Hospital, Cleveland.

**Physicians Required at High School Football Games**—The Detroit Board of Education requests attendance of a physician at every high school football game. Compensation has been provided and a schedule has been set up. The need for physicians at these games was published in the form of a request in the *Detroit Medical News*.

**Special Meeting to Discuss Wagner-Murray-Dingell Bill**—The Wayne County Medical Society has called a special meeting for November 29 to discuss the Wagner-Murray-Dingell legislation. The students of Wayne University College of Medicine, Detroit, have been invited to attend the meeting as well as intern and resident staffs of local hospitals.

**State Medical Board Changes**—Dr Elmer W. Schnoor, Grand Rapids, was elected president of the Michigan State Board of Registration in Medicine for a third term at an annual meeting of the board in Lansing. Dr David C. Eisele, Ironwood, has been named a member of the board to succeed Dr Andrew C. Roche, Calumet, for a four year term expiring Sept. 30, 1947.

## NEW JERSEY

**Emergency Hospital Unit Created**—The second public health unit in the program to organize affiliated hospital units of the Emergency Medical Service of the U. S. Office of Civilian Defense was established at the Newark Beth Israel Hospital recently. The first unit was created in the Albany Hospital, Albany, N. Y. The project is under the auspice of the U. S. Public Health Service and covers the activation of physicians, nurses, dentists, and other health workers for the armed forces, and for the treatment of civilians in time of war or in case the flow of medical aid from the various theaters of war overtaxes the regular civilian hospital. Under the plan the participating hospitals are organized into units of the U. S. Public Health Service.

## NEW YORK

**Personal**—Dr. Jacob G. Klump, president of the Winthrop Hospital, Long Beach, Cal., received the Distinguished Service Award from the Philadelphia College of Podiatric Medicine in recognition of his "distinguished service to the medical community."

**Graduate Lecture**—The State Medical Society and the state department of health sponsored a lecture on "Rheumatic Fever" by Dr. H. D. Jones, Jr., before the Jefferson County Medical Society, Westcott, November 11. The lecture was given by Dr. Jones, Jr., professor of clinical medicine, Syracuse University College of Medicine, Syracuse.

## New York City

**Course in Occupational Dermatoses**—A lecture course on occupational dermatoses will be held at the New York Academy of Medicine, December 11, under the auspices of the dermatoses investigations division of industrial hygiene, National Institute of Health, Public Health Service. Dr. S. J. Freed, medical director, U. S. P. H. S., chief of the division of dermatoses investigation, and the following members of his staff will deliver the lectures: Samuel M. Peck, senior surgeon; John L. Dunn, Jr., surgeon; James Q. Gint, Jr., surgeon; and Howard S. Mason, associate chemist. James G. Townsend, medical director, chief of the division of industrial hygiene, National Institute of Health will deliver the opening address. All are of the U. S. P. H. S.

**Lectures to the Public**—The New York Academy of Medicine started its ninth series of lectures to the public on November 18 with the presentation of the Lusk R. Williams Memorial Lecture by Sir Gerald Campbell, British minister and special assistant to the British ambassador, on "Effect of Science on Human Bombs." Other lectures in the series are:

- Lieut. Col. Howard T. Mackie, M. C., A. U. S., Epidemics and War, December 14.
- Charles Glen Kim, Ph.D., New York, The Ninety Fourth Anniversary of the New York Academy of Medicine Food and Civilization, January 27.
- Dr. Reinhold Fitz, Boston, Medicine and the Changing World, February 24.
- Dr. Colin M. MacLeod, New York, The Past Present and Future of Chemotherapy, March 23.
- Dr. Edward A. Stricker, Philadelphia, the George R. Siedenburg Memorial Lecture, How We Averted the Rule of King Mob, April 27.

**Clement Cleveland Award Goes to Frederick Hoffman**—On November 2 the Clement Cleveland Award for 1943 was awarded in absentia to Frederick L. Hoffman, LL.D., San Diego, for many years consulting statistician and a third vice president for the Prudential Life Insurance Company, Newark, N. J. The medal, which is presented for "outstanding service in the cause of cancer control," was received for Dr. Hoffman by Dr. Howard C. Taylor, who in his acceptance address stemmed the beginning of the national society to a paper read by Dr. Hoffman on May 7, 1913 at a meeting of the American Gynecological Society. An exhibit at the meeting also credits Dr. Hoffman with the development of this movement. The annual dinner of the New York Cancer Committee was given this year in honor of the founders of the American Society for the Control of Cancer. The speakers included Clarence C. Little, Sc.D., managing director, who reviewed the national organization's history.

**New City Division of Nutrition**—The New York City Department of Health has created a new division of nutrition and appointed eight nutritionists to supervise the intensified nutritional program of the health department which has been necessitated by the war and current food shortages. Mrs. Gertrude Gates Mudge has been named supervising nutritionist. According to Dr. Ernest L. Stebbins, city health commissioner, one of the projects to be conducted will be the development of a staff education program for physicians and nurses in the health department. Specialized nutrition instruction will be provided with emphasis on timely food information which the

physicians and public health nurses can pass on to their patients and to persons with whom they come in contact during their professional visits. Working through the health department's district health centers, the nutritionists will also cooperate with public and private social and welfare agencies and the New York City food and nutrition program in the development of neighborhood programs throughout the city.

## OHIO

**One Hundred Years of Medicine**—The Cleveland Health Museum has given over its entire second floor to an exhibit reviewing the last hundred years of medicine in Cleveland as a part of the centennial celebration of Western Reserve University School of Medicine. Dr. Howard Dittick, director of the museum of historical medicine of the Cleveland Medical Library Association, is in charge of the display. Instruments, books, etc. bills and documents of the country doctor of a hundred years ago feature the exhibit. A preview was held on October 26 under the sponsorship of the Western Reserve Historical Society, the Museum of Historical Medicine of the Cleveland Medical Library Association and the Cleveland Health Museum. Chauncey D. Leake, Ph.D., dean of the University of Texas Medical Branch, Galveston, spoke on "Milestones in Medicine." The office of a Cleveland doctor, Abner Webb, 1846, is reconstructed with the help of old letters and prints and with many of his own furnishings. A news item announcing the centennial program appeared in THE JOURNAL, October 16, page 430.

## OKLAHOMA

**Portrait of Dr. Garabedian**—A portrait of the late Dr. G. A. Z. Garabedian has been presented to the Tulsa County Medical Library by Mrs. Garabedian. The work was executed by Diane Travis and recently was hung at Hillcrest Hospital. An endowment fund bearing the name of the late physician was established shortly after his death in 1938 by Mrs. Garabedian.

**The Annual Leroy Long Lecture**—Dr. Harry L. Alexander, professor of clinical medicine, Washington University School of Medicine, St. Louis, presented the fourth annual Leroy Long Memorial Lecture at the University of Oklahoma School of Medicine, Oklahoma City, recently on "The Present Status of Chemotherapy in the Treatment of Diseases." The lecture is sponsored by the alumni and undergraduates of Phi Beta Kappa as a memorial to the late Dr. Leroy Long, Oklahoma City, dean of the medical school from 1915 to 1931.

## OREGON

**Meeting on Poliomyelitis**—The University of Oregon Medical School, Portland, and the Multnomah County Chapter for Infantile Paralysis recently held a symposium on the newer concepts of the management of poliomyelitis. The course was designed to help in handling existing cases. Only basic data were presented. Speakers included Mr. E. T. Hedlund, postmaster, and Drs. Adolph Weinzierl, Paul V. Woolley, Jr., Lawrence Noall and Lewis D. Clark.

## PENNSYLVANIA

**Physician Observes Ninety-Third Birthday**—Dr. George B. Woods, Washington, celebrated his ninety-third birthday, September 7. For the past sixty-nine years Dr. Woods has practiced in Washington County and for more than thirty years has been physician to the Washington County Home and Poor Farm, a position he still holds, having given up all other practice.

**State Psychiatric Meeting**—Dr. George W. Smeltz, Pittsburgh, was named president-elect of the Pennsylvania Psychiatric Society at its fifth annual dinner meeting in Philadelphia, October 7, and Dr. Ralph L. Hill, Wernersville, was installed as president. Dr. Le Roy M. A. Maeder, 206 South 13th Street, Philadelphia 7, is the secretary-treasurer. Speakers included Mr. John Corcoran, radio commentator and writer, who discussed "Today," and Dr. Oliver Spurgeon English, Philadelphia, "The Referral Center for Selective Service in Philadelphia."

## Philadelphia

**The Pancoast Lecture**—Dr. Dallas B. Phemister, Thomas D. Jones professor of surgery, University of Chicago School of Medicine, delivered the annual Pancoast Lecture of the Philadelphia Roentgen Ray Society, November 4, on "Disturbances Arising from Interruption of Circulation in the Skeletal System." The lectureship was established in 1941 in honor of the late Dr. Henry K. Pancoast professor of radiology at the University of Pennsylvania School of Medicine.

**Trust Fund for Needy Patients Established**—William H. Donner, retired industrialist, has given a \$400,000 trust fund to the University of Pennsylvania to establish the Donner Fund for Needy Patients. The income from the fund will be used to extend to needy patients special facilities additional to those normally supplied by the hospital. Part of the income may be used for assistance in clinical research problems and for special experiments in those aspects of hospital administration that have to do principally with the welfare of patients. Surveys may be conducted, investigations of routine practices made and further special training of personnel undertaken, including grants to graduate fellows in nursing, and, for trial periods, new administrative procedures that have direct bearing on the welfare of the patients may be developed. The specific objective of the fund is to assist needy patients who require extraordinary services not usually supplied by a hospital. Mr. Donner gave \$2,000,000 in 1932 to found the International Cancer Research Foundation, Philadelphia.

**Professorship of Medicine to Be Created**—The Frank Wister Thomas Professorship of Medicine is to be established at the University of Pennsylvania School of Medicine under the will of Mrs. Maria G. B. Thomas of Philadelphia, who died on September 15 according to the *Pennsylvania Medical Journal*. The professorship will be a memorial to Mrs. Thomas's husband Dr. Frank W. Thomas who died on Jan. 19, 1928. According to the will, most of the \$200,000 estate is left ultimately to create the new chair. The residue is bequeathed to the university toward the endowment, and trust funds amounting to \$50,000 will be added to it as the beneficiaries die, until \$200,000 is accumulated. The holder of the professorship shall be the person who is recognized by the trustees as the head or chief professor of medicine at the medical school. If the endowment exceeds the amount necessary to establish the professorship or if the chair becomes temporarily vacant one or more temporary Frank Wister Thomas fellowships in medicine are to be set up. Any excess over the \$200,000 limit fixed for the professorship is bequeathed to Germantown Dispensary and Hospital.

## SOUTH CAROLINA

**State Venereal Hospitals to Be Relocated**—Relocation of two of the state's three venereal disease hospitals to place all closer to Columbia was announced in newspaper reports recently. The Pontiac quarantine hospital for white women will be moved to Camp Victory, about 12 miles from Columbia and the hospital for Negro women at Goldville will be moved to the old Pontiac site. The third hospital at the state prison for women will remain unchanged. The move was to be made during October.

## TENNESSEE

**Memorial Health Unit Established**—Dr. Warren C. Ramer, Lexington, has been placed in charge of the Blanche Bomer Morgan Memorial Health unit in Haywood County dividing his time between this unit and those in Lauderdale and Tipton counties. The Blanche Bomer Memorial Unit was established in Brownsville through the offer of L. W. Morgan to contribute \$2,000 a year for a period of five years in memory of the late Mrs. Morgan, who had been interested in health education particularly the campaign against tuberculosis. The unit's first public function was a tuberculosis clinic.

## VIRGINIA

**Graduate Course**—The Virginia Society of Ophthalmology and Otolaryngology will sponsor its tenth annual postgraduate course December 7-10 in the Burch Auditorium of the Medical College of Virginia, Richmond. Among the speakers will be Drs. Oscar V. Batson, Philadelphia, Leroy A. Schall, Boston, Henry B. Orton, Newark, N. J., Warren T. Vaughan, Richmond, John A. Kolmer, Philadelphia, Ferris Smith, Grand Rapids, Mich., John J. Shea, Memphis, Tenn., Edmund B. Spruth, Philadelphia, Peter C. Kronfeld, Chicago, Algernon B. Reese, New York, Ramon Castroviejo, New York, and Theodore L. Terry, Boston.

**State Hospital Physicians Win Research Awards**—First prize of \$225 in the annual competition inaugurated early this year by the Virginia State Hospital Board went to Drs. Isadore S. Weiss and Walther Reese of the Eastern State Hospital, Williamsburg, for their Preliminary Report of the Study of 200 Autopsy Cases at the Eastern State Hospital with Special Emphasis on Neuropathology and Brain Tumor in Old Age. Dr. Simon Coren, Central State Hospital, Petersburg, received \$125 for his Analysis of the Negro Criminal Insane in Virginia. Dr. Vincent L. Lascara, Central State Hospital, received

\$50 for his work on "Neurosyphilis with a Two Year Observation of the Comparative Therapeutic Effects of Inoculation with Malaria and Artificial Fever Therapy." The state hospital board made the awards at its October 14 meeting. The prize winners were rated according to their merit by Dr. Winfred Overholser, St. Elizabeths Hospital, Washington, D. C. Early this year the state hospital board arranged to make financial prizes available annually to stimulate interest in professional work among physicians on the staffs of the state hospitals exclusive of the superintendents. The prizes are given for original or meritorious papers, based preferably on observations of patients under the physicians' care (11th January, February 27, p. 693). The competitive papers need not necessarily deal entirely with the clinical or laboratory features but may cover reclassification and deductions that have not heretofore been made.

**Seaboard Medical Association Meeting**—The forty-eighth annual session of the Seaboard Medical Association of Virginia and North Carolina will be held at Richmond, Va., November 30 to December 2, with headquarters at the Jefferson Hotel, under the presidency of Dr. Charles Lydon Harrell, Norfolk, Va. A preliminary program includes, as speakers, Gov. Colgate W. Darden Jr., Richmond and the following:

Ben Jones, American Red Cross Camp Lee, Va. Red Cross Activities at Home and Abroad.  
Dr. Antonio A. Burke, Norfolk. Remarks on Nasal Sinus Disease.  
Dr. Vernon D. Offutt, Kingston, N. C. Diagnosis and Treatment of Virus Pneumonia.  
Dr. Eugene J. Townsberg, Norfolk. Icterus and Dermatitis of the Temple (Gentilia).  
Drs. Keith S. Grimson and Gammel B. Hodge, Durham. Intestinal Obstruction.  
Dr. Jacques P. Gray, Richmond. Medical Education in Wartime.  
Dr. Malory A. Pittman, Wilson, N. C. Penicillin in the Treatment of Osteomyelitis and Other Inflammations.  
Dr. Donnell B. Cobb, Goldsboro, N. C. Simple Method of Fracture Fixation.  
Dr. James Morrison Hutcheson, Richmond. Medicolegal Aspects of Coronary Thrombosis.  
Dr. Randolph B. Crumrine Jr., Norfolk. Skin Manifestations of Sulfathiazole Intoxication.  
Drs. Russell V. I. Buxton, Waverly, R. Payne and Morris B. Bleckroft, Newport News, Va. False Negative Results in the Aschheim-Zondek Test.  
Dr. Harry Hudnall Ware Jr., Richmond. Fetaloc Pregnancy.  
Dr. Charles J. Andrews, Norfolk. The Maternal Mortality Situation.

The meeting will also include a symposium on "Diarrhea" with the following members of the faculty of the Medical College of Virginia, Richmond, as speakers: Drs. John H. Scherer on "Bacillary Dysentery Amebiasis," Lee E. Sutton Jr. "Acute Gastroenteritis in Children," Thomas Dewey Davis, "Diarrhea Associated with Organic Disease of the Colon," and Maxwell Berry Jr., "Diarrhea Associated with Functional Diseases."

## WEST VIRGINIA

**Personal**—Dr. Walter E. Vest, Huntington, was reelected president for a fourth term of the public health council of West Virginia at its meeting in Charleston, October 26. Dr. Vest has served continuously as president of the council since 1935.—E. J. Hall, Buckhannon, educator, has been named as educational consultant in venereal diseases in the state department of health.

**Appointments as Health Officers**—Dr. James E. Coleman, Fayetteville, has been appointed by the public health council as full time health officer of Fayette County. The council also appointed the following physicians, among others, as part time health officers:

Dr. Harry K. Owens, Elkins.  
Dr. James K. Pichens, Jaeger.  
Dr. Roscoe Stotts, Kenova.  
Dr. Bayard L. Liggett, Mill Creek.  
Dr. James A. Newcome, Keyser, Mineral County.  
Dr. Ona F. Mitchell, Franklin, Pendleton County.

**Venereal Treatment Center**—A medical center for the treatment of venereal diseases will be opened in an abandoned National Youth Administration training center, South Charleston, to accommodate about 350 patients. A medical clinic with 35 beds will be attached and facilities for a limited amount of occupational training will be provided. Funds for the transportation, hospitalization and treatment of patients will be provided by the U. S. Public Health Service which will also provide a medical staff for the institution. Under the provisions of an act passed at the 1943 session of the West Virginia legislature local health officers are authorized to commit to the institution persons who refuse to submit to treatment in their local communities but admission will also be authorized on a voluntary basis. The so called fast treatment will be used at the center, consisting of a maximum of thirty days for syphilis and fifteen days for gonorrhea.



ence in Medical Schools of A S T (Army) and V12S (Naval) Programs in Particular" and Dr Roscoe R Spencer, chief, National Cancer Institute, Bethesda, Md., "Social and Economic Factors as They Influence Disease Production and Health Promotion." A round table on objectives and methods in the teaching of preventive medicine and public health was also held. The Conference of Professors of Preventive Medicine was organized in St. Louis, Oct 30, 1942. It is an informal organization of the men and women who teach preventive medicine in the approved schools of the United States and Canada and aims to promote the better teaching of the specialty through the bringing together of those who do the teaching and the discussion of problems which arise in that teaching. Dr Wilson G Smilie, New York, is president and Dr Parr secretary.

### CANADA

**Institute of Psychiatry Created at McGill**—The Allan Memorial Institute of Psychiatry has been established at McGill University, Montreal, Quebec. The new institute, a 50 bed hospital which will become the teaching center of a newly organized department of psychiatry in the university's medical school, will be housed in "Ravenscrag" formerly the home of Sir H Montagu and Lady Allan, who presented it to the Royal Victoria Hospital, Montreal. The accommodations will be for patients suffering from early and acute psychiatric conditions. Facilities for intensive treatment are being set up. The project will include laboratories to accommodate the development of research and treatment which are the principal objectives. According to the *American Journal of Psychiatry*, the Rockefeller Foundation has made a grant of \$150,000 over an initial five year period to develop the teaching and research facilities of the institute. The provincial government of Quebec has authorized an annual appropriation of \$30,000 for twenty years for hospital maintenance costs, and Montreal citizens have contributed to the project. Dr D Ewen Cameron, professor of neurology and psychiatry and director of the department at the Albany Medical College, Albany, N. Y., has been named in charge of the new department at McGill University. Faculty of Medicine serving as the first full professor of psychiatry there and psychiatrist in chief to the Royal Victoria Hospital. He will also be director of the new institute. Dr Cameron was born in Bridge of Allen, Scotland, in 1901. He received his medical degree at the University of Glasgow in 1924. He served on the psychiatry staff of the Johns Hopkins Hospital, Baltimore, from 1926 to 1928, teaching during the latter year as an instructor in psychiatry at the medical school. Subsequently he served at the Burgholzli, Zurich, and at the Brandon Hospital for Mental Diseases, Brandon, Manitoba, returning in 1936 to become senior research psychiatrist for the Foundation of Neuro-Endocrine Research at the Worcester State Hospital, Mass. In 1938 he went to Albany Medical College.

### LATIN AMERICA

**Health Activities in Latin America**—The development of a quinine project is rapidly going forward in Colombia and providing work for hundreds of workers. The discovery of these quinine bearing trees dates back prior to 1878, when Jose Triana, a Colombian botanist through his researches discovered these trees in the Bucaramanga area. A paper written by him was subsequently published in a French journal. A commission in 1917 made investigations, but steps were not taken to develop the quinine found there. In 1942 a commission sponsored by the U S Board of Economic Warfare, in collaboration with agencies of the other American republics, sent a mission to Colombia in its program to discover additional hemisphere sources of quinine. It found a stand of trees extending over 700,000 acres just as Triana reported in his article more than fifty years ago.

**Tuberculosis Control**—Antituberculosis vaccine has been employed successfully for the first time in Colombia with serum donated by the republic of Venezuela. According to the Newsletter of the Health and Sanitation Division, Dr Edmundo Medina, chief of the department of epidemiology, administered the vaccine for the first time in Bogota to 10 infants at the Maternity Hospital. In Ecuador four of the six pavilions originally planned for the tuberculosis hospital in Guayaquil are now finished, except for a few details.

**Typhus Fever Mort**—Serious outbreaks of typhus were reported during July near Cobán, Quezaltenango, Totonicapán, Solotlán and Tecpan. During 1942 89 cases of the disease were reported by the U S Public Health Service in Colombia. Surveys conducted by a combined U S Military and Naval Commission formed in 1942 to study typhus show that the

disease was present in Bolivia, Chile, Colombia, Ecuador, El Salvador, Guatemala, Mexico, Panama, Peru and Venezuela. Complement fixation tests have proved its presence in Bolivia, Colombia, Ecuador, El Salvador, Guatemala and Peru.

**Personal**—Dr Thomas B. Phinney, formerly commissioner of public health for Richmond County, Arkansas, is chief of the new field party in the Dominican Republic. Dr David Glusker, Yonkers, N. Y., is the new chief of party in Costa Rica. A plaque was unveiled in the Faculty of Medicine of the University of Mexico, July 13, in honor of Dr Gonzalo Castañeda, first president of the Mexican Academy of Surgery, who has completed fifty years in the practice of medicine.

**New Construction**—A new hospital on the grounds of the Getulio Vargas Hospital at Alagadico in Fortaleza, Brazil, was recently completed. Dr Jose Borges de Sales is chief medical officer. The government of Guatemala has approved the construction of a three story 300 bed general hospital to be built on the site of the former "Luperón" in Guatemala City.

**Society News**—The conference of sanitary engineers on inter-American service and public health presided over by Dr Eugene P. Campbell, regional director for Central America and Panama, was held in Managua, October 11-14. The first Pan American Physical Education Congress was held in Rio de Janeiro, Brazil, July 19-31. The congress was set up on a permanent basis with a secretary in Peru under the auspices of the department of physical education of Peru. It was agreed to hold the next congress in Mexico City in 1945 according to the *Child*. Prof. A. M. Barriga Villalba has been elected president of the recently established Sociedad de Biología. Other officers include Prof. Jose Ignacio Chela and Kaiman Mezey, vice presidents, Dr Luis Maria Murillo, treasurer, and Prof. J. Hernando Ordoñez, general secretary. The official journal of the new group is *Anales*, the first number of which recently made its appearance.

### FOREIGN

**Institute for Typhus Research**—The *British Medical Journal* reports that an institute for typhus research named after Emil A. von Behring, German bacteriologist, 1854-1917, has recently been opened in Lemberg. The journal announces also that a special typhus institute has been created in Dresden for the "wholesale" preparation of typhus vaccine.

**American Award Goes to British Scientist**—The Grocery Manufacturers of America has given its 1943 annual award to Sir John Boyd Orr, LL.D., director of the Rowett Research Institute, Aberdeen, who, according to *Science*, was largely responsible for improving the nutritive quality of the English diet in the face of wartime food shortages. The presentation ceremony was broadcast on November 4 over a two way transatlantic hookup by the Blue Network at a meeting of the association in New York. Sir John accepted the award over the air from England. He is a member of the advisory committee on nutrition of the Ministry of Health.

**International University Sanatorium Proposed**—Plans are under way to establish an International University Sanatorium in Switzerland under the auspices of international student organizations, the International Union Against Tuberculosis, the League of Red Cross Societies, the International Committee for Intellectual Cooperation and the European Rotary. Half a million Swiss francs have already been granted by the Swiss government to the project. The subscription of "founders' shares" at 25,000 Swiss francs each is now available, entitling subscribers to permanent ownership to one of the beds and membership in the governing body. A recent announcement indicated that 40 of the proposed 208 beds have been taken and that construction will start as soon as 100 shares have been subscribed. The idea for the institution stemmed from the success of the Swiss University Sanatorium in Leysin in the Vaudois Alps, which was opened in 1922 as a place where professors and students afflicted with tuberculosis could obtain the necessary treatment and carry on with some of their studies as well. Dr Louis Vautier, director, is the original sponsor of the project which was supported by the Swiss universities and the Swiss Federal School of Technology.

### CORRECTION

**Evaluation of Albuminuria**—In paragraph 3 of the directions for determining the significance of albuminuria in selections in the communication by Drs Derow and Stellar in *THE JOURNAL*, October 23, page 503, the word "supine" should have been used instead of "prone".



## Foreign Letters

## LONDON

(Continued from page 763)

Oct. 2, 1943

## The Beveridge Plan

At the conference of the British Medical Association the Beveridge plan for 1942-43 was discussed. It was decided that a committee should be appointed to study the plan and to report to the association. The committee was appointed on Oct. 1, 1943. The plan is a comprehensive one, covering all aspects of medical service. It is based on the principle that medical service should be available to all who need it, but that it is unnecessary for the state to provide for those who are willing and able to provide for themselves. The plan is a result of discussions carried on with the Ministry of Health for four months. There was reason to believe that the Ministry's view had been greatly modified and were more likely to meet the approval of the profession.

The following resolution was carried by 200 votes to 10: That in the opinion of the representative body the creating of a full time salaried state medical service is not in the best interests of the community. A resolution to the effect that a comprehensive medical service should be available to all who need it but that it is unnecessary for the state to provide for those who are willing and able to provide for themselves, was carried by 149 votes to 37.

A number of principles recommended by the committee which represented the medical profession in the conference with the Minister of Health were adopted. They included the following:

1. The system of medical service should be directed toward the achievement of positive health and the prevention of disease no less than toward the relief of sickness.
2. There should be available for every individual the services of a general practitioner or a family doctor of his own choice. Consultants, specialists and all necessary auxiliary services should be available normally through the family doctor.
3. The health of the people depends primarily on environmental conditions, such as adequate nutrition and security from fear and want. Improvement of means to satisfy these needs should precede or accompany any future organization of health services.
4. It is not in the public interest that the state should convert the medical profession into a salaried branch of central or local government service.

## Laboratory Control of Enteric Fevers

At a meeting of the Fever Hospital Medical Service Group of the Society of Medical Officers of Health, Dr. A. Felix opened a discussion on recent advances in the laboratory control of typhoid and paratyphoid fevers. He referred to the finding of C. G. and Yen in 1938 that strains of the typhoid bacillus could be divided into types by their sensitiveness to specifically adapted anti-V<sub>1</sub> bacteriophages. The results were as reliable as those obtained in streptococcal or pneumococcal infections with the established serologic tests. More recently

Felix and C. G. had found that the bacteriophage technic could be applied to strains of the paratyphoid B bacillus. Anti-V<sub>1</sub> phages of *Salmonella paratyphi* B could be adapted to develop a high degree of specificity for particular strains. So far, four different V<sub>1</sub> phage types of *S. paratyphi* B had been identified and more than 90 per cent of the strains isolated from patients and carriers in Britain during the past three years were found to belong to those four types. The new typing method was found to be an indispensable laboratory aid to investigation of sporadic cases or outbreaks of typhoid and paratyphoid fever. The detection of a chronic carrier was usually difficult, though the methods of isolating the bacilli had been greatly improved by the introduction of refined culture mediums. In all our recent outbreaks of paratyphoid B fever those responsible for spreading the infection were temporary excretors. The true culprits were the chronic carriers, and they escaped detection. The test it was reported, could be used to detect chronic carriers among recovered patients who otherwise might be discharged from the hospital because they excreted bacilli intermittently. A decreasing V<sub>1</sub> titer would indicate temporary excretion, a steady or rising one a possible carrier state.

## Reform in the Training of Psychiatrists

The means provided for the training of psychiatrists are felt to be unsatisfactory at present. In only a few of the medical schools is the student given a proper introduction to the subject and the standard for the diploma in psychologic medicine is low in general. To remedy this condition a committee presided over by Sir Walter Langdon-Brown has drawn up a program which has been published. The committee considers that graduates of one year should not be allowed, as at present, to emerge as fully equipped specialists. Four years' postgraduate training is recommended as the minimum for the diploma. Also the aspirant should not rush straight from medical school into specialized training but should first obtain experience in general medicine for at least one year in hospital or general practice. The committee further recognizes that for full understanding of psychiatry a year or two should be spent in close contact with mental disorders in their worst forms. The creation of psychiatric clinics in general hospitals, valuable as it is, does not remove the need for residence in a mental hospital as part of the psychiatrist's training, the committee feels. The ideal training should include both.

## Rehabilitation of the Amputated

Members of the Allied Ex-Service Men's Provisional Committee, drawn from fourteen countries, recently paid a visit of inspection to Roehampton Hospital, the great center for supplying artificial limbs. During this war 2,330 amputations resulting from enemy action and comprising service patients and civilian men, women and children have been dealt with. The visitors met a 14 year boy from Malta whose legs had both been amputated after an air raid. He was wheeling himself in a chair and had just been swimming. He had arrived in the last month to be fitted with artificial limbs. The wonderful work for the limbless done at Roehampton involves rehabilitation on the mental no less than on the physical plane. A gunner sergeant who lost his right arm above the elbow in Libya eighteen months ago wheeled a heavy barrow and then wielded a pick vigorously to break up a lump of concrete. An instructor who lost his left arm below the elbow showed how, with special appliances, he can use that arm to saw, drive nails and handle a plane. A young girl with an artificial leg the consequence of a German bomb, mounted, rode and dismounted from a bicycle with every appearance of naturalness. Another cyclist, a man, had two artificial legs. He not only rides considerable distances but, like others among the ex-patients, stands long hours at a bench every day.

## BUENOS AIRES

(From Our Regular Correspondent)

Oct. 1, 1943

## The Heart in Emphysema

The Brazilian Academy of Medicine recently awarded its international prize to Drs Elyser Magalhães, Egídio S Mazzei and Jorge M Remolar, all of Buenos Aires, for their report of a clinical and experimental study on the heart in emphysema. The authors carried on their work in the Instituto de Investigaciones Aplicadas a la Patología Humana of the National Academy of Medicine of Buenos Aires. They found that the conflicting opinions previously given by several authors on the clinical effects on the heart during the course of emphysema were due to lack of differentiation of the circulatory changes caused by the bronchogenic and thoracogenic types of emphysema. Bronchogenic emphysema is the cause of chronic pulmonary heart disease, from which congestive cardiac insufficiency develops. Thoracogenic emphysema causes cardiac disorders which mainly result from coronary sclerosis.

The authors proved the interpretation of their clinical and anatomic studies by experiments on dogs. Electrocardiograms of patients with bronchogenic emphysema show preponderance of the right half of the heart and pulmonary P wave, whereas those of patients with thoracogenic emphysema show the changes proper in coronary insufficiency. Special attention is given by the authors to reports on the subject in the American literature, mainly those of Korentz and Alexander, Christie, McIntosh and Paine.

## Bullous Emphysema Caused by Bronchial Tumors

Drs M R Castex, E S Mazzei and J M Remolar of the Instituto de Investigaciones Físicas Aplicadas a la Patología Humana have reported the results of their investigations on the production of bullous emphysema by bronchial tumors. A certain number of bronchial tumors, as a result of a valvular obstruction of the bronchus, lead to the production of areas of bullous emphysema. This is often the earliest radiologic sign of the bronchial neoplasm and gives a clue to the diagnosis of some cases of bronchial tumors before any shadow is visible by x ray.

## Health of the Argentine Army

The minister of war recently presented a report in which he stated that the health of the Argentine army is extremely good. The morbidity of infections and contagious diseases is negligible. The morbidity of epidemic parotiditis is 2 per thousand and that of measles, diphtheria, pneumonia and rheumatic fever is 1 per thousand. Cases of typhoid and malaria are rare. Army examinations of soldiers for tuberculosis are performed frequently.

Special mention of venereal disease does not appear in the report. Success in preventing infections and the good health of soldiers are attributed to the prophylactic measures used in the army: good food and proper hygiene.

## Food of Argentine Soldiers

The minister of war recently reported on the rations of soldiers which are based on the cost of living in the different regions of the country. The higher ration allowances are given to soldiers in the southern region. In all regions the daily menu has the proper nutritional value and is well selected and varied during the week. Army physicians are consulted in connection with nutritional values in the preparation of the various diets. Good meat of all kinds, milk, bread, vegetables, cheese, fruits, rice, sugar and other good foods are given in abundance to soldiers. The kitchens and dining rooms of all quarters are modern and large and have proper lighting and ventilation.

## Partial Hepatectomy and Pregnancy

Drs Erico Fels and I de Landa have reported to the Argentine Society of Biology on the effect of partial hepatectomy in animals on the course of pregnancy. They concluded that extirpation of one third of the liver does not prevent the normal course of pregnancy, while the excision of one half or more of the structure is followed by immediate termination of pregnancy. Nine days after removal of half of the liver, pregnancy can again occur and proceed normally, owing to the liver's remarkable power of regeneration. Administration of deoxycorticosterone or progesterone had no effect on the results.

## Public Health in Paraguay

Public health in Paraguay has recently shown improvement. The Department of Hygiene has increased its work, especially in epidemiology. The campaigns against schistosomiasis, trichinosis, malaria, typhoid and smallpox have been intensified. A division for prevention and therapy of venereal diseases was recently established, with clinics and dispensaries for free medical care and drugs. Medical centers are to be constructed with a sum of \$1,000,000 that the government of the United States allotted to the country through the Inter-American Department of Public Health. The project will include buildings for all the various activities of public health, a central pharmacy, the Department of Hygiene and branch offices of the Department of Public Health, a sanatorium for tuberculous patients and a leprosarium. Several hospitals are to be enlarged and improved.

## Physicians in Paraguay

According to the 1942 statistics published by the Ministry of Public Health of Paraguay, there are in Paraguay 229 physicians, 73 dentists, 198 pharmacists, 7 chemists and 47 midwives.

## Physicians in Uruguay

The number of physicians in Uruguay is estimated in a recent statistical survey to be 1,635, 1 for each 1,346 persons. There are 1,177 physicians in Montevideo, 1 for each 595 persons, and outside the capital there are 458 physicians, 1 for each 3,275 inhabitants.

## Poliomyelitis in Chile

In a study of infantile paralysis in Chile, Dr Agustín Inostroza reported that only 99 cases were observed in a period of five years (1937-1941). Eighty-four of the cases occurred in children under 2 years of age, only 1 case occurred in the age group from 5 to 10 years. No case was observed in persons above 10 years of age. Of the 99 cases reported, 98 presented motor disturbances in the lower extremities, and in 11 cases the paralysis also involved the upper extremities. In one third of the cases the paralysis was bilateral.

## Marriages

- THOMAS GRIGSBY HERBERT JR, Charleston, S C, to Miss Miriam Pope of Dade City, Fla, in Jacksonville, Fla, July 23.  
ROBERT JOHN FLOODY, Nutley, N J, to Miss Victoria Lillian Stanbury of Campbellford, Ont, Canada, in September.  
ROBERT JAMES ALLEN, Elizabethton, Tenn, to Miss Jeanette Merck of Gainesville, Ga, in Rossville, Ga, recently.  
THEODORE JACKSON BENDER JR, Mobile, Ala, to Miss Agnes Gavin of Memphis, Tenn, September 26.  
WEIR MITCHELL TUCKER, Richmond, Va, to Miss Linden Crawford of Rosemont, Pa, October 2.  
WILLIAM HUGHES EVANS to Mrs Elizabeth Miller Williams both of Richmond, Va, September 29.  
DANIEL A BRODY, Youngstown, Ohio, to Miss Barbara Ann Murray of Lorain, recently.  
GAVNEI BYRON HODGE to Miss Katie Adams, both of Durham, N C, September 22.  
JOSEPH A WALSH, Olyphant, Pa, to Miss Wynne Campbell of Baltimore, October 30.

## Deaths

Roy Dennis Halloran \* Washington, D. C. chief of the neuropsychiatry branch, Army Medical Department, died November 10 in the Walter Reed General Hospital, Washington, D. C., of coronary occlusion.

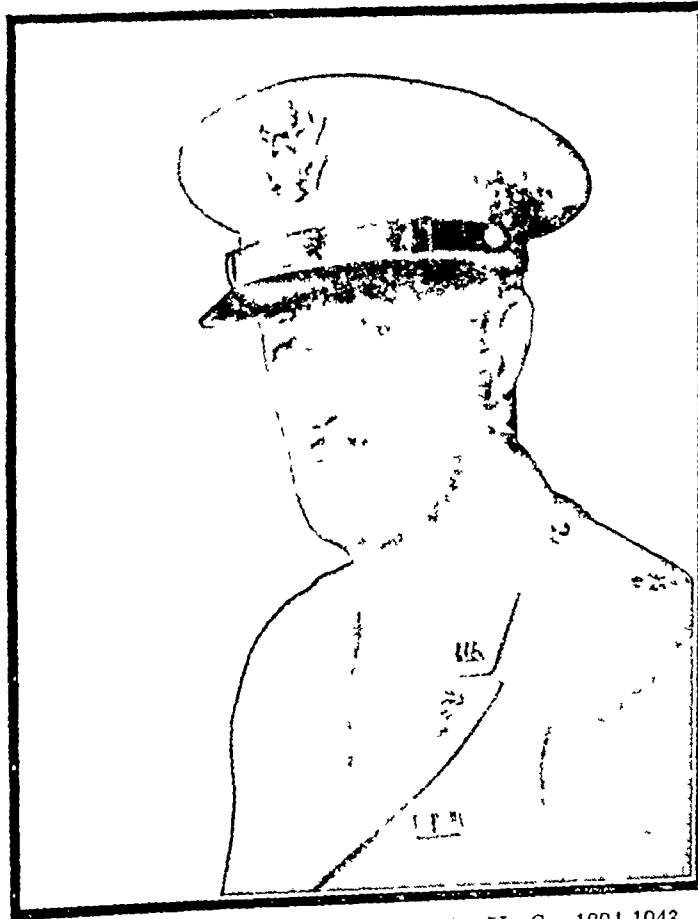
Colonel Halloran was born in Cambridge, Mass., Aug. 4, 1894. He received his bachelor of arts degree cum laude from Dartmouth College, Hanover, N. H., in 1917, then graduated at Columbia University College of Physicians and Surgeons, New York, in 1920, from his internship at the Naval Medical Hospital, Philadelphia, Pa., in 1921, in vital statistics from the Harvard School of Public Health, Boston, in 1922, and from the New Hampshire State Hospital, Concord, N. H., in 1923. He was a staff physician, senior consultant, and chief of the neuropsychiatry branch at the Naval Medical Hospital, Philadelphia, Pa., in 1921-22, and at the Naval Medical Hospital, Boston, in 1922-23. He was in the establishment of the Naval Medical Hospital, Boston, in 1923. In 1925 Colonel Halloran

Jesse Godfrey Moritz Bullowa \* New York, Columbia University College of Physicians and Surgeons, New York, 1903, clinical professor of medicine at the New York University College of Medicine at one time adjunct professor of clinical medicine at the New York Polyclinic Medical School and Hospital, specialist certified by the American Board of Internal Medicine and a member of the founders group, fellow of the American College of Physicians, New York Academy of Medicine, American Association for the Advancement of Science and the New York Academy of Sciences, member of the New York Pathological Society, Society for Experimental Biology and Medicine, American Association for the Study of Internal Secretions, National Tuberculosis Association, American Association of Immunologists and the American Trudeau Society, consulting physician to the New York Infirmary for Women and Children and the Norwalk (Conn.) General Hospital, consulting serologist to the Long Beach (N. Y.) Hospital, visiting physician, Harlem and Willard Parker hospitals, trustee of the J. J. J. Foundation, translator of Bechhold's "Colloids in Biology and Medicine," 1919, author of the "Management of the Pneumoniae, for Physicians and Medical Students," 1937, and the Beaumont Foundation lecture for 1939 "Specific Therapy of the Pneumoniae," died November 9, aged 64.

Robert Broadus Homan Sr. \* El Paso, Texas, University of Texas School of Medicine, Galveston, 1897, member of the Southwestern Medical Association and the American College of Chest Physicians, past president of the El Paso County Medical Society, formerly councilor of the First District of the Texas State Medical Association, a member of the board of directors of the Texas State Tuberculosis Association and formerly a member of the board of directors of the National Tuberculosis Association, member of the Board of Appeals, Selective Service for the El Paso district, co owner and founder of the Homan Sanatorium, which he established in 1910 and continued to operate until 1936, co owner and president of the board of directors of Southwestern General Hospital, president of the board of directors of Homan and Crimen, Incorporated, operators of the hospital associated medical director of St. Joseph's Sanatorium, a member of the staffs of Hotel Dieu, Sisters' Hospital and the

Masonic Hospital, formerly a member of the board of managers of the El Paso City-County Hospital, a charter member of the El Paso Rotary Club and formerly a director of the El Paso Chamber of Commerce, at one time member of the board of managers of *Southwestern Medicine* and associate editor of *Diseases of the Chest*, died September 6, aged 71, of arterio sclerosis and uremia.

Charles Watts Flynn, Dallas, Texas, University of Pennsylvania School of Medicine, Philadelphia, 1911, instructor in anatomy at the University of Pittsburgh, 1912-1913, associate professor of surgery at the Baylor University College of Medicine from 1914 to 1927, professor of clinical surgery from 1927 to 1930, professor of surgery from 1937 to 1941 and since the latter date emeritus professor, honorary professor of surgery at the Southwestern Medical Foundation School of Medicine, specialist certified by the American Board of Surgery, member of the State Medical Association of Texas, member and formerly vice president of the Southern Surgical Association, past president of the Texas Surgical Association, fellow of the American College of Surgeons, formerly chief surgeon at the Baylor University Hospital, visiting surgeon, St. Paul's, Methodist and the Medical Arts hospitals, died August 13, aged 59, of cerebral hemorrhage.



COL ROY D. HALLORAN, M. C., A. U. S., 1894-1943

In July 1942 Colonel Halloran was commissioned from civilian life to the rank of lieutenant colonel and assigned as consultant in neuropsychiatry in the Surgeon General's Office, Washington. A few weeks later he was named head of the neuropsychiatry branch of the Army Medical Department with the rank of colonel.

A specialist certified by the American Board of Psychiatry and Neurology, Colonel Halloran was president of the Massachusetts Occupational Therapy Association from 1939 to 1941 and served as counselor, vice president and president of the New England Society of Psychiatry. He delivered the annual oration of the Massachusetts Medical Society in 1939, serving as a member of the society's legislative committee in 1940 and as counselor in 1942. He had been assistant commissioner of mental diseases for Massachusetts from 1929 to 1933.

Colonel Halloran was the author and co-author of numerous articles on neuropsychiatry and collaborated with Paul I. Yakovlev in the preparation of volume III, *Collected Lectures of the Seventh Post-Graduate Seminars in Neurology and Psychiatry*.

"The placing of a psychiatrist with each division for the purpose of preventive psychiatry was a particular accomplishment of Colonel Halloran," Major General Norman T. Kurl, surgeon general of the army, stated in commenting on Colonel Halloran's death. "The psychiatrist consultation services he set up at replacement training centers have been highly important in adjusting the new recruit to the rigors of army life."

The death of Colonel Halloran again focuses attention on the tremendous burden carried by physicians as a contribution to the winning of the war. Certainly his untimely death, so young, from a failure of the heart to meet the stress placed upon it is a great loss to medicine and to the nation.

**Halbert Greenleaf Stetson & Greenfield, Mass** College of Physicians and Surgeons, Baltimore, 1895, member of the House of Delegates of the American Medical Association in 1904 from 1912 to 1914 and from 1916 to 1932, past president of the Massachusetts Medical Society, Franklin County Medical Society, New York and New England Association of Railway Surgeons and the Connecticut Valley Medical Association, member of the New England Surgical Society, fellow of the American College of Surgeons, medical examiner for Franklin County member of the city board of health from 1909 to 1912, chairman of the school board for many years president of the board of trustees, the hospital corporation and staff, Franklin County Hospital, on the staff of the Larran Memorial Hospital, Montague City, served as president of the chamber of commerce, died September 15, aged 75, of congestive heart disease

**George Van Amber Brown & McAllen, Texas** Detroit College of Medicine, 1894, member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, assistant secretary from 1923 to 1928, first vice president 1923-1924 and president 1928-1929 president of the Wayne County (Mich.) Medical Society, 1927-1928, of the Northern Tri State Medical Association in 1918 and of the Hidalgo Starr Counties Medical Society in 1940, fellow of the American College of Surgeons and a member of the board of governors from 1930 to 1932, formerly head of the German Polyclinic, chief of staff, senior surgeon and chief urologist, Highland Park General Hospital, and senior gynecologist at the Providence and St. Joseph's Mercy hospitals, all of Detroit, surgeon, McAllen Municipal Hospital, died September 19, aged 73 of angina pectoris

**Edwin Lee Miller, Kansas City, Mo.** Harvard Medical School, Boston, 1911 member of the Missouri State Medical Association and president, 1935-1936, member of the Western Surgical Association and the Southern Medical Association, specialist certified by the American Board of Surgery, first lieutenant in the medical corps of the U. S. Army during World War I, a founder and member of the executive staff, St. Luke's Hospital, on the staff of St. Mary's Hospital and chief of the surgical staff of the Kansas City General Hospital for many years, consulting surgeon, Missouri Pacific Railway, received the Distinguished Alumni Award of Merit from the University of Missouri, Columbia, in 1938, died October 6 aged 56, of coronary disease with myocardial infarction

**Raymond Ernest Senecal & New Bedford, Mass.** Boston University School of Medicine 1917, appointed a member of the Public Health Council in July 1943, president of the New Bedford Medical Society, school physician, served during World War I in 1929 retired as a major in the medical reserve corps of the U. S. Army, on the staffs of St. Luke's and Union hospitals, New Bedford Acushnet Hospital Acushnet, and St. Anne's Hospital, Fall River, physician for the board of public welfare for a number of years member of the Franco-American Civic League Franco-American Historical Society New Bedford Civilian Defense Council Massachusetts Committee on Public Safety and the American Executives Club died August 24, aged 51 of coronary occlusion

**John Butler & Minneapolis, University of Minnesota** College of Medicine and Surgery, Minneapolis 1903 associate professor of dermatology at his alma mater specialist certified by the American Board of Dermatology and Syphilology member of the American Dermatological Association and the American Academy of Dermatology and Syphilology major in the medical officers reserve corps, in charge of the department of dermatology and urology at Camp Lewis, Washington, from 1917 to 1919 colonel in the medical reserve corps not on active duty at one time assistant city physician, on the staffs of the University St. Mary's St. Barnabas Northwestern General, Lymnhurst and Abbott hospitals, died September 18, aged 66, of coronary disease

**Ivin Sickels, West Nyack N. Y.** University of the City of New York Medical Department 1883 assistant professor of chemistry and physics at the Cornell University Medical College New York, from 1898 to 1908 professor of natural history and subsequently professor of geology at the College of the City of New York where he taught from 1875 until his retirement in 1923 at which time he was appointed professor emeritus instructor in chemical laboratory from 1882 to 1887, lecturer in chemistry and physics from 1887 to 1891 and assistant professor of chemistry and physics from 1891 to 1893 at the University Medical College New York died August 5 aged 80 of pneumonia

**John Milton Berger & Chicago** College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois 1908 formerly instructor in surgery and assistant in

clinical surgery at his alma mater and instructor and assistant professor of surgery at Loyola University School of Medicine served as a major in the medical corps of the U. S. Army in France and Germany during World War I on the staffs of the Garfield Park Community and St. Anne's hospitals for many years attending surgeon at the Frances Willard Hospital died at his home in Oak Park, Ill., September 23, aged 60, of coronary thrombosis

**John Blair Fitts, Richmond Va.** Medical College of Virginia, Richmond, 1914, assistant professor of orthopedic surgery at his alma mater, member of the Medical Society of Virginia and the American Academy of Orthopedic Surgeons in 1936 elected president of the Virginia Orthopedic Society fellow of the American College of Surgeons served in France during World War I, assistant orthopedist Hospital Division, Medical College of Virginia orthopedic consultant at the Retreat for the Sick and the Stuart Circle Hospital, where he died August 19, aged 53, of leukemic leukemia

**Julius Hilton Sure & Milwaukee, College of Physicians and Surgeons of Chicago** School of Medicine of the University of Illinois, 1903 specialist certified by the American Board of Obstetrics and Gynecology Inc. visiting obstetrician and gynecologist, Columbia Hospital attending obstetrician and gynecologist at the Johnston Emergency Hospital, chief of the obstetric and gynecologic clinic and consultant in obstetrics and gynecology at the Mount Sinai Hospital where he died August 19, aged 63 of acute myocardial infarction coronary thrombosis and arteriosclerosis

**James Maurice White & Gary, Ind.** Northwestern University Medical School Chicago 1926 past president of the Lake County Medical Society and the Tenth District Medical Society, councilor of the Tenth District from 1938 to 1942, past president of the board of health of Gary, served as examining physician for Gary Draft Board number 9 and as a member and secretary of the Lake County Selective Service Appeal Board on the staffs of the St. Mary's Mercy Hospital and the Methodist Hospital, where he died August 5, aged 45, of coronary thrombosis

**Dix Henry Alverson, Shreveport, La.** Memphis (Tenn.) Hospital Medical College 1902, member of the Louisiana State Medical Society, died suddenly September 7, aged 63, of coronary occlusion and nephritis

**Lillian Bryan Askenstedt, Louisville, Ky.** Southwestern Homeopathic Medical College and Hospital, Louisville 1904 formerly lecturer at her alma mater and the Deaconess Hospital died September 25 aged 75, of coronary occlusion

**Clarence Allen Baer & Milwaukee** Johns Hopkins University School of Medicine, Baltimore 1905 specialist certified by the American Board of Dermatology and Syphilology, served on the British and French fronts with the Red Cross during World War I and for devotion to duty was decorated by the French government, at one time chief of staff at the Milwaukee Children's Hospital, died September 15 aged 63, of coronary thrombosis and myocarditis

**William H. Barnum, Fremont, Mich.** Saginaw (Mich.) Valley Medical College, 1902, member of the Michigan State Medical Society, secretary and past president of the Newaygo County Medical Society chairman of the Newaygo County Selective Service Board, past president of the chamber of commerce, a director of the Home State Bank of Fremont died suddenly in Baldwin September 4, aged 70 of cerebral hemorrhage

**Johnson Lorenzo Bean, Norway, Maine.** Tufts College Medical School, Boston, 1933, member of the Maine Medical Association and the New England Pediatric Society served on the staff of the Maine General Hospital, Portland began extended active duty as a captain in the medical corps Army of the United States on Oct. 15, 1942, honorably discharged because of physical disability on May 12, 1943 died August 10 aged 37, of coronary occlusion

**Hector Emile Bernadas & New Orleans** Medical Department of Tulane University of Louisiana, New Orleans 1902 past president and vice president of the Orleans Parish Medical Society, councilor of the First District Medical Society, president of the staff Hotel Dieu Sisters Hospital, died suddenly September 22, aged 64 of coronary thrombosis

**Samuel M. Bloomstein, Nashville, Tenn.** University of Nashville Medical Department 1896, member of the Tennessee State Medical Association for many years professor of clinical pediatrics at the Vanderbilt University School of Medicine formerly a member of the city board of education served on the board of directors of the Davidson County Tuberculosis Hospital for sixteen years died September 24 aged 73 of endocarditis

**Joseph Franklin Bowers**, Denver, Miami Medical College, Cincinnati 1890, died in St. Joseph's Hospital August 11, aged 75, of cerebral hemorrhage.

**Robert Ambrose Buchanan** F.D.C. (Calif.), California Medical College, San Francisco 1899, Hahnemann Medical College of the Pacific, San Francisco 1903, College of Physicians and Surgeons of San Francisco 1905, member of the California Medical Association, owner of the Buchanan Hospital where he died October 25, aged 77, of cerebral and cerebral arteriosclerosis.

**Howard William Burdley**, Seaton, Ind., Medical College of Indiana, Indianapolis 1902, for many years medical director of the Indiana Prison Hospital, died August 28, aged 65, of coronary thrombosis.

**Eugene Charles Ciccarelli**, New York, Syracuse University College of Medicine 1925, member of the Medical Society of New York, New York, American Psychiatric Association, American Association of Physicians and Surgeons, psychiatrist, chief of the psychiatric department of the city board of education, died in the New York City Hospital, N. Y., September 24, aged 42, of coronary thrombosis.

**David Cohn**, Buffalo, University of Buffalo School of Medicine, Buffalo, N. Y., died August 21, aged 60, of coronary thrombosis.

**Leopold Reever Dawson** & Smith, University of Michigan, Ann Arbor, Michigan, died in the University of Michigan Hospital and Surgery, Ann Arbor 1882, an active fellow of the American Medical Association, fellow of the American College of Surgeons, formerly consultant in gynecology and obstetrics at the Kent County Hospital, during the Spanish American War served with the First Washington Infantry, U. S. Volunteers, a lieutenant colonel and brigade surgeon in the Washington National Guard, died August 16, aged 67, of heart disease.

**George William Deemer**, Las Animas, Colo., Northwestern University Medical School, Chicago, 1894, died September 10, aged 78, of coronary thrombosis.

**Philip Albert Delavan**, St. Paul, University of Minnesota Medical School, Minneapolis, 1927, member of the Minnesota State Medical Association, resigned his appointment as clinical instructor in ophthalmology and otolaryngology at his alma mater on Feb. 1, 1940, specialist certified by the American Board of Otolaryngology, served during World War I, member of the staffs of University, Midway, Ancker Children's and St. Joseph's Hospital where he died September 12, aged 44, of acute coronary infarction.

**William Peter Dickerson**, Newport News, Va., Howard University College of Medicine, Washington, D. C., 1899, formerly vice president of the National Medical Association, president of the Crown Savings Bank, medical superintendent, roentgenologist, president of the medical staff and treasurer of the board of trustees of the Whittaker Memorial Hospital, where he died August 8, aged 73, of subarachnoid hemorrhage.

**John Guido Guenther** & La Grange, Texas, University of Texas School of Medicine, Galveston, 1897, past president of the Lavaca County and Fayette County Medical societies, served overseas during World War I, chairman of the board of trustees and president of the staff of La Grange Hospital, on the staff of the Drs. John Guenther Clinic, died September 14, aged 71, of coronary occlusion.

**Oscar Lee Hansen**, Chicago, Rush Medical College, Chicago, 1897, served during World War I, died in the Veterans Administration Facility, Downey, Ill., September 19, aged 73, of chronic myocarditis and arteriosclerosis.

**Thomas P. Howell**, Davis, Okla., University of Maryland School of Medicine, Baltimore, 1872, died in a hospital at Pauls Valley, July 16, aged 94, of bronchopneumonia and an injury received in a fall.

**Fayette Elmore Hubbard** & Montclair, N. J., University of Vermont College of Medicine, Burlington, 1906, member, past president and vice president of the American Society of Anesthetists, Inc., medical examiner for the draft board of Bloomfield and Glen Ridge, chairman of the medical board and member of the staff of the Mountainside Hospital, died September 21, aged 66, of coronary occlusion.

**Charles Leitner Jennings**, Jacksonville, Fla., University of Maryland School of Medicine, Baltimore, 1906, member of the Florida Medical Association, fellow of the American College of Surgeons, formerly chief surgeon at St. Luke's Hospital, died in the Duke Hospital, Durham, N. C., September 30, aged 62, of bronchogenic carcinoma.

**William Titus Marius Liccione** & Mount Vernon, N. Y., Columbia University College of Physicians and Surgeons, New York, 1919, fellow of the American College of Surgeons, asso-

ciate gynecologist at the Mount Vernon Hospital, assistant gynecologist at the Bellevue Hospital, New York, and attending surgeon at the Grasslands Hospital, Valhalla, died September 26, aged 47, of heart disease.

**Jesse Pendergraft**, Stidham, Okla. (licensed in Oklahoma under the Act of 1908), served on the staff of the Baptist Hospital, Muskogee, died August 11, aged 76, of carcinoma.

**Leo Buckley Reed** & Philadelphia, Jefferson Medical College of Philadelphia, 1920, instructor in applied and topographic anatomy at his alma mater, on the staff of the Jefferson Hospital, where he died August 17, aged 47, of cirrhosis of the liver.

**Walter E. Scarborough**, Avery, Texas, Barnes Medical College, St. Louis, 1904, veteran of the Spanish-American and World War I, died in Veterans Administration Facility, Waco, August 31, aged 62, of chronic pulmonary tuberculosis.

**Morris J. Van Horn**, Town Hill, Pa., Medico Chirurgical College of Philadelphia, 1902, member of the Medical Society of the State of Pennsylvania, served on the staff of the Nanticoke State Hospital, died August 30, aged 68, of carcinoma of the stomach.

**Ralph Doremus Vreeland**, Newark, N. J., Columbia University College of Physicians and Surgeons, New York, 1906, member of the Medical Society of New Jersey, served as an examiner for the draft board and as a first lieutenant in the medical corps of the U. S. Army during World War I, at one time an assistant surgeon on the staff of the Roosevelt Hospital, New York, formerly medical director of L. Bamberger and Company, died in Glen Ridge August 23, aged 59, of carcinoma of the right hand with metastasis.

**Charles L. Watkins**, Meridian, Miss., Mississippi Medical College, Meridian, 1911, died in Rush's Infirmary August 27, aged 69, of acute cardiac decompensation following nephritis and ureteral stone.

**Elliott Hillery Wheeler**, St. Louis, American Medical College, St. Louis, 1911, also a pharmacist, physician for the city jail for several years, died in the Evangelical Deaconess Home and Hospital August 5, aged 64, of hypertensive heart disease and uricemia.

**Robert E. Lee Williams**, Point Pleasant, Mo., St. Louis College of Physicians and Surgeons, 1890, died in St. Francis Hospital, Cape Girardeau, August 15, aged 80, of cerebral hemorrhage.

**Homer Forest Wonders** & Philadelphia, Medico Chirurgical College of Philadelphia, 1907, died in the Presbyterian Hospital, New York, August 27, aged 66, of cerebral hemorrhage.

**Charles Austin Wynn**, Greensburg, Pa., Jefferson Medical College of Philadelphia, 1896, formerly coroner of Westmoreland County, died August 29, aged 74, of Parkinson's disease.

**Anton George Zeiss**, Sheboygan, Wis., Ludwig-Maximilians-Universität Medizinische Fakultät, Munich, Bavaria, Germany 1888, served as county and city physician, died August 28, aged 84, of chronic myocarditis and diabetes mellitus.

#### DIED WHILE IN MILITARY SERVICE

**Lester White Baird**, Temple, Texas, University of Illinois College of Medicine, Chicago, 1933, member of the State Medical Association of Texas, Radiological Society of North America, Inc., and the American College of Radiology, specialist certified by the American Board of Radiology, Inc., a fellow in radiology in the Mayo Foundation, Rochester, Minn., from 1934 to 1937, formerly a member of the Scott and White Clinic, commissioned a captain in the medical corps, Army of the United States, on Oct. 13, 1942, died in the station hospital, Camp Carson, Colo., October 6, aged 36, of coronary thrombosis.

**Ross Bradley Bretz** & Colonel, M. C., U. S. Army, Durham, N. C., Western Reserve University Medical Department, Cleveland, 1909, U. S. Army Medical School, 1921, member of the House of Delegates of the American Medical Association in 1934 and the 1935 special session, served during World War I, commissioned a captain in the medical corps of the regular Army Sept. 9, 1920, a major in 1929, a lieutenant colonel in 1937 and later a colonel, formerly professor of military tactics and science at his alma mater, commanding officer, station hospital, Camp Butner, died in the Moore General Hospital, Swannanoa, August 5, aged 59, of coronary thrombosis.

## Correspondence

### "ACUTE TOXIC NEPHROSIS" AND PHOSGENE

To the Editor —I would call to the authors' attention the possibility of the production of phosgene gas during the worker's operations as cited in the protocol of the article on "Acute Toxic Nephrosis" (THE JOURNAL, September 11, p 81). The existence of carbon tetrachloride vapor in the presence of the open flame and heat during welding quite probably resulted in phosgene production.

It is widely held that phosgene is considerably more toxic than carbon tetrachloride by inhalation. Information is sought from the authors of this excellent clinical and laboratory study whether it may not be based erroneously on pure carbon tetrachloride as the sole contributing factor to poisoning and that a combination with phosgene may not have existed.

WILLIAM R. BRADLEY,  
Industrial Hygienist,  
80 Maiden Lane,  
New York City

[NOTE.—This letter was referred to Dr A C Corcoran who replies.]

To the Editor —That phosgene poisoning may have complicated the pattern in our patient was suggested in the article (page 81, paragraph 2). Mr F B Mallette, industrial hygienist Firestone Tire and Rubber Company, has since called to our attention the possibility that hydrogen chloride vapor may also have been formed during the heating of carbon tetrachloride.

Both these vapors are more toxic than carbon tetrachloride, but their toxicity is largely immediate in time, respiratory in character and as far as we can determine, not associated with delayed and severe manifestations of renal injury.

Indeed Mr Mallette notes the maximum concentration of carbon tetrachloride vapor tolerable for several hours with slight symptoms as 0.16 per cent by volume whereas he calculated an exposure of our patient to 0.29 per cent by volume for five and a half hours and concludes that the effect produced in our patient might well be expected from the amount of solvent to which he was exposed.

It therefore seems likely that carbon tetrachloride inhalation is sufficient explanation of the toxic nephrosis seen in our patient. The respiratory findings in this case (dyspnea, epistaxis, fluid in both pleural cavities, increased lung markings suggesting pulmonary edema) may be attributed to the action or to one or both of the products of thermal decomposition of carbon tetrachloride.

However, since cases 2 and 3 and Smetana's report (Nephrosis Due to Carbon Tetrachloride, *Arch Int Med* 63:760 [April] 1939) showed evidence of pulmonary irritation after exposure to unaltered fumes of the solvent we suggested that phosgene poisoning was not essential to any part of the pattern in our case although we must presume that it existed. Interestingly, Dr M A Simon (Acute Toxic Nephritis Due to Inhalation of Carbon Tetrachloride Fumes, *Canad M A J* 41:580 [Dec] 1939) has demonstrated structurally in a patient who had suffered from this condition the complete restitution to integrity shown functionally in our patient.

A C CORCORAN, M D, Indianapolis

## BACILLUS VIOLACEUS

To the Editor —In THE JOURNAL of April 16, 1938 M I Black and I reported the first known case of human infection due to *Bacillus violaceus* mallei. In this report it was noted that no other organisms were ever found as contaminants in any of the lesions at any time. As these were large open lesions discharging for weeks this struck me as unusual. I therefore conducted a series of experiments. The substance produced by *B. violaceus* mallei which killed other organisms and therefore prevented contaminations. I wrote to various institutions in the attempt to get help in further isolating the agent as it was a problem of biologic chemistry as well as of bacteriology. Various pathologists were advised of my findings at the time in private communications but no one indicated any interest in this phase of the study and in fact some expressed doubt as to the pathogenicity of *B. violaceus*, a point which has been proved by other subsequent case reports in THE JOURNAL.

Since the announcement of the results of treatment with penicillin, revived interest has been shown in my findings. I want to go on record as to my original observation as to any similar substance which may be developed from *B. violaceus* mallei or from any substance produced by *B. violaceus* mallei in relation to its effects on other organisms or tissues. I am still conducting my experiments and believe it only fair that I establish priority even though I am not yet ready to publish my final results.

JOHN SHAHAN, M D, Clearwater, Fla

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL Nov 13, page 721.

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Jan 17-19 Sec Dr J S Rodman 225 S 15th St Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF INTERNAL MEDICINE *Written* Various centers Feb 21 Final date for filing application is Dec 15 Ass't Sec Dr William A Werrell 1301 University Ave, Madison Wis

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Part II* May or June Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh 6 Pa

AMERICAN BOARD OF OPHTHALMOLOGY New York June Final date for filing application is Dec 15 Chicago October Sec, Dr John Green 6830 Waterman Ave St Louis

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Written and Oral Part II* Chicago Jan 21-22 Sec Dr Guy A Caldwell 3503 Prytania St New Orleans La

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Los Angeles Feb 2-5 Sec Dr Dean M Lierle University Hospital Iowa City Ia

AMERICAN BOARD OF PEDIATRICS *Written Locally*, Feb 4 *Oral* Philadelphia March 25-26 and San Francisco May 6-7 Sec Dr C A Aldrich 707 Fullerton Ave Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *Oral Locally*, Dec 20-21 Sec Dr Walter Freeman 1028 Connecticut Ave NW Washington D C

AMERICAN BOARD OF RADIOLOGY February Final date for filing application is Dec 15 Sec Dr B R Kirklin 102 110 Second Ave SW Rochester Minn

AMERICAN BOARD OF SURGERY *Written Part I* March Final date for filing application is Jan 1 Sec Dr J Stewart Rodman 225 S Fifteenth St Philadelphia



## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Act: Finding of Guilt of Crime Involving Moral Turpitude After Plea of Nolo Contendere Not a "Conviction" Justifying Revocation of License.** Henry F. Schireson, who was licensed to practice medicine and surgery in New Jersey, was found guilty after a plea of nolo contendere in federal court of (1) unlawfully exercising control over a trustee in bankruptcy, (2) making a false statement in bankruptcy proceedings, and (3) perjury, and was committed to the Federal Penitentiary in Pennsylvania. Subsequently and while he was confined in the penitentiary, a complaint was filed with the state board of medical examiners of New Jersey charging that he had been "convicted" of a crime involving moral turpitude, which is one of the grounds for revocation of a New Jersey medical practice act for the suspension or revocation of a license to practice medicine and surgery. The board accordingly notified Schireson in writing that it would in Trenton, N. J., on Feb. 18, 1942, hold a hearing to consider whether or not it should suspend or revoke his license. On his request made through his attorney, the hearing was postponed to March 18 and then to April 14, but the board refused to grant further postponements and proceeded with the hearing on April 14 without his presence, ultimately revoking his license to practice. The federal court brought certiorari in the supreme court of New Jersey to review the order of revocation, but the supreme court in effect affirmed the order of the board. *Schireson v. State Board of Medical Examiners*, 28 A. (2) 879, 1 A. M. A. 123:55 (Sept. 4) 1943. Schireson then appealed to the Court of Errors and Appeals of New Jersey.

The New Jersey medical practice act said the Court of Errors and Appeals, authorizes the board of medical examiners to revoke the license of any licensee who

(a) has been adjudicated insane, or (b) habitually uses drugs or intoxicants, or (c) has practiced criminal abortion, or been convicted of the crime of criminal abortion, or has been convicted of crime involving moral turpitude, or (d) has advertised fraudulently. Before any license shall be suspended or revoked, except in the case of a conviction of criminal abortions or convictions of a crime involving moral turpitude or convictions of violations of any Federal or State law relating to narcotic drugs, the accused person shall be furnished with a copy of the complaint and be given a hearing before said board in person or by attorney.

From this statute, continued the court, it is clear that the legislature ordained different standards or modes of procedure in the matter of the hearing granted the accused person. Thus, if a physician had become insane or habitually used drugs or intoxicants or had practiced criminal abortion, manifestly such status or conduct became a matter of proof on the merits before the board. But in cases where such physician had been convicted of criminal abortion or of crime involving moral turpitude, such licensee was not entitled to receive either the complaint or a hearing. In the first class of delinquents the truth or falsity of the charge had to be determined by the board as a fact issue. In the second the conviction itself of the designated crime became sufficient basis for the board's disciplinary action, and the truth or falsity of the charge on which such conviction resulted had no place whatever in the board's consideration. The question therefore is whether the proceedings had in the federal court, that is, plea of nolo contendere and sentence to prison, constitutes a "conviction" within the meaning of the medical practice act. "Conviction," according to Blackstone, "may occur two ways: either by the person confessing the offense and pleading guilty, or by his being found so by the verdict of his country" [i. e. by the verdict of a jury]. A conviction in ordinary legal language consists of a plea "guilty" or verdict of guilty and it is immaterial whether final judgment has been rendered thereon. *Bishop on Statutory Crimes*, see 348. In *Peacock v. Judges etc.*, 46 N. J. L. 112, *Crimes*, see 348. In *Peacock* a plea of nolo contendere is an implied confession of the crime of which the defendant is charged and is equivalent to a plea of guilty so far as judgment and execution in that case are concerned, and that the difference between this implied confession and an expressed confession by plea of guilty

was that, after an expressed plea of guilty, "Not guilty" may not be pleaded to an action of trespass for the same injury, whereas it may at any time be done after a plea of nolo contendere. The distinction is clear that a plea of guilty to a criminal indictment will not reserve for the wrongdoer the right to contest the issue in a civil action for the same wrong, while a plea of nolo contendere creates no such estoppel but is merely an implied admission of guilt for the purposes of the instant criminal prosecution. Applying these principles to this case, the court continued we think it was error for the intermediate appellate court to hold that Schireson could be deprived of his license to practice medicine and surgery solely on the exhibits relating to the congruities of events in the federal court that led to Schireson's imprisonment in the federal penitentiary, which exhibits were placed before the board. The statute, once the board acquires jurisdiction, ordains that the delinquent be "convicted" of the crime and to hold that a commitment on a nolo contendere plea is a conviction which may be used to satisfy the requirements of the statute, in a proceeding entirely collateral, is to accord to the plea of nolo contendere an effect which the cases and text-writers mentioned do not support. Here there was no such conviction in the strict sense or the ordinary legal sense as would estop the appellant from contesting the issue in a collateral proceeding. The provisions of the medical practice act, which are penal in character, must be construed strictly. Schireson, licensed to practice medicine under the New Jersey law, had a status in which the law protects him until such time as he might be shown to be unfit to continue in that profession. The New Jersey medical practice act ordains that under certain conditions and for specified malefactions that right may be revoked or suspended by the state. And this of course, is on the theory that this right a property right, is derived from the state or society generally, and society is entitled to be protected from practitioners found to be unfit. The medical practice act makes no provision for the case of one who pleads nolo contendere to an indictment for a crime involving moral turpitude. Perhaps it is *casus omissus*. If it is, we may not supply the want. The distinction between a conviction of crime and the judgment and commitment that results from a plea nolo contendere is recognized in our law and Schireson is entitled to its benefit. That plea raises no issue but is traditionally regarded as one by which the accused submits himself to the mercy of the court. The court is always free to refuse to accept such submission. To designate a nolo contendere as a plea seems to be a misnomer. It is rather an unwillingness to plead and present a defense which is essentially the function of a plea in a criminal cause. Our conclusion is that the record of the judgment and the commitment of Schireson, following his plea of nolo contendere to the charges of the indictment in the federal court, do not amount to a conviction of the designated crime within the contemplation of the medical practice act and hence may not be used as such for the revocation of his license. Whether Schireson's license may be suspended or revoked under the medical practice act by the state board of medical examiners after a hearing on the merits of the charges that he committed a crime involving moral turpitude is a question which we expressly reserve.

The Court of Errors and Appeals accordingly, in effect, reversed the order of the board of medical examiners revoking Schireson's license to practice medicine in New Jersey—*Schireson v. State Board of Medical Examiners*, 33 A. (2d) 911 (N. J., 1943).

## Society Proceedings

### COMING MEETINGS

American Society of Anesthetists, New York, Dec. 9. Dr. McKinnie L. Phelps, 745 Fifth Ave., New York 22, Acting Secretary.  
Association for Research in Nervous and Mental Disorders, New York, Dec. 17-18. Dr. Thomas E. Bimford Jr., 115 East 53d St., New York 28, Secretary.  
Eastern Section American Federation for Clinical Research, New York, Dec. 4. Dr. Charles H. Wheeler, 345 East 68th St., New York 22, Secretary.  
Seaboard Medical Association, Richmond, Va., Nov. 30-Dec. 2. Dr. Clarence P. Jones, 3117 West Avenue, Newport News 12, Secretary.  
Society for the Study of Asthma and Allied Conditions, New York, Dec. 4. Dr. W. C. Sprain, 116 East 53d St., New York 22, Secretary.  
Southern Surgical Association, New Orleans, Dec. 7-9. Dr. Ochsner, 140 Tulane Ave., New Orleans, Secretary.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1913 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Journal of Diseases of Children, Chicago 66 227-348 (Sept.) 1943

- Growth of Major Long Bones in Healthy Children. Preliminary Report on Successive Roentgenograms of Extremities from Early Infancy to Twelve Years of Age. M. M. Maresh—p. 227  
Synchias of Vulva in Small Children. H. E. Bowles and L. S. Childs—p. 258  
Blood Diarrhea in Mumps. J. P. Murphy, G. S. Dozins and F. J. Bieri—p. 264  
Postoperative Pulmonary Collapse in Childhood. C. J. Molony—p. 280

#### American Journal of Medical Sciences, Philadelphia 206 281-420 (Sept.) 1943

- Further Historical and Experimental Studies on Menstrual Toxin. D. I. Macht—p. 281  
Acute Infectious Polyneuritis (Guillain Barré Syndrome). Brief Review of Literature with Report of 3 Cases. J. A. Jones, J. W. Holmes and Mary Weinstein—p. 305  
Hyperglobulinemia. B. M. Kagan—p. 309  
\*Calcium Salts of Sulfadiazine and Sulfathiazole with Particular Reference to Their Subcutaneous Administration. C. T. Nelson and W. W. Spink—p. 315  
\*Treatment of Pneumococcal Pneumonia with Sulfapyridine. J. M. Rueggsegger, N. L. Brookens, M. Hamburger Jr. and Ed. S. Gruen—p. 323  
\*Status of Sulfonamide Therapy in Malaria. C. E. Johnson Jr.—p. 327  
Prothrombin Studies Using Russell Viper Venom. VI. Stability of Thromboplastin-like Activity of Russell Viper Venom Under Various Conditions of Storage. R. C. Page and E. J. De Beer—p. 336  
Effect of Arsenic (Fowler's Solution) on Erythropoiesis. Contribution to Megaloblast Normoblast Problem. L. R. Limarzi—p. 339  
Study of Hemoglobin Metabolism and Hematology in Case of Congenital Hemolytic Jaundice During (A) Clinical Crisis (B) Repeated Transfusions and (C) Before and After Splenectomy. R. C. Lowe—p. 347  
\*Heart Size and Pulmonary Findings During Acute Coronary Thrombosis. F. Massie and W. C. Miller—p. 353  
Case of Myocardial Infarction Masked by Bundle Branch Block but Revealed by Occasional Premature Ventricular Beats. W. Dressler—p. 361  
Saccular Aneurysm of Abdominal Aorta. Report of Case with Terminal Aneurysm and Rupture into Duodenum. E. S. Howland and B. E. Sprockin—p. 363  
Survey of Protozoan Infection of Staff of Large General Hospital. M. M. Kothman and M. Tasker—p. 369  
Perinephric Abscess—Previously Unreported Complication of Amebiasis. D. Kirsch and R. S. Diaz Rivera—p. 372

**Subcutaneous Administration of Calcium Salts of Sulfonamides.**—According to Nelson and Spink, sodium salts of sulfapyridine, sulfathiazole and sulfadiazine have been administered extensively by hypodermoclysis at the University of Minnesota Hospital. Since local tissue reactions, tenderness and sometimes necrosis are provoked by concentrations exceeding 1 per cent it was decided to investigate whether calcium salts of sulfadiazine and sulfathiazole could be given in higher concentrations. Calcium sulfadiazine was administered parentally to 24 adults. Only a few observations have been carried out with calcium sulfathiazole on human subjects. The authors found that aqueous solutions of calcium sulfadiazine may be administered subcutaneously or intravenously in concentrations up to 4 per cent with no ill effects. The pattern of absorption and excretion of calcium sulfadiazine as measured by the rise and fall of drug level in the blood does not differ significantly from that observed following the parenteral administration of comparable doses of sodium sulfadiazine. Preliminary clinical experience indicates that calcium sulfadiazine administered subcutaneously is effective in establishing and maintaining adequate blood levels of the drug. Aqueous solutions of calcium sulfathiazole administered subcutaneously resulted in local inflammation.

**Sulfapyridine in Pneumococcal Pneumonia.**—Rueggsegger and his associates used sulfapyridine in 105 cases of "typical" pneumonia. A blood culture and sputum sample were collected from each patient, but treatment was not delayed until the causative organisms were identified. The drug is an effective agent in the treatment of pneumococcal pneumonia for the mortality in this series was only 1 per cent. The mortality among 24 bacteremic cases was 17 per cent. The only important toxic effect of the drug was on the kidneys. Evidence of transient renal damage was found in 9 per cent of the patients treated with 1 Gm. every four hours. In patients treated with 1 Gm. every six hours the only manifestation of renal injury was the occasional microscopic finding of small numbers of red blood cells. Other toxic effects commonly produced by sulfonamide drugs appeared but rarely in this series. One morbilliform rash and 1 instance of nausea and vomiting were believed to be due to sulfapyridine.

**Sulfonamide Therapy in Malaria.**—Johnson observed the antimalarial action of sulfadiazine and sulfathiazole on neurosyphilitic patients. He selected sulfadiazine for his investigation because of its low toxicity. His studies were made on neurosyphilitic patients undergoing malaria therapy. Sulfadiazine exhibited an antimalarial action with a minimum of toxic reaction. It is taken by patients with less reluctance than is quinine. The relapse rate has been established at 23 per cent. The amount of treatment used appeared to have no relation to the relapse rate. Patients suffering relapses had five eight and nine days of treatment. Relapses are controlled by a second course of sulfadiazine. No patient had a second relapse. The author thinks that the antimalarial action of sulfadiazine could be used to advantage by the military in malarious areas.

**Heart Size During Acute Coronary Thrombosis.**—Massie and Miller studied the hearts of 16 patients following unequivocal acute coronary thrombosis by teleoroentgenograms taken over periods extending from twelve hours to seven months after the acute attack. They did not observe any consistent change in cardiac size or shape. Eight of the patients showed no change in any of their entire series of films. Each of 4 other patients presented only one film with cardiac measurements significantly different from the others of their respective series, and these were taken at greatly varying intervals (three days to three months) after the attack with both increasing and decreasing measurements occurring. It is noteworthy that in the important first two weeks following the acute accident only 4 patients of the entire series had a change in cardiac measurements and in 2 they were increased while in the other 2 they were decreased. It is impossible to state from this study that there is any significant feature which characterized the 8 patients who showed a change in cardiac size following coronary thrombosis. Patients with significant change in cardiac size were somewhat more ill than the others. The roentgenologic aspects of pulmonary congestion in the first and second weeks following the coronary accident were especially noteworthy. Twelve patients showed roentgenologic evidence of such pulmonary involvement whereas in only 7 of these did auscultation reveal the presence of basal rales. In 4 patients evidence of pulmonary congestion was lacking on both x-ray and physical examination.

#### Anesthesiology, New York

4 465-576 (Sept.) 1943

- Comparison of Actions on Nerve Fibers of Certain Anesthetic Mixtures and Substances in Oil. D. Duncan and W. H. Jarvis—p. 465  
Effects of Certain Premedicants on Traumatic Shock Produced in Animals Under Ether Anesthesia. C. D. Anderson and H. E. Essex—p. 475  
Mechanism of Production of Spontaneous Cardiac Irregularities with High Concentration of Cyclopropane. W. V. Lee, O. S. Orth, C. P. Wangeman and W. J. Meek—p. 487  
Practical Approach to Treatment of Shock. D. B. Kendrick Jr. and J. Reichel Jr.—p. 497  
Acute Pulmonary Edema—Case Report. Edith Eason and Mary Karp—p. 508  
Observations on Wartime Anesthesia. F. W. Clement and C. K. Elder—p. 516  
Present Status of Trichlorethanol. Evelyn H. Case—p. 523  
Pharmacologic Studies in Search of Suitable Drug for Peridural Segmental Anesthesia. J. Abajian Jr.—p. 528  
Sodium Pentothal. Actual Experience in Combat Zone. A. T. Rose—p. 534



silver reticulum stain is of particular assistance in distinguishing hemangioendothelioma from hemangiopericytoma, since endothelioma are found inside and pericytes outside the reticulum sheath of the vessels. Demonstration that tumor cells behave in vitro like endothelia provides further confirmatory evidence.

### Archives of Neurology and Psychiatry, Chicago

50 233 380 (Sept) 1943

- Tuberous Sclerosis A T Ross and W W Dicker on—p 213  
Histologic Studies of Brain Following Head Trauma III Post-Traumatic Infarction of Cerebral Arteries, with Consideration of Associated Clinical Picture J P Evans and I M Scheinker—p 259  
Studies in Diseases of Muscle XIV Progressive Muscular Atrophy of Peroneal Type Associated with Atrophy of Optic Nerves Report on Family A T Millorat—p 279  
Genealogic and Clinicopathologic Study of Pick's Disease N Mahmud and R W Waggoner—p 288  
Convulsant Shock Treatment of Patients with Mental Disease by Intravenous Injection of Acetylcholine Electroencephalographic and Electrocardiographic Observations M M Harris and B I Pacella—p 304  
Autonomic Balance in Patients Treated with Insulin Shock as Measured by Mecholyl Chloride Preliminary Report L Gold—p 311  
Nature of Painful Vasodilatation in Causalgic States G de Tinkts—p 318  
Meningioma of Thirty Years Duration Report of Case R B Cloward and R D Kepner—p 327  
Multiple Meningiomas Removal of Four Tumors from Region of Foramen Magnum and Upper Cervical Region of Cord C F First—p 335  
Recurrent Autonomic Phenomena Associated with Exacerbations of Post-encephalitic Parkinsonism Report of Case M Ostro—p 342

### Connecticut State Medical Journal, Hartford

7 611 676 (Sept) 1943

- Medical Care Insurance—Compulsory or Voluntary L H Pink—p 619  
Public Medical Care Some Practical Considerations H J Davis—p 622  
Connecticut State Medical Society from 1860 to Present S B Weld—p 639  
Actuarial Experience Administering Surgical Obstetric Contract, with Reference to Premiums Benefits and Black Ink on Ledger J C Ketchum—p 650

### Georgia Medical Association Journal, Atlanta

32 289 316 (Sept) 1943

- Medical Achievements in Present War L Sheldon Jr—p 289  
\*Riboflavin Deficiency versus Perleche Differential Diagnosis of Fissuring of Labial Commissures P H Nippert and A P McGinty—p 295  
Use of Vitamin C and Nicotinic Acid in Bright's Disease J W Daniel—p 297  
Osteomyelitis J R Lewis Jr and W J Senter—p 302  
Resuscitation of Newborn T S Gatewood—p 306

**Riboflavin Deficiency versus Perleche**—Nippert and McGinty point out that fissuring at the corners of the mouth is not always due to riboflavin deficiency. There is an intertrigo of the labial commissures, designated as perleche ("to lick"), which may be mistaken for riboflavin deficiency. In children perleche often develops because of an abnormal amount of moisture at the angles of the mouth, a condition resulting from the habit of licking. In adults the lesion is most frequently seen as a result of a narrowed bite, either because the natural teeth have been worn down or because of improperly fitting artificial dentures. The narrowed bite produces an additional fold at the labial commissures, the skin in this area then, because of constant moisture from saliva, becomes macerated, fissured and infected. Cheilosis of riboflavinosis is usually accompanied by other signs of the deficiency and is cured by an adequate consumption of riboflavin. The cheilosis of perleche is relieved only by correcting the anatomic defect that resulted in the intertrigo; this will usually require new, well fitting dentures. Three cases are presented to illustrate the differential diagnosis.

### Illinois Medical Journal, Chicago

84 173 228 (Sept) 1943

- Thyroid in Childhood A J Carlson—p 192  
Experimental Cretinism M M Kunde—p 192  
Pituitary-Thyroid Relations H G Swann—p 197  
Growth and Development in Graves Disease with Report of Puerile Case Associated with Unverified Thyrotropic Pituitary Adenoma H I C Seckel—p 200  
Diagnosis and Prognosis of Thyroid Deficiency in Childhood I P Kronlein—p 206  
Observations on Bacterial Allergy in Scarlet Fever J A Conner and A Nitzer—p 214

### Journal of Clin Endocrinology, Springfield, Ill

3 445 482 (Aug) 1943

- Further Consideration of Cushing Syndrome J W Henry and I Lausie Eisenhardt—p 445  
Oral Therapy with Sodium Iodide Sulfate I Induction of Bleeding and Cycle Regulation in Functional Anovulation V H Furr and C D Davis and I C Hamblen—p 451  
Id II Induction of Hemostasis and Cycle Regulation in Functional Uterine Hemorrhage V H Furr, C D Davis and I C Hamblen—p 455  
Contribution to Treatment of Amenorrhea M Berlin—p 47  
Influence of Thyroid Activity on Renal Function I M MacLay and J W Sherrill—p 462  
Pregnancies Occurring in Cretinism and in Juvenile and Adult Myxedema C Parker and J A Greene—p 466  
Insulin Hypohypertrophy M G Goldner—p 470  
Endometrial Biopsy J C Burch and Doris Phelps—p 475

### Journal Industrial Hygiene & Toxicology, Baltimore

25 251 322 (Sept) 1943

- \*Protection of Radium Dial Workers and Radiologists from Injury by Radium R D Evans—p 253  
Protection of Radium Dial Painters—Specific Work Habits and Equipment C I Morris, I R Tabershaw, J B Skinner and M Bowditch—p 270  
Mercury Vapor Measurement Radioactive Method C Goodman, J W Irvine Jr and C I Horn—p 275  
Sensory Response to Certain Industrial Solvent Vapors K W Nelson, J F Foe Jr, M Rose, I F Woodman and I Silverman—p 287  
Glucuronic Acid in Urine as Measure of Absorption of Certain Organic Compounds W Deichmann and G Thomas—p 296  
New Type Adhesive Impregnment Dust Counter I B Rowley and R C Jordan—p 293  
Dust Reduction at Coalface by Means of Water Sprays C G Warner—p 303  
Ventilation Requirements for Solvents in Industrial Tanks L Silverman—p 306

**Protection of Radium Workers**—Evans points out three health hazards in the handling of radium and radium products: (a) radium poisoning from ingestion or inhalation of radium, (b) respiratory lesions from inhaled radon and (c) radiation injury from overexposure to gamma rays. Inhalation of dust containing traces of dry radium paint must be guarded against as carefully as the ingestion of bits of radium paint. Under the best working conditions now existing in the dial painting industry about 15 per cent of the workers accumulate more than the tolerance dose of radium. These persons can be successfully identified by routine tests every four to six months of the radon content of their exhaled air. Those who accumulate more than the tolerance quantity of radium, if identified promptly, can be shifted to nonradium work until their radium content falls to a safe level by natural elimination. They may then safely return to radium work. Inspectors of radium dials and pointers, and those who finish, balance or assemble instruments are often exposed to greater hazards than the dial painters, because of the greater chances for inhaling dust and dry flakes of radium paint. Power ventilation designed to remove radon and radium dust from the workroom air is essential. Samples of room air should be analyzed for radon at least every six months and also whenever changes are made in the ventilating system or in the type of work done in each room. Meticulous housekeeping, including the performance of all cleaning operations as wet processes, is the essence of protection from radium ingestion and inhalation.

### Journal-Lancet, Minneapolis

63 225 268 (Aug) 1943

- Presidential Address A R Sorenson—p 241  
Epidemic Encephalitis in North Dakota and Minnesota 1941 Studies on Etiology Epidemiology and Serum Treatment E C Rosenow and H W Caldwell—p 247  
Observations on Selenium Poisoning in South and North America R E Lemley—p 257

63 269-306 (Sept) 1943

- Induction and Stimulation of Labor with Ergot C J Ehrenberg and J A Haugen—p 290  
Minnesota Multiphasic Personality Inventory B C Schiele, A B Baker and S R Hathaway—p 292  
Report on Heart Program of Bureau for Crippled Children Medical Unit (Abridged) Division of Social Welfare Feb 16 1942 to Feb 15 1943 M J Nydahl—p 297

## Kansas Medical Society Journal, Topeka

41 253-258 (Aug) 1943

1. The Effect of Second Cervical Vertebrae on the Cervical Collar — p 253  
 2. The Effect of the Cervical Collar on the Cervical Collar — p 254  
 3. The Effect of the Cervical Collar on the Cervical Collar — p 255  
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41 259-261 (Sept) 1943

1. The Effect of the Cervical Collar on the Cervical Collar — p 259  
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**Sulfonamide Therapy in Common Cold**—Kauvar and  
 others. The effect of sulfonamide therapy in the common cold was studied in 100 cases. Seventy-five cases were treated symptomatically, and 25 cases were treated in addition with sulfonamides. There was no evidence that the use of sulfonamides in the common cold shortened the course of the disease or prevented complications secondary to rhinopharyngitis. Complications secondary to rhinopharyngitis were more frequent and more severe in the untreated group than in the treated group. The use of sulfonamides in the common cold may sensitize the patient to subsequent infections, which is contraindicated in a patient in whom it is urgently needed.

## Maine Medical Association Journal, Portland

31 169-175 (Sept) 1943

1. The Effect of the Cervical Collar on the Cervical Collar — p 169  
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## Military Surgeon, Washington, D C

93 237-338 (Sept) 1943

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**Refrigeration Therapy in Vascular Trauma**—Bowers reports 4 cases in which refrigeration was used. Refrigeration decreases metabolic needs so that a damaged circulation may be adequate. The application of ice packs to the injured extremity will gradually render the part anesthetic and will allow a painless transportation of the injured soldier. This is a considerable factor in the reduction of secondary collapse from continued pain. Bacterial growth is inhibited by refrigeration therapy due to decreased oxidation, enzymes and toxins are temporarily inactivated. This means that a dirty wound is maintained in a stationary condition until debridement can be carried out. If refrigeration is continued after definitive treatment because of irreparable vascular damage, such therapy must be continued until collateral circulation is established, until vasospasm is overcome, until thrombosed vessels recanalize or until the criteria of failure are present. Refrigeration therapy must be withdrawn slowly to prevent rapid spread of gangrene or infection.

**Sulfathiazole in Fusospirochetal Infections of Mouth and Throat**—According to Hirsch and Spingarn, infections of the mouth and throat with the fusospirochetal group of bacteria are encountered frequently in military medicine. In the first world war they were common among the enlisted personnel especially under field conditions, and were known as "trench mouth". The causative organisms are present in small numbers as harmless saprophytes in many normal mouths, but they may become pathogenic in the presence of predisposing conditions such as trauma to the oral mucosa by neglect of the hygiene care of the mouth and teeth and a lowering of the general health and resistance. The disease may take several forms. Commonly one encounters (a) gingivitis, marked by numerous ulcerations of the peridental tissues with reddening and swelling of the gums, which bleed easily, and (b) angina, characterized by ulcerations of the tonsils and pharynx. A variety of therapeutic agents have been used to treat infections of this type. This series consists of 8 young men with fusospirochetal disease of the mouth or throat. Moderate doses of sulfathiazole (4 Gm daily) for periods of two to six days were effective in controlling fusospirochetal infections of the mouth and throat. This therapy is well tolerated and produces a prompt relief of symptoms and healing of the lesions. The treatment has the advantages of simplicity and speed.

## Minnesota Medicine, St Paul

26 753-848 (Sept) 1943

1. Differentiation of Endometriosis and Carcinoma of Sigmoid Colon — E L Jenkinson and W H Brown — p 773  
 2. Practical Applications of Routine Blood Count in the Newborn with Special Reference to Obstetric Nursery — F C Neff — p 779  
 3. Transurethral Resection — Autopsy Findings in 26 Cases — A N Collin — p 782  
 4. Damage to Spinal Cord and Meninges Following Spinal Anesthesia — Clinicopathologic Study — G R Kammann and A B Baker — p 786  
 5. Minnesota Soldiers Discharged for Mental Disability — R C Gray — p 791  
 6. Influence of War on Medicine — B C Crowell — p 795  
 7. Thiamine Hydrochloride—Aid in Solution of Mosquito Problem — W R Shannon — p 799  
 8. History of Medicine in Dodge County — J Eckman and C E Bigelow — p 805

**Thiamine Hydrochloride and Mosquito Problem**—Shannon reports results obtained in combating the mosquito pest by the administration of large doses of thiamine hydrochloride. He describes 10 cases which show that thiamine hydrochloride in adequate dosage, administered either by mouth or by injection, is capable of reducing the mosquito hazard in at least three ways: (1) It diminishes the approach of the mosquito toward the protected individual, (2) it lessens and may entirely combat the itching that usually follows the bite, (3) it minimizes and often entirely prevents the formation of a papule at the site of the bite. Indeed it causes a rapid recession of welts even of long standing.

## New England Journal of Medicine, Boston

229 387-422 (Sept 2) 1943

1. Differential Diagnosis of Chronic Bright's Disease — Clinicopathologic Correlation — J S Mansfield, G K Mallory and L B Ellis — p 387  
 2. Familial Auricular Fibrillation — L Wolff — p 396  
 3. Acute Pneumonitis and Pericarditis — Report of Case — C C Fuller and T W Quinlan — p 399  
 4. Bright's Diseases (concluded) — S E Bradley — p 402

**Familial Auricular Fibrillation**—Wolff points out that, although auricular fibrillation is one of the commonest disorders of the cardiac mechanism, its familial occurrence is rare. He reports observations on 3 brothers with auricular fibrillation mentioned earlier and on 2 new cases in brothers. These 2 instances of familial occurrence of auricular fibrillation are unique in medical literature. All 3 of the first set of brothers had permanent auricular fibrillation. Arrhythmia was constantly present years before a diagnosis of fibrillation was made, suggesting that an abnormal mechanism was present at birth or developed early in life. Congenital auricular fibrillation is suggested particularly in 1 case. The 3 brothers lived normal lives, and 2 of them engaged in strenuous sports without difficulty. Although the arrhythmia was untreated, the ventricular rates were slow, even after exercise. A likely explanation for the slow ventricular rate was furnished by the evidence of a strongly preponderant vagal tone, which also may have been

a factor in the production of auricular fibrillation. The author suggests that an increased vagal tone may be an etiologic factor in the production of auricular fibrillation in certain cases. Auricular fibrillation, even when untreated and of many years' duration, is entirely benign, provided the ventricular rate is slow and embolism does not occur. Under these conditions, auricular fibrillation does not cause cardiac enlargement. The combined administration of digitalis and quinidine for abolishing auricular fibrillation was in these cases superior to the use of quinidine alone.

### Public Health Reports, Washington, D C

58 1329 1364 (Sept 3) 1943

Patient Load of Physicians in Private Practice. Comparative Statistical Study of Three Areas. A. Cicco and J. Altman—p. 1329

58 1365 1392 (Sept 10) 1943

Surveys of Liquid Wastes from Munitions Manufacturing. R. S. Smith and W. W. Walker—p. 1365  
Twenty Year Survival of Virulent *Bacillus Pestis* Cultures Without Transfer. E. Francis—p. 1379

58 1393-1428 (Sept 17) 1943

Surveys of Liquid Wastes from Munitions Manufacture. R. S. Smith and W. W. Walker—p. 1393

### Surgery, St Louis

14 321 486 (Sept) 1943

Surgery of Terminal Ileum, Cecum and Right Colon. A. O. Whipple—p. 321  
Blood Supply of Large Bowel with Reference to Resection. A. O. Singleton—p. 328  
Consideration of Elective Surgical Procedures in Various Segments of Colon. T. E. Jones—p. 342  
\*Carcinoma of Colon. A. W. Allen—p. 350  
Cancer of Colon. M. V. Zinner and P. I. Hoxworth—p. 366  
Carcinoma of Colon and Rectum. Report of 503 Patients Treated at Lahey Clinic 1938-1941 Inclusive. R. B. Cattell—p. 378  
\*Management of Polyps Occurring in Rectum and Colon. V. C. David—p. 387  
New Practical Sigmoidoscope. P. G. Wakeley—p. 395  
Anterior Resection of Rectosigmoid and Upper Rectum with Reestablishment of Continuity. L. S. Fallis—p. 397  
Primary Resection (Closed Anastomosis) of Colon and Rectosigmoid. Including Description of Abdominoanal Methods for Restoration of Continuity Accompanying Excision of Carcinoma of Rectal Ampulla. O. H. Wingensteen—p. 403

**Carcinoma of Colon**—Allen states that carcinoma of the colon accounts for at least 11 per cent of deaths from cancer in the United States. The concept of resectability should be substituted for operability. In his 186 cases of colonic cancer 91 per cent were resectable. Mortality and morbidity are directly related to resectability. Immediate removal of the growth is not as important as proper preoperative preparation. This includes the use of sulfonamides, cleansing the involved bowel, the preliminary use of the Miller-Abbott tube and supportive measures. Preliminary ileotransverse colostomy with aseptic suture is advocated for lesions of the right colon and the proximal third of the transverse colon. Preliminary tube cecostomy is advocated for lesions of the remaining colon. These procedures will increase the resectability rate in this group of patients, which offsets the added morbidity. It also appears to reduce the mortality rate. Resection with immediate aseptic anastomosis is the author's method of choice for the second stage. The Parker Kerr type of anastomosis has been satisfactory to him. He recommends delayed closure of the abdominal wound by Collier's technic forty-eight hours after resection.

**Management of Polyps in Rectum and Colon**—According to David areas of hyperplasia, pedunculated adenomas and sessile papillomas are common tumors in the colon. Hyperplasia of the bowel mucosa gives no symptoms and is found in the course of proctoscopy, in examination of surgically removed segments of bowel or at necropsy. Adenomas make their presence known by bleeding protrusion from the rectum if they are low in the bowel and cramplike pains due to attempts of the bowel to push them along and occasionally by becoming an apex of an intussusception. The symptoms of villous tumors or papillomas are much the same as adenomas except that they are usually associated with the passage of a large amount of

mucus. Polyps of the colon and rectum should be radically destroyed or removed because of their tendency to malignant degeneration. Many can be handled by fulguration and local removal but, when necessary, more radical surgery is indicated.

### Texas State Journal of Medicine, Fort Worth

79 275 322 (Sept) 1943

Classification of Bone Tumors. G. T. Colwell—p. 275  
X-Ray Treatment of Bone Tumors. C. E. Martin—p. 277  
Diagnosis in Primary Bone Tumor. W. B. Carroll—p. 279  
Indications for Surgery in Bone Tumor. B. F. Coles—p. 281  
Management of Cardiac Arrhythmia. A. W. Hattie—p. 283  
Treatment of Osteomyelitis. C. W. N. Lewis and J. D. Fournier—p. 297  
Icterus Disease. Report of 4 Cases in One Family. C. S. Alexander—p. 301  
Doctor and Postwar World—p. 303  
Suggested Procedures for Control of Typhus Fever. G. W. Cox—p. 305

### United States Naval Med Bulletin, Washington, D C

41 1213 1512 (Sept) 1943 Partial Index

Medical Department of Battleship in Action. J. A. Seale—p. 1213  
War Wounds of Head. J. T. B. Cramoisy—p. 1217  
Injuries in Defense Force, Saragat Group. Preliminary Report. J. C. Dickson, R. W. Huntington Jr and S. Fischel—p. 1240  
Absence of Skin Irritants in Contents of Vessels. M. B. Sulejver and J. H. Katz—p. 1258  
Low Back Pain and Sciatica, with Special Reference to Roentgen Interpretation. H. J. Hare and I. W. Evans—p. 1261  
Pilonidal Cysts and Sinuses in Navy. W. Z. Lane—p. 1284  
Combat Fatigue and War Neurosis (concluded). G. N. Rames and I. C. Kolb—p. 1299  
Electroencephalography in Selection of Naval Recruits. P. Solomon, H. I. Harris, C. I. Witten and W. A. Hunt—p. 1310  
Detection of Malingering Through Psychometric Tests. W. A. Hunt and H. J. Older—p. 1318  
Management of Navy Personnel with Rheumatic Fever. H. A. I. Coburn—p. 1324  
Care of Injured Hand. W. H. Requirath—p. 1329  
Injuries of Semilunar Cartilages of Knee. T. H. Peterson and J. J. Lille—p. 1336  
\*Ocular Pathology in Various Types of Dietary Deficiencies with Particular Emphasis on Arteriolar Sclerosis. Experimental Study. A. A. Knapp and S. N. Blackberg—p. 1339  
Laboratory Aids in Treatment of Shock State. H. R. Brown Jr—p. 1345  
\*Allergic Reactions to Dried Human Plasma. W. J. Colonnell—p. 1356  
Sterilization Process for Powdered Sulfonamides. J. A. McClintock and R. H. Goodale—p. 1360  
Treatment of Chronic Gonorrhea with Combined Sulfathiazole and Intravenous Typhoid Vaccine. F. A. Hand—p. 1365  
Studies in Maintenance of Instrument Sterility. S. R. Howell—p. 1370  
Sodium Pentothal Anesthesia in Intraoral Surgery. C. R. Carr and D. E. LaMothe—p. 1374  
Nasal and Pharyngeal Irritation from Contact with Sucrose Octyl Acetate Among Operators of Compressed Air Hammers. T. J. Viles—p. 1378

**Ocular Pathology in Dietary Deficiencies**—Knapp and Blackberg report that lesions resembling senile arteriolar sclerosis in man were produced in the eyes of rats suffering from various types of malnutrition. Faulty nutrition, irrespective of whether the deficiency was caused by a lack of adequate caloric intake, vitamin A or vitamin B complex, consistently produced increased light reflex, pallor and uniform attenuation of the arterioles along their entire course. In previous experiments the authors observed that in vitamin D deficiency similar pathologic changes were produced. The arteriolar sclerosis induced was not specific for any vitamin deficiency but rather followed a general nonspecific disturbance of the cellular nutrition.

**Allergic Reaction to Dried Human Plasma**—Colonnell points out that scattered reports of reactions to pooled blood plasma have appeared but that no satisfactory explanation has been given. He reports a case which demonstrates the remote possibility of reactions with pooled dried blood plasma. The fact that thousands of plasma transfusions have been given without reactions is probably due to the caution in collecting blood and the dilution factor in pooling. The questioning of blood donors as to allergy, the taking of blood after a short fast and the refusing of blood from individuals receiving any form of injection treatment is evidence of the safety of administration of plasma under proper supervision. The presentation of this case history may throw some light on the few reactions which have occurred, and it should impress the necessity of having epinephrine handy when blood plasma is to be used. It also demonstrates the presence of an allergen (ragweed) in pooled human plasma.



## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted. A small circle (o) indicates that the article is abstracted and the title of new drug is usually omitted.

## British Medical Journal, London

2 257-258 (Nov. 28) 1943

See also: The British Medical Journal, London, 2 257-258 (Nov. 28) 1943. The following articles are abstracted from the British Medical Journal, London, 2 257-258 (Nov. 28) 1943. The following articles are abstracted from the British Medical Journal, London, 2 257-258 (Nov. 28) 1943. The following articles are abstracted from the British Medical Journal, London, 2 257-258 (Nov. 28) 1943.

**Exploratory Epidemic of Sonne Dysentery**—Green and McFadden report an outbreak of *Shigella sonnei* in which the outbreak of water-borne infection was subsequently supported by laboratory evidence. The outbreak involved approximately 100 cases. The circumstances under which *S. sonnei* was isolated from a sample of water precluded the possibility of a direct infection. A disturbing feature was the fact that the water used in the outbreak did not meet the usual standards for purity and that 0.15 part per million residual chlorine was still present. It appeared to be a direct contradiction until it was found experimentally that *S. sonnei* could survive after treatment with this strength of chlorine for periods longer than those applicable to much of the water. The position was rendered more dangerous by the fact that the chlorine ammonia ratio of 2:1 is such as to delay considerably the sterilization process. The concurrent connection observed between one particular milk supply and a group of cases was interesting in that the dairyman concerned was in the habit of rinsing his bottles with cold tap water after they had been sterilized by steam and probably introduced the infection to his supply in that manner. Flies were considered as possible vectors, but when the epidemic had practically subsided the usual summer increase in the fly population developed without stimulating further infection. This appeared to minimize the importance of flies in this particular epidemic.

**Etiology of the Fibrositic Nodule**—Copenhagen relates that, in a recent epidemic of influenza in which he examined 40 cases, lumbar and other pain was a prominent feature. It was observed that the pain was also referred from small hypersensitive areas in the muscles. These were indistinguishable from "rheumatic" myalgic spots. On reexamination of the patients after one and two months these spots were still found to be present, although in diminishing numbers. None of these patients had a previous rheumatic history. Myalgic spots which had arisen during influenza were reactivated in one patient by an attack of mumps. In another, this occurred as the result of the artificial induction of sandfly fever. It appears that myalgic spots can arise in the course of acute influenza and that these will persist in a proportion of cases. They can be reactivated by infections of other types. Rheumatic pains are a characteristic sequel of many of the exanthems, mostly those of virus origin. Observation has shown that these pains, which tend to arise in a less acute manner, are also generally of the focal type. It is therefore suggested that the myalgic spots which form the basis of many of the rheumatic syndromes of later life are sometimes a legacy from acute infections in earlier years. The victims are often unaware of their presence until they become activated by factors such as chill, trauma or focal sepsis. These should consequently be regarded as secondary and no longer causative.

**Vitamins and Physiologic Function**—Jenkins and Yudkin tested 178 school children aged 11 and 12, about half of whom had received vitamin supplements daily at school for one year. The supplements provided each school day were 5,000 international units of vitamin A, 1 mg. of vitamin B<sub>1</sub>, 25 mg. of vitamin C and 500 international units of vitamin D, the average addition over the year being about a half of the daily requirements of these substances. No difference was observed between the control group and the supplemented groups in resting pulse

rate, vital capacity, breath holding or 40 mm. endurance test. The authors point out that, if they accept the validity of the observations of the Manchester investigators, the fact that vitamin supplements did not induce such changes in physiologic function in their subjects might possibly be due to the children not having been deficient in these nutrients before the administration began. This is supported by the fact that there was also no improvement in other respects after the year's dosing. Gain in height and weight, strength of grip, hemoglobin, intelligence, educational attainment and dark adaptation were no different in those children receiving the supplement from what they were in those receiving the control pellets.

Journal Obst. & Gynaec. of Brit. Empire, Manchester  
50 241-316 (Aug.) 1943

Phases of Maturation Fertilization and Early Development in Man. W. J. Hamilton, Josephine Barnes and Gladys H. Dodds—p. 241.  
Renal Failure Following Abortion. 2 Cases. Phyllis Dingle—p. 246.  
Reactions to Pressor Substances in Normal and Toxic Women. F. J. Browne—p. 254.  
Delivery of Fetal Head in Occipitoanterior Positions of Vertex. W. Hunter—p. 260.  
Further Study of Clinical and Pathologic Properties of Malignancy. J. R. Goodall—p. 271.  
Obstructed Labor Due to Dysgerminoma. Case. D. A. Abernethy—p. 275.  
Full Time Hydatidiform Mole with Central Placenta Previa. Case. A. J. Herring—p. 281.  
Response of Isolated Muscle Strips from Upper and Lower Segments of Human Full Time Pregnant Uterus to Pitressin and to Pitocin. C. S. Russell—p. 287.  
Antenatal Thrombophlebitis. J. P. Maxwell—p. 299.

**Full Time Hydatidiform Mole with Central Placenta Previa**—Herring reports a case of full time hydatidiform mole without a fetus but with a central placenta previa and associated severe toxemia. A cesarean section was performed because of the central placenta previa, which revealed the true condition. Hyperpyrexia and breast secretion were of interest after the operation. A follow-up of thirteen months showed persistently negative Aschheim-Zondek tests and a return to normal menstrual periodicity and good health.

## Revista Médica de Chile, Santiago

71 519-614 (June) 1943 Partial Index

Hormones of Digestive Apparatus. B. A. Houssay—p. 519.  
Value of Sulfonamide Therapy in Perinephritis. I. Diaz Muñoz and A. Vargas Molinare—p. 529.  
Arthroplasty of Elbow. R. Urzua and G. Vergara—p. 536.  
Blood Transfusions in Sydenham's Chorea. O. Salas C. and E. Uiberall—p. 540.  
Prothrombinemia and Its Response to Vitamin K in Jaundice. H. Alessandri, H. Ducet and J. Mothes—p. 549.  
Action of Certain Drugs on Oddi's Sphincter. R. Yazigi—p. 555.  
Meningococcal Meningitis. B. Viel and R. Alvarado—p. 559.  
Treatment of Pulmonary Suppurations. H. Oyanguren M.—p. 568.

**Blood Transfusions in Treatment of Chorea**—Salas C. and Uiberall employed blood transfusions in the treatment of 22 patients with chorea. The disease was severe in 7 cases, moderately severe in 11 and mild in 4. The ages of the patients varied between 7 and 22 years. Five had a history of rheumatism and 12 had clinical signs of past or present rheumatic disease. From 100 to 150 cc. was the average amount of transfused blood, but in a few cases up to 250 cc. was given. The transfusions were given at intervals of three or four days. Generally a total of three was made, but in stubborn cases as many as five. Cure was obtained in 15 cases, great improvement in 4, mild improvement in 1 and no effect in 2. The favorable results had no relation to the seriousness of the disease, on the contrary, the blood transfusions seemed to give the most rapid results in the very acute and grave cases, whereas the sequels of the acute states seemed to be less amenable to this treatment. The authors advise against tonsillectomy during the acute stage of chorea, considering it an excessively grave intervention. They recommend it after the disease has been cured in order to prevent further rheumatic complications. This is based on the fact that the majority of cases of Sydenham's chorea are of rheumatic origin. The mechanism of blood transfusions in chorea is like that of pyretic therapy. It involves a reactivation of the cellular metabolism by proteins introduced by the parenteral route, the production of immunizing bodies and a focal reaction with hyperemia.

## Book Notices

**Distribution of Health Services in the Structure of State Government**  
By Joseph W. Mountain and Evelyn Flook. [Reprinted from Public Health Reports.] From the States Relations Division. Prepared by Direction of the Surgeon General. Federal Security Agency. U. S. Public Health Service. Public Health Bulletin No. 184. Third edition. Paper. Various pagination. Washington, D. C.: Supt. of Doc. Government Printing Office, 1943.

This is the direct inheritor of the subject matter and critical consideration of state health services first put into book form by Dr. Henry I. Bowditch and presented by him in his address at the Centennial Exposition in Philadelphia in 1876 (*Hygiene in America*, Boston, Little, Brown & Co., 1877). Dr. Bowditch by personal correspondence and acquaintance with leading physicians and some other citizens of prominence across the continent gathered and presented the first account of the quantity and something of the quality of sanitary and communicable disease control in our states and territories of the post Civil War period. This was followed by the classic report by Dr. Henry V. Chapin in 1915, published by the American Medical Association describing the activities, equipment and accomplishments of the various state boards of health. In 1929 the U. S. Public Health Service published as Bulletin 184 the results of a survey made by the Health Division of the Rockefeller Foundation of the changes which had taken place between 1915 and 1925, together with new information of a financial, personnel and administrative character. A revised or second edition appeared under the same auspices in 1932, bringing the national experience on a state basis up to 1930.

The present bulletin, which is based on state organization for health services in 1940, includes functions of state health departments and activities spoken of as of a health nature which deal with the diagnosis and treatment of diseases as well as state government activities which contribute to public health work without being within the administrative framework of the health department. The eleven chapters are on the composite pattern of state health services: communicable disease control by state agencies, tuberculosis control by state agencies, venereal disease control by state agencies, sanitation by state agencies, medical and dental care by state agencies, maternal and child health activities of state agencies, industrial health activities by state agencies, central state services affecting all branches of public health work and state health department organization. The information covers the District of Columbia, the territories of Alaska, Hawaii and Puerto Rico, and Virgin Islands.

The chief innovation with some controversial implications, and of interest alike to practitioners of medicine and to the personnel of health organizations is the content of chapter vi, dealing among other matters with general medical care of the needy. Of much concern are the extent and variety of activities contributing in some respect to the health and medical care of the population carried on by state agencies other than the health department.

This is a valuable technical well documented and well presented report of one of the major functions of state government for the civil population under peacetime conditions. However good a state health organization it cannot operate profitably in a vacuum that is under conditions of local civil government which do not provide full time health services for which city, county, multicounty or district communities are responsible and supported with adequate appropriations from tax resources. This is an important historical document, revealing as it does the force and effect of the policy of the federal government to aid by money grants and control through standards of personnel and performance much of the health service within the states and their regional and county subdivisions. Students of sociology and civil government, of contemporary history as well as workers and teachers of health administration, will find this interesting and essential reading. The chapters have appeared separately in *Public Health Reports* from time to time from Aug. 22, 1941 to April 2, 1943.

**The Role of Nutritional Deficiency in Nervous and Mental Disease**  
Proceedings of the Association, December 19 and 20, 1941. New York: Editorial Board: Stanley Cobb, M.D., Chairman; Edwin I. Gillies, M.D.; and Harry M. Zimmerman, M.D. Research Publications Association for Research in Nervous and Mental Disease, Volume XXII. Cloth. Price \$4. 1p. 214, with 23 illustrations. Baltimore: Williams & Wilkins Company, 1943.

These sixteen papers by prominent laboratory and clinical investigators with a special interest in nutrition, the thiamine and the respiratory enzymes constitute a valuable, but not very complete, review of the role assumed by these factors in the metabolism of the nervous system as evidenced especially by the neurologic manifestations of their deficiency. The book is divided into two parts, the first on contributions from the fundamental sciences, the second on clinical aspects. The ensuing discussions of the papers as they were read are also printed and constitute a valuable adjunct to the formal presentation of each subject.

In the section on contributions from the fundamental sciences Cowgill calls attention to some of the difficulties inherent in both animal and human nutritional studies, difficulties which have led some less restrained investigators into hasty publication of premature conclusions. Lashem reviews briefly some of the known and biochemically important interrelations between certain of the vitamins and the respiratory enzymes of which they function as the prosthetic group. The interesting observations of Himwich on the demonstrable reduction of cerebral arteriovenous oxygen difference in states of thiamine deficiency in man support the pioneer experimental work of Peters, Ochoa and others on the role of diphosphothiamine in cerebral metabolism. This paper is marred by the application of such unfortunate terms as "neurotic" and "neuroses" to avitaminotic patients and their symptoms. The original contribution of Ferrebee and his collaborators on the thiamine content of human tissues represents another important step toward the application of quantitative methods in the study of thiamine metabolism in man. Zimmerman reviews the neural pathology of the vitaminoses and includes some excellent photomicrographs. The pathology of vitamin A deficiency is discussed by Walbach and Bessey, and that of alpha-tocopherol deficiency by Pippenheimer. The work of these investigators in their respective subjects is well known.

The section devoted to clinical aspects will be of especial interest to those clinicians who have attempted a critical appraisal of the legitimate place of vitamins in medical therapy. It should be read by those who have not Wilder's careful and protracted studies of induced thiamine deficiency, recorded elsewhere in greater detail by Williams and his collaborators, are reported and an illustrative case history is included. The patients studied, however, were inmates of a neuropsychiatric hospital, little information is given concerning their previous emotional histories, and the simple statement that the significance of the subjective symptoms which they developed over periods ranging from ninety-three to one hundred and ninety-six days of thiamine deprivation depends on the selection of "noncomplainers" does not invalidate the criticism that they represent a poor group on which to base generalizations concerning the emotional manifestations of thiamine deficiency. Spies reports the relief of states of emotional tension in pellagrins by administration of thiamine, and Sebrell reviews briefly current observations on the mental and neurologic aspects of B complex deficiency. In an enlightening discussion of these three papers, Smith cogently points out differences in the material studied, especially regional dietary differences, which must be considered in evaluating symptoms and the efficacy of specific treatment.

Strauss, leaning heavily on Meiklejohn's inadequate review to question the role of thiamine deprivation in the production of nutritional polyneuritis, reviews briefly other major causes of the peripheral polyneuritides.

Of great interest to the clinician will be the paper of Bowman and Worts. These workers, who with Jolliffe have segregated from other encephalopathies the dramatic syndrome, usually encountered in nutritionally deficient alcoholics, of acute niacin deficiency encephalopathy and who have demonstrated that the

ophthalmoplegia of Wernicke's syndrome is reversible by thiamine. Discuss in some detail these syndromes and also the relationship of thiamine deficiency to Korsakoff's syndrome, delirium tremens and the cortical dysfunction associated with acute peripheral neuropathy.

In a well-tempered final chapter on the prevention of nutritional failure and disease McEwener rightly points to the critical importance of high economic and educational factors in determining the degree of the problem. Likewise rightly he deplores the failure to make a complete or pharmacologic vitamin preparation available to all. He also points out that the proportions in recent years of the diet of the American should familiarize him with the results of the carefully controlled studies of Keyes which have shown the value of a diet of much earlier and less cautious type.

In a chapter on the clinical aspects of nutritional deficiency and mental disease illustrate that much work still remains to be done, that there is urgent need for the development of laboratory techniques for the accurate estimation of each nutritive failure and that even now little is known of the vital interdependence of the vitamins of the B group.

The printing of this useful volume is excellent and marred by a few errors. Naughton, page 18 and triconelline, pages 26 and 27 are misspelled. The National Research Council's recommended minimum daily requirement for niacin is erroneously printed as 18 mg. instead of 18 mm. on page 159.

**Hypertension. A Manual for Patients With High Blood Pressure.** By John H. Little, A.B., M.D., Director, City Clinic, Indianapolis, City Hospital, Indianapolis. Price \$1.00. Springfield, Illinois: Charles C. Thomas, 1942.

An accurate and illuminating explanation of disease states written for patients is often a useful aid to practicing physicians. Such patient manuals are particularly helpful when dealing with chronic disorders. Almost all patients when first informed that they have hypertensive disease are pathetically bewildered by what it is all about. Furthermore, the popular concepts of high blood pressure are as confused and as full of false belief as Axis propaganda. Therefore this little book should prove most useful as an introductory primer for hypertensive patients. The author has wisely adopted a dogmatic method of presentation. Every statement is justified by clinical experience or sound experimental observations. Where recent discoveries are mentioned, the author cautions against their overenthusiastic or blindly credulous acceptance; the healthy skepticism of the scientist is evident. The text in no way intrudes on the role of the attending physician in the management of hypertension; it does not advise but merely informs.

Only two, relatively minor, adverse comments appear justified. The dogmatic, simple factual approach causes the style to appear decidedly elementary. Such manner of presentation is not infrequently resented by educated and intelligent lay readers; no one likes to be "talked down to." Secondly, though the condensation of much material into such a short essay is admirable, one has the feeling that brevity is overdone. There are many paragraphs, such as those dealing with the socioeconomic importance of hypertensive disease and the need for enhanced support for research, or the concepts of pathogenesis, and especially the importance of individualization in etiologic diagnosis and management, which could and should be considerably amplified. The condensation of material is such that only those fully acquainted with the problems of hypertensive disease can appreciate how much there is in this little book. The uninitiated, for whom it is intended, may miss much of the significance of the various aspects because of the extreme brevity.

As a primary manual for new patients with hypertension the volume can be recommended heartily. It is accurate, precise, neither alarmistic nor overly optimistic and answers many of the questions which such patients must inevitably ask. Thus it should save physicians much time. One of its most valuable attributes is that it should stimulate such patients to ask pertinent and intelligent questions. It should reduce the tendency to quackery and faddism now all too common in the so-called management of hypertensive disease. Patients who read and understand the section on diagnostic examinations will demand more thorough study than is usually undertaken.

**A Short Practice of Surgery.** By Hamilton Bailey, F.R.C.S., Surgeon, Royal Northern Hospital, London and H. I. McNeill Love, M.S., F.R.C.S., Surgeon, Royal Northern and Metropolitan Hospitals. Sixth edition. Cloth. Price 6s. 1p. 1943. With 922 illustrations. London: H. K. Lewis & Co. Ltd. 1943.

The influence of the war is definitely imposed on this brief summary of surgical practice. This is by far the best edition of this standard English work. Former obsolete and outmoded concepts which appeared in reprinting after reprinting are gone, and in their places are features of genuine significance. Similar types of textbooks are rare in this country; the average standard work for students here is much more theoretical and undoubtedly superior for teaching purposes. The splendid illustrations on fine quality paper (surprising for a country hard pressed by war) are finer than in the average American textbook. A highly commendable feature is a brief biographic note which lends life to the abundant eponyms of which the British seem to be so fond. As is to be expected, traumatic conditions are especially well presented. Emphasis is laid on nerve injuries and injuries to the motor system generally which are distinct problems in the present configuration. The present edition admirably fills its intended purpose, and at times its very brevity is an asset.

**Physiology of the Nervous System.** By John Farquhar Fulton, M.A., D.Phil., M.D., Sterling Professor of Physiology, Yale University, New Haven, Connecticut. Second edition. Cloth. Price \$9. Pp. 614 with 112 illustrations. New York, London & Toronto: Oxford University Press, 1943.

The rapid advances in our knowledge of the physiology of the nervous system has led to a complete revision of this book. The author has conscientiously followed the current literature, evaluated the researches of others, included his own important work and incorporated all in what is virtually a new text. He has called on other workers to aid in expanding and clarifying certain chapters. A cooperative spirit has entered into the making of the book, thus greatly increasing its value. In presenting the most important recent advance in neurophysiology, namely the nature of synaptic transmission, the section was partly prepared by Dr. David Nachmansohn, one of the foremost investigators in the field. The original form of the book has been retained, with the useful historical introductions to each chapter. A smaller but clearer type has been used, and the references are now referred to in the text by author and year of publication. These and other changes make it more readable than ever before. The illustrations are clear, the bibliography and index excellent. The textbook, carefully brought down to date, sets a standard for a work of its type. If the first edition was considered a fundamental book, the second edition is of equal value.

**The Physiological Basis of Medical Practice. A University of Toronto Text in Applied Physiology.** By Charles Herbert Best, M.A., M.D., D.Sc., Professor and Head of Department of Physiology, University of Toronto, and Norman Barle Taylor, M.D., F.R.S., F.R.C.S., Professor of Physiology, University of Toronto. Third edition. Cloth. Price 55s. Pp. 1,942, with 497 illustrations. London: Baillière Tindall & Co., 1943.

An accepted textbook of physiology again reaches a high standard of excellence, in this, the third edition. The impetus in medical research is especially reflected in physiology. It necessitates constant revision and a sifting process to present to the student simple and concise material. Best and Taylor have followed, as in previous editions, their concept of presenting physiologic facts as underlying clinical problems. A carefully selected bibliography and a wealth of digested material between its covers render it an unusual reference book for all practitioners of medicine. A careful perusal may lead to the conclusion that at times controversies as to theory have been taken up too fully. Thus fundamental and imperative physiology facts may seem buried in a welter of detail. The section on blood clotting is a good example of how clearly an intricate mechanism can be described. Probably the important subject of shock has been undertreated. Chapters on the endocrine glands are typically illustrative of the authors' ability to present subjects with clarity in spite of the expanding state of knowledge regarding them. It is hoped that they will continue their admirable purpose and in further revisions maintain this book as a live vehicle for the presentation of physiology in the practice of medicine.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE TEXT. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### VASECTOMY

**To the Editor**—A white man aged 29, diabetic and married, has four healthy children. Because he is diabetic and it is felt that there should not be more children, he wishes to be sterilized. I advised cutting the vas and told him it would not make any change in his sexual life except that he could not impregnate his wife. When the surgeon was consulted he informed the patient that he would lose 25 to 50 per cent of his sexual powers. Would you please give an opinion on the following questions? After the vas has been severed: 1. Will the sexual powers be changed? 2. From the brief history is it the operation of choice or should the wife be sterilized? 3. Will this tend to shorten his sexual life? Is there danger of infection and if so if the infection is severe will it leave him as if he were castrated? I might add that this couple have intercourse each night and practice withdrawal. M.D., Iowa

**ANSWER**—1. There is no convincing evidence to indicate that ligation of the vas deferens has any harmful effect on the sexual power.

2. There is a difference of opinion on whether the wife or the husband should be sterilized. There are some states that prohibit the sterilization of the male.

3. There is no evidence that vasectomy tends to shorten sexual life. There is always the danger of an infection when an incision is made, although in this particular type of operation the chances of an infection would be minimal if ordinary surgical antisepsis is maintained. The only way in which he could become a castrate would be for both testes to slough out completely as a result of the infection. This, although possible, would be one of the rarest of complications. The diabetes, provided it is under proper management, would be no contraindication for operation.

### VINETHENE AND ETHYL CHLORIDE

**To the Editor**—Is vinethene a safer anesthetic than ethyl chloride for opening ear drums? Harold L. Snow, M.D., San Pedro, Calif.

**ANSWER**—The anesthetic properties of vinethene (vinyl ether, divinyl ether, divinyl oxide) were first observed in 1930 (Leake, C. D., and Chen, M.-Y. *Anesthetic Properties of Certain Unsaturated Ethers*, *Proc. Soc. Exper. Biol. & Med.* 28: 151 [Nov.] 1930). Ethyl chloride, on the other hand, was used for clinical anesthesia during the later decades of the past century and was studied carefully by Embley in 1902 and following. His experimental findings regarding ethyl chloride were published in detail in the American Yearbook of Anesthesia and Analgesia for 1917-1918, pages 140-152. His conclusions at that time were that it was "a relatively safe anesthetic agent if cardiac inhibition can be avoided." In 1930 Henderson and Kennedy (Ethyl Chloride, *Canad. M. A. J.* 23: 226 [Aug.] 1930) reviewed the work of Embley and others, collected reports of twenty-six deaths or near deaths, and presented experiments of their own. They believed ethyl chloride to be a useful anesthetic demanding careful administration. Jacobs (Value of Ethyl Chloride in Extraction for Children, *J. Am. Dent. A.* 20: 1060 [June] 1933) reported 149,528 administrations for dental extraction without a death.

Gelfan and Bell described the first clinical use of divinyl oxide in 1913. The Council on Pharmacy and Chemistry made a preliminary report on vinyl ether in 1934 (Vinyl Ether, *The Journal* Jan. 6, 1934, p. 44) and another report entitled "The Present Status of Vinethene" in 1937 (*ibid.* Aug. 28, 1937, p. 66). The investigations of Goldschmidt, Raydm and others (Divinyl Ether *ibid.* Jan. 6, 1934, p. 21) are thorough and favorable to the safety of the agent; the report of Hawk, Orth and Polite quite the opposite. Hepatorenal Syndrome Following Administration of Vinethene, *A Case Report*, *Anesthesiology* 2: 333 [July] 1941).

No specific comparison of the safety of these two agents has been found in the literature. When properly administered, ethyl chloride produces a pleasanter induction and has been considered by many to be relatively safe. It has been given to a large number of patients. Vinethene is, on the other hand, a recent addition to the list of anesthetic drugs. From a review of the literature available at present, vinethene might be considered decidedly the safer for short administrations such as

the incision of a drum membrane. In any event, in a practitioner possessed of knowledge of the particular agent and skill in giving it, it is a more important safety factor than is the drug which he elects to administer.

### SURFACE TENSION OF BLOOD PLASMA

**To the Editor**—I am interested in obtaining information concerning the surface tension of the blood and plasma, especially drugs which will increase or decrease the surface tension. Any other information concerning alterations in the surface tension physiologic or otherwise will be greatly appreciated. Roy J. Pophin, Major, M. C. A. U. S.

**ANSWER**—It is unfortunate that really complete studies of the surface tension of plasma have not been made. This fact is probably largely due to the complex nature of the problem. The surface tension of plasma varies with the use of the exposed surface, and measurements made using dynamic methods where these surfaces are new yield relatively high surface tension values. Others have used surfaces used varying lengths of time. Since the surface tension varies with the use of the surface, it is little wonder that results from various methods are divergent. Many of the methods used deal with surfaces of indefinite age. This is especially true of the drop weight method and to some extent of the ring (duNoüy) method. It would be of considerable value to study much more completely the change in surface tension with time for many of these systems, using a method especially suited to this type of investigation such as the static pendant drop method recently developed.

Values given by different workers for the surface tension of normal human serum vary from about 70 dynes per centimeter with the drop weight method to about 55 dynes per centimeter with the ring method under conditions where the value for water is about 74 dynes per centimeter. Values for plasma appear to be somewhat larger (perhaps 75 dynes per centimeter by the drop weight method).

Various conclusions have been reached concerning the surface tension in pathologic serums. In many pathologic serums values slightly lower than normal (2 to 5 dynes per centimeter) appear to be observed, but even in any particular disease this result is not obtained by all workers. Thus syphilitic serums have been reported to give (1) a slight lowering, in the average surface tension, (2) a definite increase, and (3) very little difference from normal serums. A somewhat larger decrease in the surface tension value for syphilitic plasma has also been claimed. These results are representative of the uncertainties of these studies, and equally discrepant results are reported for other pathologic serums and plasma. It has been concluded by Dr. duNoüy that true surface tension effects in living organisms are rare and of relatively little importance.

Changes in surface tension of serum due to various conditions have often been reported. A drop in surface tension (2 dynes per centimeter) within twenty minutes after eating, followed by a rise to normal in about an hour, has been observed by several workers. A somewhat larger effect on the surface tension following the ingestion of allergenic foods has been observed by others. Feeding cholesterol to rabbits decreased the surface tension. Radioactive water also is said to give rise to a decrease in surface tension.

The surface tension of serum, and especially plasma, appears to be considerably lowered (drop weight values by as much as 9 dynes per centimeter) in anaphylactic shock. Considerably smaller decreases have been observed following intravenous injections of bacterial proteins, epinephrine, acetylcholine, atropine and possibly histamine. Intravenous injection of normal human serum causes a slight decrease of the surface tension of rabbit serum. Injection of a small amount of octyl alcohol dissolved in dilute ethyl alcohol caused a pronounced decrease in surface tension of the serum lasting for only a few minutes. Repeated injection after a short time gave a stronger and more lasting effect. A third injection usually caused death. Benzopyrene injected into human subjects and animals with tumors caused a decrease in serum surface tension. Bile acids and salts lower the surface tension of serum but several tenths of a per cent must be present to produce an appreciable effect. Heat inactivated serum also appears to have a lower surface tension than the fresh serum.

Use of parathyroid injection in rabbits caused an increase in the surface tension of plasma, reaching a maximum in thirty minutes followed by a decrease to normal taking six to forty-eight hours. An increase in surface tension was observed when horse serum was diluted with a solution of methylene blue. Pilocarpine has been reported to cause an increase in surface tension when injected intravenously.

Again it should be stated that these results are in many cases somewhat uncertain and that more adequate studies of the surface tension need to be made.

F L Wood M D, Lynden W.

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## THE PROGNOSIS OF ANGINA PECTORIS

A LONG TIME FOLLOWUP OF 497 CASES INCLUDING  
A NOTE ON 75 ADDITIONAL CASES  
OF ANGINA PECTORIS DECUBITUS

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Despite the proverbial uncertainty of the outlook for life in the presence of angina pectoris, it is of distinct value in the practice of medicine to have some idea of average expectation in general, as well as at different ages and under various circumstances. It is helpful for the doctor to know something of this, as well as for the patient himself and for his family, rather than to leave merely the impression that prediction is impossible and that the Sword of Damocles may fall at any moment. Such a state of affairs is for many persons so paralyzing that they are prone to sit for many years awaiting the end, unable to carry on a useful or happy life, or else, hardened by the thought, they may lead a reckless existence which can in truth hasten their end.

Routine experience during the last decade having strongly suggested that the classic and often quoted average of five years or less of duration of life after the first attack of angina pectoris was erroneous, and the realization that this error if it exists is a very significant one in clinical medicine, have caused us to make a more complete and longer time follow-up of a larger number of cases of angina pectoris personally observed (P D W) than had previously been carried out. Accordingly we have made a follow-up analysis of the 500 consecutive cases of angina pectoris reported in 1931 by White and Bland<sup>1</sup>. A few observations have been added concerning 75 additional cases of angina pectoris decubitus.

The determination of the average duration of life after the beginning of angina pectoris as found by several observers in the last twenty-five years has presented a gradual increase, as shown in table 1. Herrick and Nuzum<sup>2</sup> in 1918 reported 200 cases. Of the 50 patients who died the average duration to death was a little less than three years. No data were submitted on their

living patients, and the duration of their observation was not stated. Mackenzie<sup>3</sup> found 54 years to be the average duration to death of 214 patients he had followed to the end. He had records of 380 patients but no data on living patients were submitted. White<sup>4</sup> in 1926 studied 200 cases observed from 1920 to 1926. In the 66 in which death occurred the average survival period was 3.4 years. Of the 134 patients still living at that time the average duration of the disease was 4.6 years. The average of the dead and the living was 4.2 years. In 1931 White and Bland<sup>1</sup> brought the original 200 up to date and added 300 more, making 500 in all. Two hundred and thirteen were then dead with an average survival period of 4.4 years. The average duration of the disease in the 273 still living was 5.1 years. Fourteen were untraced. The average duration of the disease in the living and the dead was 4.9 years. The period of observation extended from 1920 to 1931. Eppinger and Levine<sup>5</sup> in 1934 studied 141 fatal cases without stating the duration of the period of their observations. The average duration to death in their cases was 4.57 years.

### PRESENT STUDY

In order thus to secure more accurate data concerning the prognosis of angina pectoris than have yet been collected, we have made a new long time follow-up of White and Bland's old group of 500 cases. Every one of these cases has been traced and the present status of each is known. Of the 500 patients 445 are dead and 55 are living. The average duration to death for the 445 was 7.9 years. Three of the 55 living were finally deleted from the series after a careful review of their histories, which revealed a slight question of the accuracy of diagnosis. The average duration of the disease in the 52 living patients is 18.4 years. The average for both the living and the dead is 9.0 years to date (table 2). The duration of observation is from 1920 to 1943. No new cases were added after 1931. After correcting for the 68 dead patients who had symptoms prior to 1920, and for the 2 living patients whose symptoms began prior to 1920, the average duration to death became 7.0 years, and the average duration of the disease in the living became 18.0 years.

It is apparent that a long time follow-up of a large group of patients throughout the entire course of the disease provides the only accurate basis for prognosis. The key to the problem is the prolonged follow-up of all the living patients in any given group starting at

1 White P D and Bland F F. A Further Report on the Progress of Angina Pectoris and of Coronary Thrombosis. A Study of 500 Cases of the Former Condition and of 200 Cases of the Latter. *Am Heart J* 1:1 (Oct) 1931.

2 Herrick I B and Nuzum F R. Angina Pectoris. Clinical Experience with 200 Cases. *J A M A* 67 (Jan 12) 1918:212-217.

3 Mackenzie James. *Angina Pectoris*. New York, Oxford University Press 1923.

4 White Paul D. The Prognosis of Angina Pectoris and of Coronary Thrombosis. *J A M A* 87:1525 (Nov 6) 1926.

5 Eppinger E C and Levine S A. Angina Pectoris. Some Clinical Considerations with Special Reference to Prognosis. *Arch. Int Med* 53:120 (Jan) 1934.





causes—angina pectoris, myocardial infarction, congestive failure. The remaining 105 deaths were due to infections, malignant disease, accidents and other non-cardiac causes. The average age at death was 65.8 years.

The distributions of the ages at onset and at death for the 445 dead patients are shown by the frequency distribution curves in chart 1.

In order to evaluate the significance of certain factors that are generally considered important in arriving at some conclusions as regards prognosis, the data obtained on our first examination were assembled (table 5) in three groups: (1) the series of 497 as a whole, (2) 100 patients who died within three years and (3) 52 patients who have lived fourteen years or more. These factors are hypertension, myocardial infarction, cardiac enlargement, abnormal heart sounds, congestive failure and abnormal electrocardiogram. Briefly, the factors named occurred much more frequently in the group that died within three years than they did in the living group of 52 patients. None of the latter group had had con-

form of the disease in the group of 100 patients who survived the shortest period, that is, three years. However, only 23 (23 per cent) of those dying within three years had this type of pain when first seen by us, 103 (20.6 per cent) of the entire group had the decubitus occurrence of pain while 5 (9.6 per cent) of the 52

TABLE 3—Comparison of Average Durations in Myocardial Infarction as Found by Several Observers

	Date	No. of Cases	To Death	Average Duration Years		Duration of Observation
				In Living	In Dead and Living	
White	1936	69	13 (37)	2.04 (30)	1.65	1930-1936
White and Bland	1931	900	15 (101)	3.2 (94)	2.4 (5 not traced)	1920-1931
Bland and White	1941	200	34 (171)	12.9 (70)	4.8	1920-1941
Jevlase and Rosenbaum	1941	372	34 (101)	2.3 (271)	2.6	From less than 1 yr to more than 10 yrs

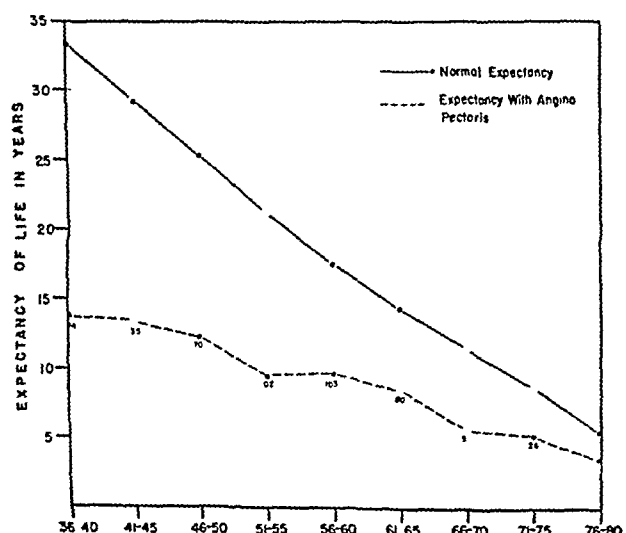


Chart 2—The expectancy of life for different ages with and without angina pectoris. The ages at onset by quinquenniums are shown along the abscissa. The number of cases of the present series with onset of angina pectoris during each five year age period are recorded along the broken line.

gestive failure at the time of our first examination, while 22 (22 per cent) of the group that died within three years had had congestive failure. Eighteen (34.6 per cent) of the living group had normal cardiac examinations (including normal blood pressure and normal electrocardiogram), only 9 (9 per cent) of the group that died within three years had normal examinations. The living group had a much greater incidence of pronounced nervous sensibility than those that survived three years or less. This seemed to indicate that a definite degree of nervous sensibility had a protective function. The more stolid phlegmatic person usually has more disease before he feels it, pays less heed to the subjective manifestations of coronary insufficiency and is more apt to overstep his physical limitations.

Chart 2 shows the expectancy of life according to age with and without angina pectoris.

#### NOTE ON ANGINA PECTORIS DECUBITUS

Since angina pectoris decubitus is generally considered to be a symptom of some gravity, one might expect to encounter the highest incidence of this severe

living fourteen years or more had this type of pain. On the basis of these figures angina pectoris at rest (somewhat comparable to myocardial infarction itself) would not seem to be incompatible with long life. The average duration of the disease in these 5 patients still living is 18.2 years, which is practically the same as the duration in the entire group of 52 still living. The average duration to death in 98 of the 103 patients who had the decubitus type of pain was 7.6 years. This is only a shade less than the 7.9 years average for the 445 dead patients of the series.

In an additional group of 75 cases of angina pectoris decubitus observed from 1923 to 1943 there were 56 males and 19 females. These data are summarized in table 6. Forty-seven are dead and 28 are living. There are no significant differences in average ages at onset and at death between this group and our old group of 497 cases. The average duration of life after the onset of angina of effort was 5.6 years but the development of angina decubitus signified that life on the average was

TABLE 4—Summary of Data on the 497 Patients with Angina Pectoris

	Total (497)	Dead Within 3 Yrs (100)	Living 14 Yrs or More (37)	Total Dead (445)
Sex				
Male	377 (75.9%)	81 (81%)	36 (97.3%)	340 (76.4%)
Female	120 (24.1%)	19 (18.7%)	16 (42.7%)	105 (23.6%)
Age at onset average	56.5	59	51	
Limits	20-80	24-80	3-72	
Age at death average				65.8
				Males 64.0
				Females 67.4
Average duration of life	9.06 (to date)		15.4	7.9
				Males 7.55
				Females 8.91

thereafter limited to 2.8 years. The follow-up of this group may continue over a considerable number of years as several patients have been added to it quite recently. We believe that angina decubitus, like angina pectoris of effort, is for the most part an accompaniment of actual coronary occlusion but with a higher degree of coronary insufficiency, just short of gross myocardial infarction and frequently leading to it. Angina pectoris

decubitus resembles myocardial infarction itself in that it seems to be an acute or subacute condition and not a chronic one that shows little tendency to change from week to week or from month to month. Its greatest hazard, resulting occasionally in sudden unforeseen but perhaps preventable death, is undue activity over the

TABLE 5—*Angina Pectoris: Comparison of Data Obtained on Our First Examination of the Group of 197 Patients as a Whole with Data on 101 Dead and 96 Living Patients with Data on 52 Patients Still Living at Years or More So*

	Total (197)	Dead Within 3 Years (101)	Living 14 Years or More (96)
	Percentage	Percentage	Percentage
Hypertension	18 (9.1%)	10 (9.9%)	7 (7.3%)
Myocardial infarction	3 (1.5%)	1 (1.0%)	1 (1.0%)
Coronary enlargement	27 (13.7%)	8 (7.9%)	1 (1.0%)
Abnormal heart sounds	2 (1.0%)	0	1 (1.0%)
Constrictive failure	7 (3.5%)	2 (2.0%)	0
Abnormal electrocardiogram (29 patients were electrocardiographed)	11 (5.6%)	0	1 (1.0%)
Normal cardiac examination	71 (35.6%)	9 (8.9%)	18 (18.8%)
Nervous sensibility pronounced	9 (4.6%)	10 (9.9%)	11 (11.5%)
Severity of pain			
Unrelieved	1 (0.5%)	4 (4.0%)	1 (1.0%)
Mild	1 (0.5%)	1 (1.0%)	1 (1.0%)
Moderate	13 (6.6%)	11 (10.9%)	13 (13.5%)
Pronounced	101 (50.9%)	18 (17.8%)	0 (0.0%)
Severe (decubitus)	10 (5.1%)	1 (1.0%)	0 (0.0%)

\* Only 1 patient had blood pressure at 170/110.

few days or weeks during which the angina pectoris occurs at rest, at which time too much effort or excitement is permitted simply because there is no evidence of gross myocardial infarction.

An important consideration with respect to angina pectoris decubitus is the percentage chance of its progressing within a few hours, days or weeks to gross clinical myocardial infarction itself. Such an occurrence took place in 41 (or 54 per cent) of this group of 75 cases (within twenty-four hours in 22 and within three months in 19 more).

#### SUMMARY AND CONCLUSIONS

1. A follow-up study has been made in 1943 of 497 cases of angina pectoris that were first observed in the years from 1920 to 1930, and a few observations added

TABLE 6—*Angina Pectoris Decubitus*  
75 Additional Cases Observed from 1931 to 1941

	Total 75	Males 56	Females 19	Dead 41	Living 34
Average age at onset of angina of effort or decubitus	57.0	57.1	60.7		
Limits		37-70	46-70		
Average age at death	61.9	62.2	68.6		
Limits		44-84	53-82		
Average duration to death after development of					
(1) Angina of effort	5.6	5.2	6.7		
(2) Angina decubitus	2.8	2.4	3.8		

on a supplementary series of 75 cases with angina pectoris decubitus.

2. A comparison of prognosis in angina pectoris and in myocardial infarction by several observers over the past twenty-five years establishes the fact that only by a long time follow-up including the living patients can an accurate basis for prognosis be determined. The

present study is the first (so far as we know) to present a large series of cases followed over an adequate length of time.

3. Of the 497 patients with angina pectoris 445 are dead and 52 are still living. The average duration to death of the 445 was 7.0 years, while the average duration from onset of the disease in the living is 18.4 years. The average duration to date for the combined dead and living is 9.0 years, which will ultimately increase when all the present survivors succumb doubtless to a figure approximating ten years, a duration of life about double that at present widely regarded as the expectation of life after angina pectoris first appears.

4. Seventy-six per cent of the deaths were due to cardiac causes. Approximately one fifth of the entire group had normal cardiac examinations, blood pressures and electrocardiograms at the time of the first examination, and these patients as a rule lived longer. Such factors as hypertension, myocardial infarction, cardiac enlargement, abnormal heart sounds, congestive failure and abnormal electrocardiogram occurred much more frequently in the group that died within three years than in those living fourteen years or more. A pronounced degree of nervous sensibility was a favorable influence.

5. Angina pectoris decubitus was found in 103 (20.6 per cent) of the 497 cases. There were no significant differences in the average duration of the disease to death or in the living between this group and that of the group as a whole. In 75 additional cases of angina pectoris decubitus, life was relatively short after the onset of decubitus type of pain, averaging 2.8 years in 47 cases followed to death. However, the average duration of the preceding angina of effort brought the overall average duration of life close to that of the larger group. Gross myocardial infarction recognizable clinically followed angina pectoris decubitus within twenty-four hours in 22 of the 75 cases (29 per cent) and within a period of three months in 19 (25 per cent) more. The follow-up study of these groups should continue for a considerable period which will doubtless further affect the prognosis.

6. A very important by-product of our follow-up study is the conviction previously little more than a suspicion that coronary heart disease, whether shown by the angina pectoris or temporary coronary insufficiency or by myocardial infarction with subsequent scarring, is actually in major part and in the majority of cases an acute or subacute rather than a chronic disease, though frequently with recurrence. The coronary artery damage may be permanent and therefore chronic, but its effect on the heart itself is the important point, thus coronary disease and coronary heart disease must be clearly differentiated. This conception of the frequent acuteness or subacuteness of coronary insufficiency is a vital one, of tremendous significance both in prognosis and in treatment. It is of course the natural tendency of the heart to establish an adequate collateral coronary circulation that is the answer. Special care over the periods of the acute and subacute phases of coronary heart disease, replacing the old fatalistic point of view, is the most important part of the treatment of coronary heart disease, at times lost to view in the course of the introduction of new therapeutic measures.

## PSYCHOGENIC RHEUMATISM

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Psychogenic rheumatism was found to be the most frequent cause of disability in 450 consecutive cases diagnosed as arthritis or an allied organic condition previous to admission to the medical service of Hoff General Hospital.

By the term psychogenic rheumatism is meant those states in which symptoms such as pain, stiffness, subjective sense of swelling or limitation of motion in the muscles or joints are caused, intensified or perpetuated by mental influences. When disability results from such a state in the complete absence of structural joint or muscle abnormalities the condition is designated as "pure" psychogenic rheumatism. When incapacitating psychogenic symptoms are associated with nondisabling organic changes the psychogenic rheumatism is considered to be "superimposed."

We are aware of many of the dangers and pitfalls involved in explaining physical symptoms and more particularly physical signs on a psychogenic basis. Our experience with rheumatic patients in an army general hospital, however, has led us to the opinion that sufficient attention has not been paid to the influence of the emotional factors in the production of somatic symptoms in the musculoskeletal system. This has been made evident by the large number of patients admitted to the arthritis wards with organic diagnoses in which inadequate or no structural changes existed in the muscles or joints. While functional states in the fields of neurology, cardiology and gastroenterology have been increasingly recognized, the concept of psychogenic rheumatism has not been widely appreciated.

Our patients were obtained largely from station hospitals whose policy is to transfer to general hospitals cases refractory to treatment and those which are likely to become chronic. Our statistics, therefore, do not necessarily reflect the incidence of psychogenic rheumatism among soldiers with disabling rheumatic complaints in all army hospitals. Four hundred and fifty consecutive patients admitted with the diagnosis of arthritis and allied conditions including patients with backache, were classified and analyzed (table 1). Of the wide variety of rheumatic diseases observed, pure psychogenic rheumatism was more often responsible for peripheral joint and muscle symptoms than were any of the commonly recognized disorders including rheumatoid arthritis, osteoarthritis and acute rheumatic fever. It also constituted one of the most frequent reasons for complaints referable to the back. Table 2 indicates that in 1 out of 5 rheumatic patients the symptoms were purely on a psychogenic basis while 1 out of 7 was disabled by psychogenic factors superimposed on mild organic pathologic changes. Approximately one third of the patients in the entire series were considered incapacitated because of psychic difficulties.

From this group we have undertaken to study, as internists, 50 cases of psychogenic rheumatism in some detail. We have been interested largely in the correlation of such information as might help clinically in evaluating rheumatic complaints rather than in the search for underlying psychologic mechanisms. Patients

with rheumatism based on organic disease and with associated mild psychoneurotic symptoms were not included. Only those cases in which psychogenic muscle and joint complaints were sufficiently severe to prevent the satisfactory performance of military service were considered.

## STATISTICAL SURVEY

**Classification**—Twenty-eight of the 50 patients had no objective evidence of muscle or joint disease and were regarded as examples of pure psychogenic rheumatism. Eighteen had minor nondisabling structural changes, and 4 patients had a persistence of an incapacity after all physical manifestations of an observed organic process had completely subsided.

TABLE 1—Classification of 450 Consecutive Admissions for Arthritis and Allied Conditions

		269
<b>Peripheral joint complaints</b>		
Psychogenic rheumatism (pure)	60 (22.3%)	
Rheumatoid arthritis	36 (20.8%)	
Osteoarthritis (primary and secondary)	40 (14.9%)	
Acute rheumatic fever	38 (14.1%)	
Unclassified arthritis	35 (13.0%)	
Rheumatoid ?	11	
Gonorrheal ?	10	
Rheumatic fever ?	7	
Nonspecific spondylitis ?	7	
Fibrositis	14 (5.2%)	
Gonorrheal arthritis	8 (3.0%)	
Gout	5 (1.8%)	
Miscellaneous types	13 (4.8%)	
<b>Back complaints</b>		
Psychogenic rheumatism (pure)	32 (17.7%)	181
Unstable back syndromes (trauma, congenital anomalies, scoliosis, spondylolisthesis)	61 (32.7%)	
Rheumatoid sacroiliitis and spondylitis	37 (18.2%)	
Osteoarthritis	18 (9.9%)	
Fibrositis	12 (6.6%)	
Osteochondritis juvenilis dorsii	12 (6.6%)	
Ruptured intervertebral disk	13 (7.1%)	
		450

TABLE 2—Incidence of Psychogenic Rheumatism

	Total Psychogenic Cases	Pure Psychogenic Rheumatism	Superimposed Psychogenic Rheumatism	Total
Peripheral joint complaints	269	60 (22.3%)	16 (5.9%)	76 (28.2%)
Back complaints	181	32 (17.7%)	46 (25.4%)	78 (43.1%)
Total cases	450	92 (20.4%)	62 (13.8%)	154 (34.2%)

**Miscellaneous Information**—Military service prior to hospitalization ranged in this group from one day to seven years. The average military service was about nine months, and over one third of this time was spent in army hospitals. Nearly 60 per cent had two or more periods of hospitalization before admission to a general hospital. The physical development was considered as average in 25, as inferior in 18 and as superior in 9. In all cases the sedimentation rate was within normal limits. Slightly more than half of these soldiers were married. The incidence of psychogenic rheumatism in enlisted men seems to be unrelated to age, rank, previous occupation, intelligence or education.

**Precious History of Rheumatism or Injury**—Thirty-eight patients gave a history of peripheral joint or back symptoms prior to entry into military service. Nineteen of these dated their disability to an injury and 7 gave a clear description of previous inflammatory joint disease. Twelve others claimed to have had a preceding arthritis involving one or more joints but

their descriptions of the antecedent illnesses were too vague to allow proper evaluation. Five of the 38 patients stated that they were incapacitated at the time of induction.

*Family History of Rheumatism.*—Twenty patients or over one third of the series gave a history of invalidism or semi-invalidism from rheumatism in one or more members of their immediate families. Frequently a parent, a brother or a sister had been crippled with arthritis for years. Occasionally the patient referred his symptoms to the same joint or extremity that was involved in the relative. Several remarked that they suffered from rheumatism and nervousness "just like" their father or mother.

*Location of Symptoms.*—The sites of election for symptom fixation were predominantly the back and lower extremities (table 3). In 38 of the 50 cases symptoms were limited to these regions. While the lower extremities were involved alone in 11 cases, the upper extremities were the sole site of somatic fixation

TABLE 3—Location of Psychogenic Rheumatism in Soldiers

Back (only)		1*
Cervical	0	
Dorsal		
Lower	11	
Back (plus)		1
Upper extremities	1	
Lower extremities	10	
Multiple joint	2	
Lower extremities (only)		11
Hip	0	
Knee	10	
Ankle	0	
Foot	0	
Whole leg	7	
Sciatic distribution	2	
Multiple peripheral joints		8
Upper extremities (only)		1
Shoulder	0	
Elbow	0	
Wrist	1	
Hand	1	
		—0

in only 1 instance. Complaints were present in practically all joints in 8 cases. There was no striking predilection for psychogenic symptoms to involve the left side in this group. Of the 16 cases showing laterality of symptoms the involvement was right sided in 7 and left sided in 9.

*Emotional Factors.*—The majority of patients had definite psychoneurotic manifestations before entry into military service. Seventeen, or approximately one third of the patients, gave a history of disabling psychoneurotic or hysterical episodes prior to the onset of the presenting complaint. These ranged from attempted suicide to interruptions in schooling because of "nervousness." Many gave a history of enuresis, somnambulism, nightmares, temper tantrums or other symptoms looked on as constituting personality and behavior problems. At the time of examination 28 presented an anxiety state of greater or lesser degree. Sixteen patients showed mild mental depression with anxiety, and in 8 the attitude was that of happy indifference.

Forty-six of the 50 patients had definite associated psychoneurotic symptoms in addition to the rheumatic complaints. Almost all of the common emotional features which characterize the psychoneurotic state were

observed in this series. The 4 patients without demonstrable associated psychoneurotic symptoms presented striking incongruities between the organic findings and either the severity or the quality of the complaint. With each patient attempts were made to elicit the immediate precipitating emotional factors incident to the development of the disability, but these efforts were not always successful.

*Presenting Disability.*—In the peripheral group the most frequent symptoms were pain, stiffness, limitation of motion, subjective sense of swelling and weakness of the involved part. Pain was universally complained of and was usually augmented by some physical activity incident to military service and was often qualitatively of the functional type. Such sensations as numbness, tingling, pricking, weakness, burning, deadness or fullness were frequently interpreted as pain by the patient. Approximately one half of the patients described stiffness and a subjective sense of swelling. Fifteen presented bizarre limps, some associated with abnormal postures which in themselves were sufficient to cause pain and muscle spasm. All the patients with backache complained of pain and stiffness. Frequently the discomfort, after close questioning, became a weakness, a tired feeling, a dead or numb sensation or a localized burning in some region of the back, especially the lumbosacral area. Back rigidity, variable in degree, was common, although true restriction of motion was rare. During the examination it was frequently evident that the apparent immobility was due to pain on forced motion and muscle spasm rather than to structural changes.

By far the outstanding characteristic in the patients with psychogenic backache was the persistence of the disability in spite of prolonged bed rest. Continuous night and day discomfort refractory to bed rest and physical therapy and augmented by slight physical exertion was typical. The degree of incapacity may occasionally approach satire as when a patient with advanced active rheumatoid spondylitis was found pushing another with pure psychogenic backache to the post exchange in a wheel chair. There were 4 examples of camptocormia in the group. Of the entire series 5 cases demonstrated anesthesia or hypesthesia of the hysterical type, and there were 2 cases of associated hysterical paresis of an extremity.

*Disposition.*—At least 46 of the 50 patients were eventually discharged from military service. Several were given a trial at duty on a limited service status. Except for 4 cases which we have been unable to follow, such experiments have been uniformly unsuccessful. Patients sent to duty returned to the hospital anywhere from four hours to three months with the same or intensified symptoms.

#### COMMENT

We hold no brief for the concept that organic joint disease, such as chronic rheumatoid arthritis, may result from psychic conflicts.<sup>1</sup> In view of the absence of sound supporting evidence, such a thesis seems entirely unwarranted. While being cognizant of the fact that a psychoneurotic state may be kindled by a chronic illness such as arthritis, we do not support the theory that mental factors are etiologically related to inflammatory joint disease.

1. McGregor, H. G. Psychological Factor in Rheumatic Disease, J. Roy. Inst. Pub. Health & Hyg. 4: 169-179 (July) 1941. Weiss, Edward, and English, O. S. Psychosomatic Medicine. Philadelphia: W. B. Saunders Company, 1943.

Although there are no available statistics to indicate the prevalence of psychogenic rheumatism in the civil population proper emphasis does not appear to have been placed on the psychic factors which operate in patients with rheumatic complaints. Strecker<sup>2</sup> in estimating the relative frequency of functional disorders in the various systems places the musculoskeletal system last on the list. While this may be true in civilian practice, disabling psychogenic complaints as observed in an army general hospital are displayed frequently in the joints and muscles and are comparable to their occurrence in the gastrointestinal and cardiovascular systems. It is of interest that our statistics parallel those compiled by Halliday<sup>3</sup> in compensation insurance cases. He found the disability due to psychogenic factors in 37 per cent of 62 insured patients labeled with the diagnosis of rheumatism.

Without entering into a discussion of the many complex psychologic explanations offered for the localization of psychogenic symptoms, two points are worthy of consideration. First somatic fixation usually bears an expedient relationship to the attempted solution of an emotional conflict. This may explain the predominant localization of psychogenic musculoskeletal symptoms in the back and lower extremities in soldiers. As these structures are synonymous with marching and soldiering the development of an infirmity in such parts may be an unconscious attempt to solve the desire for separation from military service. Secondly, localization of fixation is often dependent on a vivid recollection or experience. One third of our patients had glaring examples of arthritic invalidism in their immediate families. Approximately three-fourths gave a recent or remote history of traumatic or inflammatory joint disease in their past lives. In times of great emotional stress these recollections or experiences may act in a persuasive manner to influence the selection of a site for symptom formation. The following cases are illustrative.

A 31 year old private with a profound limp complained of pain and stiffness in the region of the left hip. His first symptoms appeared during the course of an acute anxiety state at about the time of induction. During the succeeding eleven months the disability was progressive and finally he was unable to walk for distances greater than one half mile. No organic basis for his complaints was demonstrated. His attitude was anxious and tense, and multiple associated minor psychoneurotic symptoms were volunteered. Questioning revealed that in childhood he had been operated on for tuberculous cervical lymphadenitis and subsequently he had feared that the infection might settle in a joint. It seemed significant that he had been reared by an aunt who had been crippled with tuberculous arthritis of the left hip since childhood.

A 24 year old private with approximately one year of service was admitted with the diagnosis of arthritis of the left hip and knee. He complained of pain and stiffness in these joints together with weakness and numbness of the leg. He had a bizarre limp and with each step threw the knee outward. He was resentful for having been drafted and candidly admitted his dislike for military discipline. No organic findings were elicited. Associated psychoneurotic manifestations such as fatigue, irritability, nervousness, insomnia, photophobia and sighing respirations were prominent. Three years previously the soldier had developed left leg pain following an injection of bismuth into the hip. The disability had persisted for a period of four months but subsequently no further discomfort in the leg had been experienced until the onset of the present disability two weeks after induction.

In practically all instances in our series a psychoneurotic predisposition was present and in over one third of the cases previous incapacitating psychoneurotic episodes had developed during civil life. It is not surprising that such a group should substitute bodily distress for the emotional conflicts growing out of the severe stresses incident to military service and to the transition from civil to army life. The following case is illustrative.

A 37 year old private complained of continuous low back pain. He had been hospitalized for eight of his nine weeks of military service. His discomfort allegedly was so great that he could do nothing which entailed physical activity. His back was held rigid during examination and he complained bitterly of any attempted back motion. His hands and feet dripped with perspiration, and the outstretched fingers were coarsely tremulous. He complained of headache, fatigue and 'throbbing eyeballs'. Roentgenograms of the spine showed minimal congenital lumbosacral asymmetry. He had sustained a minor back injury in an automobile accident two years prior to induction. Although there had been no head injury at the time, compensation was received for eight months because of a persistent hemianesthesia which included the face and which was demarcated exactly at midline.

The immediate precipitating emotional cause is often difficult to elicit. This is as true in civil life as in military practice. The factors which induce anxiety states in soldiers are manifold. Some are peculiar to military service and include (1) the loss of security or love caused by separation from a wife, family or home, (2) the loss of ability to control one's personal destiny, (3) resentment at authority, especially when such is invested in those felt to be inferior, (4) fear of bodily harm, (5) the confusion resulting from strange surroundings, crowding, regimentation and competition, and (6) the concern for the safety and financial well being of dependents. In the following case an exciting emotional factor is illustrated.

A 24 year old corporal with over two years military service was admitted with the diagnosis of post-traumatic arthritis of the right ankle which allegedly resulted from a minor sprain sustained three months previously. The objective manifestations had entirely disappeared within three weeks but pain on weight bearing and a pronounced limp persisted. There were no physical or roentgenographic evidences of arthritis. His organization had been placed on alert for embarkation soon after the joint injury was sustained. After repeated questioning it was revealed that the soldier had a deeply rooted fear that insanity would develop if he was subjected to combat. The soldier's father had been confined to a veterans' institution for twenty-five years because of insanity which allegedly resulted from 'shell shock' during World War I. The pain and limp completely disappeared within one week after the soldier was assured of separation from military service.

The diagnosis of psychogenic rheumatism is facilitated by the recognition of certain points at the time of examination or during the period of observation. These include (1) gross incongruities between the quality or severity of the symptoms and the structural changes, (2) persistence of the disability, (3) qualitative functional characteristics of the presenting complaint, (4) bizarre postures or limps and (5) the association of other hysterical or psychoneurotic manifestations. The following cases exemplify these factors.

1. *Incongruity between quality and severity of symptoms and structural changes.* A 28 year old private with six weeks of military service was admitted with the diagnosis of arthritis of the right knee. He presented a profound bizarre limp favoring the right leg and complained of a continuous hurting in the

<sup>2</sup> Strecker, F. A. The Tension of Psychosomatic Medicine. *Ann Int Med* 18: 736-740 (Nov.) 1942.  
<sup>3</sup> Halliday, I. I. Psychological Factors in Rheumatism. *Preliminary Study*. *Brit M J* 1: 213 (Jan 30) 264 (Feb 7) 1942.



right knee. The onset of symptoms was dated to an injury sustained five years previously when he fell from a hay loft. Allegedly he had limped persistently since this injury. The family history revealed that he rather was incapacitated because of arthritis and was receiving a disability pension. The patient had been emotionally unstable since childhood and had frequent crises until the age of 16 years. He was tense and apprehensive, had cool moist hands and tremor of the outstretched fingers and of the eyelids and detected a deep anxiety caused by separation from his wife who was pregnant. On examination the right knee presented no objective abnormality except perhaps some increase in crepitation on forced motion. The joint was held rigid and the patient cried with pain on attempted manipulation and deep palpation. Roentgenograms revealed minimal osteoarthritic changes on the posterior surface of the patella and some sharp angulation of the tibial spines. Neurologic examination disclosed a band of complete anesthesia 3 inches in width around the circumference of the knee joint.

2 *Persistent crippling*. A 21 year old sergeant was admitted with the diagnosis of arthritis of both knees. He had been hospitalized for four months at a station hospital. From the history and records it seemed apparent that the soldier had developed an acute synovitis of both knees which occasioned his entry into the station hospital. At the onset the knees had been swollen, tender and hot and moderate joint effusion had been present. The sedimentation rate had been 34 mm in one hour and on joint aspiration clear amber fluid had been removed. The effusion and inflammatory signs had spontaneously disappeared completely within six weeks. No residual joint deformity or restriction of motion resulted. The sedimentation rate had returned to normal and repeated roentgenograms of the knees failed to reveal structural joint abnormality. Aching in the knees, at rest as well as on weight bearing, persisted and the patient restricted his walking to the distance from the bed to the toilet. Discomfort was complained of on palpation and on passive motion of the joints. He was restless and irritable and suffered from insomnia. Under observation a train of associated psychoneurotic symptoms gradually unfolded. In spite of repeated reassurance the soldier persisted in the conviction that he was destined to remain 'crippled' and would be of no further useful military service.

3 *Qualitative functional characteristics*. A 42 year old officer was admitted with the diagnosis of osteoarthritis of the spine. He had had no symptoms referable to the back or peripheral joints until three months prior to admission when he sustained a minor back strain while helping to lift a 'jeep'. The only immediate discomfort experienced was slight aching and stiffness in the lower part of the back. Roentgenograms of the spine were taken, and subsequently the officer was informed that he was suffering from arthritis. Soon he developed a persistent mid-dorsal and low back pain together with stiffness in the lower back. Examination revealed the back to be objectively normal. The roentgenograms showed the characteristic changes of a mild healed osteochondritis juvenilis dorsalis. Detailed questioning revealed that qualitatively the pain consisted of two areas of "burning and tingling," each the size of a 50 cent piece (30 mm). One was located over the right sacroiliac joint and the other just medial to the angle of the right scapula. Both the stiffness and the "pain" disappeared with simple reassurance.

4 *Bizarre posture*. A 28 year old corporal with eight months of military service was admitted with the diagnosis of severe lumbosacral strain. He complained of continuous mid and lower back pain and a progressive forward bending of the back of four months' duration. He had a hunted look, was tense and presented a myriad of associated psychoneurotic symptoms. Examination revealed a pronounced stoop, the forward bending being from the hips and the trunk being held at about a 120 degree angle. The back was held rigid, the paravertebral muscles were decidedly spastic and any attempt to extend the trunk was exceedingly painful. He could straighten his back perfectly in the recumbent position. The past history and the events leading to the development of the camptocormia can only be sketched. He had spent two years in a penitentiary between the ages of 18 and 21 years because of larceny. After release

he held jobs in various states as an oil field worker was married and had one child. From all available information he had remained a good citizen and had no further police record. In every new location in which he worked his prison record eventually became known. Consequently he had moved from job to job. Two years prior to induction he had injured his back during a fall from an oil derrick. He was hospitalized and received compensation for a period of four months. He had not been incapacitated subsequently but periodically had noted mild low back discomfort and stiffness. On induction into the service he had welcomed the opportunity to make good and finally to get away from his criminal record. He received the rating of corporal after four months and decided to take examinations for Officers Candidate School. In the course of making such application the question of his penitentiary record came to light. He was bluntly told that an ex-convict could not become an officer, and his prison record became known to other soldiers. The patient became depressed and developed back pain and a progressive forward stoop. With psychotherapy which included assurance that he would be separated from the service the posture gradually became normal. Two similar cases of camptocormia were reported from the medical service of this hospital by Hamlin.<sup>4</sup>

5 *Associated hysterical manifestations*. A 34 year old private of American Indian parentage with two years' military service was admitted with the diagnosis of arthritis of the right wrist and fingers. He complained of pain, stiffness, weakness and a sense of swelling in the right wrist and the metacarpophalangeal and proximal interphalangeal joints of the right hand. He had worked as a laborer on road construction in the North Pacific area for several months. After his return to the United States he applied for a furlough in order to visit his wife, who had been ill. The furlough request was refused, and three days later the disability ensued. His attitude was cheerful and he smiled while complaining of the pain provoked by forced motion of the allegedly involved parts. There was no objective or roentgenographic evidence of joint disease but neurologic examination revealed a complete anesthesia to pain, temperature and touch of the glove type extending from the finger tips to 4 cm below the tip of the right shoulder. Reassurance and a promise of furlough brought about considerable improvement in the symptoms. For administrative reasons the furlough was again denied and within forty-eight hours the joint complaints and anesthesia returned to their original intensity.

We agree with Halliday<sup>5</sup> that many patients complaining of stiffness and aching in the muscles and joints who are considered to have fibrositis are actually victims of psychogenic rheumatism. In the light of our experience we find difficulty in accepting the incidence of fibrositis in soldiers as reported by certain English physicians. For example, Copeman<sup>6</sup> reported that of the first hundred rheumatic cases admitted to a general hospital in France in 1940, 70 per cent were diagnosed as fibrositis. Hutchison<sup>7</sup> studied 78 patients with rheumatic disease admitted to a British military hospital and considered 69.2 per cent to be suffering from fibrositis. These figures are in sharp contrast to those compiled by us (table 1). The diagnosis of primary periarticular or intramuscular fibrositis was made in 5.8 per cent of our cases. We have ventured the diagnosis of fibrositis only when a typical history has been elicited in an emotionally stable individual. In the absence of significant organic changes it is always diffi-

4 Hamlin, P. G. Camptocormia. Hysterical Bent Back of Soldiers, Report of 2 Cases, *Mil. Surgeon* 92: 295-300 (March) 1943.

5 Halliday, J. L. Concept of Psychosomatic Rheumatism, *Ann. Int. Med.* 15: 666-677 (Oct.) 1941.

6 Copeman, W. S. C., cited by Hench, P. S., Bauer, Walter, Boland, E. W., Dawson, M. H., Treiberg, R. H., Holbrook, W. P., Ke, J. A., Lockie, Maxwell and McEwen, Currier. Rheumatism and Arthritis. Review of American and English Literature for 1940. *Ann. Int. Med.* 15: 1002-1108 (Dec.) 1941.

7 Hutchison, I. H. Nonarticular Rheumatism in the Army. *Symp. on Rheumatology. Etiology, Treatment.* Glasgow M. J. 137: 33-42 (Feb.) 1942.

cult to evaluate symptoms of aching and stiffness especially when these are located in the back. We have considered a more or less typical "jelling" character of these symptoms i.e. aggravation by periods of physical inactivity, dampness or weather changes and relief by moderate exercise or heat as necessary criteria. We believe that improper evaluation has often been placed on the fatigue and nervous irritability which is said to accompany fibrositis so frequently. In many instances it is probable that these symptoms are but part of a neurasthenic state in which aching and stiffness serve as the predominant psychogenic manifestations. The evaluation of the patient's emotional make-up, the recognition of associated psychoneurotic complaints and the finding of a precipitating psychogenic factor have aided us in differentiating between fibrositis and psychogenic rheumatism.

One comment that is frequently heard is to the effect that many of these patients are malingerers and should be made to work. Malingering involves the conscious feigning of an illness to avoid duty<sup>8</sup> and as such is punishable in the army by court-martial. In our experience true malingering has been uncommon in contrast to the frequency with which somatic symptoms develop unconsciously as a means of escape from the unpleasant things associated with military service.

Our attempts to salvage these patients with psychogenic rheumatism and to return them to either full or limited duty have been largely unsuccessful. In many instances the only solution rests in the removal of the underlying mental conflict which can be accomplished by separating them from military service. In others the underlying emotional make-up is so poor and the associated psychoneurotic manifestations are so definite that rehabilitation for military service would be neither feasible nor advisable. In certain instances, however, mild somatic symptoms have become intensified and fixed because the psychogenic nature of the illness has not been recognized soon enough. It is hoped that more prompt recognition and proper psychotherapy instead of physical therapy will prevent some of these psychogenic rheumatism casualties.

8 Farrell M J and Kaufman M R. A Compendium on Neuropsychiatry in the Army. Army M Bull. April 1943. No. 66. pp. 1112.

**Types of Injury Produced by Electric Currents**—It is necessary to differentiate sharply between the forms of electrical energy in studying their effects on the tissues. High frequency alternating currents of different varieties (damped uniterminal, bi-terminal and undamped) produce their effects essentially through the production of heat in the electrical field. The effect varies with the character of the current. Passage of the current may produce only a moderate rise in the temperature of the field without permanent injury to the tissues (diathermy). The temperature of the whole body may be elevated in this way through the distribution of the heat so generated throughout the body by the circulating blood and tissue fluids. Currents of high frequency but otherwise of a different character are capable of destroying tissue: a principle applied in surgery in the use of the electric knife. Currents of this type through the passage of electrical discharges from suitably shaped electrodes produce (1) complete disruption of tissue through molecular changes as in fulguration (2) a peculiar dehydration of the tissues through what is called desiccation or (3) a complete death of the tissue through its coagulation and (4) a lifelike severance of the tissues spoken of by some as resection. All these therapeutic forms of electric energy have their virtues and their faults which must be read about in treatises on electrotherapy and clinical surgery.—Forbus Wiley D. Reaction to Injury. Baltimore: Williams and Wilkins Company, 1943.

## PREFRONTAL LOBOTOMY IN CHRONIC SCHIZOPHRENIA

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OMAHA

The operation of prefrontal lobotomy for certain mental disorders was introduced by Egas Moniz<sup>1</sup> of Lisbon, Portugal, in 1936. He published results in 20 cases of which 7 were classed as recovered, 7 as improved and 6 as not benefited. The best results appeared in cases of depression, the poorest in schizophrenia.

Freeman and Watts<sup>2</sup> who introduced the procedure in this country in 1936, deserve the credit for the development of current interest in this method. Since 1936 the procedure has been tried by Tarumianz,<sup>3</sup> Strecker, Grant and Palmer,<sup>4</sup> Lyeley,<sup>5</sup> Love, Schrader,<sup>6</sup> Peterson and Buchstein,<sup>7</sup> among many. They have reported on a fairly large number of different psychotic states.

One of the most encouraging reports was made by Strecker, Grant and Palmer<sup>4</sup> in 5 cases of chronic schizophrenia, not one of which had been benefited by years of previous therapies. The authors noted removal of emotional charge and definite change in behavior in all patients.

Schrader<sup>6</sup> reported 58 cases in a state hospital, mostly of chronic schizophrenia. He obtained good results in 30, in 26 of which paroles from the institution were granted. The best results were obtained in the paranoid patients.

Freeman and Watts<sup>2</sup> operated on 12 patients with schizophrenia and obtained good results in 5, improvement in 5 others and no response in the other 2. Of this group 3 became regularly employed, 3 were employed part time, 3 were able to live at home and 1 remained institutionalized.

Peterson and Buchstein<sup>7</sup> recently reported 25 cases of schizophrenia of long duration in state hospitals; remarkable improvement occurred in 12 of these, slight improvement in 11, no improvement in 1, and there was 1 fatality.

Ziegler<sup>8</sup> has compiled from questionnaires a survey of all available cases. His analysis is given in the accompanying table.

Although good results from this operation have been reported in the psychoneuroses and affective disorders, we feel that this radical treatment is not indicated at present in these functional emotional states with the possible exception of chronic disabling obsessive

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From the Department of Neuropsychiatric Research, Bishop Clark on Memorial Hospital.

1. Egas Moniz. Tentatives operatoires dans le traitement de certaines psychoses. Paris: Masson & Cie, 1936.

2. Freeman, Walter and Watts, J. W. Prefrontal Lobotomy in Agitated Depression. Report of Case. M. Ann. District of Columbia 5: 326 (Nov.) 1936. Prefrontal Lobotomy in the Treatment of Mental Disorders. South. M. J. 30: 23 (Jan.) 1937.

3. Tarumianz, M. A. in Twenty-Sixth Biennial Report of the State Board of Trustees of the Delaware State Hospital, Wilmington, 1941.

4. Strecker, E. A., Grant, J. C. and Palmer, H. D. Study of Frontal Lobotomy. Evaluation of Neurological and Psychological Features in Five Clinically Observed Psychotic Patients. Am. J. Psychiat. 98: 24 (Jan.) 1942.

5. Lyeley, J. C. Transection of the Deep Anterior Fibers of the Prefrontal Tracts in Certain Mental Disorders. Arch. Surg. 78: 476 (Oct.) 1940.

6. Freeman, Walter and Watts, J. W. Psychosurgery. Springfield, Ill.: Charles C. Thomas, Publisher, 1942.

7. Peterson, M. C. and Buchstein, H. S. Prefrontal Lobotomy in Chronic Psychosis. Am. J. Psychiat. 99: 46 (Nov.) 1942.

8. Ziegler, I. H. Personal communication to the author.

compulsive states. The present therapy of affective disorders by means of combined psychiatric and convulsive shock therapy is effective. Psychoneurotic states usually respond favorably to psychotherapy. Lobotomy is a radical procedure that can hardly be considered a cure. Definite change in personality does occur after lobotomy. The patient becomes more extroverted, less self-conscious and no longer aggressive and responsive to abnormal emotional drives, thus becoming a socially acceptable individual. But he cannot be said to be cured of the psychosis. We should therefore reserve the operation for chronic and apparently permanent institutional patients in whom any improvement is pure gain and the procedure, even with its hazards, seems justifiable. We have therefore considered its possible application only to improving personality reactions of chronic schizophrenic patients for whom all previous therapies have failed.

The mortality of various groups reported to date has been from 1 to 10 per cent. Operative hemorrhage has been the usual cause of death. Increased experience has lowered the rate which need never be high. Complications

#### Survey of Bilateral Prefrontal Lobotomies

Reported from Seventeen Different Clinics in United States and Canada on Patients with a Variety of Psychiatric Reaction Types. Schizophrenia Predominant.

January-March 1943

1 Number operated on	582
2 Died as a result of the operation	11
3 Died subsequently to the operation	16*
4 Rendered clinically worse after the operation than before	8
5 Clinically unimproved after the operation	60
6 Clinically slightly improved after the operation	111
7 Clinically much improved after the operation	192
8 Recovered after operation, psychotic or neurotic symptoms disappeared	184
9 Number of patients known to be in the hospital now (some able to work)	265
10 Number known to be outside the hospital but unable to work	55
11 Number known to be outside the hospital working, part or full time	235

\* One from suicide

Survey made by Lloyd H. Ziegler, M.D., medical director, Milwaukee Sanatorium, Wauwatosa, Wis.

cations have been frequent, such as persistent incontinence, convulsive states (10 per cent), aphasias and postoperative hemiplegias.

The *modus operandi* of the procedure is still not adequately understood. Beneficial results possibly occur from section of the anterior thalamic radiation from the medial dorsal nucleus of the thalamus to the frontal poles. These fibers may supply affective tone to intellectual experience, and their severance may break the link between emotion and imagination.

After lobotomy a pronounced change in the patient's personality occurs. Freed of anxiety and obsessive thinking and released from feelings of inferiority, he feels un-self-conscious and is able to turn his interests outward. He responds quickly to external impressions, is usually euphoric, gets along superficially with everybody and is childlike and cheerful. Intellectually the patient retains all past memories but cannot project himself into the future. He loses ambition and is satisfied with day to day living. The lobotomized individual is friendly, good-natured and indifferent to others' opinions, yet expresses himself freely. Malice and aggressiveness are lacking. He responds well to frustration, although easily angered, he calms down readily. Delusions and hallucinations may persist, but he does not spontaneously bring them out or react to them.

He makes decisions quickly and enjoys simple pleasures. He ignores criticism of others, harbors no grudges and has no worries.

#### THE TECHNIC OF PREFRONTAL LOBOTOMY

In the original operation Egas Moniz<sup>9</sup> injected small amounts of alcohol into the white matter of the prefrontal region through a trephine located 3 cm in front of a vertical line between the ears and 3 cm on each side of the midline of the skull. He used a special instrument called the leucotome which cut a localized core of white matter in different regions of the prefrontal lobes. This technic left a considerable amount of completely devascularized white brain tissue to undergo degeneration and gliosis.

Freeman and Watts<sup>10</sup> who introduced the Egas Moniz technic into this country in 1938 later changed the technic to a simple dull blade incision (Killian periosteal elevator) through a lateral trephine 6 cm above the zygoma and 3 cm behind the anterior rim of the orbit (fig. 1). This technic and approach were designed to avoid much devascularization of tissue and postoperative complications of serious hemorrhage, paralysis and convulsions (fig. 2). Freeman emphasized passing the blade of the knife in the plane of the coronal suture not in a vertical line to avoid complications and to include the precise amount of prefrontal lobe.

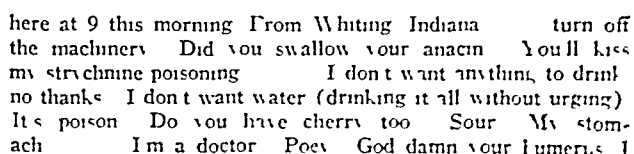
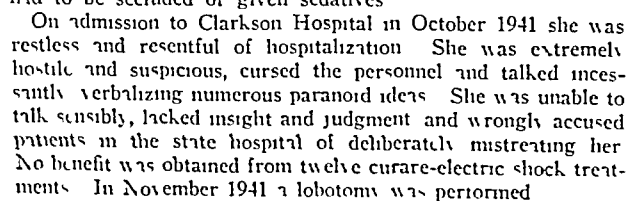
However, this method of entrance seemed dangerously close to the motor cortex of the face particularly to Broca's motor speech center on the left side. Careful anatomic study of Lyster's<sup>11</sup> approach showed its place of entrance 4 cm lateral from the midline to be well located in order to avoid a fissure and cerebral vein commonly located at the 3 cm distance. This entrance into the frontal lobe is approximately 3 cm anterior to the arm motor cortex so that superficial adhesions or gliosis should be less likely to produce postoperative convulsions.

The place of the brain incision determined by insertion of a ventricular needle before the knife blade is entered passes just in front of the anterior horn of the lateral ventricle. This prevents the blade from entering the ventricle or injuring the caudate nucleus or anterior perforated space. The depth of safe insertion depends somewhat on the shape of the frontal lobe, but 5.5 to 6 cm, the depth used, will not reach the floor of the frontal fossa in an adult. A small incision is made over a convolution in the arachnoid. The dull blade is inserted and passed medially and laterally to near the limits of the frontal lobe. Resistance of white brain tissue is not great, whereas greater resistance of pia-arachnoid and larger superficial cerebral vessels can be detected before they are torn. From each lateral limit of this incision the blade is drawn upward as it is more angulated out. The complete incision by this technic is illustrated in figure 2, drawn from lobes cut off in the plane of the lobotomy incision. Bleeding from the incision is not great and soon stops after the knife is turned crosswise a few times in different regions to permit escape of blood. The scalp wound is then closed with fine silk.

The most important white fibers cut by prefrontal lobotomy comprise the frontothalamic radiation which enters the dorsal medial thalamic nucleus. Some degeneration of this nucleus occurs after the section,

9 Egas Moniz. Les premières tentatives opératoires dans le traitement de certaines psychoses, *Encephale* 31: 1 (June) 1936.  
10 Lyster, J. G. Prefrontal Lobotomy in Involutional Melancholia. *Florida M. A.* 25: 225 (Nov.) 1938.

On admission to Clarkson Hospital the patient was quiet. Her speech was rapid without expression even when she announced that she had just drunk poison. She showed no fear, anxiety or bewilderment but rather tried to confound the examiner. She used clothing and bedding decoratively but was not destructive. Her speech was spontaneous and unrestrained, with attempts at rhyming, her talk overproductive and jumbled thus "Poey-poey on luey. Why don't you go to hell? I cant eat no meat. I dont want your ankles. I said that was Tuxedo Junction—I'm a woman and a half. My home is in Sing Sing—I'm Paul Mark disgusting, poey poey on luey. I've got to look out for bedbugs. This is Clarkson Hospital. I wasn't born in this world. I came and bought it in the dime store. Nothing 10 cents. Six. I came



own the business now. Why don't you try chess? I hate business. I love observations. I thought Mr. Moore was the guy. My kidneys. Dry up and blow away. Now my heart needs medicine.

A lobotomy was performed in April 1942. In the postoperative course at first the patient was untidy and excretory circles. Later she took part in many ward activities, did neat embroidery and began to use makeup and pay attention to her appearance. She associated well with other patients and played cards. Her answers to questions were pleasant and sometimes peculiar.

At present she lives at home doing housework and some embroidery. About once a week she has outburst of protest and sometimes never in public. Out of a clear sky, he will give you her blessing, then as she didn't say anything and start to strike a person catching herself just in time. She is cheerful most of the time, during her men she becomes seclusive but has clear conversation. She incline to accept suggestions is very eroticistic and love to dress up. She loves movies and social activities in which she is friendly and reserved. She wants to get married. She has gained about 100 pounds (45 Kg.).

She does not remember her illness before in a state hospital or the operation. She counts the last two years always in time that she is two years younger than her actual age. She can keep house and help her sister, doubtless indefinitely under intelligent understanding supervision.

CASE 3—R. K., a married woman aged 33, a housewife, admitted in August 1942 after an illness of two years, seven months, had schizophrenia of the paranoid type. Her husband first noticed that she had periods of silence and sadness, especially late in the day. The night before a gallbladder operation and removal of her hymen to which she consented, she cried bitterly and claimed her husband was talking about her and making fun of her. Postoperatively she was confused and suspicious for three or four days but recovered from this attitude. About one month later her paranoid ideas were apparent with olfactory hallucinations.

The patient was hospitalized during the early part of 1941 in two psychiatric sanatoriums. At the second she received twenty-eight electric shock treatments with temporary improvement followed by relapse. Three more shock treatments held her for the rest of the year. Early in 1942 she was given fifty-eight shocks with improvement for only a short time. Hospitalization of three weeks brought improvement and then relapse.

On admission to the Clarkson Hospital the patient was kept in seclusion almost continuously. She exhibited paranoid ideas when questioned but was quiet and cooperative when undisturbed. A lobotomy was performed in August 1942.

During the postoperative course the paranoid response was lost, the affect blunted. She was pleasant and cooperative, repetitively leafing pages, folding paper or writing letters such as "Just a line to let you know that I'm getting along fine, that I'm getting along fine, that I'm getting along fine."

Later on this repetition was broken.

At present the patient manages her home. She is pleasant and friendly and makes an effort to take her mind off worries. She has occasional periods of being jittery and seems to get depressed with physical illness. She has gained weight and can relax completely. The husband is completely satisfied with the result. Undoubtedly the operation prevented permanent institutional existence.

CASE 4—W. B., a single man aged 22, a college student, admitted in December 1942 after an illness of five years two months, had schizophrenia of the hebephrenic type with catatonic features. His father committed suicide after financial reverses, a paternal uncle was said to be peculiar but harmless. The patient was first taken ill at college. He had always been introverted, sensitive, conscientious and studious without previous nervous disorder except a tendency toward extreme day dreaming in childhood. He had worked hard in high school and had graduated at the top of his class. The first year in college he worked hard but made a poor social adjustment. When teased by his college mates for his studiousness, he com-

plained that they turned on the radio or made too much noise whenever he wanted to study. He made no heterosexual adjustment. In spite of this unhappiness he insisted on returning the next year, his mother thought to prove he could get along. He was soon missed from the college and was subsequently found wandering dazedly in a nearby town. He complained of feeling inadequate, expressed much concern over world problems and especially wanted to combat communistic influences among students. He had many ideas of reference as that others were condemning him, was much depressed and admitted auditory hallucinations.

After hospitalization he improved slightly and, on his mother's insistence, was dismissed. Two months later he was given seven electric shock treatments as an ambulatory patient. He showed some improvement but returned to a private hospital on two occasions one of which he was given fourteen insulin shock treatments. He improved in behavior and was at home for about nine months during which he had several violent spells of impulsiveness and lack of control and on one occasion threw his mother downstairs. He was then committed and sent to the state hospital.

On admission there he showed some evidence of deterioration with usually undeviated mood and blunted affect, although he sometimes broke into angry spells without provocation. Preoccupied with world problems and illogical thoughts, he had no systematized delusions although the family related such ideas as that there were secret wires in the house and that he was being controlled. He was manneristic, quiet and seclusive with much lack of judgment. He laughed unmotivatedly and whispered responses to auditory hallucinations. Electric shock and insulin shock treatments were started about six months later. He made no gain. A half year later he became excited, restless, self injurious, noisy, aggressive, impulsive, violent, uncooperative and destructive, requiring constant restraint.

After admission to Clarkson Hospital he was secluded, uncooperative, negativistic, impulsive, stereotyped in speech and expression without affective response. He was definitely blocked and often irrelevant.

A lobotomy was performed in January 1943. The postoperative course found him cooperative and partially stuporous but with pleasant response and gratitude for his care. He was incontinent. Aseptic meningitis developed as a complication, he fell into a deeper stupor but was entirely cooperative when he could be roused. After recovery from this complication he remained completely cooperative and became a friendly, carefree person. He gained 50 pounds (23 Kg.). His letters still reveal schizophrenic dissociation, but he is capable of useful work under supervision. Because he has no home he is under psychiatric care until intelligent supervision can be arranged outside an institution.

CASE 5—R. S., a married woman aged 50, a housewife, admitted in November 1942 after an illness of four years, had schizophrenia of the catatonic type. In personality the patient was extroverted, socially active and a good mixer. When she was 45 years old she lost a baby at birth. She had never had any previous nervous or mental disorder. No family history of nervous or mental illness was obtained. The mother of the patient died when the patient was a small child.

She was taken ill while visiting away from home. She suffered short periods of amnesia and once was lost for a day in a large city. On return home she had fears of dirt accompanied by feelings of guilt and obsessive hand washing. Six months after the onset she became quiet to the point of muteness, refused to eat and was actively negativistic. She was hospitalized for three and one-half years, during which she had two full courses of insulin shock treatment, one course of metrazol shock treatment and fourteen electric shock treatments. She improved somewhat with each series of treatments but immediately relapsed to her previous catatonic state.

After admission to Clarkson Hospital in November 1942 she was given hypnotic doses of a short acting barbiturate and for short periods she was cooperative. She revealed a deep seated guilt reaction to an extramarital affair. She was given a few curative electric shock treatments without sustained improvement.

A lobotomy was done in January 1943. This operation was incomplete on the left side because of technical difficulties. In April 1943 the left side was operated on again, with a complete incision at this time. Following the first operation the patient became cooperative at once and was interested in her surroundings. Incontinence was a major nursing problem. Gradually she became aggressive and sarcastic, then relapsed into inactivity and muteness. Curare-electric shock therapy produced only temporary improvement.

After the second operation an aseptic meningitis developed with recovery in about one week. Her psychologic response was more gradual with evidence of periodic depression. Investigation showed numerous deep seated feelings of guilt over the extramarital affair; she alternated between depressive moods with feelings of guilt and aggressive, sarcastic behavior. She remains institutionalized and up to date must be considered a failure to obtain improvement from lobotomy.

#### COMMENT

The convalescent postoperative psychiatric nursing care of lobotomized patients is extremely important. The later social management of these changed individuals in a protected environment, education of relatives, and reeducation of the patient are real problems. Little information concerning this phase of treatment is available. Freeman and Watts<sup>11</sup> have recently emphasized its importance.

A phase of apathy and inertia immediately follows operation. Patients appear blank or stuporous for a few days to a week, apparently regressing to an infantile level, and have to be fed and moved about in bed. They pay no attention to excretory functions and appear totally indifferent to their surroundings. Some carry out repetitive acts indefinitely. Gradually the patient becomes more tidy and can be directed into simple activities but these must be supervised for some weeks.

On the patient's return the family must be given detailed explanations in order to understand the patient. The nurse in charge is instructed to explain in detail the daily routine. The patient must be forced out of bed, taken to the toilet at regular intervals, removed from the toilet, and forced to bathe, dress and feed himself under daily supervision until responsibility develops. As the patient begins to eat, overeating must be controlled. In even the simplest occupational activities the patient must be specifically instructed and guided for a considerable time.

The patient's lack of self consciousness, childlike pleasure in simple things, facetiousness and sarcastic remarks must all be understood by the relatives, who must strictly overlook undesirable behavior. They need to recognize the patient's emotional immaturity for some months after surgery. He must not be permitted to assume such adult responsibilities as looking after money or making unusual social adjustments without supervision for some months. Gradually as he makes better adjustments, more tasks and responsibilities can be added. Return to former employment cannot be expected for at least three to six months after surgery. According to Freeman and Watts the degree of recovery cannot be determined until at least three years have elapsed.

#### SUMMARY

Prefrontal lobotomy, devised by Egas Moniz and perfected by Freeman and Watts, has been established as a useful procedure in psychiatric treatment. In our

opinion its usefulness should continue to be investigated and to be limited to chronically disabled psychotic patients who have been unimproved by other therapies. It should not be used in psychoneuroses and affective states until the patients have proved totally refractory to other methods.

In certain selected chronic cases of schizophrenia, in the light of present knowledge, lobotomy should be continued in order to restore many disabled persons to social usefulness. This operation has effected a good social recovery in 4 cases of aggressive paranoid schizophrenia. One catatonic type failed to improve.

The problem of social rehabilitation of these patients opens up a new field of social and psychiatric nursing techniques and needs more study to aid lobotomized patients to resume normal living.

607 Medical Arts Building

### SALMONELLA CHOLERAE SUIS AS A CAUSE OF INDOLENT SUB- CUTANEOUS ABSCESS

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AND

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DETROIT

*Salmonella cholerae suis*, which is more commonly known as *Salmonella supestifer* and is normally found associated with a virus in the hog's intestinal tract, was described by Salmon and Smith<sup>1</sup> in 1885. Longcope<sup>2</sup> in 1902 was the first to report human infections caused by this organism. Since that time there have been numerous reports in the literature describing both epidemic and sporadic cases. In 1928 White<sup>3</sup> collected 25 cases of 'paratyphoid nature and of localized pyogenesis.' Most of the cases which he found had occurred during or after the first world war. In 1937 Harvey,<sup>4</sup> prompted by three outbreaks of food poisoning and the sporadic appearance of the infection in 18 persons, 11 of whom were admitted to the Johns Hopkins Hospital, reviewed the literature and divided 1,425 bacteriologically proved cases into two groups: (a) those found in epidemic outbreaks due to a known source of infection and (b) sporadic cases. He found 50 of the latter recorded in medical literature and reported 21 of his own.

The most common type of sporadic infection is a bacteremia which simulates typhoid. Numerous other manifestations have been reported. Among them are

Edith Hamilton of the department of bacteriology of the City of Detroit Receiving Hospital gave us valuable assistance.

From the Department of Surgery, Wayne University College of Medicine and the Department of Pathology, City of Detroit Receiving Hospital.

<sup>1</sup> Salmon D E and Smith T. Report on Swine Plague. 2d Annual Report U S Bureau of Animal Industry. 1885, p 184.

<sup>2</sup> Longcope W T. Paracolon Infections Together with the Report of a Fatal Case with Autopsy. Am J M Sc 124: 209-217 (Aug) 1902.

<sup>3</sup> White F B. A System of Bacteriology in Relation to Medicine. London, His Majesty's Stationery Office. 1929, p 129.

<sup>4</sup> Harvey A M. Salmonella Supestifer Infection in Human Beings. Review of the Literature and Report of 21 New Cases. Arch Int Med 59: 118-133 (Jan) 1937.

<sup>5</sup> Couley B A and Israel S I. Salmonella Supestifer Infection with Acute Endocarditis. Arch Int Med 53: 697-705 (May) 1934.

<sup>6</sup> Cole D B and Nalls Walter L. Salmonella Supestifer Infections. Report of a Case. J Lab & Clin Med 23: 122-1225 (Sept) 1938.

<sup>7</sup> Solier R and Henry A. Two Cases of Human Infection with Paratyphoid C Bacteria. Paris 22: 151 (Sep) 24, 1938.

<sup>8</sup> Cohen Leiser Fink Harold and Gray Irving S. Salmonella Supestifer Bacteremia with Endocarditis. French J Bact 1: 1-11 (Aug) 1936.

<sup>11</sup> Freeman Walter and Watts J W. Prefrontal Lobotomy—Convalescent Care and Aids to Rehabilitation. Am J Psychiat 99: 194 (May) 1943.



pneumonia, pyarthrosis, osteomyelitis, endocarditis, meningitis, cholecystitis, splenic abscess, and infection of the urinary tract. Salpingitis, subdural abscess, infection of myoma of the uterus, and acute appendicitis (a fatal case) have also been described. Some of these were associated with bacteremia.

Extremely rare are reports of *Salmonella* infection involving the skin and subcutaneous tissues either following septicaemia or occurring without antecedent infection of the blood stream. A subcutaneous abscess occurring in a child 50 years reported by Kober in 1930. Several in 1932, observed a pale growth of *S. saint-paul* from the thick of a 3 year old child's arm followed by empyema from which *S. saint-paul* was isolated. Abscesses were isolated from a 10 year old child occurring in the right arm, followed by bacteremia. In 1932, a child of 5 years old with periarthritis of the hip joint, 5 months old. The organism was isolated by Bornstein and his associates. In 1933, 2nd fatal *Salmonella* infections were reported from the pus of a pyogenic abscess of the paraproctitis.

Perhaps the numerous lesions caused by *S. supestitifer* are not reported because we wish to encourage the collection of additional data on this type of infection. We are reporting cases of indolent subcutaneous abscess due to this organism.

1. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 1) 1925.
2. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 2) 1925.
3. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 3) 1925.
4. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 4) 1925.
5. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 5) 1925.
6. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 6) 1925.
7. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 7) 1925.
8. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 8) 1925.
9. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 9) 1925.
10. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 10) 1925.
11. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 11) 1925.
12. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 12) 1925.
13. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 13) 1925.
14. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 14) 1925.
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24. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 24) 1925.
25. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 25) 1925.
26. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 26) 1925.
27. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 27) 1925.
28. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 28) 1925.
29. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 29) 1925.
30. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 30) 1925.
31. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 31) 1925.
32. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 32) 1925.
33. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 33) 1925.
34. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 34) 1925.
35. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 35) 1925.
36. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 36) 1925.
37. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 37) 1925.
38. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 38) 1925.
39. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 39) 1925.
40. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 40) 1925.
41. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 41) 1925.
42. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 42) 1925.
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100. J. M. F. L. S. *Salmonella* (Hc. Cholera) Infection of the Skin and Subcutaneous Tissues. (No. 100) 1925.

## REPORT OF CASE

F. M., a retired Negro laborer aged 73 first seen in the outpatient department of the City of Detroit Receiving Hospital on Oct. 12, 1942, complained of a swollen and painful left wrist. He stated that forty years previously, while he was working in a stone quarry in Galesville, Gr., a piece of rock hit him on the back of the left wrist severing a tendon. A foreign body was deeply embedded in the wound, the wound healed uneventfully, but a small nodule appeared in the scar. The nodule had swollen intermittently for forty years, but application of liniment had usually caused the swelling to recede.

On Sept. 20, 1942, about a month before the patient came to this hospital, a heavy cooking pot fell on his wrist injuring the old scar. The next day the area was painful and swollen, and the swelling subsequently increased. The patient was followed in the outpatient clinic of another hospital for four days. At the end of that time because of an elevated temperature he was admitted there. He remained for twelve days. Following is the report from that hospital: "The left hand was markedly swollen, puffy and moderately painful. The left wrist at the radial aspect showed a prominence about 2 cm. above the surface of the arm and approximately 2 to 3 cm. in diameter. It was indolent and soft, moderately painful and fluid to palpation. The entire forearm was somewhat swollen. The patient was seriously ill and had a spiking type of temperature. The hemoglobin content was 12.5 Gm., the red blood cell count 3,800,000, white blood cell count 7,100, with polymorphonuclears 80 per cent and lymphocytes 20 per cent. The blood salicylurazole level was 4.4 mg. per hundred cubic centimeters. X-ray examination revealed a foreign body in the left wrist. Continuous hot soaks were applied to the arm and the patient was given sulfathiazole. His temperature returned to normal the day before dismissal (Oct. 7, 1942)."

After the patient's discharge from the hospital the arm continued to be swollen, painful and tender and did not improve on supportive measures. The patient was then referred to the outpatient department of the City of Detroit Receiving Hospital, where he was first seen on Oct. 27, 1942. On October 30 the swollen area was aspirated, and 7 cc. of bloody fluid was obtained. This unfortunately was not cultured.

On November 4 the patient was admitted to the hospital for incision and drainage of the swollen area and biopsy. Examination revealed a large apparently fluctuant mass occupying the entire dorsum of the left wrist. The mass was tender, and motion at the wrist was slightly limited. The other abnormal findings were hypertensive retinopathy, grade 2, enlargement of the heart both to the left and to the right with a diffuse apex beat, a moderately harsh systolic murmur at the apex and a soft blowing one over the aortic area, and definite arteriosclerosis of all vessels. The temperature, the pulse and the respirations were normal. The hemoglobin content was 10 Gm., and the white blood cell count was 6,000, with a differential count of 60 per cent polymorphonuclears, 37 per cent lymphocytes, 2 per cent monocytes and 1 per cent eosinophils. The Kline and Kahn tests were negative, and urinalysis showed nothing of note. X-ray examination revealed a foreign body 5 by 7 mm. in diameter on the dorsal aspect of the radius approximately 3 inches above the wrist joint. There was considerable diffuse demineralization of the bones of the wrist. No evidence of involvement of the bones or of the joint by the infection could be demonstrated (fig. 1).

On November 7 under local anesthesia a longitudinal incision about 4 cm. long was made through the skin and subcutaneous tissue. Several cubic centimeters of thick greenish purulent material was encountered in the center of the mass. The mass itself consisted of gray-green rubbery tissue which appeared grossly to be tuberculous. A portion of this was removed for microscopic examination, and a pathologic report of pyogenic granuloma and organized hematoma was returned. The material obtained from the abscess was cultured and a motile gram-negative rod isolated. This grew readily on all ordinary gram-negative rod isolated. This grew readily on all ordinary mediums. It produced acid and gas on dextrose, maltose, mannite, sorbitol, xylose and rhamnose. There was no reaction on lactose, sucrose, dulcitol, mositol, trehalose and arabinose.

It grew readily on tartrate agar and was inhibited by citrate. It did not produce indole but did form hydrogen sulfide. On Kliger's medium there were acid and gas in the butt with an alkaline slant. Litmus milk became alkaline, and gelatin was not liquefied. Stool cultures were repeatedly negative for the organism. Routine blood agglutination tests for typhoid antigens H and O and paratyphoid B were also negative on several occasions.

The patient was discharged after three days in the hospital. The identification of the organism was completed by Dr. P. R. Edwards at the Salmonella Typing Station, University of Kentucky, Lexington, Ky., who classified it as *Salmonella cholerae suis*, variety Kunzendorf.

The patient was readmitted on November 22. The swelling was still present on the dorsum of the forearm. Purulent material exuded from several small sinuses, and the skin surrounding the sinuses was reddened over an area 3 by 5 cm. Beyond this for a distance of approximately 10 cm the skin was dry, hard and scaly. On the volar aspect of the forearm were several areas of reddish discoloration 1.5 cm in maximum diameter (fig. 2). The purulent exudate from the lesion was again cultured and the same organism isolated. At this time the white blood cell count was 5,400, with a differential count of 58 per cent polymorphonuclears, 41 per cent lymphocytes and 1 per cent eosinophils. The hemoglobin content was 11 Gm, and the red cell count was 4,280,000.

The patient's own serum agglutinated the organism strongly in dilutions up to 1:30 in a preliminary titration. Further attempts to establish the maximum titer have been precluded because of refusal of the patient to cooperate. He also refused to have the foreign body removed and left the hospital against advice. For the next few months he was seen weekly in our outpatient department. Therapy since discharge has consisted only of immobilization and routine dressings. The wound has continued to suppurate, but gradual improvement has occurred. Several home visits have revealed that the draining sinuses are still present at the site of the original lesion on the dorsal aspect

wood<sup>22</sup> in reporting a case of osteomyelitis and pyarthrosis due to a hematogenous infection in a 9-month-old baby girl, reviewed the literature and concluded that localized *S. suis* infection apparently occurs only in infants.

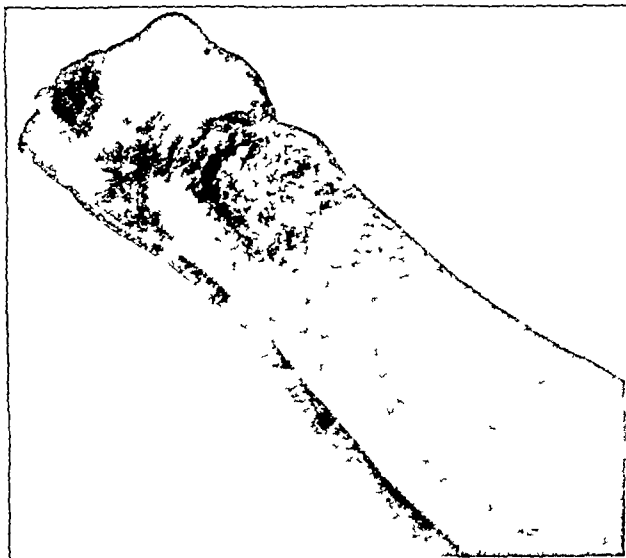


Fig. 2—Subcutaneous abscess of left wrist

As is common in cases of sporadic infection due to this organism, there is no known source of contact in the case just reported. The patient stated that he had not eaten any spoiled or infected meat. Though he had at one time cared for and slaughtered pigs, he had not had contact with them for over twenty years. Gajzago and Gottche<sup>8</sup> in 1942 discussed the possible sources of such infection in children, and though they found that in several cases it followed exposure to dead and infected pigs, they came to the conclusion that the main source of infection is probably healthy persons who are carriers.

22 Weaver J. B. and Sherwood Loraine. Hematogenous Osteomyelitis and Pyarthrosis Due to *Salmonella Suis*. *J. A. M. A.* 105: 1188-1189 (Oct. 12) 1935.

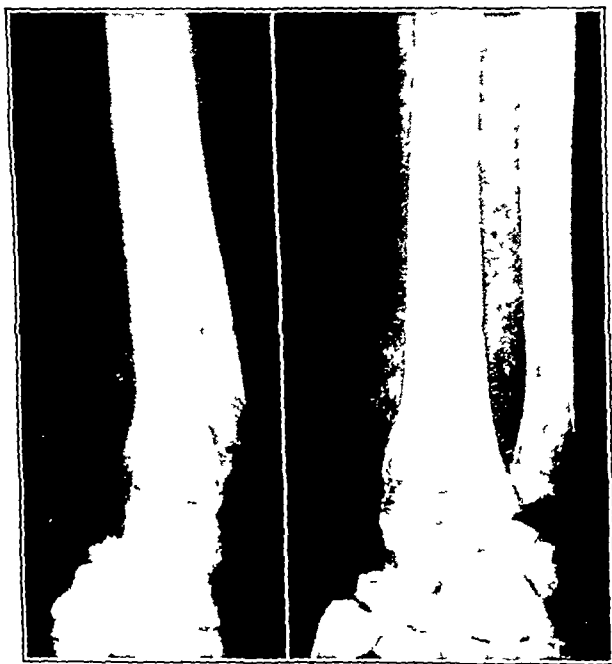


Fig. 1—Lateral and anteroposterior views of foreign body in left wrist.

of the wrist and that 5.5 cm. above this there is another draining sinus. Motion is not impaired and the patient wears a bandage only to prevent irritation.

This case is interesting since the patient is 73 years old and the majority of previously reported localized infections have been in children. Weaver and Sher-

**Complications and After-Effects of Diphtheria.**—In practically all cases of diphtheria complications occur. The most important of these are secondary infections in the upper respiratory tract. Streptococci are perhaps the most frequent secondary invaders; they are the usual cause of the interstitial and lobular types of pneumonia found so commonly at autopsy as well as of the acute nephritis that sometimes develops. Among the other serious complications may be mentioned obstruction of the air passages and asphyxiation; this results from aspiration of the diphtheritic membrane and also aspiration pneumonia, the development of which is favored by paralysis of the laryngeal muscles. When destruction of the mucosa and submucosa is extensive as it so often is when the lesions are secondarily infected, healing may be accompanied by scarring followed by contraction of the scar and narrowing of the air passages, laryngeal stenosis produced in this way is one of the common complications of the disease. Infections in the middle ear and mastoid processes are frequent and are due either to the secondary invaders or to the diphtheria bacilli; these organisms pass upward and reach the middle ear by way of the eustachian tube. Otitis media and mastoiditis originating in this way may lead to any or all of the serious temporary and permanent disorders that usually follow infections in the temporal bone.—Forbes, Wiley D. *Reaction to Injury*. Baltimore: Williams and Wilkins Company, 1943.

## THE INTENSIVE TREATMENT OF GONORRHEA AND SYPHILIS

ORGANIZATION, OBJECTIVES, ACTIVITIES AND  
ACCOMPLISHMENTS OF THE CHICAGO  
INTENSIVE TREATMENT CENTER

### PRELIMINARY REPORT

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### I. ORGANIZATION

The Chicago Intensive Treatment Center is operated under grants received from the Federal Works Agency, the U. S. Public Health Service, the state of Illinois and the Chicago City Council.

It was dedicated on Nov. 29, 1942 as an added facility in the Venereal Disease Control Program of the Chicago Health Department. The center receives its patients mainly from the health department clinics, selective service, and also from private physicians and the various hospitals. Attendance at the center is voluntary.

Extensive new case finding programs have been established in the health department. These have effectively uncovered for the Chicago Intensive Treatment Center many sources of patients infected with venereal disease which were heretofore missed. Among the most important methods used in locating the sources of infection are (1) a thorough search for and complete examination of all known contacts of infected military personnel, (2) routine examinations of such groups as selective service registrants and court cases and (3) complete cooperation of the majority of tavern, hotel and industrial groups in searching out, for the health department, suspects of venereal disease.

### II. OBJECTIVES

As a wartime emergency activity, the primary objective of the Chicago Intensive Treatment Center is to control effectively, and as quickly and safely as possible, the spread of venereal diseases by making non-infective those who spread these diseases. Therefore, persons with the following types of disease are admitted for diagnosis and treatment:

#### A. Syphilis

1. Primary and secondary syphilis
2. Relapsing primary and secondary syphilis
3. Untreated early latent syphilis meeting the following requirements

Dr. Aron is consultant in biochemistry and nutrition. Drs. Craig, Schwemlein and Jack Rodriguez are assistant surgeons (R) in the United States Public Health Service. Collaborators: Max Biesenthal, M.D., consultant in pulmonary diseases; Anne L. Bohning, M.D., consultant in cardiovascular diseases. From the Section on Fever Chemotherapy of Syphilis and Gonorrhea (Drs. Craig, Schwemlein and Steves and E. C. Sittler), the Section on Venereal Disease Diagnosis and Chemotherapy of Syphilis (Drs. Strakosch and A. A. Rodriguez) and the Section on Gonorrhea (Drs. Shaw and Jack Rodriguez).

Age of patients to be 25 years or less, with the exception of those patients between the ages of 25 and 30 who give a two year or less specific history of untreated syphilis.

#### B. Gonorrhea

1. Named promiscuous sources or contacts of persons infected with gonorrhea who have positive evidence of the disease either by laboratory or by clinical findings
2. Promiscuous persons for whom the epidemiologic information justifies isolation
3. Infectious gonorrhea resistant to routine methods of treatment
4. Those cases discovered by draft boards or selective service field stations during routine medical examinations
5. Patients with severe complications of the genital adnexa, ophthalmia and arthritis, due to gonorrhea

#### Undiagnosed Lesions

All patients presenting themselves to the Chicago Health Department clinics with acute undiagnosed genital lesions.

### III. ADVISORY COMMITTEE

Dr. Morris Fishbein suggested the appointment of a scientific advisory committee. This panel includes authoritative leaders in the field of venereal diseases who make decisions concerning policies and procedures to be followed and types of treatment to be employed as well as dosages of the drugs to be used. The advisory group now includes the following physicians: Herman N. Bundesen, Paul A. O'Leary, Francis Senear, John S. Coulter, Frank Krusen and Norris J. Heckel, and the following, who have been especially concerned with development of apparatus for fever treatment: Charles F. Kettering, D.Sc., and Paul de Kruif, Ph.D.

### IV. ACTIVITIES AND ACCOMPLISHMENTS

A. Syphilis—Three methods of intensive treatment for early syphilis are being employed—two comparative and one noncomparative method.

The two comparative methods are:

1. Modified Simpson, Kendell, Rose<sup>1</sup> (artificial fever in air conditioned cabinet plus arsenobismuth therapy), hereafter referred to as fever-chemotherapy.

All patients who complete fever-chemotherapy are at present routinely given 176 mg of mapharsen per kilogram of body weight (180 mg maximum regardless of weight) in three equally divided doses administered by the multiple syringe method. This is combined with one single dose of elemental bismuth (2 cc bismuth subsalicylate in oil) administered intramuscularly within twenty-four hours prior to the day of fever-chemotherapy.

In addition to mapharsen and bismuth, each patient also receives eight hours of fever maintained at the level<sup>3</sup> of 106° F (rectal) in the hypertherm cabinet.

The first dose of mapharsen is given when the patient's temperature first reaches the desired level of 106° F (rectal), the second dose at the beginning of the third hour, and the third dose at the beginning of the fifth hour of maintained fever.

2. Modified Schoch-Alexander<sup>4</sup> (multiple syringe, short term arsenobismuth therapy), hereafter called intensive chemotherapy.

All patients who complete intensive chemotherapy are at present routinely given 80 mg of mapharsen twice

<sup>1</sup> Simpson, Walter M., Kendell, H. Worley, and Rose, Donald L. The Treatment of Syphilis with Artificial Fever Combined with Chemotherapy. Supplement 16 to Venereal Disease Information.

<sup>2</sup> As developed at the Kettering Institute for Medical Research, Miami Valley Hospital, Dayton, Ohio.

<sup>3</sup> Allows for 0.2 degree F  $\pm$  variation from the desired level.

<sup>4</sup> Schoch, Arthur G. and Alexander, Lee J. Short Term Intensive Arsenotherapy of Early Syphilis. Am. J. Syph. Gonorr. & Ven. Dis. 25: 607 (Sept.) 1941 and Arch. Dermat. & Syph. 46: 128 (Jul.) 1942.

daily for seven days (regardless of weight) by the multiple syringe method. This is combined with 150 mg of elemental bismuth (2 cc of bismuth subsalicylate in oil) administered intramuscularly in one dose every second day for four doses.

The noncomparative method<sup>5</sup> is the modified Eagle-Hogan (multiple syringe long term arsenobismuth therapy), hereafter called long term intensive chemotherapy.

All patients who complete long term intensive chemotherapy are at present routinely given 1 mg of mapharsen per kilogram of body weight, administered by the multiple syringe method three times weekly for eight weeks. This is combined with 75 mg of elemental bismuth (1 cc of bismuth subsalicylate in oil) administered intramuscularly in one dose twice weekly for sixteen doses.

**Method of Assignment for Treatment** When the diagnosis of syphilis is established and the patient agrees to undergo treatment, he is assigned either to the fever-chemotherapy section or the intensive chemotherapy section by the admitting clerk. The distribution of patients is on a two to one ratio, two to the fever-chemotherapy section and one to the intensive chemotherapy section. Because of the greater length of time needed to complete treatment, patients in the intensive chemotherapy section remain in the center twice as long (approximately fourteen days) as those in the fever-chemotherapy section. This is why twice as many patients are assigned to the fever-chemotherapy section. This distribution by the admitting clerk prevents selectivity of patients for the respective forms of intensive treatment. Those patients who, on examination, are found to have contraindications for either of the two comparative methods are then referred for long term intensive chemotherapy.

Regardless of the section to which the patient is admitted, an extensive physical examination by competent physicians, including laboratory survey, is completed before treatment for syphilis is started. This examination includes a complete pulmonary and cardiovascular examination by special consultants who have been selected because of their training. In our experience, intensive treatment is contraindicated in early active tuberculosis and certain forms of cardiovascular disease. The examination also includes x-ray examination of the chest, electrocardiogram, lumbar puncture,<sup>6</sup> blood count, sedimentation time, complete urinalysis, and icterus index. No patient is given intensive treatment until the diagnosis has been conclusively established and the medical consultants have indicated that in their opinion, there are no contraindications for treatment.

The following observations in connection with the three methods of intensive treatment are offered only as a preliminary report, as the time period over which these studies have been made is insufficient to permit any conclusions as to the ultimate results of the intensive forms of therapy.

**Fever-Chemotherapy** From Nov. 10, 1942 through Oct. 8, 1943 931 patients were given fever-chemotherapy for syphilis. Of the 931 treated, 2 cases terminated fatally—the 13th and 69th patients treated. Since the

second death (69th patient), 862 have been treated consecutively with no fatality or serious reactions.

The following are the case records in these two fatalities.

**CASE 13**—A woman aged 23, weighing 113 pounds (51 Kg), with a diagnosis of secondary syphilis (generalized maculopapular eruption), received eight hours of maintained fever at 106 F (rectal) combined with 150 mg of elemental bismuth (2 cc of bismuth subsalicylate in oil), administered intramuscularly within twenty-four hours prior to the day of fever-chemotherapy, and mapharsen 120 mg in divided doses of 40 mg each, administered at the beginning of the first, third and fifth hours of maintained fever. Death occurred on the eleventh post-treatment day. Partial postmortem examination (the head was not examined) revealed miliary tuberculosis of the right lung, liver and spleen, caseous tuberculosis of the lymph nodes (peritracheal), acute yellow atrophy of the liver, pronounced parenchymatous degeneration of the heart, liver and kidneys, and hemorrhagic cystitis.

**CASE 69**—A woman aged 22, weighing 122 pounds (55 Kg), with a diagnosis of primary syphilis and gonorrheal urethritis and cervicitis, with urethral cultures and smears positive for gonococci and darkfield positive for *Treponema pallidum* from labial lesions, received eight hours of maintained fever at the level of 106 F (rectal), combined with 150 mg of elemental bismuth (2 cc of bismuth subsalicylate in oil) administered intramuscularly within twenty-four hours prior to the day of fever chemotherapy, and mapharsen 60 mg in divided doses of 30 mg each, administered at the beginning of the first and third hours. Death occurred on the sixth post-treatment day. No postmortem examination was made. The exact cause of death was undetermined, but it was the clinical impression that the cause of death was tuberculous meningitis.

Following the first death the maximum dose of mapharsen was reduced from 120 to 60 mg for all patients. This reduction in mapharsen dosage was made to determine, if possible, the minimum amount of mapharsen, when combined with fever and bismuth, required to obtain maximum results safely.

Following the second death it was decided to permit only those patients to receive fever-chemotherapy and intensive chemotherapy who were examined by an authority in pulmonary diseases and found to be free from active tuberculosis.

In addition to the change in the mapharsen dosage and in the diagnostic procedures referred to, the following improvements were made.

1 Adjustment of the patient's water and electrolyte balance by controlling the fluid intake. This prevented dehydration or overhydration and depletion of the electrolyte reserve and resulted in a more satisfactory treatment and postfever recovery.

2 Reduction in fever cabinet temperature below that of the patient's temperature. This was accomplished through the introduction of a modulating control which operates on the heating and humidifying devices of the cabinet.

3 Routine calibration of the rectal indicating thermometer by means of a constant temperature bath. This insured the accuracy of the temperature readings.

These changes materially increased the patient's comfort and reduced the incidence of complications.

After 241 patients had received 60 mg of mapharsen, it was necessary to retreat 51 of them for the following reasons. Chancre recurred in 1 (monorecidence); there were mucocutaneous relapses in 38; 2 developed secondary lesions even though treated while in the chancre phase; in 2 cases the serologic test became negative and reverted to positive (serologic relapse); 6 patients were retreated because the serologic tests remained

<sup>5</sup> Those patients rejected from fever-chemotherapy and intensive chemotherapy were candidates for this method.

<sup>6</sup> It is recognized that there is some objection to the performance of lumbar punctures before the institution of antisyphilitic treatment of patients with primary and secondary syphilis. In the intensive treatment employed this has been a routine investigative procedure with all but pregnant patients. In 1340 spinal fluid specimens examined before treatment of the patient 226 specimens (16.8 per cent) showed positive laboratory findings.

were taken home by various members of the staff of the Division of Zoology. During this time, when the lice were not actually feeding, the cages were kept in a pocket of the clothing of the individual

of single bites. In all, 15 different individuals acted as hosts. Some of the volunteers were observed over a period of six months or more.

#### EXPERIMENTAL DATA

*Cutaneous Reactions Following Louse Bites*—The type and intensity of the local reaction varied not only with the individual but with the number of lice fed and the length of time over which the feedings were continued.

Initial feedings over a period of six days with 30 to 50 lice resulted in pinpoint areas of redness at the site of the bites. When 200 lice were fed daily over this period the petechiae were more numerous. Little or no pruritus was encountered during the first week of exposure. However, local reactions were intensified following more prolonged exposure. After feeding



Fig. 1.—Inflammatory reaction on the calf of the leg of a hypersensitive person (volunteer 1 in the table) forty-eight hours after exposure to 500 lice for eight hours.



Fig. 2.—Vesicular reaction on arm of a hypersensitive person (volunteer 7) forty-eight hours after exposure to 50 lice for three hours.

Owing to the method of breeding the parasites, it was possible for us to follow the cutaneous reactions produced by mass feedings of from 30 to 2,000 lice at one exposure. In several experiments, 1 to 3 lice were allowed to feed at a time in order to study the effects

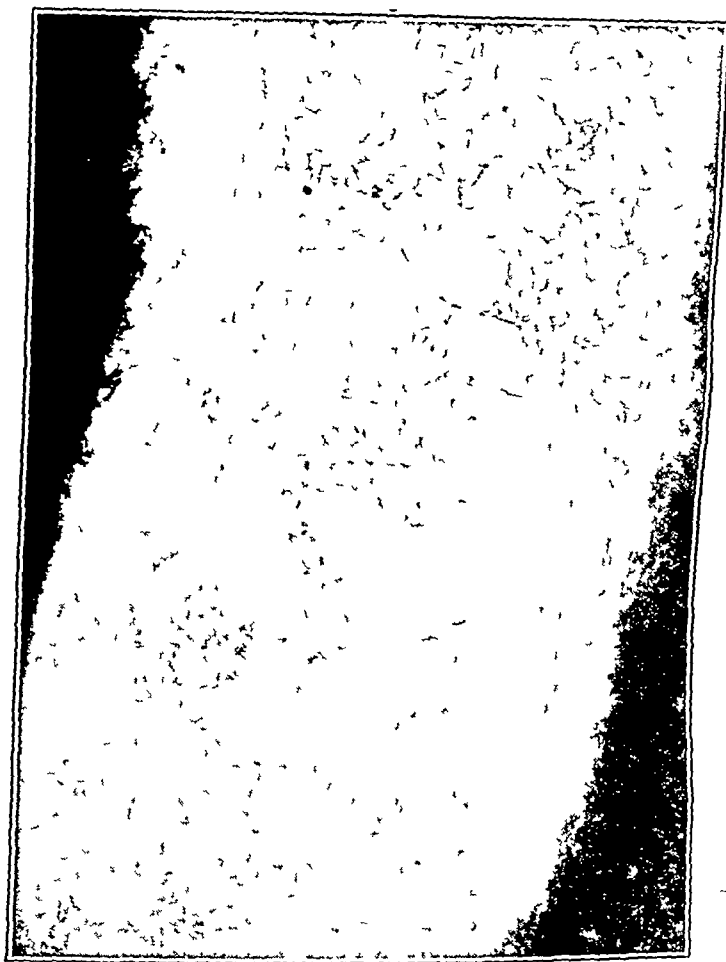


Fig. 3.—Purpuric reaction on the calf of the leg of a nonsensitive person (volunteer 6) after eight hours' exposure to 500 lice.

periods from seven to seventeen days the immediate reaction consisted in a diffuse redness or scattered papular urticarial lesions. After twelve to twenty-four hours the erythema increased in intensity and an edema developed with an elevation of the exposed area above the surface of the skin. This reaction became more pronounced during the next forty-eight to seventy-two hours (fig. 1). The erythema could be made to fade out on diascopic pressure. Vesicles appeared in some cases at the height of the reaction (fig. 2). As the lesions became older they assumed a more cyanotic appearance and the livid color failed to disappear on pressure. After twelve to fourteen days there was a fading of the lesions with brownish pigmentation and fine scaling.

The pruritus usually became evident after the seventh day. In some cases redness and pruritus reappeared in old lesions following the exposure of new areas to

200 to 600 lice. Furthermore the application of light friction to old lesions frequently reelicited pruritus which had subsided several weeks previously.

Individual variation in the reaction to the bites of the lice is illustrated by the following case descriptions.

One volunteer (5 in the table) fed increasing numbers of lice for a period of fifty days. During the last twenty-five days of this period, approximately 2,000 lice were fed each day. The local inflammatory reaction became increasingly severe. Finally she developed a generalized papular eruption and the feedings had to be discontinued. Several days later she fed a single louse on the forearm as a result of which the generalized eruption reappeared.

Two of the subjects developed a definite inflammatory reaction following the first feeding of 50 lice. One of them had had pediculosis pubis five years previously, but the other had no history of louse infestation. Another volunteer, who had had *Phthirus pubis* infestation in 1925, showed the same type of sensitization as did the majority of the other subjects since a definite inflammatory reaction was not manifested until approximately 50 lice had been fed daily for seven days.

Two of the subjects (4 and 6 in the table) exhibited relatively little inflammatory reaction and pruritus from the louse bites although they fed 300 to 500 lice daily over a period of months. After one month one of these persons (4) developed at the feeding sites a moderately diffuse erythema with some pruritus. Over the succeeding months, daily feedings continued without intensification of the local lesions. This person gave practically negative skin reactions to the louse antigens, as shown in the table. The other volunteer (6) suffered slightly from pruritus and had a moderate petechiation at the site of the bites. Other than the development of purpura in twenty-four to forty-eight hour lesions, there was no increase in the reaction. The appearance of a hemorrhagic reaction greater than noted in the other volunteers may be due to the fact that platelet count of the subject on several occasions was found to be 320,000 (fig. 3). He also gave a negative skin test to the louse antigens.

No subjective symptoms other than pruritus were noted in any of our test subjects. Neither were we able to demonstrate a rise in temperature or an adenopathy in any one of them even when 2,000 lice were fed daily.

**The Effect of Individual Bites**—Since it was thought that the mass feeding experiments might mask clinical types of lesions which are actually produced in the course of louse infestations, feedings with single lice were carried out on the eighth volunteer, who had had *Phthirus pubis* infestation five years previously and who had exhibited a vesicular reaction following his first exposure to 50 lice on Dec. 29, 1942. On Jan. 26, 1943 3 lice were allowed to feed, and on January 27, 28, 29 and 30 and February 2, 3 and 9, a single louse was permitted to feed on his forearms. The same female louse was used in the last four feedings.

After the act of feeding was completed there could be seen a pinpoint area of redness located at or near a pore, occasionally no change was seen as a result of the bite. In about eighteen to twenty-four hours a definite papule about 2 × 2 mm in diameter developed at the site of the bite and pruritus was felt. At the end of forty-eight hours the papule became somewhat elevated and the itching became more pronounced and persisted for about four days. By the end of a week only a minute brownish pinpoint area persisted at the site of the bite.

All subsequent feedings followed approximately the same pattern. The itching, which was never continuous but which would recur at intervals, was out of all proportion to the size of the lesion.

It could not be deduced whether sensitization occurred from several single louse bites since each bite seemed to follow about the same pattern. Furthermore, the eighth volunteer was no doubt already hypersensitive. However, it is apparent that the cutaneous

*Cutaneous Reactions with Feces and Head Antigens,  
March 16 1943*

No. of Volun- teers	Antigen	Reaction		Comment
		after 24 Hrs	after 72 Hrs	
1	F1	++	+++	Reaction still present with severe pruritus for a week after intra dermal injection highly sensitive patient last feeding in February 1943
	F2	++	+++	
	H	++	+++	
2	F1	++	+	Last feeding 5 days previously has been feeding lice since 12/11/42 vesicular reaction to lice bites
	F2	0	0	
	H	0	0	
3	F1	++	+	Fed lice just before the test has been feeding lice since 12/18/42 pronounced local reaction following lice bites
	F2	++	+	
	H	+	±	
4	F1	±	0	Fed lice just before the test has been feeding lice since 11/30/42 relatively insensitive to lice bites
	F2	0	0	
	H	±	0	
5	F1	++	+	Fed lice 4 days previously when feeding was resumed after tests had become negative the previous test sites flared again
	F2	+	±	
	H (not done)			
6	F1	0	0	Fed lice day of test relatively insensitive to lice bites
	F2	0	0	
	H	0	0	
7	F1	++	++++	Vesicles finally developed at F1 in 72 hours primary reaction to lice bites was vesicular, had <i>Phthirus pubis</i> 5 years previously
	F2	±	+	
	H	+	+	
8	F1	++	+++	Decidedly sensitive develops vesicular reaction from lice bites
	F2	+	±	
	H	+	±	
Controls 1	F1	0	0	No previous infestation with lice
	F2	0	0	
	H	0	0	
2	F1	+++	+	Had <i>Phthirus pubis</i> a few days before tests were made
	F2	+	±	
	H	++	±	
3	F1	0	0	No previous infestation with lice
	F2	0	0	
	H	0	0	
4	F1	0	0	<i>Phthirus pubis</i> 8 years ago
	F2	0	0	
	H	0	0	
5	F1	0	0	No previous infestation with lice
	F2	0	0	
	H	0	0	
6	F1	0	0	No previous infestation with lice
	F2	0	0	
	H	0	0	
7	F1	0	0	No previous infestation with lice
	F2	0	0	
	H	0	0	

F1 feces antigen autoclaved F2 Seltz filtered feces antigen H head antigen

0 no reaction ± area of redness little less than 1 cm not raised above skin level + area of redness 1-2 cm some induration ++ area of redness 2-3 cm some induration +++ area of redness 2-3 cm pronounced induration area of redness 1-5 cm studded with papules and surrounding zone of erythema ++++ area of redness 2-3 cm studded with papules and vesicles indurated usually with surrounding erythema

reactions following mass feedings differed only quantitatively from those produced in a hypersensitive person by a single louse.

#### SKIN TESTING WITH FECES AND HEAD ANTIGENS

Antigens for skin testing were prepared from the feces and from the heads of lice in an attempt to study the pathogenesis of the sensitivity which developed after repeated exposures.

**Head Antigen**—One hundred and fifty heads of lice removed at a point immediately anterior to the prothorax were ground in a sterile mortar and 10 cc of 1:12,500 merthiolate solution was added and the material further ground. The material was then centrifuged at high speed and the supernatant fluid was incubated



at 37 C for twenty-four hours. Aerobic and anaerobic cultures were made and proved to be sterile.

*Feces Antigens*—Feces deposited by the lice overnight were collected from the colonies and placed in a desiccator for twenty-four hours. They were then sealed and kept in the ice box until used.

Ten cc of distilled water was added to 40 mg of the desiccated louse feces. The mixture was ground up thoroughly in a mortar and the resulting mass was centrifuged at high speed. The supernatant fluid was divided into two parts. One part was autoclaved for twenty minutes under 15 pounds pressure. A great deal of material was precipitated and left a clear straw colored fluid. This was again centrifuged and the supernatant fluid was removed and enough 1:10,000 merthiolate solution added to it to make a final concentration of 1:10,000 merthiolate. The second portion was passed through a Seitz filter. About half was lost in the filtration process, the filtered fluid was a light

yellowish straw color. Enough 1:10,000 merthiolate solution was added to the filtrate to make the final concentration of merthiolate 1:10,000. Both portions were incubated at 37 C for twenty-four hours. Aerobic and anaerobic cultures were made which were sterile.

Cutaneous tests with the antigens previously described were carried out on March 16 on the 8 volunteers who had been used in the louse feeding experiment and on 7 controls. One of the controls (2 in the table) had had *Phthirus pubis* infestation a few days before he was tested and another (control 4) had *Phthirus pubis* infestation eight years previously. The other 5 controls had had no infestation with lice as far as we could find out.

In each instance 0.1 cc of the particular antigen was injected intradermally. The same amount of a 1:10,000 solution of merthiolate in distilled water was used as a control injection. Injections were made on the flexor surface of the forearm.

Following the injection of head or feces antigens there was an immediate reaction in nearly all the cases, including the controls. The head antigen caused an unusual amount of burning pain. In 6 of the volunteers and in 1 of the controls a delayed type reaction was noted in addition to the immediate reaction.

The immediate reaction consisted in the formation of a wheal, which in twenty minutes or longer increased in size with the formation of a zone of erythema. This reaction began to disappear in about an hour or two and there was no trace of it to be seen in twenty-four

hours. The delayed type of reaction began to appear after four to twelve hours and reached its peak in twenty-four to seventy-two hours. This reaction persisted for a week in some cases. The delayed reaction was characterized by an area of redness and induration from 1 to 3 cm in diameter. In unusually sensitive persons, papules and vesicles studded the indurated area and there was a variable surrounding zone of erythema (fig 4).

It can be seen from the table that the delayed reactions with feces and head antigens were obtained in those persons who exhibited an inflammatory reaction following lice bites. Volunteers 4 and 6, who exhibited purpuric reactions but practically no inflammatory reactions following exposure to lice, gave negative delayed skin reactions with both feces and head antigens. Volunteer 1, who exhibited the most pronounced skin reactions of all our volunteers following exposure to lice (fig 4), also gave the strongest delayed reaction. The delayed type of reaction therefore is a reaction of sensitivity which develops after exposure to the lice. It resembled that seen in persons exhibiting positive skin reactions after intradermal injection of trichophyton or tuberculin.

The only control to give a positive skin reaction with the feces and head antigens was control 2, who had *Phthirus pubis* infestation a few days before the tests were made. It would seem that infestation with *Phthirus pubis* might lead to cross sensitization to *Pediculus humanus* and/or its feces, since volunteer 6, who had had *Phthirus pubis* infestation five years previously, developed a vesicular reaction after his first exposure to 50 lice.

Heat did not destroy the skin reactive principle in louse feces. The autoclaved feces antigen was more active than that which passed through the Seitz filter. It has been noted in experiments with other antigens that some of the active principle was lost by filtration.

In no instance was the skin reaction to the head antigens positive when the feces antigen gave a negative reaction, but the reverse was true in a number of instances. Microscopic examination of the heads before preparation of the antigen showed fine particles of feces coating the surface of the head, thus the head antigen actually contained some fecal material. As far as the skin tests were concerned, the head antigen may have acted as a weak feces antigen.

#### COMMENT

Our findings are in accord with the observations of previous workers that the earliest manifestations of the louse bites are minute red, noninflammatory points which are flat with the skin. In most persons but little pain or itching was experienced during the initial feedings. When large numbers (300 to 500) of the parasites were allowed to feed by the wristlet method, a stinging sensation was sometimes experienced, especially if they were permitted to feed over a previously exposed area.

Repeated exposures to the lice resulted in the development of a hypersensitivity in the majority of persons exposed. Once the hypersensitivity became manifest, a pronounced inflammatory reaction developed at the site of exposure. In most instances it took practically daily exposures over a period of about seven to ten days before hypersensitivity became evident.

The skin reaction following exposure to the lice can be divided into two phases, a purpuric and an inflammatory phase. The introduction of the proboscis and the

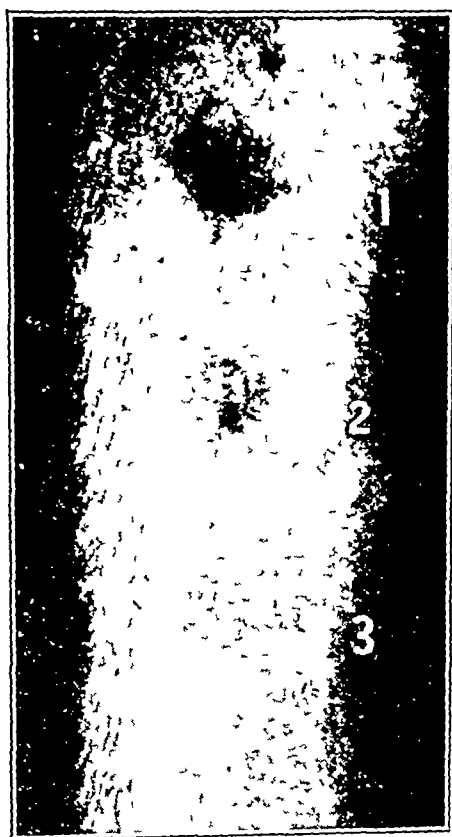


Fig 4—Seventy two hour skin reactions in volunteer 1 following intradermal injection of autoclaved feces antigen at 1, head antigen at 2, and filtered feces antigen at 3.

act of feeding cause a minute hemorrhage, which clinically is seen as a pinpoint redness. This goes on to an actual purpura from the capillary rupture. The degree of purpuric reaction is dependent on the susceptibility of the capillaries and the tendency of the person to bleed. Among our cases the greatest purpuric reaction was manifested by a person with a relatively low platelet count.

The inflammatory phase of the reaction is due to the hypersensitivity which develops. After single louse bites it was characterized by a papule with some surrounding erythema. When large numbers of lice were fed, the area of skin covered by the bottom of the can became red, edematous, somewhat indurated, raised above the level of the skin and in very sensitive persons studded with vesicles. The reaction reached its height in twenty-four to forty-eight hours and gradually subsided in about five to eight days with fine scaling leaving a brownish pigmentation.

After the development of hypersensitivity continued exposure to the lice did not result in a desensitization. In the majority of the cases, the inflammatory reaction rather increased with each subsequent exposure. If feedings were discontinued for a week or two the level of sensitivity dropped in some persons. However, further sensitivity could be induced by subsequent exposures to the lice.

Pruritus became evident and paralleled in its severity the development of the inflammatory reaction. The itching was usually intense. Even in older already subsided lesions, it could be reelicited by light brushing or scratching. The pruritus developed along with the syndrome of hypersensitivity, since in most individuals it was little in evidence during initial feedings.

No generalized reactions such as malaise, rise in temperature or adenopathy were observed in our cases even though as many as 2,000 lice were fed daily by a single individual over relatively long periods of time. It is difficult to reconcile our experience with the observations of Nuttall,<sup>4</sup> Jameson,<sup>5</sup> and others<sup>6</sup> who believed that febrile reactions could be regularly induced by the feeding of large numbers of lice.

While a primary whealing usually followed the intradermal injection of antigens prepared from louse heads and feces, even in individuals who had no previous exposure to lice this promptly disappeared and was followed by a typical reaction of the delayed type which reached its height in twenty-four to seventy-two hours in persons developing a hypersensitivity after repeated exposures to lice. The positive skin reactions were greatest in those persons who manifested the most pronounced inflammatory reaction after exposure to the lice while the skin reactions were negative in those persons who did not develop an inflammation following the bites. The head antigen was relatively less potent than the feces antigen but the relative potency of the two antigens is difficult to compare since equivalent amounts of feces and heads were not used and because by our method of preparation the head antigen also contained a very small quantity of feces. In this connection an attempt to dissociate the feces antigen from the head antigen might be made by desensitizing with feces antigen alone. However we have not attempted such tests.

To our knowledge previous workers have not considered the possibility of the feces playing a role in the pathogenesis of the skin irritation following louse infestations. However, it would appear that the sensitivity which develops after repeated exposures to lice is

associated with presence of the feces. Our experiments throw no light on the question of sensitization being produced by the act of feeding. However, the head antigen never gave a positive skin test when the feces antigen resulted in a negative test. This fact would seem to offer evidence concerning the more important role of the feces in the production of sensitivity. It seems to us that it might be of practical importance to make sure that all of the feces is removed from the clothing of infested individuals as part of the delousing process where practical.

#### SUMMARY AND CONCLUSIONS

1 Repeated exposures to the body louse will result in the development of a dermal hypersensitivity to it in the majority of those exposed.

2 The feces of the louse play an important role in this induced reaction.

3 There are apparently two components to the "louse bite reaction", viz (a) The purpuric element due to the act of feeding and (b) the development of an inflammatory reaction following sensitization.

4 The pruritus accompanying infestation with lice seems to be mainly a part of the syndrome of hypersensitivity.

#### A TREATMENT FOR PEDICULOSIS CAPITIS

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As part of a general program to devise methods for the control of typhus fever a systematic study was undertaken with a view to determining the louse-killing properties of various chemical agents. My purpose in this paper is to present results obtained by the use of some of these chemical agents in the control of head lice (*Pediculus humanus capitis* [Linnaeus] Retzius).

The older methods for the control of head lice can be found in various textbooks<sup>1</sup> and in Buxton's little monograph "The Louse."<sup>2</sup> Objections to these treatments arise almost as they are described. Shaving the scalp is effective but hardly appealing. Soaking the hair for an hour in 70 per cent alcohol, 2 per cent phenol, veratrine, larkspur, vinegar or similar preparations is time consuming and only too often ineffective or irritant. Essential oils are effective in adequate dosage but expensive and odorous. Kerosene, crude petroleum and xylene similarly are liable to leave an odor unless washed out thoroughly and are unpleasant. The fumigation of the scalp by sulfur dioxide, mentioned by Buxton as a common practice in Germany, is clumsy and leaves the head immediately susceptible to reinfestation. The removal of head lice by a fine-toothed comb is tedious to say the least. Probably the best of the older methods is theunction of the scalp with ointment containing such agents as xylene, pyrethrum or rotenone. More recently Busvine and

From the Laboratories of the International Health Division of the Rockefeller Foundation.

<sup>1</sup> Craig, C. F. and Faust, E. C. *Clinical Parasitology*, Philadelphia, Lea & Febiger, 1940. Goodman, I. S. and Gilman, Alfred. *The Pharmacological Basis of Therapeutics*, New York, Macmillan Company, 1941. Moxer, J. H. *Internal Medicine: Its Theory and Practice*, Philadelphia, Lea & Febiger, 1938. Riley, V. A. and Johnson, O. A. *Medical Entomology: A Survey of Insects and Allied Forms Which Affect the Health of Man and Animal*, New York, McGraw-Hill Book Company, Inc., 1938.

<sup>2</sup> Buxton, I. A. *The Louse: An Account of the Lice Which Infest Man, Their Medical Importance and Control*, Baltimore, Williams & Wilkins Company, 1940.

Buxton<sup>3</sup> have incorporated thiocyanates in ointments and report excellent results. Yet such grease may be unpleasant or tedious to rub into women's hair. The ideal method for treating pediculosis capitis should be by a lotion, since only a liquid can easily penetrate the entire hair and leave a residual for prolonged action. The fluid should rapidly kill lice and nits, should not have unpleasant properties such as greasiness, staining or odor, and should be both cheap and lasting. Systematic laboratory studies revealed several materials with these properties. Phenyl cellosolve and benzyl cellosolve<sup>4</sup> were the most efficient and were readily available. Preliminary trials indicated that if a 10 per cent concentration of these cellosolves was put onto cloth, it killed all lice on the cloth in less than three hours, nits exposed to the same dosage failed to hatch. A 40 per cent concentration of phenyl cellosolve placed on the head was not irritant and could be detected for about four days. Therefore clinical trials of these agents were made. For simplicity only phenyl cellosolve was used on human beings.

#### RESULTS OF CLINICAL APPLICATION

*Results of Trial on Children*—Through the courtesy of Dr. Robert E. Cox, resident pediatrician at Bellevue Hospital in New York, a lotion for the treatment of pediculosis capitis was tried on more than 50 children who were hospitalized for various reasons. The material was applied as soon as lice were discovered, and the nurses reexamined the children at intervals throughout their hospital stay. The lotion included methyl salicylate as a perfume, because this essential oil gave it a "clean smell."

The formula used was phenyl cellosolve 40 per cent, ethanol 30 per cent, water 25 per cent and methyl salicylate 5 per cent. The nurses were asked to apply the lotion to the head so that the hair was thoroughly wet and cautioned to keep the fluid out of the eyes and mouths of the children. No further treatment was used. The results were quite satisfactory. No live lice were ever found after a single treatment. No irritation was observed except a brief mild tingling if the lotion was rubbed into the scalp.

*Results of Trial in Mexican Villages*—In cooperation with the Mexican Department of Public Health, studies on the delousing of entire villages were made. The eradication of head lice constituted a part of a general program which will be reported elsewhere in collaboration with Drs. Malo Juvera and Hernandez Lira of Mexico. In all 1,278 persons were treated. Of these, 989 were known to have head lice. The treatments were made in the homes by nurses and sanitary inspectors who had been trained in the technique of delousing.

The formula used was phenyl cellosolve 1 gallon, ethanol 2 gallons, water 2 gallons and methyl salicylate (to give a slight odor). While it was impossible to be sure that every louse on every head was killed, it seemed likely that this was the result. About 200 heads were examined a week after treatment and not a single louse was found. No more examinations were made because such searching was not tactful and because it was impossible to be sure that there were no lice in the long hair of the women. Probably the best evi-

dence for the effectiveness of the lotion came from the subjects, who regularly stated their satisfaction with the head lotion though they were candid enough on other treatments. Soon after the public health workers had left the house the treated people could be seen examining one another's heads. Fortunately the material so stunned the lice that they appeared dead or sick in a few minutes. This dramatic effect was helpful in carrying on the program of delousing.

#### COMMENT

The chief advantages of the lotions described were ease of application, rapidity of action, freedom from irritant action and efficiency against both insects and eggs. The cost was about 1 cent per treatment in Mexico. The disadvantages were slight. Nits were left on the hair. The lotions produced a moderate burning if applied to such tender areas as the eyes, mouth or perineum. The preliminary laboratory trials suggested that the cellosolve left the hair in a few days.

It is obvious that many more formulas can be prepared which are similar to those described. Other perfumes, such as eucalyptus oil, may be substituted for methyl salicylate. The shipping space of the lotion can be reduced by eliminating alcohol and producing an emulsion by means of a detergent. The long-lasting insecticide "G N B" ( $\alpha, \alpha$ -di[4-chlorophenyl]- $\beta, \beta$ -trichlorethane) can be incorporated in either of the cellosolves or benzyl benzoate and used in the form of an emulsion. A number of these alternative formulas have been prepared and tested in the laboratory and plans are under way to test them on human beings in the near future.

No suggestion is made that the lotions described constitute the only effective treatment of pediculosis capitis, but it is emphasized that the usual methods for killing pediculi are clumsy and relatively ineffective, and the type of lotions described should be generally adopted for the eradication of head lice.

#### SUMMARY

As a result of studies on chemical agents which kill lice a number of lotions have been prepared which are rapidly effective against head lice and their eggs, are cheap and easy to use, and possess almost no unpleasant properties.

Two lotions, the formulas of which are given, proved to be quite satisfactory for the treatment of pediculosis capitis on children in an American hospital and on civilian populations in Mexico. They are recommended for general use in the control of head lice.

**Prevention of Infectious Disease**—In order to prevent infectious disease the first important step is to determine the natural history of the causative organism, and this of course includes the means of access to the body. Some organisms are conveyed by food or drink, or through the air. Others enter the body as the result of direct contact of the skin tacked with the malignant pustule of anthrax—primarily a disease of animals—which develops on the back of the neck where the infected hides are most liable to rub. The same disease sometimes attacks the faces of people who are unfortunate enough to have bought and used unsterilized and infected shaving brushes. Wool sorters, on the other hand, are more likely to develop the disease in their lungs, since they are constantly inhaling quantities of dust which sometimes contains spores of the anthrax bacillus—Haagensen, C. D., and Lloyd, Wyndham E. B. *A Hundred Years of Medicine*, New York, Sheridan House, Inc., 1943.

3. Busvine, J. R., and Buxton, P. A. A New Method of Controlling the Head Louse, *Brit. M. J.* 1: 464-466 (April 11) 1942.  
4. Cellosolve is the trade name for certain solvents made by the Carbon and Carbide Chemicals Corporation, phenyl and benzyl cellosolves are, respectively, the monophenyl and monobenzyl ethers of ethylene glycol.

EFFECT OF STORAGE OF CITRATED  
BLOOD ON THE SURVIVAL OF  
TRANSFUSED ERYTHROCYTES

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AND

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The radioactive isotope of iron  $\text{Fe}^{59}$  is metabolized by the human organism exactly as ordinary iron and, when fed to or injected into persons with the hypochromic anemia of iron deficiency, is incorporated into the hemoglobin of newly formed erythrocytes<sup>1</sup>. Once built into the hemoglobin molecule of an erythrocyte, radioactive iron does not exchange with the iron of the serum or the tissues<sup>2</sup> but remains within the red blood cell during its entire lifetime and is liberated only when the cell is broken down and destroyed. The physical property of radioactivity does not influence the morphologic aspects or the function of the erythrocyte in any way but serves to "label" or "tag" the cell during its lifetime. It is possible to detect quantitatively the radioactive iron of such labeled cells even though they may be mixed with thousands of cells containing no radioactive substance<sup>3</sup>.

When erythrocytes labeled with radioactive iron are transfused into compatible human subjects they rapidly mix with the recipient's cells and can be detected quantitatively in samples of the recipient's blood. If these tagged cells are destroyed after transfusion, the concentration of radioactively labeled cells in the recipient's blood progressively decreases, and the radioactivity determined on consecutive samples of the recipient's blood will reveal the rate at which the transfused cells are destroyed. The effectiveness of various blood preservatives can thus be evaluated by observing their influence on the survival of transfused tagged erythrocytes.

We have studied the effect of the storing of citrated blood on the survival of transfused erythrocytes, and we present our observations as illustrative of the technique as well as of the adverse effect of sodium citrate as a blood preservative.

## METHODS AND PROCEDURE

Iron containing the radioactive isotope  $\text{Fe}^{59}$  was fed as ferrous sulfate or injected intramuscularly as ferrous ammonium citrate into patients with the hypochromic anemia of iron deficiency<sup>4</sup>. As indicated in chart 1, the radioactive material was rapidly incorporated into the hemoglobin of newly formed erythrocytes. The maximum concentration of radioactivity achieved in these experiments was 2,000 counts per minute per cubic centimeter of packed erythrocytes.

After sufficient radioactive iron had been incorporated into the erythrocytes of such donor subjects, venesection was performed aseptically, and the blood was drawn into sterile 25 per cent sodium citrate solution with a  $pH$  of 7.4. The final con-

centration of sodium citrate at completion of the venesection was 0.25 Gm per hundred cubic centimeters of blood.

This donor blood was immediately divided into 55 cc aliquots and placed in sterile 150 cc Erlenmeyer flasks stoppered with gauze and nonabsorbent cotton. The flasks were stored in the dark in a refrigerator at a temperature of 10°C. Hematologic studies and determinations of radioactivity were carried out on aliquots of this blood<sup>5</sup>.

After storage for periods varying from one to fourteen days, 40 or 50 cc aliquots of this labeled blood were injected intravenously into healthy human adults (interns and technicians) all of whom showed normal red cell and hemoglobin levels. Solutions of Evans blue dye (T-1824) were injected immediately prior to the injections of blood, so that the plasma volume could be determined by the method of Gibson and Evelyn<sup>6</sup>. At varying intervals of time after the injection of the blood and dye, samples of venous blood were removed without hemostasis from an antecubital vein of the opposite arm. A portion of each sample was placed in a chemically clean calibrated centrifuge tube and allowed to clot, and the remainder was placed in a tube containing the oxalate mixture of Heller and Paul<sup>7</sup>.

Complete hematologic studies and determinations of the dye content of the serum<sup>6</sup> and of the concentration of radioactive iron in the blood and in the cell mass were made on each sample of blood<sup>3</sup>. The total blood and cell volumes were calculated by the method of Gibson and Evelyn<sup>6</sup>. The total radioactivity in circulation at the time each sample was withdrawn was calculated from the formula

$$\text{Total radioactivity in circulation} = \frac{\text{Radioactivity per cubic centimeter of blood} \times \text{total blood volume}}{\text{Total radioactivity in circulation}}$$

The percentage of the total transfused radioactively tagged cells in circulation at any given time was calculated from the formula

$$\text{Per cent of transfused radioactivity in circulation} = \frac{\text{Total radioactivity in circulation}}{\text{Total radioactivity of the transfused blood}}$$

Determinations of the radioactivity of aliquots of the transfused blood always were made in conjunction with similar determinations on samples of the recipient's blood, eliminating the necessity of corrections for decay of the radioactive iron and counting tube variation.

## RESULTS

Charts 2 and 3 illustrate the effect of storage of citrated blood on the survival of transfused erythrocytes. The number of days that the blood was stored before transfusion is indicated by the circled numbers. In the first series of experiments (chart 2) each recipient received 40 cc of the labeled blood. This blood contained 96 cc of red blood cells and 2.45 Gm of hemoglobin. The maximum age of the labeled erythrocytes from the time of formation until removal from the donor by venesection was fifty-one days (since the first dose of radioactive iron had been fed to the donor fifty-one days before the venesection). The donor blood in the second series of experiments (chart 3) was removed from the donor thirteen days after a single intramuscular injection of radioactive iron, and therefore the maximum age of the labeled erythrocytes in this blood was not more than thirteen days. Each recipient in this series of experiments received an injection of 50 cc of labeled blood containing 21.4 cc of cells and 5.5 Gm of hemoglobin.

In both series of experiments the destruction of the transfused erythrocytes was rapid immediately after injection but subsequently progressed at a slower and steadily decreasing rate. This suggests that some of the stored erythrocytes were more resistant to destruc-

From the Evans Memorial Massachusetts Memorial Hospitals and the Department of Medicine Boston University School of Medicine.

1. Ross J. F. and Chapin M. A. The Selective Absorption of Radioactive Iron by Normal and Iron Deficient Human Subjects. *J. Clin. Investigation* 20: 437 (July) 1941.

2. Hahn P. F., Bale W. F., Ross J. F., Hettig R. A. and Whipple G. H. Radio Iron in Plasma Does Not Exchange with Hemoglobin Iron in Red Cells. *Science* 92: 131 (Aug. 9) 1940.

3. Ross J. F. and Chapin M. A. The Electrolytic Separation of Radioactive Iron from the Blood. *Rev. Scient. Instruments* 13: 77 (Feb.) 1942.

4. The radioactive isotope of iron was prepared by deuteron bombardment of iron phosphide probes in the Harvard cyclotron through the aid of Dr. B. R. Curtis.

5. The counts are those recorded with a modified Geiger-Müller counter and scaling circuit.

6. Gibson J. G. and Evelyn K. A. Clinical Studies of the B. V. 1 Volume. IV. Adaptation of the Method to the Photoelectric Microcolorimeter. *J. Clin. Investigation* 17: 13 (March) 1938.

7. Heller J. G. and Paul H. Change in Cell Volume Produced by Varying Concentrations of Different Anticoagulant. *J. Lab. & Clin. Med.* 19: 777 (April) 1934.

tion than others but such an interpretation must be made with reservations. As noted in a later paragraph, a few hours after transfusion the radioactivity of the red cell mass represents not only the survival of transfused erythrocytes but the presence of newly formed red cells as well. The number of such newly formed

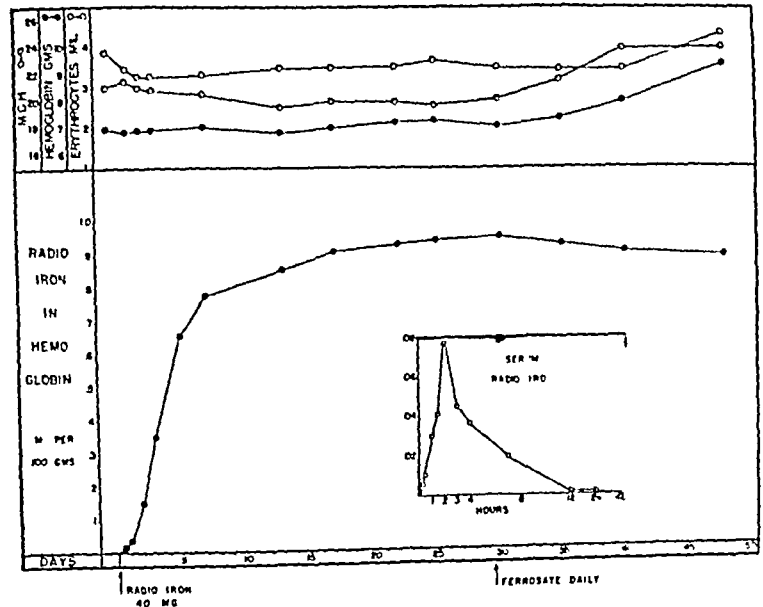


Chart 1—Incorporation of radioactive iron in the hemoglobin and erythrocytes in a case of hypochromic anemia of iron deficiency. Iron containing the radioactive isotope  $Fe^{59}$  was fed as ferrous sulfate.

cells is quite small for a period of several days, however, and we believe that the concentration of radioactivity in the erythrocytes during this time is a qualitative indication of the survival of transfused cells. Prolongation of storage greatly increased the rate of destruction of the transfused cells, and the percentage surviving for twenty-four hours varied inversely with the length of storage time as illustrated in chart 4.

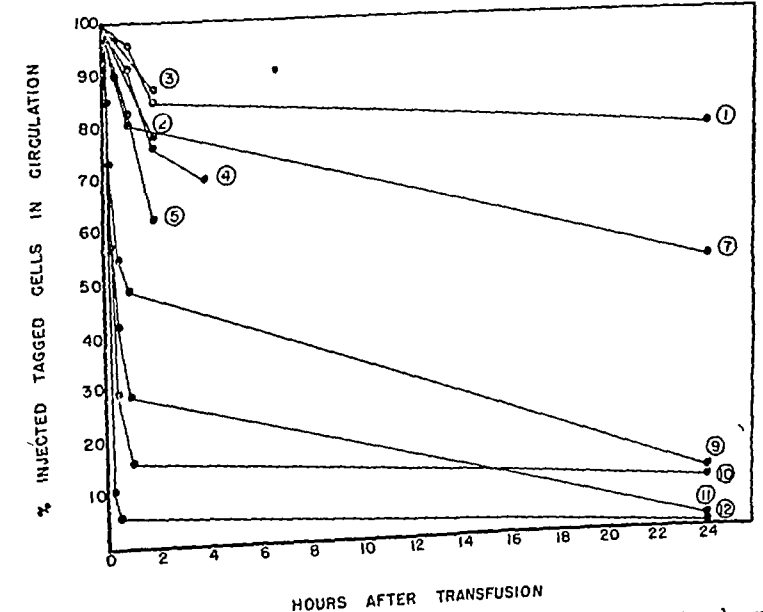


Chart 2—The post transfusion survival of erythrocytes stored in citrated blood. The circled numbers indicate the number of days the citrated blood was stored prior to transfusion.

The slightly more rapid destruction of the transfused cells in the first series of observations (chart 2) may be related to the fact that the maximum age of the transfused labeled erythrocytes in this series was almost four times greater (51 days) than the maximum age (13 days) of the labeled cells in the second series of observations (chart 3).

In the second series of experiments the determinations of erythrocyte radioactive iron concentration were made several days after the transfusion of radioactively labeled cells. After the initial decrease in radioactive iron concentration, which continued for approximately twenty-four hours, the concentration of radioactive iron in the red cells began to increase (chart 5). This increase was definite in each case studied and occurred at a fairly constant rate.

These changes in concentration of radioactivity might be explained by assuming a temporary immobilization and eventual release of the transfused tagged erythrocytes. Since there is considerable evidence that there is no storage site or reservoir for red blood cells and that all erythrocytes are in active circulation at all times,<sup>8</sup> it appears unlikely that the pronounced changes in concentration of radioactive iron can be accounted for on the basis of a temporary storage of cells. It appears much more probable that the rapid decrease in concentration of radioactivity immediately following transfusion represents destruction of transfused cells.

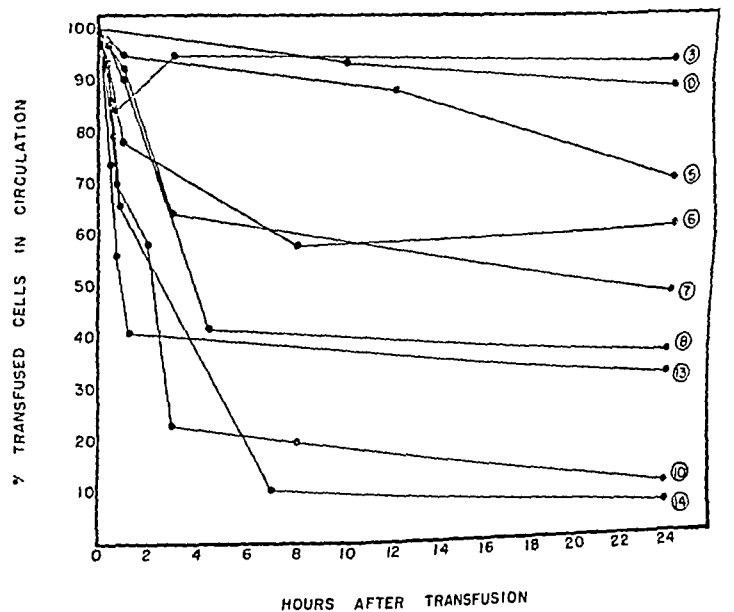


Chart 3—The post transfusion survival of erythrocytes stored in citrated blood. The circled numbers indicate the number of days the citrated blood was stored prior to transfusion.

and that the subsequent progressive increase represents a reutilization of the labeled iron originally contained in the transfused cells. The iron liberated from destroyed erythrocytes appears to be used for the synthesis of hemoglobin in preference to and more rapidly than the iron present in the blood plasma, the tissue reserves or foodstuffs. This observation raises a question as to whether or not some of the products of hemoglobin breakdown can be reused for the synthesis of hemoglobin while still in a fairly complex state and without being completely broken down. Somewhat similar observations have been reported by Cruz, Hahn and Bale,<sup>9</sup> who observed rapid reutilization of erythrocyte radioactive iron for the synthesis of hemoglobin after the acute hemolytic anemia of acetylphenylhydrazine poisoning.

<sup>8</sup> Hahn P F, Ross J F, Bale W F, Balfour W M and Whipple G H. Red Cell and Plasma Volumes (Circulating and Total) as Determined by Radio Iron and by Dye. *J Exper Med* 75: 221 (Feb) 1942. Ross, J F, and Chapin M A. The Absence of Erythrocyte Reserves in Human Subjects as Indicated with Radioactive Tagged Cells. *J Clin Investigation* 21: 640 (Sept) 1942.  
<sup>9</sup> Cruz, W O, Hahn P F, and Bale W F. Hemoglobin Radioactive Iron Liberated by Erythrocyte Destruction (Acetylphenylhydrazine) Promptly Reutilized to Form New Hemoglobin. *Am J Physiol* 135: 95 (Feb) 1942.

The conservation of the hemoglobin-radioactive iron of transfused blood cells is illustrated in chart 6 which also demonstrates the feasibility of following the fate of the radioactive iron of transfused cells in the circulation over long periods. In this experiment blood containing radioactively tagged cells was transfused into a patient with paroxysmal nocturnal hemoglobinuria and the concentration of radioactivity per unit volume of blood and of cells was followed over a period of four months. In spite of wide variations in the hematocrit reading and in the concentration of radioactivity in the red cells the concentration of radioactivity in the whole blood was fairly constant for almost four months.

#### COMMENT

The value of a blood preservative must be judged not by its ability to prevent *in vitro* hemolysis, changes in osmotic fragility, cellular potassium content and so on but by its effectiveness in prolonging the *in vivo* survival of transfused erythrocytes. The radioactively tagged cell method is particularly suited to evaluating the effectiveness of blood preservatives since it actually allows the number of transfused donor cells surviving

that the hemoglobin molecule may be built up from fairly complex remnants of destroyed hemoglobin.

Storage of citrated blood exerts a deleterious effect on erythrocytes. When continued for six days only 50 per cent of the transfused cells survived for twenty-four hours, and when storage was prolonged for ten

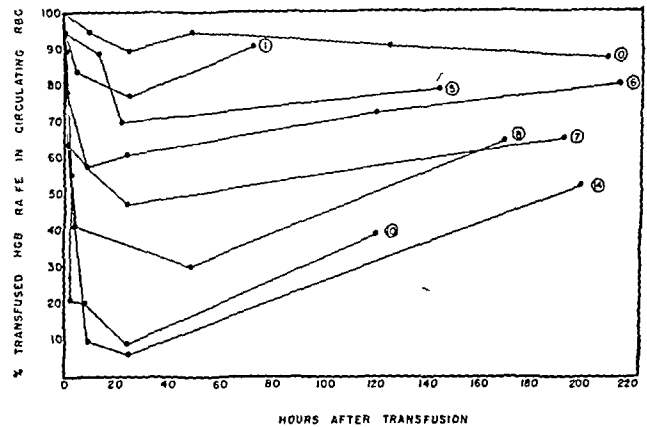


Chart 5—The reutilization of radioactive iron from destroyed transfused erythrocytes. The circled numbers indicate the number of days the citrated blood was stored prior to transfusion.

days or longer less than 10 per cent of the cells survived for twenty-four hours. These observations corroborate the findings of other investigators<sup>10</sup> that citrated blood is unsatisfactory for blood transfusion when stored for more than two or three days.

#### SUMMARY

1 The survival *in vivo* of transfused erythrocytes and the effectiveness of blood preservatives in prolonging such survival can readily be determined by the use of donor red blood cells labeled with radioactive iron.

2 The storage of citrated blood exerts a deleterious effect on the survival of transfused erythrocytes. The survival of these erythrocytes varies inversely with the duration of storage.

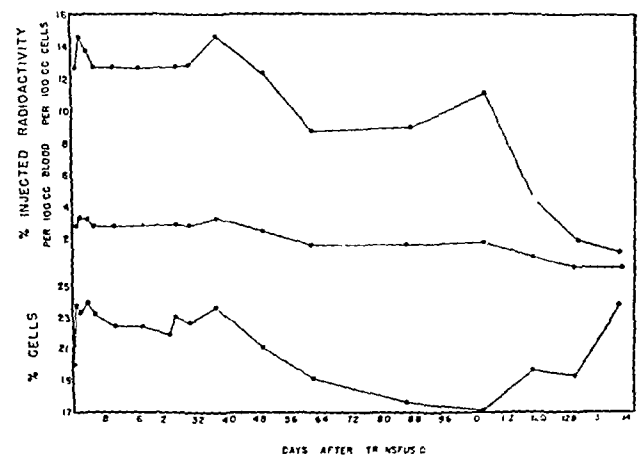


Chart 6—The conservation of the radioactive iron of transfused erythrocytes.

3 The iron of destroyed transfused erythrocytes is rapidly and preferentially reutilized for the synthesis of hemoglobin.

65 East Newton Street.

10 Belk W. P. and Barnes B. C. The Survival Time After Transfusion of Erythrocytes of Citrated Human Blood Stored at 4 to 6 Centigrade. *Am. J. M. Sc.* 201: 838 (June) 1941. Stremia M. M. The Fate of Transfused Refrigerated Blood and the Problem of Blood Preservation. *N. Clin. North America* 22: 1693 (Dec) 1942.

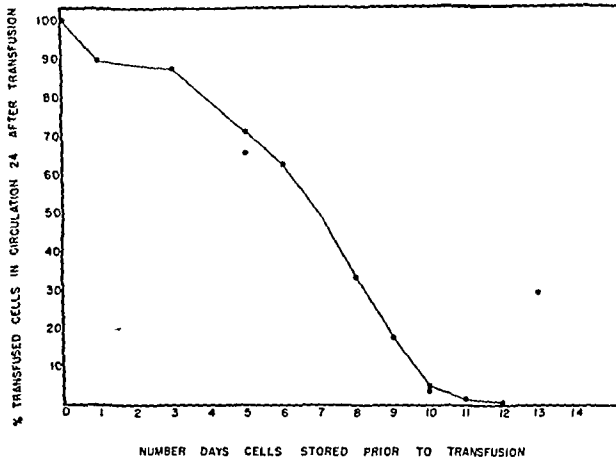


Chart 4—Effect of storage of citrated blood on the survival of transfused erythrocytes.

in the recipient to be quantitatively determined. The technic is so sensitive that 0.0005 cc of transfused cells can be detected in 10 cc of the recipient's blood with an accuracy of  $\pm 10$  per cent, and the total volume of labeled cells which needs to be injected into the recipient is so small that it produces no hemodynamic or hemopoietic disturbance.

It is apparent from our studies that the breakdown products of hemoglobin are rapidly reutilized for the synthesis of new hemoglobin. This rapid reutilization of radioactive iron from destroyed transfused cells makes it impossible to trace with accuracy the survival of these cells for more than forty-eight hours after transfusion. In most instances, however, it is the initial twenty-four to forty-eight hours after transfusion in which the survival of transfused cells is of greatest importance.

The rapid reutilization of hemoglobin breakdown products is of considerable practical as well as theoretical interest, since it indicates that even though transfused cells are rapidly destroyed they are of distinct therapeutic value in promoting blood formation. As already mentioned, the rapid and preferential reutilization of iron from destroyed erythrocytes suggests



## Clinical Notes, Suggestions and New Instruments

### PROTECTION AGAINST WELDING FUMES

#### A NEW COMPRESSED AIR UNIT FOR VENTILATING WELDERS HOODS

L. R. KRASSO, PH D R. J. DE MOTTE, M D, AND A. C. ILL, PH D, M D CHICAGO

The deleterious effects of welding fumes, especially those arising from galvanized metals ("galvo fever"), are well known. Previous methods for protecting the welder have not been satisfactory. The use of a respirator has failed because it is cumbersome and does not fit well beneath the welder's hood. The welder objects to the discomfort of wearing the respirator on his face throughout the working day. Those compressed air ventilating devices for the hood which have been provided to date have not been constructed so as to prevent fumes from entering the hood and to avoid the criticisms and complaints of the welder.

The present compressed air unit for ventilating the welder's hood consists of a metal tube bent to form a rectangle of such dimensions that it may be placed in and attached to the hood so as to surround the glass window completely. The metal tube is perforated along the outer edge of the rectangle with holes  $\frac{1}{2}$  inch in size and  $\frac{1}{8}$  inch apart. That is, the perforations direct the flow of air away from the glass window and parallel to the face of all surfaces of the hood (fig 1). This arrangement is important, because an outward flowing spray of air surrounds the entire field about the nose and mouth and produces a "shelling out" effect of the flow of air which (a) prevents fumes from being drawn into the mask, (b) avoids drafts on the face and eyes of the welder and (c) at the same time prevents sweating and soiling of the eyes.

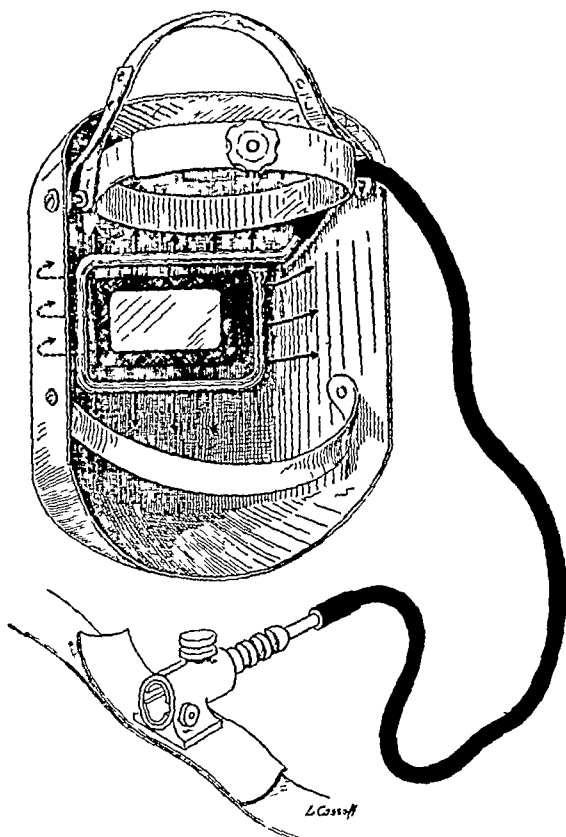


Fig 1—Compressed air unit for ventilating welder's hood. Metal tube, surrounding window, directs outward flowing spray of air.

At the primary compressed air source a filter is inserted to trap impurities which sometimes contaminate compressed air lines in industry. This primary filter also serves as a pressure reducing valve. A rubber tube is used to lead the air from the fixed metal outlet to a reducing valve attached to a belt about the waist of the welder. In this way the pull of the rubber

tubing does not hamper the welder, a complaint which obtains when the rubber tubing pulls directly against the hood (fig 2). The reducing valve, which is small, renders it possible for the welder to regulate the rate of air flow into his hood according to his individual likes or needs and any fluctuations of pressure in the main line. This is an important feature, since a perfect device is of no value unless the worker will wear it.



Fig 2—Rubber tubing does not pull directly against hood.

Experience with this welder's ventilated hood justifies the following statements:

- 1 Welding fumes do not enter the hood even when welding directly over and close to the arc.
- 2 The atmosphere in the mask is cool, which prevents perspiration and soiling of the eyes.
- 3 A constant supply of "fresh" air is supplied the welder.
- 4 It prevents the necessity of using alternating shifts of men on galvanized welding jobs.
- 5 The men like the device and insist on wearing it after once trying it.

303 East Chicago Avenue

### SPONTANEOUS HEPATICOGASTRIC BILIARY FISTULA

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MEDICAL CORPS, ARMY OF THE UNITED STATES

This case is reported for three reasons: (1) No other cases have been encountered in the literature, (2) symptoms which suggested biliary tract disease were absent and (3) any type of biliary fistula in the age group of the patient is rare.

Judd and Burden<sup>1</sup> in 1925, in reporting 153 cases of spontaneous internal biliary fistula from the Mayo Clinic, stated that they were not aware of any cases in the literature in which the fistula originated in the hepatic duct. Dean<sup>2</sup> in June 1939 reported the first case of hepatoduodenal fistula and Puestow<sup>3</sup> in June 1942 reported a similar case. No other case of spontaneous internal biliary fistula originating in the hepatic duct has been found in the literature.

Spontaneous internal biliary fistulas from any origin terminating in the stomach are rare. Of the 200 cases reported by

From the Surgical Service of the Station Hospital, Camp Gordon, Georgia.

<sup>1</sup> Judd, E. S., and Burden, V. G. Internal Biliary Fistula, Ann Surg 81 305 (Jan) 1925.

<sup>2</sup> Dean, Gilbert O. A Discussion of Internal Biliary Fistulas Based on Twenty Nine Cases, Surgery 5 857 (June) 1939.

<sup>3</sup> Puestow, Charles B. Spontaneous Internal Biliary Fistula, Ann Surg 115 1043 (June) 1942.

From the Medical Department, Pullman Standard Car Manufacturing Company, and the Department of Physiology, Northwestern University.

Naunyn<sup>4</sup> only 8 involved the stomach, and of the 153 cases in the series of Judd and Burden<sup>1</sup> the stomach was involved in only 6, with all cases in both series originating in the gallbladder. The most frequent fistulas are the cholecystoduodenal, the cholecystocolic, the cholecystogastric and the choledochoduodenal in the order named. Other types have been reported and are relatively rare. The frequency of all types of spontaneous internal biliary fistulas may be deduced from the following reports: 109 fistulas found in 6,263 biliary operations by Bernhard<sup>5</sup>; 43 fistulas in 10,866 routine necropsies by Roth, Schroeder and Schloth,<sup>4</sup> 5 fistulas among 15,677 operative cases in Surgical Section A at the Hospital of the University of Pennsylvania from 1922 to 1929 according to Eliason and Stevens,<sup>6</sup> and approximately 12 per cent of all patients with cholecystitis admitted to the University Hospitals of Iowa since 1915 as reported by Dean.<sup>2</sup>

Of the 153 cases reported by Judd and Burden,<sup>1</sup> 111 were in females and most of the cases occurred in the sixth decade of life. All cases occurred beyond the fourth decade with 1 exception which was in the 20 to 30 year age group. The average duration of symptoms in this series was ten years, but in 1 case the symptoms had existed only one month.

The usual history in spontaneous internal biliary fistula, according to Walters and Snell,<sup>7</sup> is that of chronic cholecystic disease with colic, jaundice and symptoms of acute cholecystitis which are more or less miraculously relieved after a severe attack, indicating that the gallbladder had emptied its contents into the intestinal tract.

The diagnosis of spontaneous internal biliary fistula was made preoperatively in 2 cases of the 153 reported by Judd and Burden,<sup>1</sup> and to date Garland and Brown<sup>8</sup> have reported approximately 90 cases recorded in the literature as diagnosed by x-ray prior to operation.



Fig 1—Hepaticogastric fistula partly filled with barium

#### REPORT OF CASE

A white soldier aged 26, a native of Ohio, with three months' army service was admitted to the Station Hospital Camp Gordon, Georgia, at 10 35 a m, April 11, 1943. The

<sup>4</sup> Cited by Judd and Burden.<sup>1</sup>

<sup>5</sup> Bernhard cited by Delano, Percy J. *Internal Biliary Fistula*. Am J Roentgenol 47: 298 (Feb.) 1942.

<sup>6</sup> Eliason, E. L. and Stevens, L. W. *Spontaneous Internal Biliary Fistula*. Am J Surg 51: 387 (Feb.) 1941.

<sup>7</sup> Walters, W. L. and Snell, Albert M. *Diseases of the Gallbladder and Bile Ducts*. Philadelphia: W. B. Saunders Company, 1940.

<sup>8</sup> Garland, L. H. and Brown, J. M. *Roentgen Diagnosis of Spontaneous Internal Biliary Fistulae*. Epecially Those Involving the Common Duct. Radiology 38: 15, (Feb.) 1942.

following admission notes were made by the ward surgeon: "The onset of the present illness occurred at about 2 p m yesterday with dull pain in the midepigastrium which gradually moved to the right side of the abdomen above McBurney's point and below the gallbladder region. There was no radiation to the back, shoulders or groin. Some nausea and anorexia occurred but no vomiting or diarrhea. The bowels were

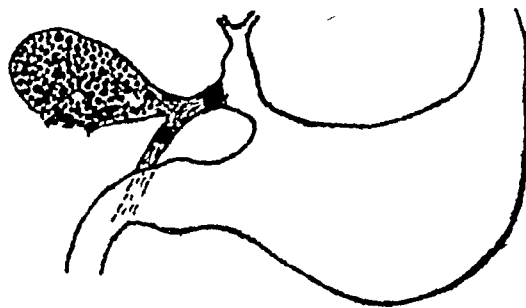


Fig 2—Hepaticogastric fistula stones in hepatic and common ducts, fibrous degeneration of cystic and common ducts and distal portion of hepatic duct and perforated gallbladder impacted with stones

normal. There was no dyspepsia or urinary frequency. Appendectomy was done three years ago. The pain was cramping at times for brief intervals since reporting at sick call this morning and it hurt worse on deep breathing. There was a slight nonproductive cough today. No habitual or recurrent dyspepsia had occurred in the past. The patient was never jaundiced. There was no food intolerance. The patient had always been in excellent health and other than measles, chickenpox and whooping cough, which he was told that he had had in early childhood, he could not recall any illness that he had had except one attack of appendicitis in May 1941, for which he had had an immediate appendectomy and from which he made an uneventful recovery, being hospitalized only eight days. He had never had any intolerance to any food, had never had any abdominal pain or distress other than when operated on for appendicitis and with his present illness, had never suffered from constipation or diarrhea and had never had any discoloration of the skin. The patient was well developed and nourished, of slender type, was 6 feet (183 cm) high and weighed 172 pounds (78 Kg). All physical findings were negative except slight dullness to percussion and harsh breath sounds at the left posterior base of the lungs and slight spasticity and tenderness of the right abdomen with no point tenderness. A well healed old McBurney incision was noted. Blood pressure was 130/80, temperature 100.4 F, pulse rate 100, respiratory rate 20. The white blood cell count was 18,600 with a differential count showing 65 per cent segmented cells, 29 per cent lymphocytes, 5 per cent eosinophils and 1 per cent mononuclears. Urinalysis was negative.

At 2 p m the temperature was 99.8 F and at 9 30 p m was 102 F with no other changes in the physical findings. X-ray examination of the chest at this time with the patient in the sitting posture showed lungs clear and no air under the diaphragm. At 10 30 p m the surgical officer of the day was called to see the patient and in turn called me. At about 10 45 p m the patient was in acute distress with breathing short and labored and the abdomen moderately distended with generalized abdominal tenderness but pronounced point tenderness over the gallbladder. There was pronounced right rectus rigidity with increased spasticity over the entire abdomen. The temperature at this time was 98 F, pulse rate 112 and blood pressure 130/80. A tentative diagnosis of general peritonitis due to a perforated perigastric abscess secondary to a penetrating ulcer or due to a perforated gangrenous gallbladder was made and the patient prepared for surgery.

Under closed ether-oxygen inhalation and anesthesia a high right rectus incision was made and when the peritoneum was opened

a large quantity of pus was evacuated in which there were several gallstones varying in size from 1 mm to 1.5 cm in diameter. The gallbladder was firmly impacted with stones, was gangrenous and showed a perforated area about 3 cm in diameter. The gallbladder was opened widely and over 200 light yellow, faceted stones were removed. The gallbladder was then separated from its bed, beginning at the fundus, and removed. The cystic duct and the common bile duct were identified as solid fibrous cords. One large stone which was embedded in a fibrous cord representing the remains of the distal portion of the hepatic duct just proximal to the cystic duct and another large stone which was embedded in the fibrous cord representing the remains of the common duct just distal to the cystic duct were removed. The proximal portion of the hepatic duct was widely dilated and joined to the anterior wall of the stomach near its lesser curvature and about 6 cm proximal to the pylorus. This fistulous tract was opened, explored for stones, noted to have an opening into the stomach about 1.5 cm in diameter and then closed tightly with No. 80 cotton sutures. Sulfanilamide was sprinkled in the operative area, one soft rubber dam drain was left in the gallbladder bed and the abdomen was closed in layers with No. 50 interrupted cotton sutures. The patient received 1,000 cc of 5 per cent dextrose in isotonic solution of sodium chloride one hour before operation and 1,000 cc of blood plasma during the operation, which commenced at 12:05 a. m. and ended at 2:15 a. m. Water in quantities desired and tolerated was allowed as soon as the patient reacted from the anesthetic and the patient had an excellent postoperative course without distention or discomfort. The drain was removed on the tenth postoperative day and the patient was allowed out of bed on the twenty-first postoperative day. There was no external bile drainage, but a slight purulent drainage persisted for several weeks until a gallstone about 1 cm in diameter was extruded through the drain site in the incision.

An extract of the patient's clinical record when hospitalized in a Chicago hospital for appendectomy in May 1941 was obtained, confirming the date and the length of stay in the hospital as given in the history obtained from the patient. The diagnosis of the surgeon and the pathologist in this hospital was acute catarrhal appendicitis. Although the family of the patient visited him shortly after his recent operation, no history could be obtained from the mother or other members of the family of any illness that the patient had ever had other than the illnesses previously recorded in his past medical history. However, the patient, about two months after this recent operation, recalled one other instance eight years ago, in which he had severe abdominal pain for several hours which caused him to leave a ball park and return to his home. For this pain, which he relates was more severe than that suffered with his attack of appendicitis and during his present illness he received no hypodermic medication and the pain suddenly ceased the same day, after which he felt perfectly well.

Two months after operation a barium sulfate meal was given the patient and the fistulous tract to the stomach was demonstrated under the fluoroscope. An x-ray plate was made with the patient in a recumbent position (fig. 1) showing the partially barium filled fistulous tract. Figure 2 is a schematic illustration of the findings at operation.

#### SUMMARY

A case of spontaneous hepaticogastric biliary fistula, the first recorded in the literature, with symptoms vaguely suggestive of biliary tract disease of only thirty-four hours' duration, was observed. A gangrenous, perforated, gallbladder impacted with over 200 stones, complete fibrous obliteration of the cystic and common bile ducts and fibrous obliteration of the distal portion of the hepatic duct and general peritonitis were found at operation. Complete recovery of the patient followed surgical intervention, and roentgenographic demonstration of the hepaticogastric fistula was made two months after the operation.

## Special Article

### AMERICAN HEALTH RESORTS

#### THE IMPORTANCE OF HEALTH RESORTS AND THEIR FACILITIES IN MEDICAL PREPAREDNESS

MAJOR GENERAL CHARLES R. REYNOLDS  
UNITED STATES ARMY, RETIRED

*These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.*

The term health resort is loosely applied to several kinds of institutions quite unlike in their facilities and methods of promoting health as well as their importance in medical preparedness. This term includes hospitals or spas possessed of certain natural therapeutic facilities for the treatment of chronic diseases and, in a sense, other institutions offering convenient, attractive and

TABLE 1—Spa Facilities According to States, Localities  
and Accommodations

Alabama	3	665	Montana	4	300
Arizona	2	119	Nevada	2	74
Arkansas	1	20,412	New Mexico	5	1,161
California	23	4,708	New York	6	10,145
Colorado	2	830	North Carolina	3	170
Florida	3	430	Oklahoma	2	1,030
Georgia	2	457	Oregon	3	550
Idaho	2	180	Pennsylvania	2	850
Illinois	1	75	South Dakota	1	435
Indiana	5	1,055	Tennessee	3	680
Iowa	1	110	Texas	3	1,088
Kentucky	1	165	Utah	1	10
Maine	1	640	Virginia	5	1,490
Michigan	3	2,765	West Virginia	4	1,815
Minnesota	2	155	Wisconsin	1	590
Mississippi	2	310	Wyoming	2	25
Missouri	2	2,084			
			33 states	10	57,491

healthful accommodations in an environment calculated to attract those needing rest and rehabilitation as well as those seeking athletics, sports or even social advantages. For military use we must include in this consideration hospitals and hotels some of which offer little more than sunshine, mountain air and sea breezes. These institutions have a potential military value for housing purposes during mobilization or for conversion into convalescent hospitals and camps as military operations progress. Many of the larger hotels, as for instance those at Atlantic City, are being acquired by the military services at the present time for the establishment of special schools, reception centers and so on. In general, these institutions fit into the military plans only because their physical facilities are readily available where and when needed and not because they are called health resorts.

The use of spas in this country for military purposes has been well considered by Dr. N. Philip Norman<sup>1</sup> and by several more recent surveys of these institutions.

<sup>1</sup> Norman, N. P. Mobilizing the Spas and Health Resorts of Our Nation. New York, N. J., 1918, 419 (Sept. 7), 463 (Sept. 14), 507 (Sept. 21), 1918. Published in book form by A. R. Fildes Publishing Company. 1918. Copyright 1918.

for military purposes being made by the Committee on Health Resorts of the American Medical Association, cited by Dr Walter S McClellan, medical director of the Saratoga Spa in his articles.<sup>2</sup> From the latter source have been taken many data essential in estimating the value of health resorts in medical preparedness, more especially tables 1, 2, 3 and 4, which record the results of the survey by showing spa facilities and location, capacity and therapeutic value. Lists of institutions meeting somewhat the definition of health resorts which have been compiled by the Red Book of the American Hotel Association and by the Hotel Monthly have been consulted.

In table 1 are listed the facilities according to states with the total accommodation for each state having spa facilities. Table 2 shows the number of spas in various states classified according to accommodations. Table 3 lists the states with the greatest accommodations in institutions of 1,000 or more. Table 4 lists the spa facilities according to the several army corps areas.

From a study of these compilations it is found that spas of significant importance are found in one hundred and three localities in thirty-three states, which provide facilities for treating about 57,000 patients.

As to size, there are eleven states having facilities each of which is capable of caring for 1,000 or more patients. These constitute about 85 per cent of available facilities, the greatest concentration amounting to over 70 per cent of such institutions being found in Arkansas, New York and California. The others of varying sizes are located in Michigan, Missouri, Texas, Indiana, West Virginia, Virginia, New Mexico and Oklahoma in approximately that order of importance. It will be seen that territorially their distribution does not coincide at this moment with the greatest concentration of troops, a definite scarcity of accommodations in this respect being noted in the Southeastern states of the Fourth Corps Area. In general, however, it will be seen that a sufficient number of spas of the larger size are fairly convenient for such military use as may be required.

There are a few very significant factors to be taken into consideration in determining the value of the spas for military medical purposes, chief among which is that many of these institutions do not house their patients, the immense majority of whom seek living accommodations in nearby hotels and boarding houses while undergoing treatment at the spa. Few of the spas or health resorts are professionally staffed but rely largely on the local profession for the care of the patients undergoing treatment. Some are not open the year round. There is no question about their ability to treat a very large number of patients at one time. For instance, New York State can care for 10,000, one-half of whom can be treated at the Saratoga Spa. However, practically none of the health resorts are staffed administratively organized and possessed of sufficient housing, hospital facilities and utilities to function as general hospitals or as large special hospitals in the general scheme of military hospitalization, certainly not without remodeling and reorganization.

#### USE OF HEALTH RESORTS IN MEDICAL PREPAREDNESS

The use of health resorts in medical preparedness will be considered from the standpoint of the military forces and the civilian population.

To understand the situation regarding the use of special hospitals, such as spas or civilian hospitals in general, it is necessary to be acquainted with the general plans of hospitalization in the military establishment. It is now about eighty years since this nation was engaged in a war in which the theater of military operations was within the home boundaries. The present war, big as it is, does not give much indication that the theater of operations will be laid in the continental limits of the United States. At least military plans have not envisioned such a probability at the present time. This fact has had a determining influence on our system of hospitalization of military casualties, most of which

TABLE 2—Spa Facilities According to Number of Patients Who Can Be Accommodated

States	Number of Localities with Accommodations			
	Under 500	500 1,000	1,000 5,000	Over 5,000
Alabama	3			
Arizona	2			
Arkansas				1
California	21	1	1	
Colorado	1	1		
Florida	3			
Georgia	2			
Idaho	2			
Illinois	1			
Indiana	3	1	1	
Iowa	1			
Kentucky	1			
Maine		1		
Michigan	1		2	
Minnesota	2			
Mississippi	2			
Missouri	1		1	
Montana	4			
Nevada	2			
New Mexico	5			
New York	3		2	1
North Carolina	3			
Oklahoma	1	1		
Oregon	3			
Pennsylvania	1	1		
South Dakota	1			
Tennessee	3			
Texas	1	1	1	
Utah	1			
Virginia	4	1		
West Virginia	3		1	
Wisconsin		1		
Wyoming	2			
Total	86	9	9	2

are expected to come from the theaters of operations in foreign lands. Experience shows that the Army must operate its own hospitals whether in the zone of the interior (home country) or in the theater of operations which includes the zone of communications or supply lines and the combat zone itself. It is true that during the Spanish American War civilian hospitals were used for military patients, but that situation was brought about by the almost total absence of military hospitals of a permanent or fixed type. The use of civilian hospitals for military patients will come only when military operations are carried on in our own country or the capacity of our military hospitals is overtaxed. During the first world war, before American military hospitals were ready for casualties it became necessary to evacuate some of the American sick and wounded to French institutions, a procedure that created the utmost confusion and was discontinued as soon as possible.

<sup>2</sup> McClellan, W. S. Role of Spas in Medical Preparedness. Arch. Phys. Therapy 22: 656 (Nov.) 1941. New York State J. Med. 42: 786 (April 15) 1942.

Another general principle is that military hospitals must be general hospitals in the sense that they shall receive all types of patients, sick or wounded. The only exceptions in time of peace to this plan are the Fitzsimons General Hospital at Denver for the treatment of tuberculous military patients and the Army and Navy Gen-

allowance of beds will be made in the theaters of operations. The requirement of fixed hospital beds in the American Expeditionary Forces in 1918 was 15 per cent of the forces engaged. General hospitals in the United States are under the supervision of the Surgeon General. They are general hospitals in every sense of the word receiving and caring for the military sick and wounded of all kinds and conditions. Classification and consequent separation of patients is of course carried on in each large hospital and when the situation calls for it several general hospitals may be grouped largely for administrative reasons, one hospital being designated for the sick, another for surgical cases or fractures and so on until there is developed a hospital center of more or less specialized units. Patients remain in these hospitals until returned to duty, discharged, transferred to the Army and Navy General Hospital or the Fitzsimons General Hospital or discharged and admitted to the facilities of the Veterans Administration.

TABLE 3—States with Largest Accommodations

	Number of Localities	100 or Over
1. Arkansas	1	20,112
2. New York	1	10,145
3. California	23	4,768
4. Michigan	1	2,755
5. Missouri	2	2,084
6. Texas	1	1,688
7. Indiana	3	1,075
8. West Virginia	4	1,545
9. Virginia	5	1,371
10. New Mexico	5	1,101
11. Oklahoma	2	1,000
Total	79	50,666

eral Hospital at Hot Springs, Ark., which is operated by the Medical Department of the Army for the treatment of diseases for which the waters of that locality have an established reputation. Specialized hospitals have no place in the theater of operations except possibly some institutions for neuropsychiatric cases, the so-called shell shocked. Some of these were established fairly near the front for the purpose of keeping such patients away from the hospital atmosphere, which seems to grow on them and tends toward permanent demilitarization of this class of war casualties. Unless the principles of hospitalization in the present war are modified in a manner at variance with all past experiences and existing plans, there will be no institutions for special treatment in the theater of operations nor is the use of special hospitals contemplated anywhere except under military management. The purchase or lease by the Veterans Administration of existing spas or health resorts or the transfer of individual patients from Veterans Administration facilities has not been established as a policy at the present time. It is reasonable to expect that such a policy, if adopted, will operate after the war or during the later stages of a long war.

The present hospitalization program of the Army is similar to that which operated during the first world war. Near each concentration of troops there is provided a 'station hospital' which might just as well be called a camp hospital for the troops in that immediate vicinity. The program calls for beds in station hospitals for 4 per cent of the military strength. They vary in capacity from 50 beds to several thousand and function under local commanders.

The general hospitals of the peacetime Army and Navy will continue to function as such on an expanded basis. Other general hospitals are being constructed throughout the country at strategic points. In the theaters of operations general hospitals will be provided by construction or otherwise to receive patients by transfer from station hospitals and through the established route in the evacuation of casualties via aid stations, clearing stations, surgical hospitals and evacuation hospitals. The allowance of general hospital beds in the zone of the interior will be approximately 1 per cent of the total strength of the Army. A much higher

For military purposes there are three ways by which health resorts, more particularly spas, can be of value:

1. By the acquisition by purchase or lease of these plants by the War or Navy Department for general hospital purposes after the necessary remodeling and additions.
2. By the transfer of individual military patients for special treatment under the direction of personnel now operating the spas.
3. By the operation of these institutions essentially as spas, under military control. Their use as convalescent hospitals should be considered in this respect.

The acquisition by the Army and Navy of spas and health resorts and their development into military hospitals for the treatment of all classes of patients will be determined by their availability and the requirements of the service balanced against the advantages of new construction. Some of the larger spas and health

TABLE 4—Spa Facilities Accorded to Army Corps Areas (Army Service Center data)

	Army Corps Area	Number of Accommodations
First	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut	1 640
Second	New York, New Jersey, Delaware	6 17,117
Third	Pennsylvania, Virginia, Maryland, District of Columbia	7 2,618
Fourth	South Carolina, Tennessee, Louisiana, North Carolina, Alabama, Georgia, Mississippi, Florida	16 2,717
Fifth	Ohio, West Virginia, Indiana, Kentucky	10 3,834
Sixth	Michigan, Illinois, Wisconsin	5 3,445
Seventh	North Dakota, South Dakota, Nebraska, Minnesota, Kansas, Iowa, Arkansas, Missouri, Wyoming	9 2,471
Eighth	Colorado, Arizona, New Mexico, Oklahoma, Texas	14 5,125
Ninth	Washington, Montana, Oregon, Nevada, Utah, California, Idaho	13 5,682
Total		100 57,471

resorts have been transferred to the jurisdiction of the War Department, reorganized on a general hospital basis and administered by the Medical Department of the Army. The large institutions at Battle Creek, Mich.; Palm Springs, Calif.; and White Sulphur Springs, W. Va., have been acquired by the Army Medical Department and others are contemplated. It simply means that these institutions are being acquired in

carrying out the hospitalization program of the Army. Their hydrotherapeutic facilities will become a valuable feature of physical therapy for medical and surgical cases, which is a fairly well developed service in the larger hospitals of the Army though not in a way comparable with that afforded by the facilities of the spas.

TABLE 5—*Chronic Diseases Treated at Spas*

Heart and circulatory disorder	31 per cent
Rheumatic conditions	24 per cent
Gastrointestinal ailments	18 per cent
Nervous condition—functional and organic	8 per cent
Metabolic disease	4 per cent
Skin diseases (noninfectious)	2 per cent
Miscellaneous	3 per cent
No disease chiefly general debility	10 per cent

The transfer of militarized patients to existing spas for special treatment is confronted by administrative difficulties. Few of these institutions are staffed, administratively organized and possessed of sufficient housing, hospital facilities and utilities to function in the general scheme of military hospitalization. Then there is the objection that military control of patients transferred to civilian institutions is lost, with inevitable confusion. It would seem to be better administration and would accomplish the purposes desired if, before discharge or general demobilization, patients for whom spa treatment is indicated were to be sent to those military hospitals which have been established on the sites of the larger health resorts.

The third proposition, the operation of spas under military control, meaning by this the supplementing of these institutions by military personnel and facilities to care for military patients, is to be thought of when the hydrotherapy and physical therapy facilities of the large spas already absorbed in the hospitalization program are exhausted. Then use as convalescent hospitals or camps as a start in a program of rehabilitation either by the military medical services or by the Veterans Administration is to be considered. After demobilization we may look for the closing of many general hospitals. At that time these reinforced spas, acting as convalescent hospitals, may be the answer to the problem of the follow-up treatment of the cardiovascular, digestive and rheumatic casualties of the war and the start of a program of health conservation and rehabilitation.

#### SPA THERAPY AND ITS USE IN THE TREATMENT OF CHRONIC WAR CASUALTIES

The therapeutic value of spa treatment needs no defense. It is an established feature of medical treatment based on ages of experience. As is well known this treatment is featured according to the physical and chemical characteristics of the natural agents peculiar to the locality, varying as they do in thermal qualities and chemical content such as the sulfur, brine and carbon dioxide waters. Closely associated with hydrotherapy is physical therapy including its usual adjuncts of heat, light, electricity and the important matter of regulating diet, rest and exercise.

The diseases for the treatment of which these institutions have an established reputation are essentially chronic and may be listed as in table 5, based on the records of treatment of over 6,000 patients in one year at the Saratoga Spa.

Probably three fourths of those under treatment at spas are cardiovascular, rheumatic and gastrointestinal patients. These three groups accounted for a considerable proportion of admissions to sick report in the Army from April 1, 1917 to Dec 31, 1919 as shown in table 6.

From the military standpoint it is important to note that these are type disabilities which are usually discharged from the military service and whose after-care becomes the responsibility of the U. S. Soldiers Home or the Veterans Administration. This is particularly true in time of war, when available beds must be used for war casualties who may become military assets instead of liabilities. Even so, we should give consideration to the prevention of permanent disability during the incipient stage of these ailments whether functional or organic when treatment will be most beneficial. Discharged from military service, they face the realities of a rather complete readjustment with urges and necessities which place material interests above physical rehabilitation. These three groups accounted for more than 360,000 admissions in the Army during the first world war. If the mobilization of manpower is to be doubled during the present war there may be three quarters of a million in this reservoir of potential chronic cases.

The digestive diseases were the most important of these groups and accounted for about 9 per cent of admissions. It is estimated that they will furnish 10 per cent of admissions during the present war and on this estimate specialists in gastroenterology have been provided for in our general and large station hospitals. In reviewing the records of the first world war relating to digestive diseases, Kantor<sup>3</sup> attempts to estimate the permanent disability from this cause in soldiers based on Veterans Administration records and shows that whereas these diseases occurred among soldiers of the first world war to the extent of 9.2 per cent and among the disabled veterans to the extent of 3.5 to 4 per cent as late as 1940 "these figures might represent the residue of chronic or permanent disability resulting from the original acute wartime incidence of gastrointestinal disease." Conceding a large margin of error in this calculation, it must be evident that these diseases swell the steadily growing total of chronic ailments to which the attention of medicine is being directed more and more year by year. Cardiovascular conditions are more easily detected at the recruit examinations than digestive diseases. The functional nature and origin of many of these suggest the benefits to be expected of spa treat-

TABLE 6—*Patients with Three Diseases*

Digestive diseases excluding appendicitis and diseases of the mouth	264 611
Cardiovascular diseases excluding hemorrhoids, varicocele and lymphatic diseases	54 451
Rheumatic diseases not so classified in reports but including 22 704 arthritis and 11 525 muscular rheumatism	47 532

ment—physical medical treatment in general. I have in mind neurocirculatory asthenia, the D. A. H. (disordered action of the heart) cases early recognized by the British in the previous war. Appropriate management would rescue some of these men for military service from invalidism and its huge pension rolls. It is



known that the British and Germans are making use of their spas for military personnel as the French did some time ago

The ill defined group called rheumatic, accounting for so much disability that statistical analysis is unnecessary and from which military service affords no immunity, rounds out a list of ailments for which spas were created. The usual case finding crusades are not necessary as in certain other diseases, they are "gathered," as it were, rather than discovered and in numbers which justify spa treatment in a way consistent with the general principle of military hospitalization. The best method would seem to be the employment of the existing facilities of the spas taken over by the federal medical services for general hospitals and by militarizing and supplementing such other health resorts as may be needed for use as convalescent hospitals and by a working arrangement between certain health resorts of the spa type with the Veterans Administration for the care of war veterans after discharge.

#### THE USE OF SPAS AND HEALTH RESORTS FOR THE CIVILIAN POPULATION IN THE PRESENT EMERGENCY

The use of spas and health resorts for the civilian population in the present emergency is a subject entirely distinct from their use for purely military purposes. As specialized institutions they offer facilities for the treatment of many conditions arising out of service in war industry and, on account of the scarcity of hospital facilities in over-crowded production areas, these institutions might well be developed into a valuable asset in the field of industrial medicine and hygiene. With the increasing scarcity of physicians for civilian service and of hospital facilities the value of the spa is enhanced because of its ability to give appropriate treatment to many without additional facilities.

Many of the conditions so prevalent among workers especially in heavy industries, are greatly benefited by spa treatment and the same is true of those which partially immobilize at least periodically a large part of our population however employed. With the great advances made by preventive medicine, particularly in overcoming the infectious diseases, life expectancy has been prolonged and a greater proportion of the population is year by year arriving at the higher age brackets. The infections are gradually giving way to structural or degenerative changes and consequent chronic ailments. As a result, we have with us a steadily increasing proportion of cardiovascular cases and many more in that vast field referred to as rheumatic. It is the chronic degenerative diseases which are plaguing the later years of our lives and which present the most absorbing problem of the medical profession. The treatment of these cases is largely a feature of physical medicine, and in this field the therapy of the spa is predominant in the prevention and control of these conditions which, if unchecked, lead on to invalidism.

#### SUMMARY

1 The importance of health resorts in medical preparedness must be considered in connection with the military situation, the hospitalization plan and the policy governing the disposition of noneffectives during and after active military operations.

2 The so-called health resorts without substantial natural therapeutic agents and facilities are of value in medical preparedness only as their physical plants or

utilities are available when and where needed to supplement the military housing program. Some of these have been useful already as station or local hospitals. Others will prove valuable as military expansion proceeds.

3 The chief duty of the military medical service is the conservation of effective manpower for the purpose immediately in view. Military operations are complex under all circumstances, the medical service itself, in arranging its hospitalization, must adjust itself to the organization, distribution and operation of the troops it serves. Experience has shown that the establishment of special hospitals is unsound, as is the retention of noneffectives in the military service. Hence in the early stages of any war the development of special hospitals will not be in order.

4 The value of many of the existing spas for military medical purposes is decidedly influenced by their lack of housing facilities for patients, permanent professional staffs, administrative machinery and other facilities for handling groups of men commensurate with their special treatment facilities.

5 The most extensive employment of spas in medical preparedness will likely be through their acquisition by the Medical Department of the Army or Navy for use as general hospitals with such additions as may be necessary. Their therapeutic appurtenances will be valuable in supplementing the physical therapy department which has become a recognized and necessary service at every large military hospital. Added to this will be of course, the special program utilizing the natural therapeutic agents of the spas. Through the growth of the military establishment commensurate with the seriousness of present world conditions the Medical Department of the Army may well find it expedient to designate general hospitals with spa facilities for treatment of certain chronic diseases before discharge or demobilization, as was done to a limited extent during and after the first world war when the empyemas, fractures, osteomyelitis cases and amputations were concentrated in designated general hospitals.

6 The distribution among spas of individual convalescent patients for special treatment of conditions many of which are chronic and disabling for the military service, is objectionable for administrative reasons, especially as it severs their contact with the military establishment.

7 Consideration should also be given to some of the strategically located health resorts for use as convalescent hospitals or camps after supplementing them with military personnel and utilities.

8 The disease groups for which spa treatment is especially efficacious, digestive, cardiovascular and rheumatic, comprise a large percentage of admissions to sick report in the Army—more than 360,000 from April 1, 1917 to Dec 31, 1919, many of which became chronic with resulting invalidism.

9 Spas have a decided value in supplementing the medical service of the civilian population especially the added requirement incident to war industry. Many of the workers in this group of the population are beyond the military age limit and therefore present those chronic ailments which are becoming more prevalent in the general population year to year and which should be recognized as a real public health problem.

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION  
OF THE FOLLOWING REPORT

HOWARD A. CARTER, Secretary

### SONOTONE AUDICLES #530, #531, #533 ACCEPTABLE

Manufacturer Sonotone Corporation, Elmsford, N. Y.

The three models of the Sonotone Audicles were investigated by the Council and are treated individually in the following report

#### SONOTONE AUDICLE #530

The Sonotone Audicle #530 consists of a microphone and vacuum tube amplifier combined in a molded case  $3\frac{3}{4}$  inches by  $1\frac{1}{4}$  inches by  $\frac{1}{4}$  inch, weighing 3.46 ounces, and air receiver  $\frac{1}{4}$  inch thick by 1 inch diameter. Three B battery units were submitted with the instrument.

**Current Data**—Battery voltages and current drains with the hearing aids turned full on were measured as follows:

A Battery	Voltage	Current
< 901	1.5 volts	85.88 milliamperes
< 800	1.5 volts	86 milliamperes
B Battery	Voltage	Current
918	18 volts	0.48 milliamperes
930	30 volts	0.84 milliamperes
945	45 volts	1.47 milliamperes

**Acoustical Gain**—The instrument has a single switch for on and off volume control. Set at full volume, the acoustical gains shown were as follows:

B Voltage	128	256	512	2,048	3,072	4,096
18 volts	Nil	Nil	12.30 db	21 db	8 db	
30 volts	Nil	Nil	14.39 db	23 db	10 db	
45 volts	Nil	Nil	14.50 db	30 db	12 db	

The foregoing measurements are for pure tones at normal ear threshold levels. At 50 decibels above threshold the gain at 512 cycles per second is about 10 decibels higher, but the output shows harmonic distortion at this frequency. Whispered voice was heard and understood at a distance of 5 feet by a hard of hearing subject with an average hearing loss of 45 decibels in the speech range.

**Articulation**—Articulation tests with hard of hearing subjects, with the volume set for comfortable loudness, showed satisfactory performance.

The instrument is well made throughout.

#### SONOTONE AUDICLE #531

The Sonotone Audicle #531 consists of a microphone and amplifier unit, combined in a molded case  $4\frac{1}{8}$  by  $2\frac{1}{8}$  inches, weight 4.8 ounces, a magnetic receiver  $\frac{5}{16}$  inch thick by  $\frac{3}{4}$  inch diameter, weight without molded earpiece 9.32 ounces, and a bone receiver  $1\frac{1}{16}$  by  $\frac{1}{16}$  inches, weight 0.56 ounces. Three B battery units 18 volt, 30 volt and 45 volt were furnished, each complete with a 1.5 volt A battery as described in the report on the Sonotone Audicle #530.

**Current Data**—Current drains on the 1.5 volt A battery was approximately 85 milliamperes for each of the three B battery units. The B battery currents shown are:

18 volts	0.80 milliamperes
30 volts	1.02 milliamperes
45 volts	1.62 milliamperes

**Acoustical Gain**—In addition to the volume control there is a tone control consisting of a screw with four tone settings. The effect of shifting the tone control from 1 to 4 was to increase the amplification for the frequencies up to 2,048 cycles and to decrease it over the range from 2,048 to 4,096. The following are the approximate acoustical gains at full volume for different instrument settings and B battery voltages:

B Battery		128	256	512	2,048	4,096
Vol- tages	Tone Control					
18	21	Nil	Nil	18.39 db	4.2 db	
18	24	Nil	12 db	25.52 db	Nil	
45	21	Nil	10 db	21.47 db	17.5 db	
45	24	Nil	20 db	33.53 db	9.0 db	

**Articulation**—Tests using syllable and sentences with a hard of hearing subject showed satisfactory performance. Whispered voice was heard and understood at 8 feet in a quiet room by a hard of hearing subject with an average hearing loss of 45 decibels.

The instrument is well made.

#### SONOTONE AUDICLE #533

The Sonotone Audicle #533 is similar in external respects to the Sonotone #531. The combined microphone and amplifier unit has three controls—a separate on and off switch, a volume control and a 'tone discriminator.' It also has connection for a magnetic receiver and a separate connection for a crystal receiver. The microphone and amplifier unit are combined in a molded case 5 by  $2\frac{1}{8}$  by  $\frac{1}{8}$  inches, weight 6.0 ounces. The magnetic receiver and the bone conduction receiver were the same as for Sonotone #531. Only the magnetic receiver was supplied with the instrument.

**Current Data**—Battery units were supplied showing voltages and current drains at full volume as follows:

A Battery	Voltage	Current
< 903	1.5	75 milliamperes
< 800	1.5	75 milliamperes
B Battery	Voltage	Current
930	30	85 milliamperes
945	45	1.2 milliamperes

**Acoustical Gain**—Measurements of acoustical gain, with input at normal ear threshold, were made using the 30 volt B battery at full volume and at different tone settings, with the following results:

Tone Setting	128	256	512	2,048	3,072	4,096
			Min	Max		
1	Nil	Nil	5 db	42 db	28 db	11 db
3	Nil	Nil	24 db	45 db	30 db	12 db
6	Nil	5 db	31 db	45 db	25 db	9 db

The effect of the 'tone discriminator' is to vary the low frequency response relative to the response at high frequencies. The internal noise is not excessive. It was found that, with the 45 volt battery and with both volume and tone control set at maximum, there was a squeal due to feedback. This was eliminated, however, when either control was set slightly below maximum.

**Articulation Tests**—The usual tests with hard of hearing subjects were made and showed satisfactory performance.

The instrument is well made throughout.

The Council voted to accept the Sonotone Audicles #530, #531, #533 for inclusion in its list of accepted devices.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

**EPHEDRINE SULFATE** (See New and Nonofficial Remedies, 1943, p. 256)

The following dosage forms have been accepted:

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Solution Ephedrine Sulfate, 3 per Cent 1 fluidounce bottle Preserved with 0.5 per cent chlorobutanol

Capsules Ephedrine Sulfate 25 mg and 50 mg

**EPHEDRINE HYDROCHLORIDE** (See New and Nonofficial Remedies 1943 p. 255)

The following dosage forms have been accepted:

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Solution Ephedrine Hydrochloride, 3 per Cent 1 fluid ounce bottle Preserved with 0.5 per cent chlorobutanol

Capsules Ephedrine Hydrochloride 25 mg and 50 mg

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SATURDAY, NOVEMBER 27, 1943

## THE INFLUENCE OF THE ENDOCRINE GLANDS ON GROWTH AND AGING OF THE SKELETON

Since disturbances of body growth are not infrequently associated with endocrine disorders, attempts have been made to establish the role of the ductless glands in the maintenance of normal and in the initiation of pathologic skeletal development. The tendency is to consider the anterior hypophysis as the master gland controlling skeletal growth by a single specific growth hormone. Other endocrines are thought by many to affect growth only by acting first on the hypophysis.<sup>1</sup> More recent anthropologic and comparative anatomic observations, however, indicate that skeletal development is primarily genetically determined, although it may be modified by the secretions of ductless glands.<sup>2</sup> Moreover, hormones may influence not only skeletal growth but also skeletal aging, and often the aging effect outbalances the growth promoting.<sup>3</sup>

Histologically there are three phases of skeletal growth and aging, the first characterized by growth of cartilage, the second showing increasing regression of cartilage and maturation of bone, the third exhibiting a predominance of resorption of cartilage and bone. The duration and degree of these phases vary in different species and strains. In the joints of aging mice spontaneous degenerative changes occur, which are more severe and more frequent in rapidly aging strains.<sup>4</sup> Administration or withdrawal of hormones may affect one or all three developmental phases. In growing animals, anterior hypophysial hormone, prolactin, thy-

roid hormone, potassium iodide and, in the hypogenital male, also testosterone may temporarily intensify body growth.<sup>5</sup> Gigantism, however, does not result, since growth ceases prematurely, while the onset and progress of the subsequent phases of aging are accelerated. Under certain conditions the age changes may be so hastened that they outbalance the growth stimulation, and stunting results. Estrogens and androgens inhibit growth and intensify aging of the epiphysal cartilage and may thus cause dwarfing. The effects of estrogen are, however, more complex, since it inhibits the resorption of bone and, in some species and strains, increases endosteal bone formation.<sup>6</sup> Skeletal aging is delayed subsequent to thyroidectomy, to castration and to administration of progesterone, but this retardation is compensated at later stages by a more rapid progress of the age changes, and there ensues no skeletal overgrowth.

In animals that have definitely ceased to grow, growth promoting substances do not revive the proliferation of the inactive epiphysal cartilage, but they may accelerate and intensify the processes of skeletal aging, thus, anterior hypophysial hormone increases the incidence and severity and hastens the onset of the articular age changes, and estrogen may call forth osteoporotic lesions.<sup>7</sup> Besides the age of the animal, its sex, the dose of the hormone, the duration of the treatment and seasonal influences modify the hormonal effects on the skeleton.<sup>8</sup> Hormones of different nature produce similar histologic changes in the skeletal tissues.

The specificity of hormonal effects on the skeleton seems to be restricted, and quantitative rather than absolute. Moreover, it seems doubtful whether the term "growth hormone" should be applied to a substance that promotes not only growth but also the opposite, namely the regressive changes of aging. Since growth is the result of a variety of complex biochemical processes, it seems improbable that a single growth hormone could promote all of them and even in a limited way be specific in nature. Anterior hypophysial hormone, however, increases the retention of nitrogen and the storage of water and fat in the tissues.<sup>9</sup> Therefore the anterior hypophysis and also other endocrines affect growth by participating in the metabolism of the products needed by the organism for its growth as determined and limited by the genetic constitution of the individual. Presumably a number of hormones cooperate also in the metabolic activities that bring about skeletal aging.

<sup>1</sup> Evans, H. M. Growth Hormone of the Anterior Lobe of the Pituitary Gland. *J. A. M. A.* **117**: 287 (July 26) 1941.

<sup>2</sup> Greulich, W. W. Genetic and Endocrine Determination of Skeletal Development. *Endocrinology* **30**: 1023 (June) 1942. Smith, P. E., and MacDowell, E. C. An Hereditary Anterior Pituitary Deficiency in the Mouse. *Anat. Rec.* **46**: 249 (Aug. 25) 1930. Dawson, A. B. The Influence of Hereditary Dwarfism on the Differentiation of the Skeleton of the Mouse. *ibid.* **61**: 485 (March 25) 1934. Silberberg.<sup>4</sup>

<sup>3</sup> Silberberg, Martin, and Silberberg, Ruth. Effects of Endocrines on Age Changes in the Epiphysal and Articular Cartilages. *Endocrinology* **31**: 410 (Oct.) 1942. The Influence of the Endocrine Glands on Growth and Aging of the Skeleton. *Arch. Path.*, to be published.

<sup>4</sup> Silberberg, Martin, and Silberberg, Ruth. Age Changes of Bones and Joints in Various Strains of Mice. *Amer. J. Anat.* **68**: 69 (Jan) 1941.

<sup>5</sup> Silberberg.<sup>3</sup> Riddle.<sup>7</sup>

<sup>6</sup> Gardner, W. U. and Peiffer, C. A. Influence of Estrogens and Androgens on the Skeletal System. *Physiol. Rev.* **23**: 139 (April) 1943.

<sup>7</sup> Riddle, Oscar. Contemplating Hormones. *Endocrinology* **10**: 1 (Jan. Feb.) 1935.

<sup>8</sup> McLean, T. C. Physiology of Bone. *Ann. Rev. Physiol.* **5**: 79, 1943.

<sup>9</sup> Long, C. N. H. Metabolic Functions of Endocrine Glands. *Ann. Rev. Physiol.* **4**: 465, 1942.

RECENT DATA ON TRICHINAE IN  
NECROPSY MATERIAL

During the past several years a survey of trichina infection in necropsy material obtained from hospitals throughout the United States has been conducted in the laboratories of the United States Public Health Service. A recently published summary<sup>1</sup> of the general results provides a wealth of data on some aspects of the trichinosis problem in this country. Examination of the muscle of diaphragms with the aid of the dissecting microscope or with the help of the Baermann apparatus after enzymatic digestion revealed that 1 in 6 of the more than 5,000 specimens studied was positive for *Trichinella spiralis*. The sampling of the necropsy material employed in this investigation was such that the results provide a reasonably accurate index for the entire country. The residences of persons represented in the survey included forty-one states and the District of Columbia, both urban and rural. Necropsy material from people in states in which clinical trichinosis had not been reported at the time this survey was inaugurated, material from persons who died suddenly from natural or traumatic causes and material selected at random from hospitals selected at random were all included. There were no statistically significant differences in the percentage of positives in the various states or in the urban and rural groups. With the view of demonstrating the degree of protection afforded by the Mosaic code, samples from 200 orthodox and unorthodox Jews were included in the survey. Of this number only 1 was positive. All the material in this short series was from New York City, possibly a higher percentage of positives might have been obtained if necropsy material from Jewish people throughout the country had been examined. Nevertheless the present data clearly demonstrate the protection afforded by adherence to the Mosaic code.

With regard to the degree of infection, approximately 86 per cent of the total number of infected specimens contained less than 11 larvae per gram. Four and five-tenths per cent of the positive cases showed infections of more than 50 per gram, a number which Wright and his associates<sup>1</sup> believe capable of causing pronounced clinical symptoms. An appraisal of a number of cases in which both live and dead larvae were encountered indicated beyond reasonable doubt that in some instances a superimposed infection had occurred. This corroborates the similar results of others<sup>2</sup> and emphasizes that the observations on the resistance to reinfection with trichina exhibited by rats<sup>3</sup> does not warrant belief that the same phenomenon applies to man.

Wright and his collaborators decry any attempts to minimize the significance of trichinosis as a public health problem on the basis of statements that a clinical history of the disease may not have been reported in cases in which the parasite was found at necropsy. Such assertions do not refute the possibility that heavily infected people may have had clinical trichinosis during their lifetime without the disease having been recognized. Indeed, there is little doubt, according to Wright and his co-workers, that not all cases of trichinosis are diagnosed either clinically or anatomically. In any event the present survey, like previous less extensive studies, indicates that infection with trichina is widespread in this country. This is a problem which is of interest to all who are concerned with public health. Regrettable shortcomings in our control of trichinosis in the past have already been pointed out.<sup>4</sup>

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**Current Comment**

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**HOPE (FALSE) FOR THE VICTIMS  
OF ARTHRITIS**

Under Correspondence in this issue of THE JOURNAL appears a letter from Dr. Ralph H. Boots, New York, relative to an article in the *Reader's Digest* for November titled "Hope for the Victims of Arthritis." In 1937 the Council on Pharmacy and Chemistry of the American Medical Association indicated that a product called Ertion, which is a capsule containing some 50,000 U. S. P. units of vitamin D, was not acceptable for New and Nonofficial Remedies. The flamboyant advertising then used for the product was condemned. The Council also said that there was no proof that such large doses of vitamin D are not toxic and it concluded "Critical examination of the reports on the value of vitamin D in the treatment of chronic arthritis reveals little to warrant the belief that the beneficial effects claimed are specific." In the years that have passed, other discussions of the use of massive doses of vitamin D in the treatment of arthritis have been published, including a symposium on the subject before the American Rheumatism Association in June 1942 and a paper by Dr. R. H. Freyberg of the University of Michigan in THE JOURNAL.<sup>1</sup> Dr. Freyberg found the results of the use of such preparations unimpressive. The consensus of the symposium before the American Rheumatism Association was likewise far more negative than favorable to the use of this preparation. In New and Nonofficial Remedies, 1943, the Council summarized the evidence available to the date of publication in the following sentence: "Clinical evidence does not warrant the claim that massive doses of vitamin D are of

1 Wright, W. H., Kerr, K. B. and Jacobs, Leon. Studies on Trichinosis. XV. Summary of the Findings of *Trichinella Spiralis* in a Random Sampling and Other Samplings of the Population of the United States. Pub. Health Rep. 58: 1293 (Aug. 27) 1943.

2 Most, Harry, and Helsen, Milton. The Incidence of Trichinosis in New York City. Am. J. M. Sc. 202: 251 (Aug.) 1941.

3 McCoy, O. R. Immunity of Rats to Reinfection with *Trichinella Spiralis*. Am. J. Hyg. 11: 484 (Sept.) 1931.

4 Garbage Disposal and Trichinosis. editorial. J. A. M. A. 117: 938 (Sept. 14) 1940.

1 Freyberg, R. H. Treatment of Arthritis with Vitamin and Endocrine Preparations. Emphasis on Their Limited Value. J. A. M. A. 119: 1165 (Aug. 8) 1942.

benefit in chronic arthritis. Nevertheless de Kruif in an article in the *Reader's Digest* for November conveys to its readers his extraordinary enthusiasm regarding this technic. Apparently the article stimulated hundreds of persons with arthritis to approach their physicians and to request a change from the methods of treatment which were being followed to the use of such preparations. Many of these physicians report that they have received from one hundred to three hundred requests either directly or in writing. Those who attempt education of the public in matters of health and disease have a serious responsibility, they do incalculable harm when they mislead the public.

### PENICILLIUM INOCULATED SURGICAL DRESSINGS

Since purified penicillin is not generally available for civilian use, attempts have been made to find a substitute. One suggestion is the use of moist penicillium inoculated surgical dressings, which have been tested clinically by Robinson and Wallace<sup>1</sup> of the Allegheny General Hospital. In the preparation of such dressings, eight layers of gauze were placed in a Petri dish and saturated with a medium containing 1 per cent yeast extract, 2 per cent dextrose, 2 per cent corn starch and 2 per cent glycerin. The dish was then autoclaved, inoculated with penicillium and incubated at room temperature. Two days later, 1 cc of sterile human plasma was allowed to flush underneath the dressing to simulate its application to an open wound. At intervals the Petri dish was tipped so that a small amount of fluid would drain away. Titration of this fluid showed a rapid production of penicillin in the gauze culture. The maximum titer was reached by the end of six days, at which time the drainage fluid inhibited growth of test strains of *Staphylococcus aureus* in dilutions as high as 1:200. The titer decreased rapidly after the seventh day. Clinical tests of such penicillium gauze dressings were made on a number of patients. A typical case was one of acute osteomyelitis and periostitis of the right humerus. A previous wide incision had been made over the site of the infection and sulfonamides prescribed without relief. A moist penicillium gauze dressing was placed over the wound, with prompt relief of pain. In ten days the patient was discharged clinically well. Another patient was treated for a large staphylococcal furuncle on the back of the neck and a third for multiple soft tissue *Staphylococcus aureus* abscesses over the lower back and sacral region with equally favorable results. From these and other clinical data the Pittsburgh surgeons conclude that penicillium inoculated surgical dressings are of promise in the treatment of acute and chronic pyogenic surface infections. Their use is recommended merely as an emergency measure until adequate supplies of purified penicillin are generally available. Whether or not there are toxic or allergic reactions that might limit the use of such dressings has not yet been reported.

<sup>1</sup> Robinson, G. H., and Wallace, J. E. *Science* 98: 329 (Oct. 8) 1943.

### MEDICAL SERVICE IN SOUTH AFRICA

The reorganization of medical service has been discussed in South Africa for several years. During the last three years this discussion has increased in intensity. Several reports have been made by the Planning Committee of the South African Medical Association. The publication of the first report,<sup>1</sup> two years ago, was followed by an elaborate questionnaire to all the members of the association requesting expression of opinion on almost every phase of the proposed plan. The planning committee then studied these replies and prepared a report and plan in accordance with the majority of opinions in the questionnaire.<sup>2</sup> As a preliminary statement of principles the committee pointed out that more "doctoring" is in itself no solution of the health problem of the country. Freedom from want and poverty will do more to build up a healthy community than any amount of curative medical services. The committee found that "there was an overwhelming majority against a scheme operated as part of the civil service and run on civil service or army lines." Instead of a civil service system the committee proposed "a health service under the minister of health, with an elected council, including professional representatives, having executive as well as advisory powers." The whole plan depends on a "parallelism" with administrative matters under the control of government authority and all medical matters under medical control and supervision. It is proposed that the National Health Advisory Council, which is to have considerable executive power, should have 28 members, 9 to represent governmental departments, 3 the public and 16 the professional medical associations, including physicians, dentists, nurses, pharmacists and medical technicians. This type of organization is to be extended into regional divisions that have about 500,000 population and at least one "grade A" general hospital of about 1,000 beds and such other specialist and auxiliary hospitals as might be found necessary. Certain health and protective service should be conducted in health centers. "So far as curative services are concerned, the bulk of the work should, in our opinion, still continue to be carried out by the general practitioner."

### VOLUNTEERS FOR MALARIA TEST AWARDED LEGION OF MERIT

Fifty enlisted men volunteered to expose themselves to malarial infection for a period of six weeks in the jungles of New Guinea. This was to demonstrate the danger of malaria for those not taking preventive measures. A similar group was given atabrine as a malarial suppressive, while a third group used a drug the efficacy of which has not yet been fully disclosed. As a result of this action "beyond the call of duty" the men have been awarded the Legion of Merit. The action of these men is in the best traditions of the Army as exemplified by a similar group of volunteers in the famous experiments under Major Walter Reed, which contributed so much to the conquest of yellow fever.

<sup>1</sup> Memorandum from the Planning Committee. *South African M. J.* 16: 261 (July 25) 1942.

<sup>2</sup> The Future of Medicine. *South African M. J.* 17: 199 (July 17) 1943.

# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## ARMY

### MANAGEMENT OF POLIOMYELITIS

The War Department, Washington, D. C., recently released Circular Letter No. 175, regarding the management of poliomyelitis, which is as follows:

#### 1. GENERAL

1. a. The sudden onset and obscure source of poliomyelitis, the uncertainty of effective preventive measures, the lack of specific therapeutic agents and the frequently distressing residuals or occasional deaths among those attacked have established a special dread of the disease among the general public and the medical profession alike. As a medicomilitary problem, poliomyelitis has not been proportional to the public interest in and concern for it. However, although it is a relatively rare disease in the Army, it presents certain special problems of management.

b. The principles of therapy which follow were formulated after conference with a group of recognized authorities on the different aspects of poliomyelitis. These principles are stated here in the belief that they include the most acceptable of the therapeutic procedures currently advocated. It should be emphasized that the information is intended to serve only as a guide and is not an effort to standardize the treatment of poliomyelitis in the Army. Perhaps no other disease calls for more individualization of therapy.

#### 2. TREATMENT

2. With respect to therapy, poliomyelitis may be said to present four phases: acute, subacute, convalescent and chronic.

a. *Acute Phase*—(1) *Definition*. The acute phase includes the onset, which is characterized by malaise, nausea, vomiting, diarrhea and fever either singly or in combination. There are usually pain and tenderness and often stiffness in the muscles of the extremities or back. The degree of general systemic illness varies greatly, it is often severe. Paralysis of varying degree and extent characteristically appears in the second twenty-four hours of this phase, although it may not occur for several days. The disease may even terminate abruptly without the appearance of paralysis. The acute phase of poliomyelitis usually runs a self-limited course of three to seven days.

(2) *Management*. (a) *Transportation*. As a rule patients should be treated during this phase in the hospital where they are first seen. They are either too sick to move or only moderately ill, in which case they will survive the acute phase without special facilities. If special equipment is necessary, it should be transported to the patient by the most expeditious means available.

(b) *Isolation Precautions*. Standard measures for the management of communicable disease in hospitals will be applied as prescribed in Army Regulations (AR 40-210, paragraph 34a and section II, IV and V). These include isolation by individuals or groups, control of visitors, protection of attendants, destruction or disinfection of secretions and discharges, adequate cleansing and disinfection of contaminated articles and other medical aseptic technique appropriate for hospital management of communicable respiratory and intestinal diseases.

(c) *General Measures*. Rest, support and symptomatic relief are the important aims of therapy during this period. Absolute bed rest is essential. A nutritious, easily digestible diet, adequate in or supplemented by vitamins, should be maintained when it is tolerated, and the adequacy of fluid intake should be assured. Careful attention to the functions of the kidneys and bowels is especially important for these patients, since paralysis of the bladder may demand catheterization, and constipation may need occasional relief with enemas or mild laxatives. Sedation is usually effective in allaying the anxiety, apprehension, irritability and nervousness frequently encountered during this period. Sympathetic and tactful attention to the psychologic aspect of the patient's illness is of utmost therapeutic importance, both during the period when he is acutely ill and the long weeks or months before he reaches his maximum improvement. Medical officers, nurses and their assistants must constantly bear this feature of the illness in mind. Part or all of these general measures will be found extremely important through all the phases of poliomyelitis.

(d) *Local Measures*. Careful nursing attention must be provided to maintain the affected parts of the body in the most desirable physiologic position, with the least discomfort to the patient. Application of heat to the involved muscle groups is desirable for the relief of pain and tenderness. Heat may be applied by a variety of means, but hot packs are probably of most value. In the absence of pain and tenderness the patient should be allowed to rest without the disturbance of physical therapy procedures. There does not appear to be well established evidence that any special form of local therapy has any controlling or curative effect on the ultimate extent or outcome of the paralysis.

(e) *Special Measures*. 1. *Use of the mechanical respirator* in the treatment of poliomyelitis has been given much publicity. Spectacular results in individual cases have led to public and professional acclaim which in a sense obscures both the limits of its field of usefulness and the contraindications in the presence of which its use may actually be harmful. The respirator provides rest for paralyzed or weakened muscles of respiration. It is useful generally only when there is paralysis of the intercostal muscles or diaphragm. For this purpose it is of great importance to recognize early weakness of the respiratory muscles and to protect these muscles at the earliest detectable indication of weakness by placing the patient in the respirator. Respiratory difficulty due to disturbance of the nervous center (bulbar type) is rarely benefited by the respirator. Mechanical respirators have been strategically located in hospitals in each service command and in overseas theaters so that it is possible to transport them without delay to other hospitals on emergency request. Their location is always known to the service command or theater surgeon and on request he can arrange for prompt delivery of the equipment to any installation within his command.

2. In the treatment of this phase in addition to the treatment of bulbar paralysis nursing care is especially important. It is helpful to place the patient in a prone position with the foot of the bed elevated to 30 or 40 degrees, thus facilitating the drain-



age of mucus, saliva and vomitus from the throat. Suction equipment should always be at the bedside for clearing away any material which may obstruct the breathing passages. This may be a life saving procedure. As long as there is difficulty in swallowing, parenteral fluids may be necessary. It is unwise to give anything by mouth to a patient with pharyngeal paralysis. It should be pointed out that the use of the respirator in this type of case is rarely of value, the respirator is of aid only when there is paralysis of the diaphragm or intercostal muscles or, in rare instances, when there is hypofunction, not dysfunction, of the respiratory center. It may actually be harmful when the respiratory difficulty is associated with or caused by accumulation of obstructing material in the pharynx.

3 The preponderance of available evidence does not indicate that convalescent poliomyelitis serum is of therapeutic benefit. Its administration to Army personnel is therefore not recommended.

4 Therapeutic efficacy has been claimed for neostigmine. Its use, however, remains in an early experimental stage and its administration to Army personnel is not recommended.

*b Subacute Phase*—(1) Definition. The subacute phase begins when the acute illness has subsided, fever, headache and gastrointestinal symptoms have disappeared and the general malaise has lessened.

(2) Management. Treatment of this phase, in addition to the general and special measures mentioned in the acute phase, is directed to protection of the affected muscles and the institution of limited movements. In this stage contractures may develop, and contractures produce deformities. Appropriate orthopedic and/or physical therapy procedures should now be instituted to prevent deformities and to maintain physiologic position. During this period, when muscles are tender and painful, passive movements within the limit of tolerance, as manifested by increased pain, should be instituted by qualified physical therapy aides under the careful direction of medical officers. The physical therapy measures needed include only those conventional methods which have received general acceptance and are in common use. Active motion, when found to cause increased pain and tenderness, should be discouraged. All local therapy should be limited to the involved parts as manifested by pain, tenderness, hypertonicity or paralysis.

*c Convalescent Phase*—(1) Definition. With the disappearance of pain and tenderness, poliomyelitis passes into the convalescent phase, which may last for three to twelve months or occasionally longer. It is during this period that maximal recovery of muscle power occurs.

(2) Management. (a) Both orthopedic and physical therapy measures should be adopted which will enhance this recovery in every way possible. These measures will include mechanical support of the affected parts and physical therapy treatment such as massage, radiant or other heat and exercise of passive, assistive, active or reeducational character, depending on the degree of weakness and extent of paralysis.

(b) Transfer to the general hospital. Treatment in this phase is best carried out in a general hospital. It is therefore desirable that patients be transferred to general hospitals as soon as the convalescent phase is reached. This is ordinarily within eight weeks after onset. In individual cases, as provided in S G O Circular Letter No 73, 17 March 1943, consideration may be given to transfer to the Army and Navy General Hospital, Hot Springs, Ark., where facilities are available for special therapeutic measures.

*d Chronic Phase*—(1) Definition. When there is no longer improvement in involved muscle groups and residual deficiencies have become stationary, the chronic phase begins.

(2) Management. Further corrective measures will ordinarily become the function of orthopedic surgeons, who will be found in the general hospitals to which patients are transferred in the convalescent phase.

For the Surgeon General:

ROBERT J. CARPENTER,  
Lieutenant Colonel, Medical Corps,  
Executive Officer

## LIEUT COL ROBERT W DuPRIEST AWARDED LEGION OF MERIT

The War Department announced on November 12 an award of the Legion of Merit to Lieut Col Robert W DuPriest for "exceptionally meritorious conduct in the performance of outstanding service during and following the Japanese attack on Oahu, Dec 7, 1941. Lieutenant Colonel DuPriest, then chief of the Section of General Surgery, Tripler General Hospital, observing the great influx of seriously injured battle casualties, immediately established an effective system for routing essential supplies to the operating suites, thus greatly expediting the surgical care of the wounded. During the long hours which followed the initial influx of casualties, Lieutenant Colonel DuPriest contributed to the saving of many lives by his wise selection of cases and by his skill as a surgeon." Dr DuPriest graduated from the University of Minnesota Medical School in 1935 and from the U S Army Medical School in 1935.

## TOTAL PNEUMONECTOMY PERFORMED NEAR BATTLE FRONT

According to a recent announcement from the allied headquarters surgeons' office in Algiers, one of the most delicate operations ever done under field conditions was performed by a 5th army surgeon recently under a tented operating room and with a battle raging only a few miles away. The patient, a German soldier, was so badly wounded by shell fragments in the chest that one lung had to be taken out to save his life. Major Paul C Samson, former assistant clinical professor of surgery at Stanford University School of Medicine, San Francisco, performed the operation. Dr Samson graduated from the University of Michigan Medical School, Ann Arbor, in 1928 and entered the service May 10, 1941.

## NEW ASSISTANT COMMANDANT AT CARLISLE BARRACKS

Col Howard T Wickert, who recently returned from an inspection tour of medical installations and activities in the United Kingdom, North Africa and Sicily, has been named assistant commandant of the Medical Field Service School at Carlisle Barracks, Pennsylvania. He succeeds Col Guy B Dent, who has been acting assistant commandant following the recent retirement of Col Albert S Dabney, now assistant dean of the University of Pittsburgh School of Medicine. Dr Wickert graduated at the Jefferson Medical College of Philadelphia in 1914. He was commissioned in the reserve in May 1917 as a first lieutenant and was called to active duty the following June. He served with the British and American expeditionary forces, subsequently serving in various camps, stations and hospitals in the United States and completing additional studies of army training. On graduation from the Army War College in June 1928 Colonel Wickert was assigned to the Surgeon General's Office in Washington, where he was director of the plans, division and operations service.

## PSYCHIATRISTS ASSIGNED TO UNITS

The War Department, Washington, D C, appreciating the advance made in recognizing and treating symptoms calling for specialized handling by psychiatrists of personnel in the armed forces, is revising tables of organization to include a neuropsychiatrist, to be assigned automatically to every division. He will be a member of the division surgeon's office and will advise the division surgeon along the line of his specialty. He is to have the rank of captain or major. During the training period of troops, the division psychiatrist will be expected to detect, treat and eliminate actual and potential neuropsychiatric cases. In addition, he will instruct all officers of the division in the recognition, prevention and treatment of mental casualties. In combat zones it will be his duty to sift and clear casualties of this type, with the object of returning to duty all personnel possible.

# PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

## HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan 1, 1944

1 Prospective interns who have not yet obtained a hospital appointment should communicate with these institutions either directly or through the office of the dean of their medical school. Assistant residents and residents should direct their applications to the hospital superintendent in the usual manner.

2 Institutions having a shortage of interns or residents are again invited to make their needs known to the Council on Medical Education and Hospitals. In reporting shortages, hospitals should indicate the number of interns, assistant residents and residents needed to complete their quotas for Jan 1, 1944.

### Hospitals Reporting Vacancies for Interns or Residents

(Continuation of list in THE JOURNAL November 20 p 775)

#### ALABAMA

Baptist Hospitals Birmingham Capacity 216 admissions 6887 Mr C L Sibley Superintendent (1 resident—mixed)

#### ARKANSAS

Leo N Levi Memorial Hospital Hot Springs Capacity 75 admissions 845 Regina H Kaplan Administrator (1 resident—mixed)

#### CALIFORNIA

Queen of Angels Hospital Los Angeles Capacity 390 admissions 11242 Sister M Febronia RN Superintendent (5 interns)

#### COLORADO

Memorial Hospital Colorado Springs Capacity 204 admissions 2693 Mr Edward Rowlands Superintendent (2 residents—mixed)  
Corwin Hospital Pueblo Capacity 228 admissions 3932 Samuel B Potter Chief Surgeon (4 interns)  
Sanatorium of the Jewish Consumptives Relief Society Spink Capacity 300 admissions 139 Dr Arthur Rest Medical Director (1 resident—TB)

#### DISTRICT OF COLUMBIA

Episcopal Eye Ear and Throat Hospital Washington Capacity 100 admissions 6374 Deaconess Anna E Macdonald Superintendent (3 residents—oph otol)

#### FLORIDA

Riverside Hospital Jacksonville Capacity 60 admissions 1662 Mr W A Nelles Superintendent (1 resident—mixed)

#### ILLINOIS

Alexian Brothers Hospital Chicago Capacity 272 admissions 5190 Brother Hugh Miller RN Superintendent (3 interns)  
Columbus Hospital Chicago Capacity 170 admissions 3490 Mother Grace Superintendent (2 interns)  
Garfield Park Community Hospital Chicago Capacity 182 admissions 6113 Mr C J Hassenauer Superintendent (3 interns)  
Henrotin Hospital Chicago Capacity 129 admissions 3139 Miss Veronica Miller RN Superintendent (4 interns)  
Holy Cross Hospital Chicago Capacity 168 admissions 4967 Sister M Dorothea, RN Superintendent (assistant resident)  
Mother Cabrini Memorial Hospital Chicago Capacity 144 admissions 4283 Mother Agnes RN Superintendent (2 interns)  
Norwegian American Hospital Chicago Capacity 231 admissions 7611 William I Slover Superintendent (2 residents—med surg)  
Roseland Community Hospital Chicago Capacity 129 admissions 3975 Mr E O Massmann Administrator (3 interns)  
St Anne's Hospital Chicago Capacity 340 admissions 9480 Sister M Flavia RN Superintendent (1 intern)  
St Mary of Nazareth Hospital Chicago Capacity 294 admissions 9850 Sister M Therese Superintendent (5 interns)  
U S Marine Hospital Chicago Capacity 301 admissions 2750 H E Trimble Medical Officer in Charge (4 interns)  
Walther Memorial Hospital Chicago Capacity 209 admissions 4825 Mr William C Martens Jr Superintendent (4 interns)  
Woodlawn Hospital Chicago Capacity 140 admissions 4304 Grace L DeVilbiss RN Superintendent (3 interns)  
Wacon County Tuberculosis Sanatorium Decatur Capacity 80 admissions 79 Dr David F Loewen Medical Superintendent (1 resident—TB)  
St Mary's Hospital East St Louis Capacity 296 admissions 4703 Sister M Prospera RN, Superintendent (1 intern)  
Elgin State Hospital Elgin Capacity 4990 admissions 2000 Dr Charles T Read Superintendent (6 residents—psychiatry)  
St Joseph's Hospital Joliet Capacity 265 admission 5825 Sister M Henrich Superintendent (4 interns)

Moline Public Hospital Moline Capacity 200 admissions 5184 Margaret A Brooks RN Superintendent (2 interns 1 resident—mixed)

#### INDIANA

St Elizabeth Hospital La Fayette Capacity 285 admissions 5719 Sister M Amick RN Superintendent (1 intern)  
Ball Memorial Hospital Muncie Capacity 265 admissions 6266 Miss Nellie G Brown RN Superintendent (2 interns)  
St Anthony Hospital Terre Haute Capacity 202 admissions 3388 Sister M Gerhardt Administrator (2 interns)

#### KANSAS

Menninger Sanitarium Topeka Capacity 60 admissions 107 Dr Karl Menninger Acting Medical Director (3 residents—psychiatry)  
St Francis Hospital Wichita Capacity 422 admissions 12559 Sister M Oswaldina RN Superintendent (4 interns)

#### LOUISIANA

Hotel Dieu Sisters Hospital New Orleans Capacity 300 admissions 9484 Sister Alberta Superintendent (2 residents—mixed)

#### MAINE

Saint Mary's General Hospital Lewiston Capacity 175 admissions 3880 Sister Lachapelle RN Superintendent (2 interns)

#### MARYLAND

Franklin Square Hospital Baltimore Capacity 288 admissions 4776 Jean Hand RN Superintendent (4 interns 3 residents—surg OB med)

#### MASSACHUSETTS

Burbank Hospital Fitchburg Capacity 250 admissions 4052 Mr Richard Bullock Directing Trustee (3 interns)  
Providence Hospital Holyoke Capacity 200 admissions 4125 Sister M Stanislaus Superintendent (interns)  
Quincy City Hospital Quincy Capacity 334 admissions 9126 Dr Joseph P Leone Medical Superintendent (3 interns 1 asst resident)

#### MICHIGAN

Eloise Hospital and Infirmary Eloise Capacity 3768 admissions 4746 Dr Charley J Smyth Medical Director (8 interns)  
Charles Godwin Jennings Hospital Detroit Capacity 89 admissions, 2249 Mr Willis J Gray Superintendent (2 residents—surg, mixed)  
St Joseph Mercy Hospital Pontiac Capacity 359 admissions 7763 Sr M Charles RN Superintendent (2 residents—mixed)  
St Mary's Hospital Detroit Capacity 375 admissions 12090 Sister Marie Superintendent (intern)

#### MINNESOTA

Glen Lake Sanatorium Oak Terrace Capacity 691 admissions 502 Dr Ernest S Mariette Medical Superintendent (1 resident—TB)  
St Peter State Hospital St Peter Capacity 2306 admission 582 Dr George H Freeman Medical Superintendent (1 resident—psychiatry)

#### MISSOURI

State Hospital No 1 Fulton Capacity 2837 admissions 416 Dr C C Ault Superintendent (1 resident—psychiatry)  
Menorah Hospital Kansas City Capacity 166 admissions 4103 Mr F A Tobin Superintendent (3 interns)  
State Hospital No 2 St Joseph Capacity 2952 admissions 411 Dr F A Carmichael Superintendent (5 residents—psychiatry)  
St Anthony's Hospital St Louis Capacity 257 admissions 6187 Sister M Florina Superintendent (1 intern)

#### NEBRASKA

Nebraska Orthopedic Hospital Lincoln Capacity 110 admissions 684 Dr F A Alcorn Superintendent (1 resident—orth)  
Norfolk State Hospital Norfolk Capacity 1120 admissions 180 Dr G E Charlton Medical Superintendent (2 residents—psychiatry)

#### NEW JERSEY

William McKinley Memorial Hospital Trenton Capacity 157 admissions 3045 Mr William B Meytroitt Superintendent (2 interns)

#### NEW YORK

Auburn City Hospital Auburn Capacity 240 admissions 5530 Jerome F Peck Jr Acting Superintendent (1 resident—mixed)  
Norwegian Lutheran Deaconesses Home and Hospital Brooklyn Capacity 200 admissions 4793 Rev C O Pedersen Rector (3 interns)  
St Mary's Hospital Brooklyn Capacity 328 admissions 5351 Sister M Helen Superintendent (4 interns)  
Buffalo State Hospital Buffalo Capacity 2557 admissions, 690 Dr Christopher Fletcher Medical Superintendent (1 resident—psychiatry)  
Mercy Hospital Buffalo Capacity 198 admissions 5334 Sister Mary Mechtild Superintendent (2 interns)  
St Joseph's Hospital Elmira Capacity 279 admissions 5669 Sister Margaret Adelaide RN Superintendent (4 interns)  
Jamaica Hospital Jamaica Capacity 229 admissions 5262 Mr F C Leopold Superintendent (2 interns)  
St John's Long Island City Hospital Long Island City Capacity 292 admissions 5506 Sister Mary Visitation Superintendent (7 interns)  
Hospital for Joint Diseases New York Capacity 355 admission 611 Dr Jacob J Colub Director (3 interns)

Ellis Hospital Schenectady Capacity, 470, admissions, 12,275 Miss Mary G McPherson, R N, Administrator (7 interns)  
General Hospital, Syracuse Capacity, 110, admissions, 2,938 Mr Carl P Wright, Superintendent (1 intern)  
Jefferson County Sanatorium Watertown Capacity, 78, admissions, 83 Dr S E Simpson, Superintendent (1 resident—TB)  
Yonkers General Hospital, Yonkers Capacity, 180, admissions, 3,873 Mr Charles E Croft Superintendent (1 intern)

## OHIO

Peoples Hospital, Akron Capacity, 200, admissions, 8,772 Miss Eva P Crug, R N, Superintendent (3 interns)  
Fairview Park Hospital, Cleveland Capacity, 201, admissions, 5,899 Rev Philip Vollmer Jr, Superintendent (1 intern)  
Good Samaritan Hospital, Dayton Capacity, 350, admissions, 7,999 Sister Frances Maria, Administrator (2 interns, 1 resident)  
St Elizabeth Hospital Dayton Capacity, 365, admissions, 8,560 Sister Virgilia, R N, Administrator (3 interns)

## PENNSYLVANIA

Hamot Hospital, Erie Capacity, 255 admissions, 6,334 Mr Donald M Rosenberger, Director (1 intern)  
Conemaugh Valley Memorial Hospital, Johnstown Capacity, 364, admissions, 6,751 Dr H B Anderson, Medical Director (5 interns)  
American Oncologic Hospital, Philadelphia Capacity, 51, admissions, 548 Miss I C Martin, Superintendent (2 residents—cancer)  
St Joseph's Hospital and Dispensary, Pittsburgh Capacity, 120, admissions, 3,322 Sister Anna Regina, Superintendent (4 interns)  
Shadyside Hospital, Pittsburgh Capacity, 302, admissions, 6,770 Mr J S Hammond Acting Superintendent (1 intern)

South Side Hospital, Pittsburgh Capacity, 225, admissions, 5,227 Miss Gertrude L Heatley, R N, Superintendent (1 intern, 2 asst residents)  
Pottsville Hospital, Pottsville Capacity, 172, admissions, 2,801 Major Roger A Greene, Superintendent (2 interns)  
Columbia Hospital, Wilkesburg Capacity, 219, admissions, 4,615 Miss Martha R Speer, R N, Superintendent (1 resident—mixed)

## TENNESSEE

T C Thompson Children's Hospital, Chattanooga Capacity, 84, admissions, 1,298 Miss E Sikes, R N, Superintendent (asst resident—ped)  
Baptist Memorial Hospital, Memphis Capacity, 500, admissions, 15,434 Mr George D Sheats, Administrator (4 interns)

## TEXAS

Methodist Hospital, Dallas Capacity, 206, admissions, 5,545 E B Germany, Administrator (4 interns, asst resident)

## WISCONSIN

Madison General Hospital, Madison Capacity, 203, admissions, 7,157 Miss Grace Crafts, R N, Superintendent (resident—mixed)  
Columbia Hospital, Milwaukee Capacity, 160, admissions, 4,267 Mr Joseph G Norby, Superintendent (3 interns, 1 resident)  
Evangelical Deaconess Hospital, Milwaukee Capacity, 170, admissions, 5,351 Rev J P Meyer, Superintendent (2 interns)  
Mount Sinai Hospital, Milwaukee Capacity, 195, admissions, 7,903 Mr Harry L Eisen, Acting Superintendent (intern, resident)  
Milwaukee Sanitarium, Wauwatosa Capacity, 147, admissions, 332 Dr Lloyd H Ziegler, Medical Director (1 resident—psychiatry)

## MISCELLANEOUS

## WARTIME GRADUATE MEDICAL BULLETIN

The Bulletin of the Wartime Graduate Medical Meetings made its first appearance on November 15 to present the exchange of ideas for the twenty-four regions participating in the programs of these courses. The bulletin will serve as a medium to discuss the various problems arising in different regions as well as publicize each program. Comdr Edward L Bortz (MC), U S N R, 4200 Pine Street, Philadelphia, is chairman of the central committee of the Wartime Graduate Medical Meetings, which is sponsored by the American Medical Association, American College of Physicians and the American College of Surgeons. The meetings are authorized by the surgeons general of the Army, Navy and U S Public Health Service.

## REFRESHER COURSES FOR NURSES

Federal funds are available under the Bolton act to assist in conducting refresher courses for inactive graduate nurses, according to an announcement directed to the country's 1,300 accredited schools of nursing and to the directors of nursing services in the approximately 1,000 approved hospitals without schools. The program is intended to prepare nurses for return to active service and, in areas where there are large numbers of inactive graduate nurses, schools and hospitals are urged to participate in the plan. The courses may vary in length from six weeks to three months with variation allowed in the time spent in practice each week. Information may be obtained from the Division of Nurse Education, U S Public Health Service, Washington, D C.

## BRITISH SURGEONS AID WOUNDED IN NAZI PRISON CAMPS

Two British army doctors, Major W R Henderson and Dr Derek Taverner, twice, when they could have been saved, accepted imprisonment by the Nazis in order to continue their work of caring for wounded United Nations prisoners. Since their capture at Dunkirk they have conducted a mobile hospital which tours prison camps throughout Germany and Poland. Because of the scarcity of chloroform they perform all but the most difficult operations without anesthetics. Under the most harrowing conditions they work on men with shattered nerves and bad head wounds, reconnecting nerves severed by bullets and shell splinters and thereby restoring useless limbs to service. The names of the two doctors have become almost legendary in every prison camp. Their work and their determination to continue have won the trust of the Germans, and they are provided with special escorts and such facilities as are available. Major Henderson and Dr Taverner went to the front line in

France with the first Nuffield neurosurgical unit in May 1940. While the Germans were advancing toward Dunkirk they were treating more than 100 men. When told to leave, they refused and instead sent the nurses to safety and quietly went on operating. The Germans found them still at work and took the two men and their patients prisoners. When repatriation plans were discussed recently the doctors were told that they could return to England. Again they chose to remain. There is now no question in the minds of the Germans or of the injured British, American and Canadian prisoners that the two men would not escape if they could.

## PUBLIC HEALTH UNDER HITLER

According to NDZ of August 19, serious hemorrhage, burns, frozen limbs and nervous shock may result in death if the blood pressure falls dangerously owing to loss of blood. German science, however, has discovered a method which is saving many men's lives: the preserved serum. Oberfeldarzt Prof Dr Lang, the head of the Institute for Physiologic and Military Chemistry in the Military Academy, said in an interview. The fact that in this war it has been possible to rehabilitate a considerably larger proportion of our wounded than in the last war—between 80 and 90 per cent—sufficiently to enable them to return to their units is convincing proof of the great successes of German military medicine, particularly war surgery. In the frequently very primitive conditions at the front, blood transfusions are not as a rule possible. Research carried on in the institute has shown that the serum derived from blood comprising the vital salts and albumin is completely effective. Thousands of tubes save the lives of innumerable seriously wounded men. It keeps for an unlimited time in its dried form and is simple to use. Another advantage is that the preserved serum can be given without regard to the blood group to which the individual belongs because it does not contain the substances which distinguish the four blood groups and therefore can be used for them all. More recently the serum has also proved valuable in the treatment of children. Infants suffering from dangerous digestive disturbances have been given valuable nourishment by means of the preserved serum, and their lives have thus been saved.

According to *Burgasli Phare* of July 7, certain Bulgarian doctors point out the necessity of opening a faculty of medicine at the University of Skopje. This is imposed by two causes: (a) the health situation in the liberated lands did not progress during serfdom, and (b) there are too many professors at the faculty of medicine in Sofia.

# ORGANIZATION SECTION

## OFFICIAL NOTES

### REPORT OF MEETING OF MATERNAL AND CHILD HEALTH ADVISORY COMMITTEE

#### Children's Bureau, U S Department of Labor

On October 21 the Maternal and Child Health Advisory Committee of the U S Children's Bureau met at the Department of Labor in Washington. The committee was called together to consider policies relating to the administration of the emergency maternity and infant care program.

The attendance at the Advisory Committee meeting was as follows:

<i>Presiding</i> Nicholson J Eastman M D Baltimore	Lieut Col Basil C Maclean Washington D C
<i>Present</i>	Dr Alice I Maxwell San Francisco
Dr Fred L Adair Chicago	Dr Alice N Pickett Louisville Ky
Dr W W Bauer, Chicago	Dr E D Phoe Iowa City
Miss Harriett M Bartlett Cambridge Mass	Dr Crover F Powers New Haven Conn
Dr Jessie M Bierman San Francisco	Dr Nathan Sinai Ann Arbor Mich
Dr Wilbert C Davison Durham N C	Dr Francis Scott Smyth San Francisco
Dr M Edward Davis Chicago	Dr George S Stevenson New York
Dr Robert L DeNormandie Boston	Dr George M Wheatley New York
Dr A W Dumas Sr Natchez Miss	Dr Philip F Williams Philadelphia
Dr Clifford G Grulee Evans ton Ill	Dr C E A Winslow New Haven Conn
Dr Henry F Helmholt Rochester Minn	<i>Representing the U S Children's Bureau</i>
Dr George W Kosmak New York	Miss Katharine F Lenroot chief
Dr Leon R Kramer Topeka Kan	Dr Martha M Eliot associate chief
Miss Ruth E Lewis St Louis	Dr Edwin F Daily director, Division of Health Services
Dr Joseph I Lunde New Haven Conn	

In opening the meeting Miss Lenroot and Dr Eliot reviewed the legislative history leading up to the appropriation of funds for the emergency maternity and infant care program, the steps in the establishment of state plans and national administrative policies, and the current situation in respect to state programs.

In response to questions a brief description was given of the origin of the program. For the benefit of committee members not present at the meeting of the medical members of the committee held on April 6, 1943 following the approval of the first special appropriation for this program an amplified statement is presented in April, is given here.

The first request for funds to care for wives of enlisted men came to the Washington State Health Department in the summer of 1941 from the commanding officer of Fort Lewis who asked for assistance in obtaining maternity care for the wives of enlisted men at that post. When submitting this project to the Children's Bureau for approval under the maternal and child health provisions of the Social Security Act the state health agency explained that prior to the war and the rapid increase in the number of enlisted men stationed at the fort maternity care had been provided at the fort hospital. By the summer of 1941, however, the facilities of the Army hospital could no longer accommodate the large number of wives seeking maternity care. The project was approved by the Children's Bureau in July 1941. Antepartum delivery and postpartum medical, hospital and nursing care were made available for these young wives, many of whom were at considerable distances from their homes. The need for medical care for these wives arose not only from their inability to pay for care but from the fact that they were nonresidents of the state or county, in most cases strangers in the towns where they lived and wholly unformed as to medical resources. There was no organized plan under which maternity care could be given. The plan set up by the state health agency provided the necessary organization for the program: payment for doctor and hospital, and arrangements for public health nurse and social worker.

The program in the state of Washington came to the notice of other state health agencies, and during succeeding months a number of health officers made inquiry as to whether com-

parable plans could be established to meet similar needs in other military areas. Red Cross and Army Emergency Relief officers reported a rapidly increasing need. The Conference of State Health Officers, meeting with the Children's Bureau in March 1942, requested that the Children's Bureau set aside a portion of the federal funds available to the states to be used as grants for these special projects. By the fall and early winter of 1942 it was apparent that funds available under title V of the Social Security Act would not meet the need. By December 1942 twenty five states had initiated programs but did not have sufficient funds to continue them for more than a few months.

The first special appropriation of \$1,200,000 for the emergency maternity and infant care program was made in March 1943, to make possible the continuation of programs initiated under the provisions of title V of the Social Security Act and their extension to other states and areas as needed.

In making this appropriation the Congress made clear its purpose in doing so, namely to provide at no cost to the enlisted man or to his wife complete maternity care for the wife and medical and hospital care for the infant during the first year of life. That the care to be provided was something to which the wife was entitled, if she applied for it, was also clear. The legislative history shows that in making provision for this maternity and infant care the Congress had in mind the effect the assurance of such care would have on the morale and peace of mind of the enlisted man himself. The record is clear in connection with the first appropriation in March and the two subsequent appropriations in July and in September 1943 that this morale building factor was one of the primary purposes in the minds of the Senators and Representatives.

In administering the program, therefore, constant consideration has been given by the Children's Bureau to the development of policies that would give reassurance to the enlisted man that in his absence his wife and child would be given the care needed and that no administrative procedures, such as a financial investigation, would be used that would leave uncertainty in his mind as to whether or not care would be given or whether the care would depend on his wife's ability to pay even part of the cost. The discussions in the congressional committees leave no doubt as to the intent of Congress on these points.

On Oct 1, 1943 forty-four states, Alaska, Hawaii and the District of Columbia were operating emergency maternity and infant care programs under approved plans. Three of the four remaining states have submitted plans which will probably be approved in November<sup>1</sup>. The program of care is therefore almost as widespread geographically as the draft of enlisted men under the Selective Training and Service Act of 1940.

Reports from the states on Oct 1, 1943 showed that care had been authorized in approximately 70,000 cases<sup>2</sup>. Estimates based on the size of the Army, the proportion of married men, the reported number of pregnancies among the wives, as shown by special studies and experience in the program to date indicate that approximately 300,000 wives may be expected to apply for care during the current year. To provide the necessary funds Congress has appropriated \$23,000,000 for the fiscal year ending June 30, 1944.

Reports of discussion in congressional committees show that Congress understands and appreciates the contribution to the war effort that is being made by physicians in caring for the wives of enlisted men and recognizes the financial sacrifice that some physicians are making by their participation in this program that has as its objective the maintenance of morale among the fighting men at the front through the care of their wives and infants at home.

The introductory remarks were followed by a brief statement by Dr Daily of certain legal provisions and administrative policies and procedures concerning which numerous questions have been raised. To point up the issues certain questions were placed before the committee for discussion and recommendation and other questions emerged in the course of discussion. The questions discussed by the committee were as follows:

1. Should the program provide cash benefits to enlisted men's wives instead of payments to physicians and hospitals for services rendered?

<sup>1</sup> The plan for Colorado was approved November 10.

<sup>2</sup> By Nov 1, 1943 a total of approximately 100,000 cases had been reported as under care.

Dr Bauer reported that the American Medical Association at its meeting last June passed a resolution on this point, as follows

(a) That the action of the federal government in making funds available for maternity and infant care for the wives and infants of enlisted men be approved, and (b) that adoption be urged of a plan under which the federal government will provide for the wives of enlisted men a stated allotment for medical, hospital, maternity and infant care similar to the allotments already made and provided for the maintenance of dependents, leaving the actual arrangements with respect to fees to be fixed by mutual agreement with the wife and the physician of her choice.

Dr Bauer also presented an analysis of recent attitudes of state medical associations from various parts of the country, showing that eight out of twenty-four favored cash allotments paid directly to the men's wives.

Discussion by members of the committee brought out the following points of view

"I think the members of the medical profession believe that the relationship between the patient and the physician should have no intermediary and that the interposition of a state agency does not serve the best interests of all concerned."

"It was the intent of the act and of the Children's Bureau to do away with all anxiety on the part of the wife and the husband absent on military service concerning discussion of fees and meeting the cost of medical care."

"All experience connected with cash indemnification for medical service (not for some of the other things that people receive, but for medical service) points in the direction of discarding the principle of cash indemnity because it doesn't work. When cash is paid to the potential patient, it too rarely gets to the physician or to the hospital. The action taken by one medical society after another in setting up their medical service plans is an index of the direction this question is taking, that is, toward a service program with elimination of cash indemnification."

"Because of their experience with similar subsidy arrangements I believe the overwhelming number of hospitals would prefer to be paid directly by the state health agency under this program."

Discussion also brought out the point that a uniform grant would not take into account differences in individual cases due to variation in medical needs. It was further recognized that the situation regarding cash allotments has already been determined by Congress, which decided by a vote in the House of Representatives of 115 to 8 not to shift the program from payment for service to cash allowances. In view of this fact no action was taken by the committee beyond this general discussion.

2. *Should the rate of payment established by each state health agency for "complete maternity care" be assumed to include all services rendered by the attending physician throughout pregnancy, during labor and six weeks post partum?*

Dr Daily opened the discussion on this question by stating that the Children's Bureau had recommended that each state health agency establish an inclusive rate of payment to cover all services rendered by the attending physician during pregnancy, labor and six weeks post partum, including treatment of intercurrent conditions. It was pointed out by several members of the committee that a specialist in obstetrics or a general practitioner in a large city, when confronted with a serious non-obstetric complication during pregnancy such as might require operative intervention, could call in a surgical consultant under the program who would be paid by the state health department for performing the operation, whereas in the small community the general practitioner might have to perform the operation himself and, under the existing policy, could be paid no additional amount under the program. It was also pointed out by members of the committee that occasionally patients had intercurrent conditions not related to pregnancy requiring prolonged bed care with considerable additional service by the attending physician and that he could not be given additional reimbursement for such service under the present policies.

Considerable discussion was precipitated by an attempt to define what might be considered as included in "complete maternity care." Some opinions expressed on this point were as follows: "I don't think it is fair to ask a physician to take care of a pregnancy, and then everything that piles up in the way of human ills during the time of pregnancy should be saddled on him too." "We should divide these cases into those in which there are complications of an obstetric nature and those in which some intercurrent disease develops, making it necessary to utilize other knowledge possessed by either the general practitioner or a consultant." "Nobody can possibly control a service where there would be an extra payment for every minor condition, but if it is held to relatively major conditions it does lend itself to control."

The committee with only one dissenting vote passed the following recommendation

That the basic rate of payment for complete maternity care (established by each state health department for payments to participating physicians) should not be assumed to include the treatment of intercurrent conditions not directly attributable to pregnancy which involve major surgery or bed care of more than seven days.

The discussion brought out the fact that the Children's Bureau would necessarily have to consider carefully the feasibility of changing the policy along the line recommended and how it would affect administration of the program in the states.

The question was raised as to whether full dental services should be included as part of maternity care under the program. It was agreed that this would be a desirable goal but that present funds do not permit this development and that the most that might be included now would be payment to dental consultants for services to selected patients.

3. *Should the amount paid by the state health departments to participating physicians for complete maternity care be the only payment to the physician for services rendered under the program?*

The committee commented on this subject as follows: "If physicians can charge these patients additional fees, there is no point in having a program."

"I think it puts the medical profession in a pretty bad light if they are going to throw aside this assistance to enlisted men's families to argue about additional fees."

"I think if the underlying philosophy of this program had been more adequately explained through the medical journals that much of this discussion would not have arisen. The physicians do not want to get more money out of these patients, they want to have the fact recognized that the integrity of the medical profession can be depended on." At the conclusion of the discussion an expression of opinion was requested from the members.

The committee voted without dissent by a showing of hands that it was in accord with the policy that rates of payments under the program should be fixed and that physicians participating in the care of wives and infants of enlisted men under the program should not charge additional amounts to the patient over and above the amount received from the state health agency for services rendered under the program.

4. *How should payment be made for professional services rendered to patients seeking care in hospitals connected with medical schools, when these services are customarily provided by salaried physicians employed by medical schools?*

Several discussers stated that it is impractical to attempt to divide the costs of service and teaching in such instances, since hospital and medical school budgets are so interdependent. The discussion brought out such a variety of practices in different hospitals connected with medical schools and so many unsolved problems that

The committee voted to ask the chairman to appoint a small subcommittee to consider the question of payment for professional services provided by salaried physicians employed by medical schools and to make recommendations.

5. *Should state emergency maternity and infant care programs provide that the enlisted men's wives have free choice in applying for care in voluntary or government hospitals and clinics as well as in offices of private practitioners?*

The present Children's Bureau policy of free choice of existing facilities was discussed. It had been brought out earlier in the meeting that the question had arisen in several of the states as to whether the state health departments should use the funds in paying for care in hospitals that had outpatient and inpatient services, where in the past it had been customary to accept maternity patients, usually on the basis of a flat rate covering medical services rendered by the house staff and hospital care. There had been strong feelings in some places that this type of service should be excluded under the program. It was reported that in one instance the suggestion had been made that all wives of enlisted men who applied for care at clinics be referred to private practitioners on the staff at the hospital. A member of the committee pointed out that this would be equivalent to telling the patient "You cannot go to a voluntary hospital or municipal hospital (for these services). You have to go to a private practitioner."

It was evident from the general trend of the discussion that the committee supported the policy

That enlisted men's wives should have free choice of all existing facilities in any community for care of themselves.



and their infants and that the state agency should make suitable arrangements for payment for care in clinics, hospitals and private practice.

Endorsement was given without dissent (by a showing of hands).

6 *Should all infants born under the program be routinely referred to child health conferences where available?*

Under the provision of the congressional act the funds for emergency maternity and infant care may not be expended to purchase "similar services otherwise available." This has been interpreted to mean free services provided through the Army or Navy or by or through state or local health departments. State and local health departments are now conducting more than five thousand child health conferences under their regular maternal and child health programs, and many more are available in cities. Therefore, wherever such child health conferences are available the state health agencies have referred infants cared for under the program to such conferences for well child supervision. It has been the policy of the Children's Bureau that these facilities should be used.

In response to a question concerning the use of funds under the emergency maternity and infant care program for child health supervision, it was explained by Dr Eliot that, in communities where there are no child health conferences, such conferences may be established by the use of maternal and child health funds under title V of the Social Security Act, or if the number of infants in a community is too small to warrant the establishment of a conference physicians trained or experienced in the care of infants and children may be paid for health supervision at a rate of payment not to exceed a fixed amount per month or year comparable in general to the cost of supervision in child health conferences. It was suggested by one member of the committee that it would be preferable to use a fixed annual rate for child health supervision when payment is made to private physicians.

Committee members pointed out that some community agencies require mothers to bring referral slips from private practitioners before being accepted by child health conferences—a requirement which presents problems for many mothers, particularly those who have no private physician. It was reported that in some communities the general practitioners are so busy that they are referring all infants to child health conferences for well baby supervision while in other places the physicians wish to provide well baby supervision in their own offices. Evidence showed that many pediatricians in private practice are already working overtime and cannot accept more responsibilities.

During the discussion the statement was made that, "If you start the custom of sending all these infants to child health conferences the result will be a reduction in the private practice of pediatrics." "The program should also make arrangements to pay pediatricians for well child supervision."

"The job before us now is to take care of these children and leave the implications of what we are doing." Other committee members stated, "I think it is the logical procedure to take care of these infants in child health conferences wherever available."

"I think our difficulty is that we have not nearly enough well child conferences." "It seems to me we have to use all facilities available to take care of these babies." Some one pointed out that child health conferences had been organized originally to meet the needs of just such mothers and infants as those included in the program. The low pay rate of the enlisted men in the lowest grades (\$50 to \$78 per month) and the low allowance for the wife with no child (\$50 per month, of which \$22 is paid by the husband from his salary) or with one child (\$80) were cited in this connection by Dr Eliot.

At the conclusion of the discussion the chairman stated that it was the sense of the meeting that all existing facilities for care of well babies should be made available to infants under the emergency infant care program. There was no dissent.

A related question, also briefly discussed, was the payment of the pediatrician for care of the newborn infants. The chairman summarized this discussion as follows:

That the state health agency should authorize payment to a pediatrician for the care of the newborn infant when the obstetrician customarily does not give such care, which statement members of the committee accepted without dissent.

7 *Should all applicants accepted for care under the emergency maternity and infant care program be referred for antepartum, postpartum or infant nursing services?*

It was reported that some physicians do not wish to have public health nurses visit the patients under their care. The public health nursing program of state and local health departments was described as public service supported by tax funds which should be made available to any individual in the community. The same general principle should apply to public health nursing service of a voluntary agency. A member of the committee remarked, "I can't see any reason why a physician who understands the function of the public health nurse would not welcome her cooperation, but the fact remains that many physicians do not understand these functions." The chairman stated, without dissent from any members, that the committee appeared to be fully agreed.

That all patients accepted for care should be routinely referred for public health nursing service wherever it could be made available through official or voluntary agencies.

8 *Should the consultation services of specialists in various fields be made available wherever possible to general practitioners participating in the program?*

It was pointed out that most of the state health agencies have approved lists of consultants in various specialties who may be called by other physicians for bedside or telephone consultation, assistance in operations, or actually to perform operations. These consultants are paid by the state health agencies for such services. It was stated that perhaps the greatest contribution that specialists in obstetrics or pediatrics could make in the program would be giving advice and assistance as needed by physicians with less specialized training and experience. It was pointed out that the rate of payment to the attending physician is not reduced when he calls a consultant for advice or assistance. The chairman summarized the discussion by stating that it indicated the desire for greater utilization of consultant services in the program.

9 Several members of the committee stated that they believed this advisory committee would be more representative if it included several general practitioners, and the committee voted to recommend that at least five general practitioners be added to the advisory committee. (After the meeting adjourned members of the committee suggested that additional pediatricians in private practice should also be appointed.) Some of the committee members stated that they believed many of the misunderstandings concerning the program could have been avoided if complete information had been more widely distributed to the medical profession through the medical journals and to the public through the public press.

At the close of the meeting Dr Daily expressed gratitude to the committee for its suggestions and recommendations which he said would be given full consideration by the Children's Bureau in determining policies for future administration of the program.

## WOMAN'S AUXILIARY

### Colorado

The annual meeting of the Woman's Auxiliary to the Colorado State Medical Society was held in September at the home of Mrs H B Caton, Englewood. Mrs W W King president presided at the business session, at which the following officers were elected: Mrs Lawrence T Brown, Denver, president; Mrs A W Gather, Pueblo, president-elect; Mrs George E Pattee, Denver, first vice president; Mrs James Rigg, Mesa, second vice president; Mrs C S Lockwood, Montrose, third vice president; Mrs R S Johnston, Oter, fourth vice president; Mrs A A Weirner, Denver, treasurer; Mrs H H Heuston,

Boulder, secretary; Mrs John S Bouslog, Boulder, corresponding secretary; Mrs John G Ryan, Denver, auditor; and Mrs G C Milligan, Arapahoe, parliamentarian.

### New Jersey

The Executive Board of the Woman's Auxiliary to the Medical Society of New Jersey held its fall meeting and luncheon October 11, at the Essex House. Mrs Asher Yaguda, state president, outlined the program to be followed by the state auxiliary this year.

The Essex and Hudson County auxiliaries began their year's work with luncheon meetings recently.



## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

### ARKANSAS

**Dr Grayson Resigns as State Health Officer**—Dr William B Grayson, Little Rock, state health officer since 1933, has resigned, effective November 15. Dr Thomas T Ross, Little Rock, state director of the bureau of local health service, has been appointed acting head, newspapers announced.

### CALIFORNIA

**Physicians Needed**—The Los Angeles County Civil Service Commission announces a nationwide search for physicians for positions in the Los Angeles County Hospital, Olive View Sanatorium, Olive View, and the Rancho Los Amigos, Hondo. There will be no written examinations. Graduation from an accredited medical school and completion of at least a one year internship are required. In addition, at least one year's recent experience in the practice of medicine is required for the tuberculosis physician position. Doctors 21 to 55 years of age are urged to apply for these positions. Applications will be accepted from doctors over 55 years of age who wish to apply for temporary positions as tuberculosis physician. Applications must be filed immediately. Persons interested in these positions, paying \$285-339 and \$335-389 respectively, may obtain applications and full information from the office of the Los Angeles County Civil Service Commission, Room 102, Hall of Records, Los Angeles 12.

**Personal**—Dr Samuel J McClendon, San Diego, has been appointed a member of the California State Department of Public Health to succeed Dr Francis M Pottenger Sr, Monrovia, whose term expired.—Dr Charles L Ianne, San Jose, was appointed as examining physician in the men's health service and associate professor of hygiene in the department of health at Stanford University for the year 1943-1944. Dr Ianne has been director of the Santa Clara County Sanatorium for the past fifteen years.—Dr Frank W Otto, Los Angeles, has been named a member of the California Board of Medical Examiners. He fills the vacancy left by Dr Charles B Pinkham, San Francisco, who resigned after thirty years of state service, most of which was spent as secretary-treasurer of the board. Dr Otto is assistant clinical professor of medicine at the University of Southern California School of Medicine, Los Angeles.—Dr Melvin J Rowe Jr, Long Beach, has been appointed superintendent of the Mendocino State Hospital, Talmage, and Dr Theo K Miller, Camarillo, superintendent of the Napa State Hospital, Imola.—Dr Frank E Gallison, Ventura, has resigned as health officer of Ventura County.—Dr Howard C Naffziger, professor of surgery, University of California Medical School, San Francisco, has returned after making a survey of military medicine in England, Scotland, Sicily, North Africa and the Near East, *Science* reports.

**San Francisco Society Observes Seventy-Fifth Anniversary**—The San Francisco County Medical Society celebrated its seventy-fifth anniversary, November 7. The commemorative program included a symposium on "The Future of Medicine," preceded by special clinics at the medical schools of Stanford University and the University of California. Speakers in the symposium included:

- Dr Sidney J Shipman, San Francisco, Orientation
- Dr Morris Fishbein, Editor, *THE JOURNAL*, The American Medical Association Looks at the Future of Medicine
- Dr Anthony J J Rourke, San Francisco, A Medical Administrator Looks at the Future of Medicine
- Dr Morton R Gibbons Sr, San Francisco, The Future of Medicine from the Standpoint of the Physician in Practice
- Dr Walter H Brown, Palo Alto, A Public Health Physician Looks at the Future of Medicine

The medical society has owned its own home since 1926. The building was the former Irwin mansion and currently houses the society's offices, meeting rooms and the Irwin Memorial Blood Bank. The first attempt to form a medical society in San Francisco occurred in 1850 in the early days of the gold rush. This pioneer group dissolved within a few months, but other societies were organized in 1851, 1853 and 1855. By 1865 all of these had disappeared because of the rapidly shifting population in the young city, internal disputes and the impact of the Civil War, many of the local doctors in early days had

been Southerners. In 1868 the San Francisco County Medical Society was reorganized with 50 members and has been in continuous existence ever since. At the present time it has 1187 members, of whom 1,116 are in active practice or on war leave.

### DELAWARE

**State Medical Election and Meeting**—Dr Richard C Beebe, Lewes, was chosen president of the Medical Society of Delaware at its recent annual session, October 12-13, in Wilmington, and Dr Walter C Deakyn, Smyrna, vice president. Other officers include Dr William O La Motte, Wilmington, secretary, and Dr Winfield W Lattomus, Wilmington treasurer. Speakers at the meeting were:

- Dr Lawrence J Jones, Wilmington, The Responsibility and Future of Organized Medicine
- Dr William P Belk, Wynnewood, Pa, The Clinical and Laboratory Management of Nephritis
- Dr Anthony Sindoni Jr, Philadelphia, War Foods and Diabetes
- Capt Louis C Le Sieur, M C, A U S, Aviation Medicine and High Altitude Flying
- Dr Lemuel C McGee, Wilmington, Medicine's Contribution to Industry
- Dr John H Foulger, Wilmington, The Value of Studies of the Circulation
- Dr Edgar E Evans, Penns Grove, N J, The Effects of Industrial Gases on the Human Lungs
- Dr William H M Erb, Ridley Park, Pa, The Treatment of Varicose Veins
- Dr Charles Levy, Wilmington, Streptococcus Viridans Bacteremia
- Major Spencer T Snedecor, M C, A U S, War Wounds of the Extremities
- Col James B Brown, M C, A U S, The Plastic Surgery of War Wounds
- Dr Machteld E Sano, Philadelphia, A New Method of Skin Grafting
- Dr Charles W Dunn, Philadelphia, Gynecomastia
- Dr William Wayne Babcock, Philadelphia, The Operative Treatment of Cancer of the Rectum

### DISTRICT OF COLUMBIA

**Ophthalmologic Meeting**—The semiannual meeting of the department of ophthalmology of George Washington University School of Medicine, Washington, will be held on December 4. Members of the staff will present case demonstrations and Col Frederic H Thorne, M C U S Army, will discuss "Military Aspects of Ophthalmology" and Dr William Thornwall Davis, "Differential Diagnosis of the Vertical Motor Anomalies."

**Changes in the Faculty at George Washington**—Dr Preston A McLendon, clinical professor of pediatrics, George Washington University School of Medicine, has been appointed executive officer in the department of pediatrics. Dr Harry H Donnelly, professor and executive officer in the department of pediatrics, has resigned to become professor emeritus. Other changes in the faculty include the following promotions:

- Dr Ronald A Cox to assistant clinical professor of ophthalmology
- Dr Russell J Fields to assistant clinical professor of dermatology and syphilology
- Dr Edgar Leonard Goodman to assistant clinical professor of ophthalmology
- Dr John A Reed to assistant clinical professor of medicine

### ILLINOIS

**Committee on School Health**—On October 29 in Chicago a group of Illinois officials and leaders in education and in public health formally organized the Illinois Joint Committee on School Health, unanimously electing as chairman Dr Roland R Cross, director of the state department of health. The committee, with the consultant services of Clair E Turner, Dr P H, professor of biology and public health, Massachusetts Institute of Technology, Cambridge, Mass, will undertake a comprehensive survey of the school health needs in the state (*THE JOURNAL*, November 6, page 645). Functioning through a small liaison committee and ten subcommittees the joint committee is preparing to outline what may prove to be the broadest and most far reaching school health program ever developed by any state, it is reported. The general topics in the public school health field will be:

- The underlying principles relative to administration, educational procedures and cooperative relationships
- The specific objectives sought in terms of the pupils' habit formation, attitudes, behavior and knowledge
- The provision and maintenance of a healthful school environment under both urban and rural conditions
- The whole question of school health services
- The routine health procedures in the classroom and the organization of the school day in the interest of the mental and physical health of the pupil
- The health of the teacher

In the teacher training field, general topics selected for study include:

- Student health service
- The hygienic regimen of the student's day
- Health instruction including instruction in health education methods both academically and in the course of practice teaching
- In-service training through health education workshops, institutes, extension courses, summer courses and so on

The complete membership for the new joint committee is not yet available. At a meeting of the organizing members in Springfield, October 26, plans were drawn up for the subcommittees which are to function in the various phases of the program.

#### Chicago

**Portrait of Dr. Herrick Features Anniversary Celebration**—A bas-relief portrait of Dr. James B. Herrick for many years a member of the staff of Presbyterian Hospital, was presented to the hospital during special exercises, November 6, commemorating the sixtieth anniversary of the hospital, the fortieth anniversary of the founding of the School of Nursing and the one hundredth anniversary of the admission of the first students to Rush Medical College. The portrait was presented by Dr. Ernest E. Irons, formerly dean of Rush Medical College, on behalf of the associates of Dr. Herrick. Another feature of the occasion was the gift of \$20,000 in war bonds by Mrs. Clyde E. Shorey, president of the woman's board of the hospital, to establish a new maternity fund. The hospital also published a commemorative brochure titled "The Presbyterian Hospital and the Progress of Medicine, 1883-1943."

**Fernel Sentenced for Food and Drug Violation**—Dr. Jean Paul Fernel, self-styled plastic surgeon, was found guilty, November 16, and sentenced to serve one year in the county jail and ordered to pay a fine of \$500 on charges of violating the Federal Food, Drug and Cosmetic Act of 1938, newspapers report. The judge was Philip L. Sullivan and the decision was given after a bench trial in federal district court. The government contended that Fernel "sold and transported drugs in interstate commerce which were not as represented on their labels." Fernel was granted a sixty day stay of execution pending an appeal. In passing sentence, Judge Sullivan is reported to have said "I am convinced that this was a well conceived scheme to defraud an unwary public and to extract money from the sick under false pretenses." Fernel was found guilty on all seven counts of an indictment charging him with misbranding six preparations which he claimed would cure a variety of human ills, from arthritis to sagging breasts, newspapers reported. Fernel has been at liberty under a bond of \$1,500 since his arrest, it was stated.

#### KANSAS

**The Hertzler Lecture**—Dr. Everts A. Graham Bixby, professor of surgery, Washington University School of Medicine, St. Louis, will deliver the annual Arthur E. Hertzler Lecture on December 1 at the University of Kansas School of Medicine, Kansas City. His subject will be "Bronchiogenic Carcinoma of the Lung." The lecture was established in 1935 in honor of Dr. Hertzler by the Phi Beta Pi Medical Fraternity.

#### KENTUCKY

**Changes in Health Officers**—Dr. Frank M. Melton, La Grange, has been named director of the Madison County Health Department succeeding Dr. Max E. Blue, Richmond, who has been on leave of absence on account of ill health.—Dr. Chadwick W. Christine, Maysville, has resigned as head of the Mason County Health Department to return to private practice.

**Graduate Courses**—The Kentucky State Medical Association sponsored a postgraduate course in Mayfield for four consecutive Thursdays beginning October 28. Among the speakers were:

Dr. John B. Floyd, Louisville: Unrecognized Tuberculosis and X-Ray Findings  
Dr. Joseph G. Sherrill, Louisville: Cancer  
Dr. Sherrill: Fractures  
Dr. Alice D. Chenoweth, Louisville: Emergency Relief  
Dr. Benjamin L. Brock, Waverly Hills: Tuberculosis  
Dr. John E. Dunn, Paducah: Childhood Pneumonias  
Major Woodford B. Troutman, M. C. A. U. S.: Heart Murmurs  
Dr. Aura J. Miller, Louisville: Pathology of the Heart  
Major Troutman: Coronary Thrombosis  
Dr. Henry G. Reynolds, Paducah: Glaucoma  
Dr. Doyle: Occupational Diseases

#### MASSACHUSETTS

**Anniversary of Ether Day**—On October 16 informal ceremonies at the Massachusetts General Hospital, Boston, marked the ninety-seventh anniversary of ether day. Dr. Nathaniel W. Faxon, director of the hospital, among other speakers, reviewed the work of Dr. William T. G. Morton, who successfully administered ether vapor to produce unconsciousness Oct. 16, 1846.

**Dr. Aub Named Professor of Research Medicine**—Dr. Joseph C. Aub, since 1928 associate professor of medicine in the Harvard Medical School, Boston, has been appointed professor of research medicine. Dr. Aub graduated at Harvard in 1916 and has been a member of the staff of Harvard since

1919. The board of trustees of the Massachusetts General Hospital at its October meeting voted that the official name of Dr. Aub's laboratory shall be the Medical Laboratory of the Collis P. Huntington Memorial Hospital.

**Gift to Tufts Building Fund**—A recent gift of \$125,000 to the building fund of Tufts College Medical School, Boston, was announced by Leonard Carmichael, LL.D., president of Tufts College, October 6, during the fiftieth anniversary celebration of the medical school. The building fund has now received \$746,000 of the \$850,000 it had set as a goal. This total is exclusive of other contributions which were made for various other specific purposes in connection with the medical school. A congratulatory message from President Roosevelt was read during the commemoration exercises.

#### MICHIGAN

**Dr. Darling Joins National Research Council**—George B. Darling, Dr. P.H., president and comptroller of the W. K. Kellogg Foundation, Battle Creek, has resigned to become associated with the division of medical science of the National Research Council. Dr. Darling joined the Kellogg Foundation in 1932 as associate director. He has been president of the organization since the death of the late Dr. Stuart Pritchard in 1940.

**Corporation Formed for Medical Science Center**—Wendell W. Anderson has been elected president of the newly formed corporation for the proposed \$50,000,000 Medical Science Center of Wayne University. Other officers include Ormond E. Hunt, vice president; Frederick J. Gartner, secretary; and B. Edwin Hutchinson, treasurer. The new corporation will select a site immediately and after approval by the Detroit Board of Education will go ahead with construction plans.

**Personal**—Dr. Edward F. Fisher, councilman of Dearborn and member of the state legislature, has been appointed a member of the new board of Wayne County institutions.—Dr. Allan W. McDonald has severed his connection in Detroit to practice on Mackinac Island. In resigning from his activities with the Wayne County Medical Society, which he served as president in 1940-1941, Dr. McDonald stated that the community on Mackinac Island, consisting of about 600 persons, is now without a physician.

#### MINNESOTA

**Three Counties Accredited for Tuberculosis Work**—On October 5 public ceremonies were held in Luverne to award certificates of accreditation in tuberculosis control to Rock, Nobles and Pipestone counties. Speakers included Governor Edward J. Thye. This program is a cooperative plan of the state medical association and the state department of health to accredit counties showing a tuberculosis mortality rate not to exceed 100 per hundred thousand of population and an incidence of tuberculosis infection among seniors in high school not to exceed 15 per cent. The program was launched in 1941, with Lincoln County receiving first honors on December 11 of that year. Olmsted, Murray and Steven counties were accredited during 1942, and the recent three counties bring the total to seven in the state now accredited for the control of tuberculosis. At the recent celebration special honor was paid to Dr. Charles L. Sherman, Luverne, president of the Southwestern Minnesota Sanatorium Commission since it was first appointed twenty-eight years ago and Dr. Sidney A. Slater, Worthington, superintendent of the sanatorium since 1919, for their work in achieving the record since five of the seven counties are in the Southwestern Minnesota Sanatorium district.

#### MISSISSIPPI

**Personal**—Dr. Billy S. Guyton, who recently resigned as dean of the University of Mississippi School of Medicine University (THE JOURNAL, September 25, p. 223), will continue as professor of surgery at the school. It was announced.—Dr. Henry G. Waldrop, Ripley, has been appointed health officer of Clarke and Wayne counties, effective September 1.

#### NEBRASKA

**University News**—Dr. George E. Robertson has been promoted to associate professor of pediatrics at the University of Nebraska College of Medicine, Omaha, and Dr. Elmer W. Bantin to assistant professor of pediatrics.

**Annual Assembly**—The Nebraska State Medical Association announces that it will hold its annual assembly May 1-4 at the Fontenelle Hotel, Omaha, at which the following topics will be considered: tropical diseases as they influence the commonwealth; nutrition in medicine and surgery; surgical treatment of upper abdominal pain; newer aspects of fracture treatment and uterine ligaments.

## NEW YORK

**Personal**—Dr Bernard McD Krug New York, has been appointed commissioner of health of Cortland County for the duration of the war, effective November 7. He fills the vacancy left by Dr William E Mosher Jr, Cortland who was granted leave of absence to enter military service (THE JOURNAL October 23, p 496)

**The Wagner-Murray-Dingell Bill**—A special meeting of the Medical Society of the County of Monroe was held at the Rochester Academy of Medicine, Rochester November 17, to discuss the Wagner-Murray-Dingell bill. Among the speakers were Hon James E Murray U S Senator from Montana and co-author of the bill, Dr Louis H Bauer, chairman, Council on Medical Service and Public Relations, American Medical Association, Mr Marion B Folsom, co-chairman council on postwar planning for Rochester and Monroe County, and Mr Charles S Wilcox, president, Rochester Hospital Service Corporation

**Harry D Clough Memorial Prize**—The establishment of an award for house officers of the Rochester General Hospital, Rochester, to be known as the Harry D Clough Memorial Prize, was announced October 22. The award which will consist of a \$25 cash prize will be granted at the close of each weekly conference session to the house officer who has contributed most to the success of the conferences in the quality of case presentations, discussions and assistance in the selection of clinical material. The name of the winner will be placed on a special plaque which has been hung on the north wall of the conference room. The judging committee will be formed from staff members. The creation of the prize will be a fitting memorial to Dr Clough assistant medical director of the hospital, who died Oct 1, 1942 and who worked for the development and improvement of the hospital conferences

## New York City

**Macfadden Health Bureau Fined \$500**—On November 9 the Macfadden Health Service Bureau, Inc., of 205 East 42d Street, pleaded guilty to the charge of unlawfully practicing medicine, which charge had been preferred by the state education department in the Court of Special Sessions of the City of New York, County of New York. The bureau was sentenced to pay a fine of \$500

**Dr Timme Receives Townsend Harris Medal**—Dr Walter Timme, director of the neuroendocrinology department of the Neurological Institute of New York and professor of clinical neurology at Columbia University College of Physicians and Surgeons, received one of four Townsend Harris medals awarded at the sixty-third annual alumni dinner of City College in the Hotel Roosevelt, November 13. The medals are named after the founder of the college and are awarded annually. Dr Timme graduated in the class of 1893. The citation accompanying the award acknowledged Dr Timme's contributions to the field of endocrinology in which he is credited with being a pioneer and recognized his contribution to the art and science of healing as "teacher, hospital consultant and specialist in practice"

**Grant to Study Psychiatric Needs of Rejected Service Men**—A one year grant has been allocated by the Commonwealth Fund to the New York City Mental Hygiene Committee, State Charities Aid Association to study the psychiatric needs of men discharged from or rejected for military service. The professional staff for the project includes Dr Solomon W Ginsburg psychiatrist, Mrs Rae L Weisman and Mrs Bluma Swerdloff, psychiatric social workers, R L Valentine, psychologist, and Mr and Mrs Raymond Franzen, research consultants. A study of 500 each of psychiatric rejections and discharges will be made in order that an accurate picture may be obtained for recommendations to fill whatever needs may be determined, especially to find out how many persons in these groups need rehabilitative services which the community does not offer

**Dr Bristol Named Executive Director of Hospital Council**—Dr Leverett D Bristol, New York health director of the American Telephone and Telegraph Company since 1929, has been appointed executive director of the Hospital Council of Greater New York, effective December 1. The council is a community planning agency to coordinate and improve the hospital and health services of New York City and to plan the economic development of these services in relation to community needs. It is made up of about twenty leading voluntary and government health, hospital medical, welfare and business organizations of the state and city and its work is carried on through a planning committee made up of representatives of member agencies. The council has a close working relationship with the United Hospital Fund of New York City. One of its

immediate projects will be to develop and plan for the present and postwar periods for the organized care of the sick in greater New York. Dr Bristol's offices will be at 370 Lexington Avenue, New York 17

## OHIO

**Dr Zininger Named Acting Director of Surgery at Cincinnati**—Dr Max M Zininger, associate professor of surgery has been appointed acting director of the department of surgery at the University of Cincinnati College of Medicine. Dr Zininger graduated at Johns Hopkins University College of Medicine Baltimore, in 1921 and has been at the University of Cincinnati since 1925 with the exception of 1928-1930 when he served as professor of surgery at the Peiping Union Medical College, Peking, China. A total of \$296,773.33 has been given by friends of the late Dr Mont R Reid, professor of surgery at the time of his death, May 11, for the Mont Rogers Reid Memorial Fund

## TEXAS

**Texas University News**—The staff of the University of Texas Medical Branch Galveston, presented a special symposium on psychosomatic medicine before army personnel at Fort Crockett Galveston Camp Wallace and Ellington Field on October 28. The symposium included discussions of disorders of the gastroenteric system by Dr Charles T Stone, on effort syndrome by Dr Edward H Schwab, on neurosurgery by Dr Samuel R Snodgrass and on skin disorders by Dr Chester N Frazier, and special clinics were conducted by Drs Jack R Ewalt and Titus H Harris—Robert I Wise, Ph D, formerly director of the public health laboratory, Houston, has been named assistant professor of bacteriology at the school and Glenn Drager, Ph D, formerly in the department of anatomy, West Virginia University School of Medicine, Morgantown, assistant professor of anatomy

**"Dr" McElroy Sentenced to Penitentiary**—"Dr" Archibald Leslie V McElroy, who has been chief physician treating employees working on the Denison Dam Project, was sentenced on October 21 to three years in a government prison after he refused to produce proof of when he had attended Tulane University of Louisiana School of Medicine, New Orleans. McElroy had served an eighteen month sentence in Leavenworth after he pleaded guilty to prescribing narcotics without a license, it was stated. The challenge to McElroy's medical standing was made in the process of a hearing to revoke probation in a federal court narcotics sentence given him in 1940. McElroy is reported to have violated the conditions of his probation, principally failing to report to federal authorities. He had been located practicing at the dam after a search of many months. It was stated that McElroy had refused to reveal from what medical school he had graduated or where he had lived prior to 1941. Dr Thomas I Crowe Dallas secretary of the state board of medical examiners, stated that an exhaustive investigation had failed to produce any evidence showing that the man was a medical school graduate or had ever held a license to practice. Testimony indicated that a bona fide physician with the same name lived in Fort Worth until his death, implying that McElroy had assumed the identity of the dead physician, it is stated. McElroy is reported to have served in the U S Penitentiary at Fort Leavenworth and the Federal Correctional Institution, Texarkana. Available information indicates that McElroy has served a number of jail sentences and has been committed to various mental institutions. He has operated under a number of aliases, always claiming to be a graduate of Tulane University. Available data however, state that his record from the time he was discharged from the U S Army in 1918 shows that he was not out of jails and penitentiaries long enough to have taken a medical degree. A number of bad check charges are also linked to his record

## VIRGINIA

**State Medical Election**—Dr Henry B Mulholland professor of the practice of medicine at the University of Virginia Department of Medicine Charlottesville, was chosen president-elect of the Medical Society of Virginia at its annual meeting in Roanoke October 26. Dr Claude B Bowser Stonewall was inducted into the presidency. New vice presidents are Dr John O Boyd Roanoke Henry A Latrine Alexandria and Nicholas G Wilson Norfolk. Miss Agnes A Edwards Richmond was reelected executive secretary-treasurer. Richmond was chosen as the site of the 1944 annual session. The society recommended the abolishment of the office of coroner in all cities and counties of the state and suggested the substitution of a medical examiner system to be known as the state commission on post-mortem examination and to give a compensation

## WISCONSIN

**Pan American Health Day**—On November 18 Pan American Health Day was observed at the University of Wisconsin. Dr Estemo Hormicche, assistant director of the Institute of Infectious Diseases, Montevideo and professor of bacteriology, University of Montevideo spoke at the special program on "Etiology of Infantile Summer Diarrhea, with Special Reference to Salmonella Infection" and Dr Alfredo Sordelli, director of the Argentina National Institute of Health on "Diphtheria." Pan American Health Day in the United States is celebrated annually on December 2 by proclamation of the President of the United States in recognition of almost four decades of Pan American cooperation in the field of public health and as a stimulus to future endeavor.

**Dearholt Day**—The fourth annual Dearholt Day was held in Milwaukee on November 15 and in Madison on November 16 in commemoration of the late Dr Hoyt E. Dearholt's service to tuberculosis education. Dr Eben J. Carey, dean of the Marquette University School of Medicine, Milwaukee, presided at the Milwaukee session, and guest speakers included Drs John B. Barnwell, Ann Arbor, Mich., on "Contrasting Clinical Reactions to the Tubercle Bacillus" and "An Experience in the Control of Tuberculosis in a General Hospital" and Leroy U. Gardner, Saranac Lake, N. Y., "Silicosis and Its Relation to Tuberculosis" and "Tuberculosis in Industry." In Madison, Walter J. Meek, Ph.D., acting dean of the University of Wisconsin Medical School presided over the program participated in by the same guest speakers.

## GENERAL

**Examinations in Dermatology and Syphilology**—The next examinations of the American Board of Dermatology and Syphilology will be held in Chicago, June 9-10, 1944. The written examination will be held in various large cities of the country, May 8. Applications which must be filed before April 1, should be sent to the assistant secretary, Dr George M. Lewis, 121 East 60th Street, New York.

**Postwar Traffic Accident Committee Named**—The National Safety Council announced the formation of a special committee of authorities to study postwar traffic accident problems. The new group is called the postwar traffic safety planning committee of the street and highway traffic section of the National Safety Council. Kenneth B. Colman, president of the Seattle Safety Council and chairman of the war production transport commission of Seattle is head of the committee.

**Annual Appeal for Infantile Paralysis Funds**—On January 30 the President's birthday will again serve as a designated appeal for funds for the National Foundation for Infantile Paralysis. The annual appeal will run from January 14 to 31 with the President's birthday celebration climaxing the event. Local chapters of the National Foundation now cover 3,000 of the 3,070 counties of the United States. Half of the amount collected is returned to the counties and the other half is used by the National Foundation.

**North Pacific Surgical Meeting**—The annual session of the North Pacific Surgical Association was held at the Hotel Vancouver, Vancouver, B. C., November 19-20. The Founder's Lectures were presented by Dr Roscoe R. Graham, assistant professor of surgery at the University of Toronto Faculty of Medicine, Ontario, on "The Influence of Experimental Study on Clinical Practice in Intestinal Obstruction," "The Present Status of Surgical Procedures on the Biliary Tract" and "Surgical Therapy in Duodenal Ulcer."

**Diabetic Identification Tags**—At the suggestion of the medical division of the U. S. Office of Civilian Defense to prevent dangerous delay in diagnosis and proper treatment during unconsciousness or coma, Eli Lilly and Company, Indianapolis 6 in cooperation with the American Diabetes Association will provide metallic identification tags to be worn by diabetic patients or carried in the pocket, carrying the inscription "If ILL DIABETIC Call Physician." No advertising of any sort appears on the tags which will be supplied to the medical profession on request.

**Coyotes Carry Rabies Threat**—The threat of a rabies epidemic is serious as the disastrous outbreak in 1915 was indicated in a statement to the press November 5 by Paul C. Quick, Portland, Ore., regional supervisor of the U. S. Fish and Wildlife Service. Mr. Quick stated that the coyotes are taking 20 per cent of all livestock in six western states, Oregon, Washington, Idaho, California, Nevada and Montana. Despite the seizure of 10,578 coyotes over a recent twelve month period

the animals probably are more numerous than at any time since the government control program started, Mr. Quick stated, in commenting on a survey of the cattle and sheep country of the six affected states.

**Chemical Patents and Applications Available in Abstract Form**—The chemical patents and patent applications vested by the Alien Property Custodian have been abstracted by the Chicago Section, American Chemical Society, and are now being indexed by a committee of the Science and Technology Group, Special Libraries Association. Beginning in January 1944, these abstracts will be published in thirty-one classified indexed pamphlets, to be followed by a master index and a supplement of new abstracts. Medical men will be interested in the "Pharmaceuticals" class and in certain subclasses under "Foods," "Organic Reactions," "Organic Synthetics" and "Sanitary Chemistry." The prices, if demand is adequate to justify them, will be \$1 for any booklet and \$25 for all thirty-three booklets. The paper situation necessitates close adjustment of the printing to the known demand, orders should be placed not later than December 10 to make sure of receiving copies. Order blanks (already sent to all members of the American Chemical Society and of the Science-Technology Group, Special Libraries Association) may be had from the Alien Property Custodian, Field Building Chicago 3.

**Charles L. Mayer Award**—The National Science Fund of the National Academy of Science, 515 Madison Avenue, New York 22, announces that the closing date for the acceptance of manuscripts and published articles for the 1943 Charles L. Mayer prize will be January 15. The award will be made for an outstanding contribution to present day knowledge of factors affecting the growth of animal cells with particular reference to human cancer. Consideration will be given to contributions published during 1943 or in manuscript. The 1942 award went to Dr Charles B. Huggins, professor of surgery (urology) at the University of Chicago School of Medicine, for his work on the endocrine control of prostatic cancer. The advisory committee in charge of recommendations for the 1943 Charles L. Mayer Award includes Dr Alan Gregg, director for the medical sciences of the Rockefeller Foundation, New York, Dr George H. Whipple, dean of the University of Rochester School of Medicine and Dentistry, Rochester, N. Y., Dr Peyton Rous, Rockefeller Institute for Medical Research, New York, Robert R. Williams, D.Sc., chemical director of the Bell Telephone Laboratories, New York and Elihu Root Jr., LL.D., New York.

## CANADA

**Grant for Study on the Adrenal Cortex**—A grant of \$50,000 over a five year period has been given to McGill University from Gelatin Products, Ltd., and Frank W. Horner Ltd. to support research under the direction of Dr Hans Selye, associate professor of histology. The research is directed specifically at improving bodily resistance to all types of strain to which members of the armed forces are subjected and centers around the adrenal cortex.

## FOREIGN

**New Chair of Human and Comparative Pathology**—W. H. Collins, Buckinghamshire has given £100,000 to the Royal College of Surgeons of England, London, to be available immediately, to endow the department of pathology and create a chair of human and comparative pathology and provided for a similar bequest in his will to endow a department of anatomy and establish a chair of human and comparative anatomy. In a letter to the press, reported in *Science*, Mr. Collins acknowledged the injury to these departments by enemy action stating that he considered the endowments essential to restore the units to their scientific position.

**Medals Awarded**—The Royal Society has awarded its Copley Medal to Sir Joseph Barcroft, Cambridge a fellow of the society, for his scientific work and particularly his own personal risk of death to increase the scientific knowledge of breathing. Sir Joseph once spent a week in a glass case to test the effects of insufficient oxygen. He tested prussic acid by remaining in a gas-filled chamber with a dog that died in less than a minute before the war he tested the force of blast by sitting in air raid shelters while bombs were dropped close by. The Royal Society also awarded its Davy Medal to Ian M. Heilbron, Ph.D., Kensington for his work in the production of penicillin and his contributions to the knowledge of organic chemistry. Dr. Heilbron is scientific adviser to the ministry of production and professor of organic chemistry at the Imperial College of Science and Technology.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct. 16, 1943

#### Improved Vital Statistics During War

The vital statistics report which has just been published for the year ended last March shows continued improvement over prewar figures, except for the two usual problems of war—venereal diseases and tuberculosis. Maternal and infant mortality rates and death rates among civilians were the lowest ever recorded in England and Wales. The incidence of infectious diseases was remarkably low, probably the best on record. But rising claims under national health insurance suggest the considerable increase in short illnesses which might be expected after more than three years of war.

The deaths in England and Wales in 1942, including non-civilian deaths and those due to enemy action, numbered 480,137. This was 55,043 less than in 1941. Among females the average rate was 6.84 deaths per thousand living, 8 per cent better than in any previous year, notwithstanding the inclusion of deaths from enemy action and the withdrawal of large numbers of healthy young women from the civilian population. Among civilian males the average rate was also the lowest ever recorded in spite of the considerable effect of selective recruitment. Mortality of children at the preschool ages of 1 to 5, which had declined 47 per cent between 1931 and 1939, showed a further improvement of 2 per cent in 1942, at the school ages of 5 to 15 the low level reached in 1939 was regained. Live births, which numbered 654,039, increased by 66,811 over the previous year. There was a natural increase of population amounting to 173,902, the birth rate of 15.8 per thousand being the highest since 1931.

In his comment the minister of health says that the nation's prodigious war effort has imposed a severe strain on the health of the people, which they have withstood with dogged determination and astonishing success. As far as we could, he said, we have been ready to meet any attack that disease might make. But the strains of war are progressive and their effect on health may be of long term nature. Certainly in the fifth year of the war, the minister stated, we must not relax our watchfulness or reduce our activity. Explanation of the improved vital statistics is difficult and complex, but one important factor may be pointed out, the disappearance of unemployment consequent on the colossal demand for labor in war industries and recruitment for the fighting forces.

#### St. Dunstan's and Blinded American Soldiers

The institution known as St. Dunstan's was founded to give occupational training to those blinded in the war of 1914-1918. Its twenty-eighth annual report shows that 339 men and women blinded in war service have been admitted in the present war. Of these, over 100 have recovered useful sight and returned to military or civil life. Of the remainder, 87 men and 7 women are acquiring normal sight and will later learn an occupation. Forty-one men and women have left and returned to their old jobs, while others have become trained telephonists or masseurs. Some are working in munitions or aircraft factories. Of the men blinded in the last war, 1,777 are still under St. Dunstan's care.

At a luncheon given by Brig. Gen. Paul R. Hawley, chief surgeon, European Theater of Operations, United States Army, Sir Ian Fraser, founder and chairman of St. Dunstan's, was the chief guest among a distinguished audience which included the United States ambassador, Mr. John G. Winant. Mr. Winant said "Britain has pointed the way in many fields of human betterment. But in no field have her achievements been more

outstanding than in the work of St. Dunstan's. This work has removed from hearts that now number thousands the fear of blindness, which our guest of honor today once said is much greater than blindness itself." The chief surgeon told his audience, which also included Lieut. Gen. Jacob L. Devers, commanding general of American Forces in the European Theater of Operations, and Major Gen. John C. H. Lee, commanding general, United States Army Services of Supply in the European Theater, that it was "a high privilege for the United States Army to send its blinded soldiers to St. Dunstan's for a course of training before they returned to their own country."

### BRAZIL

(From Our Regular Correspondent)

Oct. 20, 1943

#### Plague in Northeastern Brazil

Plague is still an endemic disease in the northeastern section of Brazil (states of Ceara, Rio Grande do Norte, Parahiba, Pernambuco, Alagoas and Bahia), an important district from the standpoint of global war. Several hundred cases of human plague have been registered in this section of the country in the past few years (94 in 1940, 155 in 1941, 10 in 1942) and several more during the first months of the present year. In order to improve the control of this disease, Dr. Marcelo Silva and a few collaborators of the Plague Division of the National Department of Health have undertaken during the last three years careful epidemiologic and experimental studies, the conclusions of which have been recently published and are summarized here. The most important plague foci in this semiarid region are in the mountains (500 to 2,000 feet), and the temperature and humidity directly influence monthly and annual variations in the incidence of the disease. In the state of Ceara, which has a hot, dry climate, the morbidity and mortality rates are minimum (an average of 20 per cent of the cases are fatal). In this state human plague is closely associated with rain distribution, humidity being the main factor to awaken the activity of latent foci of the disease. Several hundred experimental inoculations to ascertain the sensibility of sylvatic rodents to plague have fully demonstrated that their susceptibility is equal to that of the guinea pig, if not higher. House rats are the main source of infection, the disease often being present in these animals in an atypical, mild form. In this dry climate the reactivation of foci which have been dormant for two to five years is not infrequent. Since this is much longer than the life span of the common flea, pulicides are of minor epidemiologic importance in the maintenance of chronic foci. Contrary to the information frequently given by common country people, epidemics are neither extensive nor intense among rural rodents. As a rule these epizootics are observed only in the areas of distribution of both kinds of rodents—the house rat, a normal carrier of *Xenopsylla cheopis*, and the wild rodent, the common parasites of which are not transmitters of plague, as extensive researches have proved. The limited extension of the infection among sylvatic rodents, confined to the region of their contact with domestic rats, and the short duration of epizootics in these rodents are probably due to an incomplete adaptation of *Xenopsylla cheopis* to their animals, owing perhaps to the hardness and dryness of their skin. It was necessary to ascertain the susceptibility of the domestic cat to plague, which has been done through numerous experiments which proved this animal to have a low sensibility. Using the digestive route exclusively, it has been impossible to infect this animal, although in some instances infection may apparently occur, as shown by visceral hyperemia, edema and hyperemia of the lymphoid organs and localized intestinal lesions which might have been produced by the endotoxic action of *Pasteurella pestis*. Only rarely does plague infection in the cat show the characteristic lesions commonly seen in rodents.



This can be accomplished by massive inoculation with infective material which breaks all the organic defenses of the animal. The most frequent instance is an ill defined morbid picture without the presence of *Pasteurella pestis*.

The authors present their personal contribution of two new methods of plague diagnosis—the intradermal reaction, which makes possible the epidemiologic retracing of the disease in stricken regions, and the direct inoculation of blood from the patient into the peritonum of guinea pigs as a means of rapid presumptive diagnosis to indicate immediate prophylactic measures. The intradermal reaction has been performed with the help of an antigen prepared according to the leprosy Mitsuda technique but using the satellite gland of a guinea pig transcutaneously inoculated with a regional strain of *Pasteurella pestis*. This method has given promising results, owing to its high specificity and sufficient sensitivity, but the number of cases discovered through its use is yet rather low (about 50). The blood diagnosis is based on the early bacteremia in human plague and on the fact that the guinea pig plague peritonitis obtained through the inoculation of blood is more frequent than that obtained through the parallel inoculation of bubo material. Twelve hours after the inoculation, a peritoneal puncture is performed, as suggested by Gottschlich.

Concerning the control measures, the authors do not recommend the routine, periodic blocking of the infected areas through poisoning, which they describe as expensive and of low relative efficiency. They much prefer generalized ratproofing of houses, fumigation of rat galleries with hydrocyanic gas, active immunization of the menaced population with a live vaccine, and the combined use of flame throwers and rat-hunting dogs.

#### Ectopic Pregnancy and Hysterosalpingography

To the works of Heuser concerning the use of hysterosalpingography in uncomplicated pregnancy Drs. Arnaldo de Moraes and J. Rosado of Rio de Janeiro have now added experience in 10 cases of ectopic pregnancy. The hysterosalpingography is not an exploratory method for cases in which the ectopic pregnancy is complicated by rupture and hemorrhage and in which the condition causing the internal bleeding requires immediate intervention by the surgeon, but the method is valuable for confirmation of the diagnosis in those cases in which there is no rupture. In a recent paper Drs. de Moraes and Rosado described the radiologic symptoms of ectopic pregnancy. They concluded that the test of Cotte, of great diagnostic value in gynecology, gains real importance in the radiologic study of ectopic pregnancy, revealing an atypical diffusion of the oil surrounding the tumor. The method is harmless and does not have the dangers of the Douglas puncture, biopsy of the endometrium, the peritoneoscopy and gynecologic pneumoercentgenography. The hysterosalpingography is indicated in cases of doubtful diagnosis of broken or complicated ectopic pregnancy, provided it is not accompanied by symptoms demanding urgent attention. It is also indicated in cases of normal pregnancy combined with some gynecologic disorder simulating ectopic pregnancy.

#### Pancreatic Diseases under Radiologic Examination

Radiologic examination of the pancreas is not indicated unless the indirect data it provides are of great scientific importance. In exceptional conditions, it is pointed out in a paper published recently by Dr. Manoel Campanario in São Paulo. Enlargement of the pancreas due to several pathologic processes is accompanied by some functional alterations and also alterations in form and topography of adjoining organs principally the stomach, duodenum and transverse colon. When rigorously interpreted, such alterations are partly the basis for radiologic study of the pancreas. After a succinct study of the anatomy of the pancreas, Dr. Campanario proceeds to analyze the alterations produced in adjoining organs by pancreatic tumors.

Radiologic evidence of pancreatic tumors is described minutely. Under unusual circumstances, chronic pancreatitis may resemble pancreatic carcinoma, in such cases, differential diagnosis by radiology is impossible. Even after operation, such differential diagnosis is not always possible macroscopically. The pneumoperitoneum is not always of practical value in the radiologic examination of pancreatic tumors. On the other hand, the technique described by Engel and Lyshold is of great practical importance in the radiologic study of diseases of the pancreas. Cholecystography is useful in tumors of the pancreas. However, radiologists agree that in some cases of pancreatic tumor, principally incipient carcinomas, radiologic examination does not provide a clear diagnosis, while in other cases it is unquestionably of practical value.

#### Diagnosis of Leprosy

The painful sensitivity of hypochromic and achromic patches occasionally presented in suspected or known cases of leprosy can be determined with a needle. According to studies carried out by Drs. Marinho Bechechi and Novo Pacheco of São Paulo, when the patches were anesthetic and of leprotic origin puncture did not cause appearance of the reflex and diffuse erythema representing the second stage of the Lewis triplex reaction observed when the skin is submitted to an irritation (Lewis's triplex reaction third phase papula). Afterward, continuing their investigation, the authors made the histamine tests on the same patches, and the same results were obtained: absence of reflex erythema in the dychromic leprotic patches and presence of reflex erythema in the bordering normal skin. (The reflex erythema is large and more persistent with histamine than with the puncture alone.) Simple needling alone caused the appearance of reflex erythema within vitiliginous patches. Thus the procedure may be applied in the differential diagnosis of leprotic maculae. The authors studied the mechanisms of cutaneous reaction produced by needling and the reasons for its importance in the diagnosis of leprosy. They concluded that the reflex erythema depends on the integrity of the sensory nerves fibers; if these are involved in leprosy the reflex does not appear. It is from this fact that the diagnostic importance of the histamine test and the simple puncture is derived. Because of verifications obtained in several cases, the authors believe that a simple needling is significant in diagnosing the leprotic nature of peripheral anesthesia; moreover, this is a simple subsidiary means that may be applied by the clinician.

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## Marriages

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BELFIELD ATCHESON, Appleton City, Mo., to Lieut. Genevieve LaBree at Camp Perry, Ohio, November 18.

MARGARET LILLIAN SAMPSON to Rev. Jarrett Wood Richardson Jr., both of Louisville, Ky., October 2.

WILLIAM OWEN ARNOLD to Miss Sarah Weaver, both of State Sanatorium, Ark., October 7.

JAMES ALAN READ, St. Louis, to Miss Peggy Westbrook at Paragould, Ark., October 10.

ROBERT ALLEN CLARK to Miss Jane E. Bancroft, both of Rochester, N. Y., November 6.

IRA MILTON MILLER to Miss Jennie S. Hardison, both of Yakima, Wash., October 2.

JAMES STEEDMAN REYNOLDS to Miss Polly Ann Wolfe, both of Gary, Ind., October 20.

ROBERT ALPERT ARENS to Mrs. Rosella Humble, both of Chicago, November 2.

FRED EUGENE HAMLIN to Miss Helen Betelle, both of Roanoke, Va., October 9.

BENJAMIN F. ROACH, Midway, Ky., to Miss Ruth Slack at Atlanta, Ga., recently.



## Deaths

**George Adams Leland Jr** ☉ Brookline, Mass., Harvard Medical School, Boston, 1911, associate in surgery at his alma mater, specialist certified by the American Board of Surgery and a member of the founders group, member of the American Surgical Association, New England Obstetrical and Gynecological Society, New England Surgical Society, American Society for the Control of Cancer, New England Cancer Society and the New England Roentgen Ray Society, fellow of the American College of Surgeons, commissioned a lieutenant in the medical reserve corps of the U S Army during World War I, assigned to Base Hospital number 6 in 1917, commissioned a captain in the medical reserve corps in 1918 and detailed to Base Hospital number 220 with rank of commanding officer, honorably discharged in 1919, decorated Officer d'Academie of Public Instruction and Fine Arts by the French government, consulting surgeon to the Addison Gilbert Hospital, Gloucester, Massachusetts Eye and Ear Infirmary, Boston, and the New Hampshire Memorial Hospital Concord, visiting surgeon to the Collis P Huntington Memorial Hospital, Massachusetts General Hospital and the Palmer Memorial Hospital, Boston, where he died September 22, aged 57, of coronary artery atherosclerosis.

**Marshall Clinton**, Bluff City, Tenn., Niagara University Medical Department Buffalo 1895, professor of surgery, emeritus, at the University of Buffalo School of Medicine, member of the Medical Society of the State of New York, Association of Military Surgeons of the United States, American Surgical Association, Buffalo Academy of Medicine and the International Surgical Society, fellow of the American College of Surgeons, veteran of the Spanish-American War, served as assistant surgeon with the rank of captain, 65th Regiment, New York National Guard, during World War I, served as consulting surgeon with the 35th division, as chief surgical consultant of the First and Second Army of the American Expeditionary Forces and director of Buffalo Base Hospital number 23, commissioned a major in the medical reserve corps on June 12, 1917 and a lieutenant colonel on June 6, 1918, cited by General Pershing for exceptionally meritorious and conspicuous services, formerly consulting surgeon at the Children's Hospital and the Buffalo City Hospital, attending surgeon at the Buffalo General Hospital, the Sisters of Charity and Erie County hospitals, all of Buffalo, surgeon for the Pennsylvania Railroad, died September 3, aged 70, of coronary thrombosis.

**Eugene Leroy Horger** ☉ Columbia, S C., University of Maryland School of Medicine, Baltimore, 1914, associate in psychiatry at the Medical College of the State of South Carolina, Charleston, for three years lecturer on mental disorders at the University of South Carolina, Columbia, specialist certified by the American Board of Psychiatry and Neurology, Inc., past president of the Columbia Medical Society, member of the Southern Psychiatric Association and the American Psychiatric Association, fellow of the American College of Physicians, a member of the medical advisory board of districts two and six during World War I, neuropsychiatric examiner at the South Carolina State Penitentiary, attending specialist in neuropsychiatry at the Veterans Administration Facility, clinical director and assistant superintendent of the South Carolina State Hospital, at one time director and vice president of the Columbia Rotary Club, formerly an associate editor of the *Journal of the South Carolina Medical Association*, a director of the Boys Scout Council and the Travelers' Aid, died suddenly October 22, aged 54, of coronary thrombosis.

**August Stephen Astor Thomen** ☉ New York University and Bellevue Hospital Medical College, New York, 1918, attending physician to the allergy clinic, Cornell University and the New York Hospital from 1920 to 1927, director of the allergy clinic New York University College of Medicine, from 1927 to 1935 and lecturer in medicine from 1925 to 1935, fellow of the New York Academy of Medicine, member of the Society for the Study of Asthma and Allied Conditions, American Association for the Advancement of Science, American Association for Adult Education, co-author of "Asthma and Hay Fever in Theory and Practice," 1931, author of "Hay Fever the Doctor," 1935, and "Doctors Don't Believe It—Why Should You?" 1941, died suddenly September 11, aged 51, of heart disease.

**Simeon Alphonse Daudelin**, Worcester, Mass., School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, Que., Canada, 1895, member

of the Massachusetts Medical Society, in 1907 appointed by President Theodore Roosevelt as high commissioner and plenipotentiary from the United States to France for a period of six months, covering the Maritime Exposition, the French government conferred on him the decoration of the Legion of Honor, at one time medical inspector in the schools, formerly chairman of the city board of health and trustee of Worcester Public Library, on the staff and at one time trustee of the Belmont Hospital, died in the Hopital Notre-Dame, Montreal, Que., Canada, August 28, aged 73, of cerebral hemorrhage.

**Carl Barck** ☉ St Louis, Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1881, Affiliate Fellow of the American Medical Association, assistant professor of medicine at the University of Basel, Switzerland 1881-1882, professor of ophthalmology at the Marion-Sims College of Medicine from 1891 to 1903, professor emeritus of ophthalmology since 1922, professor of ophthalmology from 1903 to 1922 and director of the department from 1911 to 1922, St Louis University School of Medicine, on the staffs of St Louis City, Lutheran and St John's hospitals, died in Columbia, Mo., October 2, aged 86, of diabetes mellitus and gangrene.

**William Truitt Godfrey** ☉ Stamford, Conn., Cornell University Medical College, New York, 1907, fellow of the American College of Surgeons, served as chairman of the board of education, a director of the First Stamford National Bank and Trust Company, formerly a member of Company C, Twelfth New York National Guard Regiment, veteran of the Spanish-American War, a member of the National Defense Council of the American Red Cross, physician in charge of the Tophassee Grange, on the consulting staff of St Joseph's Hospital and on the surgical staff of the Stamford Hospital, where he died September 4, aged 71, of reticulum cell sarcoma.

**Frederick Conrad Narr** ☉ Kansas City, Mo., University of Pennsylvania School of Medicine, Philadelphia, 1911, member of the American Association of Pathologists and Bacteriologists and the American Society of Clinical Pathologists, specialist certified by the American Board of Pathology, Inc., technical director of the blood donor service, American Red Cross, in Kansas City, formerly assistant instructor in pathology at his alma mater, director of the William Volker Clinic and the laboratory of the Research Hospital, where he died September 2, aged 55, of adenocarcinoma of the rectum, neuritis and ulcerative colitis.

**Stephen Charles Markley**, Richmond, Ind., Medical College of Ohio, Cincinnati, 1898, member of the Indiana State Medical Association, past president of the Wayne County Medical Society, formerly coroner of Wayne County, served with the American Expeditionary Forces in France during World War I, lieutenant colonel in the medical reserve corps of the U S Army not on active duty, served as president of the board of managers of the Smith-Esteb Memorial Hospital, president and for many years secretary of the staff of the Reid Memorial Hospital, where he died August 28, aged 70, of cerebral hemorrhage.

**Dana Byron Dana** ☉ Kewaunee, Wis., Northwestern University Medical School, Chicago, 1910, served as a lieutenant in the medical corps of the U S Army during World War I, for many years acting assistant surgeon in the U S Public Health Service, Coast Guard physician, medical superintendent and part owner of the Dana and Witcalk Hospital, surgeon for the Ann Arbor and Kewaunee, Green Bay and Western railroads, director of the Kewaunee Shipbuilding and Engineering Company and vice president of the Kewaunee Manufacturing Company, died suddenly September 19, aged 56, of coronary occlusion.

**John Lanahan Dorsey** ☉ Baltimore Johns Hopkins University School of Medicine, Baltimore, 1918, specialist certified by the American Board of Internal Medicine, member of the Southern Medical Association, fellow of the American College of Physicians, captain in the medical corps of the U S Army during World War I, instructor in medicine at his alma mater on the staffs of the Church Home and Infirmary, Hospital for Women, Union Memorial Hospital and the Johns Hopkins Hospital where he died September 15, aged 49, following an operation for brain tumor.

**Robert Abe Burns**, Alabama City, Ala., Vanderbilt University School of Medicine, Nashville, Tenn., 1901, member of the Medical Association of the State of Alabama, veteran of the Spanish-American War, cited for bravery in action by General Pershing during World War I, served in the Army of Occupation in Germany, formerly mayor of Alabama City, police commissioner of Gad-den, a member of the county jury

commission chief medical adviser for the state prison and warden of Kilby Prison, died September 2, aged 76 of cerebral hemorrhage

**William Francis Beer**, Salt Lake City, Columbian University Medical Department, Washington D C 1892, member and an honorary president of the Utah State Medical Association past president of the Salt Lake County Medical Society, major in the medical reserve corps of the U S Army not on active duty, served during World War I, in 1896 joined the Utah National Guard, formerly on the staff of Dr W H Groves Latter-Day Saints Hospital, died in the Providence Hospital Oakland, Calif, August 11, aged 76, of bronchopneumonia

**Rose Amanda Ralston Ackley**, Warren, Ohio Cleveland University of Medicine and Surgery, 1896 member of the Ohio State Medical Association, died in Saltsburg, Pa, September 25 aged 83

**Ross Uriah Adams** \* Kalamazoo Mich Detroit College of Medicine, 1907, served overseas during World War I formerly county physician, died September 30, aged 60, of cerebral hemorrhage

**Charles Adler** \* New York University and Bellevue Hospital Medical College, New York, 1912, died in the Mount Sinai Hospital September 11, aged 68

**George William Anderson**, Early Iowa State University of Iowa College of Homeopathic Medicine Iowa City, 1901 for many years president of the Early Bank and of the school board died in Spencer September 2, aged 71, of cerebral embolism

**Merchant Ellsworth Austin**, Krotz Springs La Bennett College of Eclectic Medicine and Surgery, Chicago, 1906 died September 20 aged 75 of heart disease

**Louis Dominic Bacigalupi**, San Francisco University of California Medical Department San Francisco, 1896 necropsy surgeon of San Francisco from 1901 to 1905 on the staff of St Francis Hospital, died September 17 aged 68, of bronchiogenic carcinoma

**George Silas Barksdale**, Fernbank, Ala Memphis (Tenn) Hospital Medical College 1899 member of the Medical Association of the State of Alabama president of the Lamar County Medical Society examiner for several insurance companies died September 18 aged 70

**Dempsey Barnes** \* Asheboro, N C Medical College of Virginia Richmond 1925 past president of the Randolph County Medical Society served during World War I member of the Randolph County School Board part owner and medical director of the Barnes-Griffin Clinic on the staff of the Randolph Hospital died in the Duke Hospital Durham N C September 9 aged 46, of uremia and terminal nephritis

**Ruben B. Baugh**, Polkville Miss Memphis (Tenn) Hospital Medical College 1898, served at various times as health officer of Smith County member of the county Selective Service System during World War I and recently, member of the staff of Scott County Hospital, Morton, died September 1 aged 65 of coronary occlusion

**Oscar R. Beard**, Sharon Tenn University of Louisville (Ky) Medical Department, 1892 died September 11, aged 74 of coronary thrombosis

**Clinton G. Beckett**, Danville Ill Medical College of Indiana Indianapolis, 1905 member of the Illinois State Medical Society served during World War I formerly on the staffs of various Veterans Administration facilities died September 18 aged 68 of acute cardiac dilatation

**Harry Jacob Bell** \* Dawson Pa Medico-Chirurgical College of Philadelphia 1892 fellow of the American College of Physicians formerly state senator and coroner served as examiner for several insurance companies died in the Connelville State Hospital September 30 aged 75

**Julius Samuel Berkman**, Rochester N Y University of Buffalo School of Medicine 1898 for many years physician at the Monroe County Penitentiary died September 8 aged 67 of poison self administered

**J. Morgan Berry**, Leitchfield Ky, Vanderbilt University School of Medicine Nashville Tenn 1882 died August 16 aged 83 of myocarditis

**Cheves Bevil**, Waldron Ark (licensed in Arkansas in 1903) member of the Arkansas Medical Society for many years served as a member of the state board of health formerly mayor of Waldron and a member of the state legislature died August 28 aged 94

**Thomas Eugene Bland**, Shelbyville Ky University of Louisville Medical Department 1892 member of the Kentucky

State Medical Association, formerly mayor of Shelbyville and member of the city council, died September 25, aged 79

**James F. Bohannon**, Louisville, Ky, Hospital College of Medicine, Louisville, 1897, died in the Methodist Deaconess Hospital September 10 aged 72

**Cord Bohling** \* Sedalia, Mo, Missouri Medical College, St Louis, 1888 past president of the Pettis County Medical Society at one time a representative in the General Assembly for Morgan County on the staff of the John H. Bothwell Memorial Hospital member of the chamber of commerce and a director of the Third National Bank, died September 11, aged 80

**Harold Lynn Bottomley** \* Philadelphia, Temple University School of Medicine, Philadelphia 1919 died August 25, aged 47, of acute coronary artery occlusion and hypertension

**Benjamin Isaac Brody**, Detroit Western Reserve University School of Medicine, Cleveland, 1913 died September 18, aged 57

**Benjamin Joseph Butler**, East Providence R I, University of Vermont College of Medicine, Burlington 1903 served during World War I died September 18, aged 69, of heart disease

**Roscoe William Cahill**, Boise, Idaho, University of Oregon Medical School Portland 1913 served during World War I, major, medical corps Army of the United States not on active duty chief surgical service, Veterans Administration Facility, where he died September 1 aged 55 of coronary infarction

**Matthew Corbett**, Chicago, College of Physicians and Surgeons of Chicago 1890 member of the Illinois State Medical Society, died September 12 aged 80 of chronic myocarditis

**Benjamin Courshon**, Sioux City Iowa Atlanta College of Physicians and Surgeons 1901 member of the Iowa State Medical Society, for thirty-two years city physician died September 13 aged 75, of uremia

**Phillip H. Dalby**, Ramona, Okla Kansas City (Mo) Medical College, 1898 died September 28, aged 90, of senility

**Otho Lee Dascombe** \* Waltham, Mass Johns Hopkins University School of Medicine Baltimore 1905 served during World War I on the staff of the Waltham Hospital, where he died September 26 aged 62 of Hodgkin's disease

**Albert Mitchell Dawson** \* Bellingham Wash University of Minnesota College of Medicine and Surgery Minneapolis 1905 died in St Joseph's Hospital September 18 aged 71

**Arthur Clarence Devere**, Austin Texas University of Vermont College of Medicine, Burlington, 1898 died September 14 aged 74 of heart disease

**John Richard Drake**, Memphis Tenn University of Louisville (Ky) Medical Department, 1911 school physician for the Memphis and Shelby County Health Department formerly police surgeon, served on the Mexican border as a captain of the First Tennessee Ambulance Company in 1916 and during World War I in France with the 166th ambulance company and the Rainbow Division, died September 21 aged 57 of cardiac embolus due to hypertension

**James F. Dundas**, Minden City Mich Western University Faculty of Medicine London Ont, Canada 1899 on the advisory board Hubbard Memorial Hospital Bad Axe where he died September 12 aged 75

**Walter Branham Emery**, Atlanta Ga Atlanta College of Physicians and Surgeons 1899, member of the Medical Association of Georgia past president and secretary of the Fulton County Medical Society past president of the Georgia Urological Association, formerly clinical lecturer on genitourinary diseases at the Atlanta School of Medicine and associate professor of surgery (syphilology) at the Emory University School of Medicine died in San Francisco September 7 aged 67 of peritonitis following an abdominal operation

**Henry Fisher**, Philadelphia Medico Chirurgical College of Philadelphia 1883 member of the Medical Society of the State of Pennsylvania formerly professor of materia medica and pharmacology at the Temple University School of Medicine and the school of pharmacy at one time professor of materia medica botany and pharmacology and trustee at his alma mater served on the staffs of the Medico Chirurgical Germantown and Temple University hospitals died September 18 aged 86

**Patrick Henry Fleming** \* St Martinville La Medical Department of Tulane University of Louisiana New Orleans 1911 served in the medical corps U S Army in France and Germany during World War I formerly mayor of St Martin-

ville, director of St Martin Parish Health Unit, acting director of the Iberia Parish Health Unit, died in a New Iberia hospital September 29, aged 53

**Joseph Freston**, Danville, Va., College of Physicians and Surgeons, Baltimore, 1886, died September 9, aged 76

**Herbert Milton Friedlander** \* Washington, Pa., University of Cincinnati College of Medicine, 1928, member of the American Academy of Dermatology and Syphilology, on the staff of the Washington Hospital, died August 27, aged 42, of coronary thrombosis

**Thomas Douglas Joseph Gallagher**, North Arlington, Va., University of Pennsylvania Department of Medicine, Philadelphia, 1900, died August 4, aged 80, of senility

**William Melvin Gamble**, Wetumpka, Ala., Louisville (Ky.) Medical College, 1887, member of the Medical Association of the State of Alabama, past president of the Elmore County Medical Society, died August 31, aged 77

**Simon Sims Garrett**, Duncan, Okla., University of the South Medical Department, Sewanee, Tenn., 1907, member of the Oklahoma State Medical Association, county superintendent of public health, died August 9, aged 71, of pernicious anemia

**Andrew James Gifford**, Alexandria, S. D., State University of Iowa College of Medicine, Iowa City, 1901, member of the South Dakota State Medical Association, member of the city board of education for many years, health officer of Hanson County, formerly physician for the local draft board, died in the Methodist State Hospital, Mitchell, September 14, aged 72, of cirrhosis of the liver

**George Robert Gowen**, Walla Walla, Wash., Southwestern Homeopathic Medical College and Hospital, Louisville, Ky., 1909, specialist certified by the American Board of Otolaryngology, member of the Washington State Medical Association, American Academy of Ophthalmology and Otolaryngology and the Pacific Coast Otolaryngological Society, past president of the Walla Walla Valley Medical Society, on the staffs of the Walla Walla Sanitarium and Hospital and St Mary's Hospital, died September 2, aged 61

**Otto Edward Haseh** \* Dubuque Iowa, Keokuk Medical College, College of Physicians and Surgeons, 1905, past president of the Dubuque County Medical Society, a member of the Selective Service System as examining physician for the Dubuque County board number 1, on the staffs of the Finley Hospital and St Joseph Mercy Hospital, where he died September 23, aged 69, of coronary thrombosis

**Ellwood Harlow** \* New York, University and Bellevue Hospital Medical College, New York, 1899, formerly on the staffs of the Knapp Memorial Eye Hospital and the Vanderbilt Clinic, died September 22, aged 70, of heart disease

**Gaillard Hastings Healy**, Bay City, Mich., Michigan College of Medicine and Surgery, Detroit, 1897, member of the Michigan State Medical Society, associated with the Jones Clinic, chief internist at the Bay City Samaritan Hospital, where he died September 23, aged 66, of coronary thrombosis

**Noble J. Hill**, Hindsville, Ark. (licensed in Arkansas in 1903), member of the Arkansas Medical Society, died September 1, aged 74

**Ferdinand Murdo Jeffries** \* New York, Bellevue Hospital Medical College, New York, 1893, formerly professor of pathology and bacteriology at the New York Polyclinic Medical School and Hospital, formerly on the staff of the Hospital for Ruptured and Crippled, died in Pennington, N. J., September 4, aged 78, of heart disease

**George Boyden Jones** \* Lieutenant Colonel, U. S. Army, retired, San Francisco, Medical College of Indiana, Indianapolis, 1892, veteran of the Spanish-American War, Philippine Insurrection and World War I, commissioned a major in the medical corps of the U. S. Army in 1920, retired for disability in line of duty with rank of lieutenant colonel in August 1931, died in the Letterman General Hospital September 1, aged 75, of cerebral hemorrhage, subacute bacterial endocarditis, Streptococcus viridans, and general arteriosclerosis

**Haig Haigouni Kasabach**, New York, University of Michigan Medical School, Ann Arbor, 1926, assistant professor

of radiology at the Columbia University College of Physicians and Surgeons, specialist certified by the American Board of Radiology, Inc., member of the Medical Society of the State of New York, American Roentgen Ray Society, American College of Radiology and the American Radium Society, on the staffs of the Presbyterian Hospital and the Vanderbilt Clinic, died in the Neurological Institute, September 1, aged 44

**Frederick Carl Emil Kuhlmann** \* Webster Groves, Mo., Washington University School of Medicine, St. Louis, 1896, formerly a surgeon in the U. S. Public Health Service reserve, colonel, medical reserve corps, U. S. Army, not on active duty, died in the Evangelical Deaconess Home and Hospital, St. Louis, of injuries received in an automobile accident, September 26, aged 72

**Charles Edward Lewis** \* Bell City, Mo., National University of Arts and Sciences Medical Department, St. Louis, 1916, died in the Southeast Missouri Hospital, Cape Girardeau, August 17, aged 66, of acute cholecystitis with obstruction of the common duct and chronic nephritis

**Andrew J. Mitchell** \* Sharon, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1888, on the staff of the Christian H. Buhl Hospital, died August 22, aged 84, of coronary occlusion and arteriosclerosis

**Arthur W. Moore**, Portland, Ore., University of Vermont College of Medicine, Burlington, 1883, member of the Oregon State Medical Society, past president of the Multnomah County Medical Society, one of the first members on the staff of St. Vincent's Hospital, died in the Portland Sanitarium and Hospital August 25, aged 88, of strangulated right inguinal hernia and hypostatic pneumonia

**Esther Morgan**, Williamsport, Pa., Woman's Medical College of Pennsylvania, Philadelphia, 1906, for many years superintendent of the Dixie Hospital, Hampton, Va., and later pathologist at the North Hudson Hospital, Weehawken, N. J., died October 18, aged 70, of carcinoma of the colon

**Ashley Bennett Palmer**, Seattle, State University of Iowa College of Homeopathic Medicine, Iowa City, 1907, died in the Swedish Hospital August 15, aged 78, of myocarditis

**Charles Delmer Rilance** \* Denver, McGill University Faculty of Medicine, Montreal, Que., Canada, 1906, served overseas during World War I, at one time superintendent of the Jeffrey Hale's Hospital, Quebec, Que., Canada, on the staff of the Presbyterian Hospital, associate physician at the Mercy Hospital, examining physician for local board number 2, died August 15, aged 62, of heart disease

**Frank John Walz**, Wilkesburg, Pa., Jefferson Medical College of Philadelphia, 1896, member of the Medical Society of the State of Pennsylvania, died in the Hillview Sanitarium, Washington, August 2, aged 72, of cerebral hemorrhage, hypertension and Parkinson's disease

**John Marion Whitfield**, Panama City, Fla., University of Alabama School of Medicine, 1908, member of the Florida Medical Association, served during World War I, died in the Veterans Administration Facility, Montgomery, Ala., August 15, aged 66, of brain tumor

**Fritz Carl Yeck**, Mercedosa, Ill., Rush Medical College, Chicago, 1903, died August 11, aged 68

#### KILLED IN ACTION

**Ben Richard Bronstein**, Manchester, N. H., Tufts College Medical School, Boston, 1940, diplomate of the National Board of Medical Examiners, on the resident staff of the Eliot Hospital, lieutenant (jg) medical corps U. S. Naval Reserve, a new vessel to be named in his honor, according to the Bureau of Medicine and Surgery, died as a result of the torpedoing of the U. S. S. *Jacob Jones* off Cape May, N. J., Feb. 28, 1942, aged 26, officially declared deceased by the Navy Department March 5, 1942



LIEUT. (JG) BEN R. BRONSTEIN,  
(MC), U. S. N. R., 1915-1942

## Correspondence

### "HOPE (FALSE) FOR THE VICTIMS OF ARTHRITIS"

To the Editor —Paul de Kruif's enthusiastic article in this month's *Reader's Digest* entitled "Hope for the Victims of Arthritis" might better have been called "False Hope for the Victims of Arthritis."

Since its publication I have had many inquiries from all parts of the United States both from physicians and from patients with arthritis. Dr. de Kruif's paper concerns Ertron, a vitamin D preparation manufactured by the Nutrition Research Laboratories, Chicago, and reviews a report of Dr. R. Garfield Snyder, who for the past six years has conducted a study of this in various forms of arthritis.

The objection which I have to the article in the *Reader's Digest* is that it stimulates great hope in the minds of patients with arthritis for a therapeutic agent of uncertain, if of any, permanent value, which is quite expensive, and the manufacturers of which have carried on a most intensive advertising campaign while the preparation is still on trial.

Also it states that "The treatment is now also under test by Dr. Paul Magnuson at Chicago's Northwestern University, at Columbia University in New York under Dr. Ralph Boots, and by Dr. R. H. Freyberg at the University of Michigan. It is spreading rapidly into medical practice."

Dr. de Kruif did not ask either Dr. Freyberg's or my opinion regarding our results. Reports have already been published from Dr. Freyberg's clinic, as well as from our own, concerning Ertron. Dr. Freyberg is certainly unenthusiastic concerning its value (Freyberg, R. H. *Treatment of Arthritis with Vitamin and Endocrine Preparations. Emphasis of Their Limited Value*, *THE JOURNAL*, Aug 8, 1942, p. 1165). He states "Of the many newer forms of treatment for chronic arthritis, one of the most highly advertised is treatment with massive doses of vitamin D. I know of no rationale for such therapy" and "Results of this entire study of vitamin D therapy are certainly far from impressive of great value in this form of treatment! It is beneficial in only a minority of cases, although in some instances significant improvement occurred which could be explained only by the effect of vitamin D or a coincidental natural improvement. In the majority of cases, improvement when it occurred was only symptomatic and temporary, seldom could the course of the disease be considered to be favorably altered. In view of these facts vitamin D in massive doses should not be used with a comfortable feeling that great benefit is certain to result."

Dr. Charles Ragan analyzed the results of Ertron treated rheumatoid arthritis patients in our clinic and gave these results as a discussion to Dr. Snyder's paper before the meeting of the American Rheumatism Association in June 1942 (*Ann Int Med* 19:128 [July] 1943). He stated "At the Arthritis Clinic of the Presbyterian Hospital, New York, we had 31 cases. These patients were admittedly a difficult group of cases. Eighteen of the patients developed some toxic manifestations, usually nausea and vomiting which promptly cleared after cessation of the treatment. As far as improvement goes, we were struck by one feature of the drug, namely that 7 of the patients felt very much better. In only 1 patient could we see any objective signs of improvement. Seven showed a significant drop in sedimentation rate, 8 were probably improved, but the result was not very striking. Sixteen showed no improvement at all. One remained well after he stopped the drug. The remainder relapsed immediately after the drug was discontinued."

Since 1942 we have continued this study with a very small group of patients who were unable to take gold therapy. We have relied for our treatment of rheumatoid arthritis on (1)

— general care of patient, (2) rest, (3) gold therapy, (4) transfusions, (5) physical therapy, (6) climate, (7) cod liver oil. In my opinion there is probably no difference between Ertron and any other high dosage vitamin D preparations. The therapeutic value of such preparations remains unproved. Some of the patients definitely felt better while taking it, but this can also be said of cod liver oil which is much less expensive and which we have recommended in our clinic for a number of years.

Whatever action you wish to take regarding this matter will be satisfactory to me, provided it emphasizes the fact that I certainly do not recommend Ertron as a cure for rheumatoid arthritis.

RALPH H. BOOTS, M.D., New York

To the Editor —The article in the November 1943 issue of the *Reader's Digest* entitled "Hope for the Victims of Arthritis," by Paul de Kruif, has undoubtedly already been called to your attention. However, I am afraid that the average physician is not yet aware of the fact that the sales of vitamin D preparations to the layman have increased more than 500 per cent during the past few days. My experience as a pharmacist, which I took as premedical training, has made me fully realize the extreme danger that can be evolved from such liberal self medication without proper control.

Already I have encountered complaints of nausea and slight diarrhea from some of these patients who, without seeking the proper advice of their family physicians, have resorted to self medication with highly concentrated forms of vitamin D preparations.

It certainly seems advisable at present to forewarn the public of the possibility of hypervitaminosis D and its pathologic significance. The fact that the article stressed the product "Ertron" and not irradiated ergosterol seems, as one would expect, to have made only the impression of "vitamin D for arthritis" to the layman. This can readily be understood from the fact that several of the purchasers are illiterate, and word of mouth therapy has been indeed a headache to many a physician when the case finally reaches his attention.

The effect of erroneous interpretation of articles written for the layman by reputable authors who have, in their efforts to use simple language, neglected the accuracy of those articles has already been seen in the misuse of thyroid, benzedrine sulfate and the sulfonamide drugs. It would be highly advisable to place vitamin D concentrate forms on the "required prescription" list until the public has been made to understand the dangers involved from such self medication without consulting their family physician.

NATHAN ROBERT SACHS,  
5916 Griswold Avenue,  
Cleveland

Medical Student, Ohio State University  
College of Medicine

### DERMATITIS DUE TO HAIR LACQUER AND NAIL POLISH (LACQUER)

To the Editor —Much interest has been aroused by the current reports of Dr. J. B. Howell and Dr. Stephan Epstein on dermatitis due to hair lacquer (*THE JOURNAL* October 16) as well as by the communication of Dr. S. S. Greenbaum in which it was stated that a chemical analysis of the hair lacquer was being made. On communicating with Dr. Greenbaum I learned, as was to be expected, that a chemical study revealed little of real significance. Assuming that a complete analysis could be made, physical factors such as the presence of a wetting agent might be important in enhancing the sensitizing power of the causative ingredient. This is one of the important principles learned in studying dermatitis due to resin finished shorts and fabrics (Neil Harris *J. Allergy* 14:477 [Sept] 1943).

Howell cited an example of dual hypersensitivity to hair lacquer and nail polish (which is essentially a lacquer) and he quoted a similar case reported by Downing. I should like to discuss this subject on the basis of 19 cases of nail polish dermatitis as well as 1 instance of hair lacquer dermatitis seen by me in April 1943. In most of these cases, including the one due to hair lacquer, I was able to use patch tests with a wide variety of substances as well as with the resin that is the actual cause of nearly all instances of nail polish dermatitis as seen today.

Much has been erroneously surmised about the cause of nail polish dermatitis. The first important advance was made by Simon (Nail Polish Eczema, *South M J* 36:157 [Feb.] 1943), who recorded 7 examples of this condition in which hypersensitivity to "formaldehyde sulfonamide resin" was present. At the time this paper was published I had just made tests in a case of this condition with a variety of resins, the only significant positive reaction had been produced by a specimen of melamine-formaldehyde resin. On reading Simon's paper I investigated the matter and discovered that my specimen of melamine-formaldehyde resin actually also contained some p-toluene sulfonamide formaldehyde resin. Thus, what seemed at first to be an interesting group reaction turned out to be a fairly specific positive reaction. I have now studied 19 cases of nail polish dermatitis from this point of view and, except for 1 instance, all have been found to show hypersensitivity to p-toluene sulfonamide formaldehyde resin. Furthermore, I have been able to prove, without a direct chemical analysis, that this same resin exists in a particular straw hat lacquer, and one such example under my care is now pending before the workmen's compensation board for disability produced by contact with this substance. The subject may possibly assume even greater importance when it is realized that patients are being sensitized to a material derived in part from a compound that is chemically similar to sulfanilamide. There is no direct proof of this as yet, but it is interesting that, in 10 cases of nail polish dermatitis in which hypersensitivity to p-toluene sulfonamide formaldehyde resin was present, hypersensitivity also to p-toluene sulfonamide was present in 5. There are many other points of interest revealed by such studies with the patch test, but these will be discussed elsewhere.

In connection with my case of dermatitis due to hair lacquer I had the opportunity of patch testing this patient with a number of resins. While there were mild reactions to two varieties of nail polish, the negative responses to p-toluene sulfonamide formaldehyde resin and a straw lacquer known to contain this substance proved beyond doubt that this resin was not the cause of the dermatitis in this case. There were positive reactions to a "polymerized wood rosin" and to an alkyl resin as well as a mild reaction to a dibasic terpine resin. The chief point is that this patient was not hypersensitive to p-toluene sulfonamide formaldehyde resin, the principal cause by far of nail polish dermatitis as seen today. The patient was unable to ascertain the name of the manufacturer of the hair lacquer. An editorial in *THE JOURNAL*, October 9, refers to an unidentified "new gum" as having been incorporated in the hair lacquer, whereas Howell was told that there were two synthetic resins. It must be noted that the terms gum and resin refer to entirely different classes of substances, although these terms are sometimes used erroneously as synonymous names. I make this point because the toluene sulfonamide formaldehyde resin has been used in straw lacquers under the designation of a "gum." My suggestion is that patients with hair lacquer dermatitis be tested with p-toluene sulfonamide formaldehyde resin (20-30 per cent in acetone) in order to eliminate this substance as an etiologic factor in these instances. Should the test be positive, this would go far toward elucidating the nature of the cause.

Lacquers of numerous types are exceedingly important commercial materials, extensively used in the war effort. Their formulas are complex and often variable. In some instances patch testing will yield valuable clues but without the cooperation of the manufacturer it is wise to be cautious in drawing precise conclusions. What is true of one lacquer may not necessarily hold for another or even for another specimen of lacquer manufactured at some subsequent time by the same concern. Where dermatitis due to a product reaches epidemic proportions, the cause is likely to be found in one ingredient, but it must be remembered that with such complex materials other ingredients may prove to be the sensitizer in occasional instances. Moreover, physical factors may be present to explain the enhanced sensitizing power of such materials. The manufacturer should be fully familiar with the sensitizing potentialities of the substances incorporated in his product and of the product as a whole.

HARRY KEIL, M.D., New York

### SICKNESS, NOT HEALTH, INSURANCE

*To the Editor*—Permit me to urge on you the merit of using wherever possible in the field of "social insurance" the term sickness insurance and avoiding the term health insurance.

In the November 6 issue of *THE JOURNAL*, page 634, in the Statement of General Policies by the Council on Medical Service and Public Relations, under item 4 is the following:

"The Council approves voluntary prepayment medical service under the control of the state and county medical societies in accordance with the principles adopted by the House of Delegates in 1938.

"The medical profession has always been strongly opposed to compulsory health insurance because (1)

It will add strength to our position and argument if we stick to the honest and correct term sickness insurance as used throughout the continental nations of Europe, meaning insurance to meet the cost of sickness (institutional or medical), sickness as an actuarially calculable hazard can be insured against so far as its cost (for diagnosis and treatment) and for indemnity purposes are concerned.

Health insurance was the name given to the English system as a political sales term by Lloyd George to catch the labor vote, begot the issue and gave an appearance of having something more than or other than insurance to provide for care of sickness. Health is not an insurable risk, as has been pointed out by honest actuaries, because even a physician cannot contradict the person who says he or she is sick, at least not in a practical sense.

Health insurance as a political slogan is adopted by the dogooders, the social welfare promoters, the salesman of New Dealism and "social security."

If in all our arguments and public statements we bring the subject down to earth and speak of sickness insurance, we shall strengthen our position and reduce the loose talk of "health insurers" to absurdity.

We oppose compulsion but encourage the thrifty use of insurance to meet the hospital costs of sickness by voluntary plans. We encourage prepayment plans under medical auspices to meet the cost of professional services (preventive, diagnostic and therapeutic). These are voluntary sickness or medical service plans. They are not health insurance.

Pardon my insistence on the point with which I believe you entirely agree. In preparing to beat the Wagner-Murray-Dingell bill and similar legislation, we must tell the people that it compels them into sickness insurance and is in no honest respect a measure which will contribute to health promotion or protection.

HARVEY EMERSON, M.D., Minneapolis

COMMENT—The editor entirely agrees!—L.D.



## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Nov 20 page 789

#### BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery June 20 22 Sec Dr B F Austin, 519 Dexter Ave Montgomery

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## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Acts Revocation of License Issued Without Examination to Applicant Not Licensed Elsewhere**—Goldsmith emigrated from Germany to the United States in 1926 when he was 34 years old. Prior to his entry here 'he had academic education and received advanced degrees'. After arriving here 'he studied for the medical profession and was engaged in medical research under practicing medical specialists and in connection with medical institutions'. He attended the medical schools of New York, Yale and Columbia universities, failing 'in his examinations' in New York and Yale. In 1932 he became a citizen of the United States and thereafter went abroad attending the medical school of the German University of Prague Czechoslovakia, which, according to the reported opinion 'is one of excellent standing' and from which he received the degree of doctor of medicine in 1937. He did not however, receive a license to practice in Czechoslovakia. He then returned to the United States and in 1938 moved to New Hampshire where he was licensed without examination to practice medicine under the provisions of New Hampshire medical practice act which authorizes the issuance of a license without examination to a person

legally qualified to treat human ailments or practice medicine in any state or country whose requirements the board deems equal to those in this state (Public Laws 1926 C 204 §13)

Later, acting in apparent reliance on another section of the medical practice act which authorizes the revocation of a license obtained "by fraudulent means" the board of medical examiners of New Hampshire after notice and hearing revoked Goldsmith's license finding that (1) Goldsmith had obtained his license 'by deliberately and fraudulently misleading the board with respect to his full medical qualifications and (2) if it 'had known at the time of application what it knows now about his medical scholarship and experiences as a result of the evidence in this case it would not have granted him a license without examination. Goldsmith then instituted before the superior court Merrimack County N H proceedings for certiorari. The superior court transferred to the Supreme Court of New Hampshire Merrimack without ruling certain questions involved in the proceedings.

The application for a license without examination it was charged filed by Goldsmith was fraudulent because (1) Goldsmith failed in filling out a portion of the application entitled 'Medical Education to make reference to the fact that he had attended New York and Yale universities and had failed in examinations in their respective medical schools and (2) Gold-



smith had stated in the application that he had been "examined and licensed" in Czechoslovakia, when in fact no license had there been issued to him. In determining whether or not Goldsmith's license was obtained by fraudulent means, said the Supreme Court, we must bear in mind that the medical practice act in this connection requires the fraud to be causal. If fraud was practiced but was of no efficiency in obtaining the license, a condition of the statute for revocation of the license was not met. The court did not believe that there was any evidence before the board on which there could be based a reasonable conclusion of causal fraud in obtaining the license.

With respect to the charge that Goldsmith's application was fraudulent because of the statement that he had been examined and licensed in Czechoslovakia, continued the court, the only pertinent evidence before the board was that a degree in medicine obtained at Prague conferred on citizens of Czechoslovakia the legal right to a license to practice in that country, and that because Goldsmith was not a citizen of Czechoslovakia a special permit was needed, as a formality, and with no question of his medical qualification, but Goldsmith never applied for that special permit. Goldsmith's application for a license in New Hampshire and an appendix accompanying it as a certified translation of various documents disclose that Goldsmith's statement in the application of having been licensed was clearly qualified by setting forth the fact that no license had been issued and the reason why. One requirement of the application was to furnish a "Certified Copy of State or National Board License or Certificate." Goldsmith wrote after this item "is enclosed, translation." The translation of the document which conferred the degree of doctor of medicine on Goldsmith contained the following:

Being an alien, the holder renounces the right to practice medicine within the territory of the Czechoslovakian Republic. He is not entitled to practice medicine in said territory unless he secure a special permit to practice medicine in accordance with section 6 of the law as of June 28, 1929.

Goldsmith's failure to furnish a certified copy of a foreign license was self evident and the reason for the failure definitely explained. The application and appendix thus showed the inaccuracy, considered alone by itself, of the statement of having been licensed, and the statement of the facts amounted fairly to a correction of the inaccuracy. An intent to mislead by the statement of having been licensed cannot fairly be found, and this charge of fraud must be rejected as a basis for revoking the license.

With respect to the charge of fraud in that Goldsmith failed to state the fact that he had failed in examinations in New York and Yale universities, said the court if it can be found that Goldsmith intended to mislead the board by that omission the conclusion that the board was in fact misled is altogether problematic. The omission fairly could be only of minor significance. The failures in examinations could only negligibly detract from his subsequent record as a student and from his experience in research work. The failures occurred early in his study of medicine and within four years after his emigration to this country. If not altogether negative in their bearing on his educational fitness to practice, his later studentship for a period of four or five years, and his incidental research work throughout his course of preparation, were subjected to no criticism.

The court believed that much irrelevant evidence was received at the hearings, such as evidence relating to Goldsmith's skill and conduct in the practice of his profession since his licensing. This evidence, said the court, was apparently received as having some bearing on the charge of fraud in the application, but it could have had none on the question of the causal quality of the alleged fraud. The only charge on which the revocation could be based is of fraudulent means in obtaining the license. The success of the means, which related only to scholarship, could not, under any test of logical relevancy, be proved by evidence of insufficiency of attainments in skill and ethics revealed after the issue of the license.

While the board of medical examiners, said the court, is a body of experts, the issue of causal fraud is to be resolved as an ordinary question of fact with no application of expert or special knowledge. Evidence from which a rational inference sufficient to warrant a finding of probability rather than of mere possibility was required. Evidence to have probative value must be relevant under principles of logic to support a conclusion drawn from it. As no sufficient evidence was presented to establish causal fraud, the order of revocation on the ground of fraud was not rightfully made.

The court concluded, however, that the board should not be compelled to restore a license to Goldsmith. If Goldsmith, said the court, was not "legally qualified" to practice medicine in some other state or country under the standard required by the medical practice act, the board was without power in the first instance to license him without examination and if it did so it acted *ultra vires*. If the original license was granted to Goldsmith without authority, it was void, and no injustice is done to Goldsmith by its revocation on other grounds. It therefore becomes decisive to construe the words "legally qualified" as they appear in the New Hampshire medical practice act. The applicable Czechoslovakian law does not permit the issue of a license to a foreigner unless there was a treaty between the country of which he was a citizen and Czechoslovakia relating to the rights of the nationals of either country to practice medicine in the other country. The court then quoted from a letter written by Cordell Hull, secretary of state, dated May 27, 1943 to the effect that there was not in force nor had there ever been in force between the United States and Czechoslovakia any treaty containing provisions relating to the rights of the nationals of either country to practice medicine in the other country. If, said the court, it might be held that the requirement that an applicant be legally qualified to practice elsewhere is not so insistent as to call for literal compliance with details of merely formal and ministerial observance, so that legal qualification to practice elsewhere may fall short of actual permission to practice there, yet here the lack of a treaty creates an absolute legal disqualification. Although the plaintiff was professionally qualified to practice in Czechoslovakia and hence in this state, in the absence of a treaty it was illegal for him to practice there, and utter illegality or lack of legal right is not within full legal qualification. To be "legally qualified," under a fair construction of the medical practice act, one must have at least a substantive and practical right in addition to the possession of professional attainment, otherwise the word "legally" would be surplusage. Equivalence of professional standards is not enough. An insurmountable bar of the right to practice in Czechoslovakia existing, Goldsmith is barred from a license here without successfully passing an examination. No conditions on which he may practice there have been established. An essential condition of legality without examination is missing.

Accordingly, the court, in effect, refused to set aside the order of the board revoking Goldsmith's license to practice—*Goldsmith v. Kingsford*, 32 A (2d) 810 (N. H., 1943).

## Society Proceedings

### COMING MEETINGS

- American Society of Anesthetists, New York, Dec. 9. Dr. McKinnis L. Phelps, 745 Fifth Ave., New York 22. Acting Secretary.
- Annual Forum on Allergy, St. Louis, Jan. 22-23. Dr. Jonathan Forman, 394 East Town St., Columbus, Ohio.
- Association for Research in Nervous and Mental Diseases, New York, Dec. 17-18. Dr. Thomas E. Bamford Jr., 115 East 82d St., New York 28. Secretary.
- Eastern Section, American Federation for Clinical Research, New York, Dec. 4. Dr. Charles H. Wheeler, 345 East 68th St., New York. Acting Secretary.
- Seaboard Medical Association, Richmond, Va., Nov. 30-Dec. 2. Dr. Clarence P. Jones, 3117 West Avenue, Newport News, Va. Secretary.
- Society for the Study of Asthma and Allied Conditions, New York, Dec. 4. Dr. W. C. Sprim, 116 East 53d St., New York. Secretary.
- Southern Surgical Association, New Orleans, Dec. 7-9. Dr. Arthur Ochsner, 1430 Tulane Ave., New Orleans. Secretary.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Heart Journal, St. Louis

26 291-434 (Sept) 1943

- Absence of Conspicuous Increments of Venous Pressure After Severe Damage to Right Ventricle of Dog with Discussion of Relation Between Clinical Congestive Failure and Heart Disease. I. Starr, W. A. Jeffers and R. H. Meade Jr.—p. 291
- \*Tetralogy of Fallot. I. Feigin and J. Rosenthal—p. 302
- Myocardial Infarction Indicated by Electrocardiographic Pattern in Which T<sub>1</sub> is Lower than T<sub>2</sub>. Report of 45 Cases. W. Dressler—p. 313
- Effects of Various Sulfonamide Drugs on Electrocardiogram of Dog. Roberta Hafkesbrung, Esther M. Greisheimer and Grace F. Wertenberger—p. 333
- Basal Weight Level in Treatment of Congestive Heart Failure. J. I. Goodman and J. F. Corsaro—p. 338
- Bicuspid Aortic Valves and Bacterial Endocarditis. S. Koletsky—p. 343
- Tilting Ballistocardiograph. R. W. Wilkins—p. 351
- Comparison of Value of Weltmann Reaction and Erythrocyte Sedimentation Rate in Patients with Rheumatic Heart Disease. S. Scherlis and D. S. Levy—p. 355
- Roentgenologic and Electrocardiographic Changes in Normal Heart During Pregnancy. A. G. Hollander and J. H. Crawford—p. 364
- Effect of Trichlorethylene on Human Canine and Rabbit Electrocardiogram. J. F. Mallach, G. H. Marquardt and S. C. Werch—p. 377
- Tumors of Heart with Report of Primary Fibromyxosarcoma of Left Auricle and Pulmonary Vein Associated with Multiple Tumors of Mesentery and Alimentary Tract. J. M. Ravid and J. Sachs—p. 385
- \*Significance of Vascular Hyperreaction as Measured by Cold Pressor Test. Observations on 200 Normal Subjects over Age of 40. H. I. Russek—p. 398

**Tetralogy of Fallot**—Feigin and Rosenthal present histories of 2 patients in whom at necropsy there were changes in the heart which constitute the tetralogy of Fallot, namely right ventricular hypertrophy, pulmonic stenosis, interventricular septal defect and dextroposition of the aorta. The patients were 53 and 43 years of age respectively. These cases are unusual particularly because of the long period of survival. In both there were factors which tended to alleviate the serious functional changes. These factors may explain, in part, the unusual longevity of both patients. The first patient is believed to have had originally an Eisenmenger complex which differs from the tetralogy of Fallot only in the absence of pulmonic stenosis. Rheumatic pulmonic valvulitis acquired some time after the age of 37 years resulted in pulmonic stenosis, completing the tetralogy and contributing greatly to his disability and death. The second patient had the true tetralogy from birth. The presence of patency of the ductus arteriosus and later, of systemic hypertension may have helped alleviate the cardiodynamic derangement and contributed to her longevity.

**Vascular Hyperreaction and Cold Pressor Test**—Russek's observations on 200 normal male subjects over the age of 40 years fail to support the idea that 'vascular hyperactivity' is a significant factor in the development of essential hypertension. The subject remained recumbent in a quiet room and blood pressure readings were taken until a basal level was reached. The rest period was twenty to thirty minutes, and usually four to five readings were made. The sphygmomanometer cuff remained on the arm during the whole procedure and when the lowest level of blood pressure was reached the free hand was placed in a basin of water at a temperature of 4°C. The hand was kept immersed to a level just above the wrist for sixty seconds. The blood pressure was measured at thirty and sixty seconds. The response was recorded as the difference between the basal level and the maximum reading. Subjects whose response exceeded 20 mm. systolic and 15 mm.

diastolic were called hyperreactors. Those whose response did not exceed these figures were designated as hyporeactors. Forty-one per cent of the entire group were hyperreactors. The incidence of hyperresponse increased with advancing age. The average response of both hyporeactors and hyperreactors increased with age, consequently a hyporeactor at 40 years might become a hyperreactor at 60 years. The increased response was attributed to changes in the threshold for pain and increasing vasomotor lability with succeeding decades. There is no support for the view that the cold pressor response is characteristic for the individual throughout life. The combined incidence of hyperresponse and hypertension in the subjects 60 to 69 years of age was almost three times the incidence of hyperresponse in the school children observed by Hines. There was no relationship between hyperresponse and a positive family history of hypertensive cardiovascular disease. Hyperresponse among normal subjects in the later decades of life is unrelated to essential hypertension.

#### American J. Obstetrics and Gynecology, St. Louis

46 333-478 (Sept) 1943 Partial Index

- Superficial Noninvasive Intraepithelial Tumors of Cervix. R. van Dyck Knight—p. 333
- Libroids in Pregnancy. J. H. Randall and L. D. Odell—p. 349
- Effect of Pregnancy and Puerperium on Thiamine Status of Women. Helen S. Lockhart, S. Kirkwood and R. S. Harris—p. 358
- Hemorrhage as Most Important Cause of Maternal Death. C. A. Gordon—p. 366
- Influence of Pregnancy on Location of Center of Gravity. Postural Stability and Body Alignment. E. Corinne Fries and F. A. Hellebrandt—p. 374
- Significance of Erythrocyte Sedimentation Rate in Pelvic Pathology. Katherine Y. Y. Li—p. 381
- Pregnancy and Double Uterus. H. C. Taylor—p. 388
- Observations on Elderly Primigravida. H. W. Erving and H. A. Power—p. 395
- Local Use of Acid Media and Sulfur Drugs in Management of Cervicitis and Vaginitis. M. A. Roblee—p. 400
- Uterine Contraction Pattern of False Labor and Its Relation to Pre-mature Labor. Study of 16 Patients with Lorand Tocograph. D. P. Murphy—p. 408
- Parasitic Ovarian Cysts. H. I. Kantor—p. 412
- Caudal Anesthesia in 160 Obstetric Cases. V. Parrett—p. 417
- Use of Endocervical and Endometrial Smears in Diagnosis of Cancer and of Other Conditions of Uterus. G. N. Papanicolaou and A. A. Marchetti—p. 421
- Method of Obtaining Endometrial Smears for Study of Their Cellular Content. W. H. Cary—p. 422
- Use of Precoital Douche in Cases of Infertility of Long Duration. J. MacLeod and R. S. Hotchkiss—p. 424
- Clinical Effects of Synthetic Estrogen Hexestrol. R. C. McElroy, E. G. Snyder and J. H. Clark—p. 446
- Vulvovaginal Mycosis. F. S. Rogers—p. 450

#### American Journal of Ophthalmology, Cincinnati

26 901-1010 (Sept) 1943

- Eye Manifestations of Xeroderma Pigmentosum. A. B. Reese and I. E. Wilber—p. 901
- American Board of Ophthalmology Earns About Written Examinations. S. J. Beach—p. 911
- Use of Vasodilators in Acute Fundus Disease. F. C. Cordes—p. 916
- Roentgenography of Exophthalmos with Notes on Roentgen Ray in Ophthalmology. R. L. Pfeiffer—p. 928
- Reply to Certain Criticisms of Aniseikonia. W. B. Lancaster—p. 943
- \*Pigmentary Degeneration of Retina and Nerve Type of Deafness. W. A. Sirles and H. Slaughter—p. 961
- Convergence Tests. J. I. Pascal—p. 967
- Case of Congenital High Myopia with Fundus Changes. H. Elwyn and W. S. Knighton—p. 969

**Pigmentary Degeneration of Retina and Nerve Type of Deafness**—Sirles and Slaughter report 12 cases of retinitis pigmentosa. The patients were examined both subjectively and objectively and were considered to have typical cases of this disease. A careful otolaryngologic history was obtained and thorough examinations were made including audiograms of all patients. Of the 12 patients 6 were deaf as shown by audiograms and showed the typical nerve type of deafness. Only 4 of these gave a history of hearing impairment. Three of the 4 patients who gave a history of deafness had noticed this symptom from two to twenty-eight years before they noticed any eye symptoms. It is suggested that a common germplasm defect is present in theanlage of the inner ear and the retina.

## Am J Syphilis, Gonorrhea and Ven Dis, St Louis

27 525-656 (Sept) 1943

- \*Penicillin Sodium in Treatment of Sulfonamide Resistant Gonorrhea in Men Preliminary Report J F Mahoney, C Ferguson, M Buchholtz and C J Van Slyke—p 525
- Syphilis of Liver R D Hahn—p 529
- \*Chemotherapeutic Prophylaxis with Sulfonamide Drugs II The Effect of Small Doses of Sulfathiazole or Sulfadiazine on the Mental Efficiency and Hand Eye Coordination F W Reynolds and G W Shaffer—p 563
- Concurrent Use of Sulfathiazole and Hot Baths in Treatment of Sulfathiazole Resistant Case of Gonococcal Infection Suggestion for Armed Services N Jones and S L Warren—p 572
- Problems in Epidemiology of Venereal Disease in Wartime T Rosenthal—p 581
- Chemotherapy of Experimental Lymphogranuloma Venereum in Mice F T Callomon and H Brown—p 590
- \*Sulfadiazine and Sulfathiazole Therapy in Lymphogranuloma Venereum and Chancroid Report of 30 Cases R O Noojin, J L Callaway and W Schulze—p 601
- Gonorrhea from Standpoint of Army E B Howard—p 607
- Postural Hypotension in Tabes Dorsalis Case Report A C Woofter and A V Deibert—p 616
- Quantitative Complement Fixation Test for Syphilis in Malaria Treated Syphilis Effect of Diluent J R Doraklosh—p 623
- Unusually High Icterus Index in Patient with Fatal Hepatic Necrosis Following Mapharsen Case Report W I Gester, D Turnoff and T G Schnabel—p 629

## Penicillin Sodium in Sulfonamide Resistant Gonorrhea

—Mahoney and his collaborators employed penicillin sodium therapy for 75 male patients hospitalized for sulfonamide resistant gonorrhea. All patients displayed evidence of purulent or mucopurulent urethritis, and *Neisseria gonorrhoeae* was demonstrated by both smear and culture methods. With one exception all patients had failed to respond to sulfonamide therapy. The routine therapy covered a period of forty-five hours and consisted of an intramuscular injection of 10,000 Florey units of penicillin sodium every three hours, night and day. The site of injection was the gluteal muscles. Distilled water 2 cc for each 10,000 units was used as the solvent. A 22 gage needle 1 1/2 inches in length was employed. The diagnosis of gonorrhea was established by smear and culture and the identification of *Neisseria gonorrhoeae* confirmed by the characteristic sugar fermentation reactions. The term "cure" was used to mean freedom from all clinical evidence of infection and negative smear and culture findings in secretions collected on at least three different days following the completion of treatment. On this basis 74 of the 75 patients responded in a satisfactory manner and 1 was a therapeutic failure. This patient has been retreated without evidence of sensitization. Additional observations indicate that a treatment period of fifteen hours, with an appreciable reduction in the total amount of the drug, may be found effective.

## Effect of Sulfonamides on Mental Efficiency and Hand-Eye Coordination

—Reynolds and Shaffer point out that the widespread use of small doses of sulfonamide drugs as chemotherapeutic agents for the prevention of venereal infections (gonorrhea, chancroid and lymphogranuloma venereum), especially by the armed forces, makes desirable some information as to the effect of these drugs on the physiologic and psychologic processes on which fighting efficiency depends. A study was undertaken to determine what effects sulfathiazole and sulfadiazine have on mental efficiency and on hand to eye coordination. There were two groups of subjects for this study (A) a group of 24 army medical officers and (B) a group of 49 university senior students. In each group, preliminary examinations were made in order to establish a base line. Sulfathiazole or sulfadiazine was administered in divided doses over a twenty-four hour period and the same test repeated six hours and (in group B only) thirty hours after last dose of the drug had been given. Half of the subject group A received a total of 6 Gm of sulfathiazole each, other half receiving inert placebos similar in appearance to sulfathiazole tablets. In group B each of 19 subjects received 4 Gm of sulfathiazole, 20 subjects received 4 Gm of sulfadiazine and 10 were given inert placebos. Comparison of sulfonamide treated groups with controls reveals statistically valid change in mental

coordination following either drug. A few subjects receiving sulfathiazole appeared to have an idiosyncrasy to the drug, since their performance was notably below that of all others. None of the subjects who were given sulfadiazine showed such an idiosyncrasy.

**Sulfadiazine and Sulfathiazole in Lymphogranuloma Venereum and Chancroid**—The report by Noojin and his collaborators concerns treatment of 10 patients with lymphogranuloma venereum, 10 patients with chancroid and 10 patients with lymphogranuloma venereum and/or chancroid. Half of each group were treated with sulfadiazine and half were treated with sulfathiazole. Six Gm of the respective drugs were given the first day and 3 Gm daily thereafter for twenty days, or a total of 66 Gm. The clinical results with both drugs were good. They seemed to be equally efficacious. In all patients the Frei and Ducrey tests were unaltered at the end of the treatment period and were unchanged in 11 patients seen six months later. Sulfadiazine or sulfathiazole therapy prevented lymph node suppuration and drainage where this had not already occurred. Only 1 patient out of 30 had to stop work because of a toxic drug reaction. Nevertheless leukocyte count and hemoglobin determinations on peripheral blood and urinalysis should be done every three or four days regardless of the sulfonamide used. Since drug reactions, particularly nausea, are more common with sulfathiazole than with sulfadiazine, the latter is the drug of choice.

## American Review of Tuberculosis, New York

48 131-204 (Sept) 1943

- Tuberculous Infection in People Dying of Causes Other Than Tuberculosis H C Sweany, S A Levinson and A M S Stadnichenko—p 131
- Action of Artificial Gastric Juice and Duodenal Secretions on Tubercle Bacilli C Floyd and C G Page—p 174
- Experimental Tuberculous Pleural Effusion Causal Relationship of Tubercle Bacilli and of Specific and Nonspecific Protein to Its Production W S Lemon and W H Feldman—p 177
- Nocardia Asteroides Its Pathogenicity and Allergic Properties C H Drake and A T Henrici—p 184

## Annals of Internal Medicine, Lancaster, Pa.

19 405-566 (Sept) 1943

- Physiologic Reactions of Thyroid Stimulating Hormone of Pituitary II Effect of Normal and Pathologic Human Thyroid Tissues on Activity of Thyroid Stimulating Hormone R W Rawson, Ruth M Graham and Charlotte B Riddell—p 405
- Personnel Selection Short Method for Selection of Combat Officers C W Heath, W L Woods, L Brouha, C C Seltzer and A V Bock—p 415
- Postconcussion Syndrome—A Critique D Denny Brown—p 427
- \*Disabling Changes in Hands Resembling Sclerodactylia Following Myocardial Infarction A C Johnson—p 433
- Adjustment in Wartime E L Boitz—p 457
- Neurogenic Polycythemia G Carpenter, H Schwartz and A E Walker—p 470
- Role of Central Factors in Pathogenesis of Rheumatic Disorders R Pemberton and C W Scull—p 482

**Sclerodactylia-like Changes Following Myocardial Infarction**—Johnson observed trophic changes of the hands in 39 (21 per cent) of 178 consecutive cases of myocardial infarction. The appearance and course of these alterations were not similar to those seen in arthritis, but they resembled closely those in the hands of patients suffering with scleroderma and of patients having an abortive form of Raynaud's disease. The author presents the clinical observations on the 39 cases in a table. The term "postinfarction sclerodactylia" is offered as a name for this syndrome. The author thinks that many cases are the present time classified as atypical arthritis, causing the cause of "postinfarction" of the fingers, produced by reflex vasoconstriction of lesser ischemic effects of the local anoxemia of the resulting from of the damaging

# Archives of Otolaryngology, Chicago

38 205 308 (Sept) 1943

- End Results of Treatment of Malignant Lesions of Nasopharynx G B New and W Stevenson—p 205
- \*Peritonsillitis and Peritonsillar Abscess with Special Reference to Treatment with Sulfonamide Compounds B Capus p 210
- New Approach to Treatment of Snoring Preliminary Report J F Strauss—p 225
- Abscess of Pterygomaxillary Space with Involvement of Mandibular Foramen Review of Literature and Report of Case I I Shure—p 230
- Cholesteatoma of External Auditory Meatus I Altman and J G Wiltner—p 236
- Fate of Liquid Petrolatum Instilled into Nose T J Novak Jr—p 241
- Influence of Vestibular Stimulation on Fusion Frequency of Flicker in Normal Subjects and in Patients with Postconcussion Syndrome E Simonson M S Fox and N Enzer—p 245
- Hearing Aid from Patient's Point of View W Hughson and F A Thompson—p 252
- Post Therapy Observations on over 2 000 Subjects with Speech Defects C H Voelker—p 261
- Syndrome of Larynx G B Ferguson—p 265
- Paranasal Sinuses Review of Literature for 1942 S Salinger—p 270

**Sulfonamides in Peritonsillitis and Peritonsillar Abscess**—Capus used sulfonamide compounds in 33 unselected cases of peritonsillitis and peritonsillar abscess. In the first 10 cases sulfanilamide was employed in the following 19 cases sulfathiazole, and in the last 4 cases sulfadiazine. Analysis of the results of this study lead the author to believe that peritonsillitis and peritonsillar abscess are due principally to a mixed infection rather than to the beta hemolytic streptococcus. The commonest type of mixed infection was that due to combination of the beta hemolytic streptococcus and Staphylococcus aureus alone or with other organisms. Sulfanilamide has a beneficial action, since it causes spontaneous regression in some cases and tends to prevent complications. However, recurrences are common with its use. Sulfathiazole is far superior to sulfanilamide causing resorption in a greater number of cases, and recurrences are not common with its use. Sulfathiazole has a decided masking action on the symptoms without necessarily preventing progression to abscess formation and so enables one to avoid incision and drainage in most cases of abscess formation, or at least to wait for clearcut evidence of fluctuation before carrying out this procedure. Sulfadiazine is probably the drug of choice, but further study is needed to confirm this conclusion. The dreaded complications of peritonsillar abscess are uncommon when therapy with one of the sulfonamide compounds is employed. Conservative treatment supplemented by use of a sulfonamide compound is far safer and more satisfactory than tonsillectomy.

# Archives of Pathology, Chicago

36 237-334 (Sept) 1943

- Utilization of Calcium by Rats on High Protein Low Calcium and High Carbohydrate Low Calcium Diets. Effect of Supplementary Vitamin D L G Wesson and P E Boyle—p 237
- Influence of Vitamin D on Structure of Teeth and of Bones of Rats on Low Calcium Diets P E Boyle and L G Wesson—p 243
- Incomplete Rupture of Aorta Not Followed by Dissecting Aneurysm Report of 2 Cases F Wenger—p 253
- Advantages of Egg Culture Technique in Infectious Diseases I Menzies (a) Primary Isolation of Organisms from Spinal Fluid (b) Culture of Spinal Fluid During Treatment with Sulfonamide Compounds R J Blattner Florence M Heys and A F Hartmann—p 262
- Chemical Basis of Injury in Inflammation V Menkin—p 269
- Hypertensive Disease of Brain I M Scheinker—p 289
- Experimental Appendicular Mucocoele Myxoglobulosis and Peritoneal Pseudomyoma A S Rubnitz and H T Hermann—p 297
- Disseminated Lupus Erythematosus—An Allergic Disease? R A Fox—p 311

# Bulletin of Johns Hopkins Hospital, Baltimore

78 143 238 (Sept) 1943

- Studies on Mitotic Activity of Corneal Epithelium. Methods. Effects of Colchicine Ether Cocaine and Ephedrine W Buschke J S Friedenwald and W Fleischmann—p 143
- Electrocardiographic Changes Associated with Thiamine Deficiency in Pigs M M Wintrobe R Mayaga S Humphreys and R H Gollis Jr—p 169
- Plasma Proteins in Disseminated Lupus Erythematosus A F Coburn and D H Moore—p 196
- Scrupulectomy and Cleidectomy in Rat L W Pratt—p 223

# Canadian Journal of Public Health, Toronto

34 393 432 (Sept) 1943

- Facilitation Process and Venereal Disease Control Study of Source Finding and Suppression of Facilitation in Greater Vancouver Area D H Williams—p 393
- \*Tetanus Toxoid and Its Use for Active Immunization D T Fraser D I Maclean M D Orr, H C Plummer and T O Wishart—p 406
- Tularaemia in Seven Persons Coulee Alberta M R Bow and J H Brown—p 415
- Examination of Sera from Persons in Manitoba Ontario and Quebec for Neutralizing Antibodies (Western Type) of Encephalomyelitis C A Mitchell and J W Pullin—p 419

**Tetanus Toxoid for Active Immunization**—Fraser and his associates state that by the use of a medium of veal infusion and hog stomach autolysate tetanus toxin of high titer has been obtained. The use of this toxoid did not cause anaphylactic reactions. The response in antitoxin in persons given three doses of tetanus toxoid is better than in persons given two doses. A small (0.1 cc) secondary stimulus given ten weeks after the primary inoculation caused 85 per cent of 20 persons to show an increase in antitoxin titer within nine days. A combined antigen of tetanus toxoid with typhoid vaccine (T A B T) given in three 1 cc doses three weeks apart stimulated the production of at least 0.02 unit of antitoxin in 99 per cent of 79 persons and at least 0.1 unit in 87 per cent. Although the conditions for a critical comparison are lacking, since the identical antigen was not used in the two groups compared, the results suggest that tetanus toxoid with the typhoid element added (T A B T) is more effective than without. Under field conditions the effectiveness of a recall dose of 0.5 cc of T A B T was explored. Of 168 persons 92 per cent had at least 0.1 unit of antitoxin per cubic centimeter of serum following the first recall dose. In general the antitoxin response to a recall dose is less in persons with low levels of antitoxin than in persons with relatively higher levels. The levels of antitoxin are distinctly higher in persons one year after a recall dose than one year after the primary inoculations. From ten days to seventeen months after a second recall dose given one year after the first recall dose all of 67 persons had at least 0.1 unit per cubic centimeter of serum. The recommendation is put forward that the first recall dose of T A B T (fourth dose) be given not less than three and not more than six months after the primary series of injections. Modification of this schedule may be advisable in order that a recall dose may coincide with the entry of troops into the combat zone.

# Endocrinology, Springfield, Ill

33 121-188 (Sept) 1943

- Factors Influencing Reproductive Cycle in Chimpanzee Period of Adolescent Sterility and Related Problems W C Young and R M Yerkes—p 121
- Effect of Thyroidectomy on Resistance to Low Environmental Temperature C P Leblond and J Gross—p 155
- Studies on Response of Hypophysectomized Rats to Intraperitoneal Glucose Injections S Joseph Malvina Schweizer and R Gaunt—p 161
- Effects of Pituitary Gonadotropins on Estrual Phenomena in Ewes E J Warwick and L E Casida—p 169
- Relation of Body Weight to Liver Glycogen Storage Potency of Adrenal Cortical Extracts H C Bergman and D Klein—p 174
- Effect of Continued Oral Administration of Diethylstilbestrol on Blood Pressure, Heart Rate and Respiration of Albino Rats C S Matthews F E Emery and P L Weygandt—p 177
- Further Study of Specificity of Diabetogenic Effect of Diethylstilbestrol in Partially Pancreatectomized Rat D J Ingle and J Nezamis—p 181

# Journal of Infectious Diseases, Chicago

73 1-92 (July-Aug) 1943

- Direct Plasmodicidal Effect of Quinine Atabrine and Plasmochin on Plasmodium Lophurae R I Hewitt and A P Richardson—p 1
- Occurrence of Sulfonamide Resistant Pneumococci in Clinical Practice M Hamburger Jr L H Schmidt Clara L Sessler J M Rueggerger and Eda S Grupe—p 12
- Antigenic Analysis of Trichinella Spiralis L R Melcher—p 31
- Factors Affecting Genetic Resistance of Mice to Mouse Typhoid J W Gowen and M Lois Calhoun—p 40
- Comparative Effect of Certain Sulfonamide Compounds on Nicotinamide Stimulated Metabolism S Berkman and S A Koer—p 57
- Studies on Experimental Bartonella Muris Anemia in White Rat W R Kessler—p 65
- Chronic Typhoid in Mice D Weinman—p 83

## Journal National Malaria Society, Tallahassee, Fla 2 5-78 (No 1) 1943

- War and Our Opportunity for Service J H O'Neill—p 5  
 National Malaria Society A Sketch M F Boyd—p 15  
 Variations in Asexual Cycle of Plasmodium When Transferred to Abnormal Host W B Redmond and R M Prather Jr—p 25  
 Review of Recent Research on Drug Prophylaxis and Treatment of Malaria (Report of National Malaria Society) H C Clark—p 31  
 \*Malaria Mortality and Morbidity in United States for Year 1941 E C Faust—p 39  
 Emergent Vegetation, Mechanical Properties of Water Surface and Distribution of Anopheles Larvae C E Renn—p 47  
 Studies on Mode of Action of Quinine in Avian Malaria E Waletzky and H W Brown—p 53  
 Methods Used for Investigating Certain Hydrologic Problems Related to Malaria M H Goodwin Jr and Louisa G Lenert—p 63  
 Totaquine and Conservation of Quinine H E Melency—p 77

**Malaria in the United States in 1941**—Faust stresses that the 1941 reports reveal a continued decline in malaria deaths, which began in 1936 and have with few exceptions decreased year by year. Malaria in the U S Army in the continental United States has consistently paralleled that of the civilian population but since 1918 has been considerably lower in cases and much lower in deaths. The former has been brought about by increasing prophylactic measures within the posts and in the immediate vicinity of army camps, the latter by early and accurate diagnosis and treatment of cases. The participation of military personnel from Northern states in the Louisiana-Texas area maneuvers in the early fall of 1941 was reflected in increased malaria cases in these troops on their return to quarters in the Fifth and Sixth Corps areas. This suggests that malaria is not necessarily declining but is only temporarily suppressed in endemic foci and awaits completely nonimmune subjects for reactivation. Soldiers and civilian employees in tropical defense bases will be contracting malaria in tropical defense and combat areas and will sooner or later be returned to the continental United States as convalescent carriers. This will offer a potential opportunity for heterologous tropical strains of malaria plasmodia to become established in our midst. Thus in the near future a new malaria problem may significantly alter the present trend in reduced malaria morbidity and mortality in the United States.

## Journal of Pediatrics, St Louis

23 251-370 (Sept) 1943

- Macrosonia, Cardiac Hypertrophy, Erythroblastosis and Hyperplasia of Islands of Langerhans in Infants Born to Diabetic Mothers H C Miller and H M Wilson—p 251  
 Studies of Nitrogen and Fat Metabolism on Infants and Children with Pancreatic Fibrosis A T Shohl, C D May and H Schwachman—p 267  
 Skin Disease of Newborn Infant Consideration of Relationships Between Leiner's and Ritter's Disease with Case Report M E Sano—p 280  
 \*Rh Factor and Its Importance in Transfusion for Anemias of Erythroblastosis and Other Causes Case Reports H R Brown Jr and P Levine—p 290  
 \*Mortality in Acute Staphylococcal Empyema in Infants and Children Study of 33 Surgically Treated Patients W E Ladd and H Swan—p 297  
 Use of Acetylarsan in Treatment of Congenital Syphilis in Children J Yampolsky and C C Powell—p 303  
 Whole Lactic Acid Evaporated Milk Does Not Require Refrigerator H G Taylor and R W Roberts Jr—p 307  
 Use of Cereal Thickened Formulas to Promote Maternal Nursing C A Stewart—p 310  
 Emotional Disturbances of Constant Pattern Following Nonspecific Respiratory Infections Helen G Richter—p 315  
 Use of Suppository as Vehicle in Sulfonamide Therapy J H Park Jr—p 326  
 Trichinosis During Childhood H A Slesinger—p 327  
 Treatment of Kaposi's Varicelliform Eruption with Sulfonamide Drugs Angie Connor and J E Gonce Jr—p 335  
 Obstruction of Large Bowel in Newborn Infants Due to Congenital Bands J Zaslow—p 337  
 Typhoid Fever in Seven Month Old Infant W Sako and J Fleet—p 340  
 Problems in Safeguarding Adoptions H K Berkley and Mary Ruth Colby—p 344  
 Pulmonary Manifestations Following Ingestion of Kerosene L I Lesser, H S Weens and J D McKey—p 352  
 Acute Infectious Myelitis Following Rubella M H Morris and A Robbins—p 365

**Rh Factor in Transfusion for Anemias of Erythroblastosis**—Isoimmunization with Rh factor can be caused either by repeated transfusions of Rh— patients with Rh+ blood or by pregnancy in Rh— mothers with Rh+ fetuses.

Brown and Levine report 2 cases in which important therapeutic applications of the knowledge of Rh immunization are illustrated. The first patient, an infant 9 days old with diagnosis of erythroblastosis fetalis, was treated with blood transfusions. Prior to the demonstration of anti Rh agglutinins in the mother's serum, three transfusions of the mother's blood were given to the infant with consequent aggravation of the condition. On the use of Rh— blood in the transfusion, an immediate increase in red cell count and hemoglobin was observed. Owing to the susceptibility of the Rh+ fetal blood to the action of maternal agglutinins, Rh+ blood should be avoided in the treatment of erythroblastosis fetalis. The use of Rh— donors is necessary for the treatment of this condition. The second patient, a woman aged 42, was being treated with repeated blood transfusions for liver cirrhosis accompanied by severe anemia. Even though the same donors were used, after a number of transfusions the patient suddenly developed a severe and almost fatal reaction. Each of six donors previously compatible was now incompatible with the patient's serum and all were RH+. When Rh— donors were used, no reaction occurred. The authors point out that 90 per cent of all intra-group transfusion accidents following repeated transfusions occur in Rh— individuals.

**Mortality in Acute Staphylococcal Empyema in Infants and Children**—Ladd and Swan analyzed the mortality rate in 33 cases of acute staphylococcal empyema in children under 13 years of age. The incidence of staphylococcal empyema was preponderantly highest in the first year of life. Of 33 patients, 22 were less than 1 year old. The mortality rate appeared also to be essentially dependent on the age of the patient. Thus, in 12 patients less than 4 months old the mortality was 66.7 per cent, whereas in 21 patients over 4 months of age the mortality was 4.8 per cent. The presence or absence of complications had no relation to the ultimate outcome. The higher mortality in early infancy suggests an abnormal pathologic and immunologic response to staphylococcal infection in this age group. Postmortem examination revealed in the younger infants the presence of widespread hemorrhagic exudative pneumonia. The progression of the underlying staphylococcal pneumonic process, and not empyema, appeared to be the cause of death.

## Missouri State Medical Assn Journal, St Louis

40 269-304 (Sept) 1943

- Adiposogenital Dystrophy (So Called Froehlich's Syndrome) A A Werner—p 269  
 Contact Dermatitis Its Diagnosis and Treatment N Tobias—p 272  
 Ellis Fischel State Cancer Hospital Report to Physicians of Missouri L V Ackerman—p 276  
 Sodium Sulfocyanate (Thiocyanate) in Treatment of Hypertension D M Petersen—p 279

40 305-338 (Oct) 1943

- Two Hundred Deliveries Under Low Spinal Anesthesia B H Klein—p 305  
 Nonparasitic Cysts of Liver Report of 2 Cases and an Analysis of Literature J M McCaughan and L Rasseur—p 306  
 Pruritus Associated with Menstruation C C Wilson—p 312  
 Problems in Diagnosis of Heart Disease J C Edwards—p 314

## New England Journal of Medicine, Boston

229 423-454 (Sept 9) 1943

- Acute Pericarditis with Special Reference to Changes in Heart Size L Wolff—p 423  
 \*Intraperitoneal Use of Sulfanilamide in Gastrointestinal Resections T J Anglem and H M Clute—p 432  
 \*Antithyamine Factor in Fish P S Owen and J W Ferrebee—p 435  
 General Anesthesia L P Zentgraf and U H Eversole—p 437

**Intraperitoneal Use of Sulfanilamide in Gastrointestinal Resections**—Anglem and Clute used sulfanilamide as a prophylactic agent by local implantation within the peritoneal cavity in 75 cases of gastrointestinal anastomosis or other operative procedures requiring the opening and closure of hollow viscera within the peritoneal cavity. Sulfanilamide was applied intraperitoneally along the suture lines in the viscera. There were no deaths from peritonitis. Clear evidence of intraperitoneal infection was observed post mortem in only 1 fatal case and in this case was not the cause of death. Only 1 patient had a toxic reaction to the drug, a toxic hepatitis with recovery. The experience with this series has convinced the authors of

the value of the local intraperitoneal use of sulfanilamide along the suture lines after gastrointestinal anastomosis and in all cases with peritoneal soiling. The danger of serious toxic reaction to the drug is slight if the intraperitoneal dosage does not exceed an average dose of 8 Gm in adults and if this dose is not immediately preceded or followed by the additional oral administration of a sulfonamide.

**Antithiamine Factor in Fish**—Owen and Ferrebee point out that epidemics of a severe and unusually fatal paralytic disturbance have been observed in animals when fish has been added to their diet. The first symptom is incoordination, which is usually followed in a few days by weakness, hyperesthesia, rigidity and death. The disease is evidently one of thiamine deficiency, since it may be produced by thiamine deficiency under experimental conditions and may be cured by thiamine injections. The disease has been observed following the consumption of carp, Atlantic Coast whiting, Pacific Coast mackerel, Lake Superior and Lake Michigan herring, suckers, smelts, mullets and great northern pike. Diets containing 20 per cent of fish muscle were found to be innocuous, whereas diets containing 10 per cent of whole raw fish promptly produced symptoms. There are a number of reasons why thiamine deficiency of this particular mechanism of origin may not be frequent in man. The portions of fish that are rich in antithiamine factor are for the most part those usually discarded in the preparation of fish for human consumption, that is, viscera, heads, skins and scales. Furthermore, the antithiamine factor is destroyed by cooking or drying.

#### 229 455-494 (Sept 16) 1943

- Endemic Rocky Mountain Spotted Fever in Massachusetts A D Rubenstein and H F Rowley —p 455  
\*Ascorbic Acid Content of Late Winter Tomatoes A D Holmes, C P Jones and W S Ritchie —p 461  
Incidence of Gallstones in Higher Age Groups F I Dessau —p 464  
Kineplastic Amputation of Forearm J D Adams —p 466  
Cancer Results of Treatment I T Nathanson —p 468

#### 229 495-532 (Sept 23) 1943

- Nutritional Requirements in Time of War R M Wilder —p 495  
Sarcoidosis S Katz C P Cake and H R Reed —p 498  
Use of Dalbours Water in Treatment of Skin Diseases G E Morris —p 509  
Dry Ice Burn of Hypopharynx Report of Case J E Quincy —p 510  
Chemical Factors in Inflammation and Cellular Injury V Menkin —p 511

**Ascorbic Acid Content of Late Winter Tomatoes**—Holmes and his associates point out that a number of factors affect the amount of ascorbic acid developed in tomatoes. During the late winter and early spring months tomatoes are commonly found in the stores which in neither color, taste nor physical appearance compare with the high quality of the field grown, vine matured summer tomatoes. As these tomatoes are grown, shipped and sold under conditions quite different from those of the normal, local growing season, it appeared desirable to determine the ascorbic acid content of typical late winter tomatoes. The tomatoes analyzed were obtained from six local stores. It was found that the ascorbic acid content of the late winter tomatoes is only about one third that of summer tomatoes. Hence it is obvious that whereas the late winter tomato possesses attractive decorative features for the table, particularly in salad combinations, it does not have the ascorbic acid value of fresh summer tomatoes or of tomatoes canned six months previously. The homemaker, nutritionist and physician must not consider late winter tomatoes as equivalent to vine matured, sun ripened summer tomatoes as a source of ascorbic acid for the human dietary. In computing the vitamin C value of a diet containing late winter tomatoes one should not assign to them more than one third the ascorbic acid value ordinarily used for fully ripe summer tomatoes.

#### New Jersey Medical Society Journal, Trenton

##### 40 349-378 (Sept) 1943

- Cryotherapy for Common Skin Diseases C C Carpenter —p 354  
Primary Atypical Pneumonia Clinical Description of Disease Based on 250 Cases M Kasich and I S Cohen —p 358  
Anemia of Pregnancy T K Graham —p 363

#### Northwest Medicine, Seattle

##### 42 241-274 (Sept) 1943

- Child as Wartime Problem R H Parry —p 244  
Insects and Their Allies as Causative Agents and Transmitters of Diseases F C Trust —p 250  
Causes of Postoperative Deaths D Metheny, K K Sherwood and B Zimmerman —p 258  
Medical Department of Navy H H Kretzler —p 260  
Relation of Structure of Adrenal Cortex to Function in Hypertension W B Dublin —p 263

#### South Carolina Medical Assn Journal, Florence

##### 39 225-248 (Sept) 1943

- Coronary Embolism Report of Case Complicating Syphilitic Aortitis H R Pratt Thomas —p 225  
Medical Statistics of South Carolina II Factors of Urbanization and County Wealth in State Distribution of Physicians A M Lassek —p 228  
Technic of Management of Hernia Sac K M Lippert —p 233

##### 39 249-262 (Oct) 1943

- Meningitis in Newborn Infant Due to Colon Bacillus J I Waring —p 249  
Tale of Two Sisters (Pseudohermaphroditism) A E Baker —p 251  
Glycine Poisoning in Industry R W Lommack —p 252

#### Surgery, Gynecology and Obstetrics, Chicago

##### 77 225-336 (Sept) 1943

- Oblique, Aseptic, End to End Ileac Anastomosis, Procedure of Choice in Strangulating Small Bowel Obstruction C Dennis —p 225  
Wound Healing—Experimental and Statistical Study III Experimental Observations S A Localio W Casale and J W Hinton —p 243  
Acute Obstructive Cholecystitis and Application of Principles of Its Rational Treatment J H Saint —p 250  
Changes in Extracellular Water at Delivery and in Puerperium L C Chesley and Janet M Boog —p 261  
Thoracic Injuries Review of Cases D C Elkin and F W Cooper Jr —p 271  
Cystosarcoma Phylloides with Consideration of Its More Malignant Variant W G Cooper Jr and L V Ackerman —p 279  
\*Radiodermatitis of Head and Neck with Discussion of Its Surgical Treatment F A Figi G B New and C R Dix —p 284  
Malignant Tumors of Kidney Surgical and Prognostic Significance of Tumor Thrombosis of Renal Vein J R McDonald and J T Priestley —p 295  
Congenital Dislocation of Hip with Special Attention to After Care Period and Late Postreductive Results G Whiston —p 307  
Surgical Treatment of Bronchiectasis Report on 76 Patients H H Bradshaw and J F O'Neill —p 315  
Omphalocele Anatomic and Clinical Considerations N W Specht and E H Shryock —p 319  
Avulsion of Scrotum and Skin of Penis Technic of Delayed and Immediate Repair L T Byars —p 326

**Surgical Treatment of Radiodermatitis**—According to Figi and his collaborators, radiodermatitis often is more serious than the condition for which treatment was given primarily. Overexposure during diagnostic or therapeutic procedures usually is responsible for such lesions, but individual susceptibility is an important etiologic factor. The acute stage of the disease is self limiting unless excessive reaction is present, and surgical treatment is contraindicated during this period. The chronic stage of the process is progressive and there is a decided tendency for epithelioma to develop. Surgical removal is the only means of controlling the condition when secondary irradiation changes are pronounced. Primary closure of the wound is at times possible following excision of the region of radiodermatitis. When this is not feasible, application of a free skin graft or use of a sliding flap or a pedicle flap is required. The ultimate result in these cases as a rule is satisfactory.

#### West Virginia Medical Journal, Charleston

##### 39 297-332 (Sept) 1943

- Medical Aspects of Hypertension I H Page —p 297  
Social Problems of Gynecology and Obstetrics A F Guttmacher —p 300  
Citizenship as Related to Licensure W E Vest —p 307  
Symptoms of Disease of Infantile Paralysis Elizabeth Kenny —p 312

##### 39 333-364 (Oct) 1943

- Chemotherapy of Tropical Diseases Some Aspects of Progress Through Research G A Emerson —p 333  
Tropical Dysenteries I S Maxwell —p 338  
Hookworm C C Fenton —p 341  
Parasites of Livestock in Tropics J H Rietz —p 345  
War Malaria Its Significance in Civilian Practice R H Runtzler —p 346



## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

**British Journal of Anesthesia, Manchester**

18 141-192 (July) 1943

Ether versus Cyclopropane (Statistical Comparison of Circulatory Complications After Abdominal Operations) C. Eisenhart, R. A. Simpson and N. A. Gillespie—p. 141

Method of Keeping Anesthetic Records and Assessing Results M. Nosworthy—p. 160

Anesthetic Record P. Aire—p. 180

**British Medical Journal, London**

2 289-318 (Sept. 4) 1943

\*Rh Factor and Erythroblastosis Fetalis. Investigation of 50 Families R. R. Rice, G. L. Taylor, D. F. Cappel and Marjory N. McFarlane—p. 289

\*Hemolytic Disease of Newborn (Erythroblastosis Fetalis). Its Treatment with Rhesus Negative Blood Janet D. Gimson—p. 293

\*Occurrence of Rh Antigen in Population. Notes on 5 Cases of Erythroblastosis Fetalis E. D. Hoare—p. 297

Note on Rehabilitation of Heart Patients B. Parsons Smith—p. 298

2 319-350 (Sept. 11) 1943

Transfusion Reactions and Fatalities Consequent on Circulatory Overloading R. Drummond—p. 319

Effect on Uterus of Extracts of Gorse (*Ulex Gallii*) W. Smith and A. Wilson—p. 322

Analysis of Acute Respiratory Conditions in African Soldiers W. W. MacNaught and R. M. Murray Lyon—p. 324

Night Vision in Army. Report of 10,333 Tests by A. Lister and J. W. Bishop—p. 325

Filaria in Middle East J. Fine and Livny—p. 327

Determination of Hematocrit Values in Wound Shock. Routine Procedure M. Reiss—p. 328

**Fetal Erythroblastosis**—Race and his co-workers report observations on fifty families in which fetal erythroblastosis was diagnosed. The cases were referred to them by practitioners and pathologists from many parts of Britain. It seems reasonably certain that the diagnosis of erythroblastosis was correct. Of the 50 mothers, 6 were Rh positive and 44 were Rh negative. In the serums of 38 of these Rh negative women were found anti-Rh agglutinins. In spite of the absence of demonstrable anti-Rh agglutinins in 6 Rh negative cases it is highly probable that isimmunization of the mother to the Rh factor played a part, the absence of anti-Rh may in some of them have been due to the length of time since delivery, which on the average was four years as against less than a year for the 38 cases in which antibody was found. While Rh is the blood group factor most commonly involved in the causation of fetal erythroblastosis, it appears certain that other red cell antigens may behave in a similar way. In one pregnancy in five the mother's serum contains an isoagglutinin for an antigen of the A-B-O system of groups present in her fetus. This will always be so when the fetus is of group AB save in about 1 case in 6, in which the mother will also be of group AB. In such a heterospecific pregnancy the mother's natural isoagglutinins might perhaps cause the destruction of her child's red cells. There is reason to believe that all Rh positive children of Rh negative mothers are not equally liable to the disease. In most families two or three positive children seem to be necessary before an affected child is produced. Of the first children borne by the 44 Rh negative mothers 38 were unaffected, 5 were stillbirths or miscarriages and 1 is known to have suffered from the disease. About a quarter of the children diagnosed as having erythroblastosis survived, three fourths were born dead or died mostly within a week of birth.

**Hemolytic Disease of the Newborn**—Gimson reports 19 consecutive cases of hemolytic disease of the newborn. All the mothers were Rh negative and all the infants were Rh positive. Anti-Rh agglutinins were found in the mother's serum in all but 1 case. At the beginning of the series a transfusion of Rh positive blood was given when the condition was such that it was unjustifiable to withhold treatment until the Rh picture had been determined and a supply of Rh negative blood had been obtained. In the first three cases in which Rh positive blood was used there was evidence of continued and even increased hemolysis. Within a few hours or days the hemoglobin and erythrocyte levels had fallen considerably and the

infants were in need of further transfusion. The next transfusion was of Rh negative blood. The rationale of giving Rh negative blood free of agglutinins is that the fetal blood is Rh positive and is undergoing destruction. It is desirable to give blood which is not so destroyed. Further hemolysis of the patient's red cells is not prevented by giving Rh negative blood. Blood is being provided, however, which will not be destroyed more rapidly than normal and on which the infant can live until the hemolytic process of the disease has come to an end. In a few cases mixed transfusions of Rh positive and Rh negative blood were given so that the survival rate of the two types of erythrocyte could be studied. Rh negative erythrocytes were usually found to survive for at least ninety days, whereas Rh positive erythrocytes were often destroyed within a few days of transfusion. All 18 of the infants who were given blood transfusions regained and maintained a normal blood picture, whereas only 7 of a group of 17 treated between 1935 and 1941 progressed satisfactorily. Transfusion with rhesus negative blood free of agglutinins should be employed for the treatment of hemolytic disease of the newborn. A relatively large transfusion is advocated, as no hemolytic reaction need be anticipated. A minimum number of transfusions will be necessary. A store of rhesus negative blood free of agglutinins should be available to all pediatric units and maternity hospitals. Pregnant women who have previously borne an infant with hemolytic disease should be tested for the rhesus factor. If Rh negative, she should be delivered in a maternity institution where Rh negative blood is available. For an infant born jaundiced, with a family history of hemolytic disease, immediate transfusion with Rh negative blood free of agglutinins should be given, no matter what the erythrocyte and hemoglobin levels.

**Occurrence of Rh Antigen in Population**—Hoare determined the incidence of the Rh factor in 1,122 unselected blood donors. There were 949 (84.6 per cent) with Rh positive blood and 173 (15.4 per cent) with Rh negative blood. The author also describes 5 cases of fetal erythroblastosis. In all of them the father and child were Rh positive while the mother was Rh negative. In all cases the mother's serum contained Rh antibodies. At the time these cases occurred the reports that Rh negative blood often survived longer in the circulation of infants with fetal erythroblastosis than Rh positive blood had not appeared, and as there was no theoretical reason against the use of Rh positive blood the Rh grouping of the transfused blood was not determined.

2 351-380 (Sept. 18) 1943

Medical Research in Wartime E. Mellanby—p. 351

Pituitary Hypothyroidism with Impaired Renal Function G. E. Beaumont and J. D. Robertson—p. 356

Human Infection with Bact. *Cholerae* Suis. Report of 2 Cases Hertz Schwabacher, Joan Taylor and M. H. G. White—p. 358

\*Sympathectomy in Treatment of Cryopathies E. D. Telford—p. 360

\*Misuse of Intravenous Neotrophensamine for Vincent's Infection E. C. O. Jewesbury—p. 360

Physiologic Factor in Hemoglobinometry E. F. McCarthy—p. 362

**Sympathectomy for Cryopathies**—The cryopathies include frostbite, immersion foot and hand, trench foot and shelter foot. Telford believes that the inclusion of these lesions in one group is justified by the fact that the pathologic changes are identical, they differ only in the degree of damage. In the treatment of these patients the temperature of the damaged parts must be raised with extreme slowness and caution. A too rapid return to normal will be disastrous. Sympathectomy was advocated in the immediate treatment, but against this suggestion is the fact that after rescue the chilled areas become notably hyperemic. Although the majority of patients appear to make a good recovery with no, or trivial, loss of tissue, others continue to suffer from symptoms which are due to a combination of sclerosis and deficient blood supply. The after troubles most often seen are pain of a burning or tingling type increased by warmth and exertion, persistent indurated swelling, chronic ulcers of pulps or extremities of digital stumps, loss of movement of fingers and toes, and occasionally a sensitization to cold which results in the Raynaud phenomenon. Hyperhidrosis may also be troublesome. These end results are those of vascular occlusion. For these later troubles a sympathectomy may offer some relief. The author treated the later sequences of trauma from

cold by preganglionic sympathectomy in 5 cases. In each of these cases a gratifying relief of symptoms has been obtained. It appears that sympathectomy is worth while in the chronic and painful sequelae of the cryopathies.

**Misuse of Intravenous Neosarsphenamine for Vincent's Infection.**—Jewesbury points out that there still seems to be a fairly widespread impression that intravenous neosarsphenamine is the most potent method of treatment in severe cases of trench mouth or Vincent's infection. Occasional reports of Vincent's infection occurring in patients undergoing antisyphilitic treatment have cast doubt on the efficacy of intramuscular or intravenous arsenic administration in dealing with lesions of the mouth. The author cites histories of 2 men who developed Vincent's infection while undergoing neosarsphenamine treatment for syphilis. He feels that, if the drug is valueless prophylactically, skepticism as to its value as a single intravenous injection for Vincent's angina is even more justified. Treatment of Vincent's infection calls primarily for treatment of the underlying condition whether it is local or general. Nutritional deficiencies must be remedied. Healing of the lesions in the mouth is best accomplished by daily local applications of 10 per cent chromic acid, followed immediately by hydrogen peroxide (10 vols) and subsequent two hourly mouth washes of peroxide. Thus local treatment is particularly valuable when combined with 150 mg of nicotinic acid daily by mouth. The author hopes that the employment of intravenous arsenical compounds for this condition will be recognized as useless and wasteful.

### Journal of Pathology and Bacteriology, Edinburgh

55 245 396 (July) 1943

- Necrosis of Islets of Langerhans Produced Experimentally J S Dunn J Kirkpatrick N G B McLetchie and S V Telfer—p 245  
Immediate Vascular Changes in True Frostbite R Greene—p 259  
Further Experiments on Effects Produced by Extracts of *H. Pertussis* on Blood Sugar of Rabbits D G Evans—p 269  
Toxin Production by Three Types of *C. Diphtheriae* K Zinnemann—p 275  
Rapid Identification of *Cl. Welchii* by Nagler Tests in Plate Cultures Nancy J Hayward—p 285  
Two Cases of Interstitial Cell Tumor of Human Testis Georgiana M Bonser and Leila M Hawksley—p 295  
Localization of Experimental Tumors in Scars and Healing Wounds B D Pullinger—p 301  
Preparation of Phenolphthalein Phosphate E J King—p 311  
Phosphatase Reaction as Aid to Identification of Micro-Organisms Using Phenolphthalein Phosphate as Substrate J Bray and E J King—p 315  
Metabolism of Coliform Bacilli in Distilled Water J W Bigger and J H Nelson—p 321  
Group Specific Substances A B M N and Rh Their Occurrence in Tissues and Body Fluids Kathleen E Boorman and Barbara E Dodd—p 329  
\*Case of Adrenal Carcinoma and Its Hormone Diagnosis A F Anderson A M Hain and J Patterson—p 341  
Production of Fatty Degeneration of Heart Muscle by High Fat Diet A D T Govan—p 351  
Seasonal Variation in Incidence of *Brucella Abortus* in Raw Milks E R Jones—p 357  
Agglutination Test for Serologic Diagnosis of Syphilis F M Berger—p 363

**Adrenal Carcinoma and Its Endocrine Diagnosis.**—Anderson Hain and Patterson report a case of amenorrhea of six months duration gain in weight and slight hirsutism in a woman aged 25. Physical examination excluded pregnancy. After sensitivity of the endometrium was demonstrated by an estrogen withdrawal bleeding an attempt was made to induce ovulation by administering pregnant mare's serum. The pregnandiol excretion was measured to determine the existence of a functional corpus luteum. Both before and after the administration of pregnant mare's serum the urinary pregnandiol value was high around 12 mg per day. A negative Aschheim-Zondek test confirmed absence of pregnancy. Since the only condition in which pregnandiol has been recovered in such amounts in the presence of prolonged amenorrhea unassociated with pregnancy is hyperplasia or tumor of the adrenal cortex, a provisional diagnosis of adrenal tumor was made. A very high urinary excretion of 17 keto steroids—215 mg per day—substantiated this diagnosis. The course of pregnandiol excretion was studied and a steady rise in its daily output was found which was interpreted as caused by a rapid growth of the tumor. X ray examination revealed a large mass in the region

of the left kidney. The patient died suddenly from massive pulmonary embolism before the operation could be undertaken. Necropsy showed an enormous tumor of the left adrenal weighing 1,780 Gm. The right adrenal was atrophic, weighing one half of the normal. Microscopic examination showed the tumor to be a carcinoma of the adrenal cortex. The authors stress the importance of high titers of pregnandiol and 17-keto steroids excretion in cases presenting amenorrhea or/and virilism for the diagnosis of hyperplasia and tumor of the adrenal cortex.

### Lancet, London

2 211-242 (Aug 21) 1943

- Treatment of Head Wounds Due to Missiles Analysis of 500 Cases P B Ascroft—p 211  
Toxicity of Tannic Acid J M Barnes and R J Rossiter—p 218  
\*Liver Function in Rabbits After Injection of Tannic Acid E J Clark and R J Rossiter—p 222  
\*Combined Action of Antitoxin and Local Chemotherapy on *Clostridium Welchii* Infection in Mice J McIntosh and F R Selbie—p 224

**Liver Function in Rabbits After Injection of Tannic Acid.**—Liver damage after tannic acid injection has been demonstrated microscopically by several investigators. Clark and Rossiter show that there is also impaired liver function as measured by the intravenous galactose-tolerance test of King Harrison and Delory. In the intravenous test 1 Gm of galactose per kilogram of body weight was injected into rabbits. The blood galactose was determined by the ferricyanide method after previous removal of the dextrose by yeast fermentation. The galactose tolerance test revealed a depression of liver function after the subcutaneous injection into rabbits of from 100 to 750 mg of tannic acid per kilogram of body weight. This impairment of hepatic function has also been observed after intravenous injection of tannic acid in doses of from 5 to 10 mg per kilogram of body weight. The observation that a decrease in liver function is produced more readily by subcutaneous than by intravenous injection of tannic acid is probably accounted for by continued absorption from the site of subcutaneous injection. Tannic acid applied to an experimental burn affects the animal adversely, and it seems likely that liver deficiency is a factor contributing to the ill effects.

**Action of Antitoxin and Local Chemotherapy on *Clostridium Welchii* Infection in Mice.**—McIntosh and Selbie earlier demonstrated that chemotherapeutic substances, particularly penicillin and proflavine, are of considerable value in preventing the development of experimental gas gangrene infection in mice when these remedies are applied locally in the early stages of the disease. In the later stages of the infection when the organisms have invaded the blood stream, the local application of these drugs is apparently of much less value. The authors describe experiments designed to test whether any advantage could be gained by supplementing antitoxin with local chemotherapy especially in the later stages of the disease. On the basis of their observations the authors conclude that antitoxin treatment combined with local chemotherapy is more effective than antitoxin or chemotherapy alone in the treatment of *Cl. Welchii* infection in mice. The results indicate that all patients with gas gangrene should receive adequate doses of antitoxin combined with full local treatment as soon as possible.

2 277-308 (Sept 4) 1943

- Findings in 262 Fatal Accidents G R Osborn—p 277  
Prophylactic Inoculation with O Antigen of *Bacterium Shigae* W T J Morgan and H Schutze—p 284  
Aminoacridine Antiseptics Comparison of 2,7-Diaminoacridine 5-Aminoacridine and Proflavine J Ungar and F A Robinson—p 285  
\*Diffavine in Wound Therapy G A G Mitchell and G A H Buttle—p 287  
Serial Leukocyte Counts in Hospital Nurses Not Exposed to Radiation C J C Britton—p 289  
Electrolytic Action in Dental Appliances A B MacGregor and B W Fickling—p 290  
Cocaine as Aid to Intubation in Infants Margaret Hawksley—p 291

**Diffavine in Wound Therapy.**—Mitchell and Buttle describe observations on the use of diffavine (2,7-diaminoacridine monohydrochloride) in wounds. They used diffavine in 47 patients and proflavine in over 200 cases. Most of the patients treated were battle casualties and the lesions were of

all grades of severity. The impression was gained that difflavine is not quite as effective as proflavine. Difflavine and proflavine are active *in vivo* against streptococci, staphylococci and clostridia. Difflavine is possibly also effective against *B. pyocyaneus*. Difflavine and proflavine are less toxic than acriflavine.

## 2 309-340 (Sept 11) 1943

- \*Mass Asphyxia. Medical Aspects of Tube Shelter Disaster. K. Simpson—p. 309.  
Gas Gangrene. Active Immunization by Means of Concentrated Toxoids. M. Robertson and J. Keppie—p. 311.  
Factors Affecting Response of Immunized Guinea Pigs to Antigenic Stimulus. P. Hartley, D. G. Evans and Olga M. Hartley—p. 314.  
Persistence of Tetanus Antitoxin in Man Following Active Immunization—p. 316.  
\*Tanret Reaction in Subtertian Malaria. J. W. Howie and R. M. Murray-Lyon—p. 317.  
Plaster Technique in Fractures of Tibia and Fibula. Swallow Tailed Anterior Slab Method. E. A. Nicoll—p. 320.  
Blood Picture After Massive Transfusion. W. H. Hughes—p. 321.

**Mass Asphyxia**—Simpson gives an account of the circumstances of the shelter disaster in which over 200 people were piled in a tightly wedged heap on a flight of stone steps leading from the street level. In all 161 persons were dead when extricated and a further 12 died after admission to hospitals, 43 other persons made complete recoveries. The cause of death, although expressed generally as asphyxia, was complex. The author shows that emotional, reflex neurogenic, local cardiac and more general tissue chemical changes, direct compression of the chest or abdomen or constriction of the neck, concussion of the head and inhalation of vomit may all be operating in groups or together. Many of these are capable of precipitating death within a few seconds. Extricated dead showed changes quite out of keeping with prolonged asphyxia. Danger to life ensues within seconds of the start of events. When emotional, vagal, carotid sinus, chest and abdominal compression, inhaled vomit, biochemical and other less important factors are operating together, only seconds are available to save life. Thus shelter disaster was no cool physiologic experiment. Factors dangerous to life were being combined in groups throughout that mass of people, and death picked out its victims here and there according to the mathematical whims of these factors. It was for this reason that almost the last person removed from the bottom stood up and walked to the first aid post unaided.

**Tanret Reaction in Subtertian Malaria**—From observations on European troops in a hyperendemic area of subtertian malaria (southern Nigeria) Howie and Murray-Lyon believe that, properly used, the Tanret test has an even greater value than has been generally realized. They applied the test to every specimen of urine passed by 100 men admitted to the hospital with subtertian malaria. Treatment consisted of a week's course of quinine bisulfate in solution, given in three doses of 10 grains (0.65 Gm.) daily by mouth. Fifty-three soldiers in good health served as controls. They were given 5 grains (0.32 Gm.) of quinine in solution by mouth and their urines were examined for Tanret reactions at intervals of fifteen, thirty and sixty minutes after the test dose and then at hourly intervals until a positive reaction was found. Of the 100 soldiers with malaria, 88 showed a positive Tanret reaction within two to three hours of their first dose of quinine. Of the other 12 cases, 7 showed negative reactions. While the Tanret reactions remained negative the patients were all acutely ill, but after the intravenous quinine the Tanret reaction became positive and recovery was rapid. The remaining 5 showed occasional positive reactions. They were not dangerously ill and were not given intravenous quinine, but recovery was slow. During convalescence, 18 soldiers out of 100 excreted no quinine in the urine for twenty-four hours after a 5 grain suppressive dose. The minimum doses required to produce even one positive Tanret reaction in these 18 men varied between 10 and 40 grains. The histories of some show that they suffered too numerous attacks for their safety, an average of over seven attacks annually per man. One of the commonest misapprehensions regarding the Tanret test is that a positive reaction is obtained in the urine within fifteen minutes of taking a dose of quinine. Had the authors relied on no more than a single examination at one hour after the dose had been taken they should have recorded only 37.7 per cent as positive, whereas by continuing the examinations at hourly intervals up to five hours they found that all of 53 soldiers in normal health who had

taken 5 grains of quinine gave positive reactions. The Tanret test is valuable in controlling the therapy of acute attacks. When Tanret reactions were completely absent during the treatment by mouth, the patients were all dangerously ill. Intravenous administration of quinine to such men was always followed by a rapid improvement accompanied by positive Tanret reactions.

## 2 341-372 (Sept 18) 1943

- \*Local Therapy of War Wounds. I. With Penicillin. R. J. V. Pulvertaft—p. 341.  
Therapeutic Uses of Thorium X. H. Corsi—p. 346.  
\*Action of Nicotinic Acid on Carbohydrate Metabolism. F. J. Newwahl—p. 348.  
Treatment of Burns with Triple Dye Soap Mixture. C. N. Robinson—p. 351.  
Achalasia of Cardia. Treatment with Nitrites. A. H. Douthwaite—p. 353.  
Control of Ulnar Deviation of Fingers in Rheumatoid Arthritis. D. C. Bodenham—p. 354.  
Bacterial Endocarditis Associated with Coagulase Negative Staphylococcus Albus. A. C. Cunliffe, G. G. Gillam and R. Williams—p. 355.  
Rapid Test for Bromide in Blood and Urine. T. C. Hall—p. 355.

**Local Therapy of War Wounds with Penicillin**—Pulvertaft reports that samples of sodium and calcium salts of penicillin were sent to the Middle East forces and a number of battle casualties were treated with them. As a preliminary the wounds were treated with an aspirating device similar to that used in empyema. The author thinks that some such device should be used always in conjunction with local therapeutic agents, since it is of little use to float these on a sea of pus. The penicillin salts were used as a powder, as a spray and as a wet dressing covered with soft paraffin gauze. The liquid was always painless, the powder in one case caused pain for thirty minutes. No deleterious effect was noted on wounds, but in 2 cases, when the calcium salt was injected intrathecally, severe reactions were noted. In 15 cases treated with penicillin salts there was a uniform and almost complete drop within twenty-four hours in the numbers of gram-positive organisms, including clostridia, staphylococci, streptococci and corynebacteria. Gram-negative organisms were not affected. Therapeutic results were excellent. The solid drug was introduced into a cerebral abscess cavity without deleterious effect. A few experiments with *Penicillium notatum* culture filtrates, made locally, gave satisfactory results.

**Nicotinic Acid and Carbohydrate Metabolism**—Newwahl reports observations on the action of nicotinic acid on carbohydrate metabolism in 15 nondiabetic subjects and 12 diabetic patients. The blood sugar depression curve and the effect of nicotinic acid on the arteriovenous difference in dextrose and on the response to injected insulin suggest that nicotinic acid may potentiate the action of insulin. The administration of nicotinic acid amide improved the carbohydrate tolerance of diabetic patients.

## Helvetica Medica Acta, Basel

### 10 3-256 (April) 1943 Partial Index

- Eosinophilia, Eosinophilic Leukocytosis, Pseudoleukemic Eosinophilia. R. M. Tecoz, L. de Weck and Fröhner—p. 17.  
\*Resorption of Iron in Pernicious Anemia. G. Hemmeler—p. 23.  
Chronic Hemolytic Anemia with Nocturnal Hemoglobinuria. R. Heglin—p. 27.  
Familial Hemolytic Hypochromic Anemia. K. Rohr—p. 31.  
Behavior of Blood Sugar in Experimental Carbon Monoxide Poisoning and in Nitrogen Inhalation. S. Moeschlin and W. Wildermuth—p. 39.  
Nephritis and Nephrosis. W. Frey—p. 51.  
Cardiopulmonary Function in Double Pneumothorax. E. Jequier-Doge—p. 71.  
\*Temporary Eosinophilic Pulmonary Infiltration. Summary of More Than One Hundred Observations. C. Muer—p. 95.  
Significance of Sympathetic Structure for Development of Bronchial Asthma. B. Steinmann—p. 111.  
Renal Complications of Recklinghausen's Disease. R. S. Misch and A. Perrot—p. 237.

**Absorption of Iron in Pernicious Anemia**—According to Hemmeler the iron content of the serum of patients with pernicious anemia is elevated, a fact which is partly explained by the augmented hemolysis and partly by the diminished iron requirements of the bone marrow due to impaired maturation of erythrocytes. The high iron content of the serum is not merely a passive phenomenon but is an active manifestation in the regulation of the serum iron. The high iron content of the blood serum makes possible maximum filling of the erythro-

cytes with hemoglobin. In this manner the numerical deficiency of erythrocytes is compensated by their quality. In the course of treatment with hepatic extracts the iron content of the serum becomes reduced and the depots are emptied. The anemia may eventually assume a hypochromic aspect since the iron depots no longer suffice for the production of the hemoglobin of the newly formed erythrocytes. The author presents plotted curves which indicate the variations in serum iron during liver treatment and the changes in the number of reticulocytes. A considerable reduction in the serum iron is noticeable on the day after the beginning of liver treatment. In certain cases the iron depots do not suffice for the needs of the bone marrow and iron treatment becomes necessary, otherwise pernicious anemia will not be compensated in spite of the continuation of liver therapy. To insure absorption of iron the author recommends the use of a stabilized ferrous salt which can be absorbed without the aid of the hydrochloric acid of the organism, but even with this preparation the iron absorption of the patient with pernicious anemia is less than that of a normal person. This is not surprising in view of the atrophy of the intestinal mucosa which exists in pernicious anemia.

**Temporary Eosinophilic Pulmonary Infiltration**—On the basis of observations on more than 100 cases and the reports in the literature Maier is convinced that temporary pulmonary infiltrations with blood eosinophilia first described by Löffler in 1932 are of an allergic nature. The temporary infiltrations of patients with asthma, which have been known for a long time are regarded by the author as pathogenically identical with the eosinophilic infiltration. An eosinophilic pneumonia is the anatomic basis of the syndrome. The allergens in question are proteins. The determination of the antigen is valuable for the diagnosis as well as for the measures to be taken in the individual case. The author's material contained no cases in which eosinophilic infiltration was definitely the manifestation of a specific tuberculous hyperergic reaction. It is probable, however, that patients with a history of tuberculosis may react with an eosinophilic infiltration. Atypical eosinophilic infiltrations do occur. Some forms persist for weeks or even for months. These cases require careful observation because eosinophilia occurs sometimes in early tuberculous infiltrations.

### Archivos de Oftalmología, Buenos Aires

18 125-178 (March) 1943 Partial Index

Sulfonamide Therapy in Trachoma V A Victoria and M Artigas —p 155

\*Syphilis of Conjunctiva J L Castillo —p 165

**Syphilis of Conjunctiva**—Syphilis of the conjunctiva is rare. It may appear as a chancre, as simple conjunctivitis as scleroconjunctival infiltration and pseudotrachoma of the tarsal conjunctiva and as gumma of the eyeball. There are no references in the literature to hereditary syphilis of the conjunctiva. A girl aged 10 years had subacute inflammation and infiltration of the cornea which simulated tuberculosis. The Kahn reaction was negative. The Mantoux test at 1:1,000 dilution was strongly positive. Antituberculosis treatment failed. Antisyphilitic therapy was administered because of the moderate hepatomegaly and splenomegaly, a mild diffuse adenopathy and a high palate. The Kahn and Kline tests became weakly positive in the course of antisyphilitic therapy. Rapid improvement and cure of the conjunctiva followed. The case was diagnosed as hereditary syphilis of the conjunctiva.

### Ophthalmologia Ibero Americana, Buenos Aires

4 405-574 (No 4) 1943 Partial Index

\*Treatment of Corneal Diseases by Riboflavin S Barrenechea R Contreras and J Arntsen —p 405  
The Use of Vasodilators in Acute Fundus Diseases F C Cordes —p 434

**Riboflavin for Corneal Diseases**—Barrenechea and his associates treated with riboflavin 109 patients presenting corneal ulcers and corneal vascularization of various causes. In 70 per cent of the cases the disappearance of ulcers and vascularizations was remarkably rapid. The average time for the complete healing of the ulcers was seventy hours. The vas-

cularization disappeared in three days to two weeks. The treatment failed in 30 per cent of the cases, 15 per cent of which were shown to be tuberculous ulcers, which flared up on the administration of riboflavin.

### Prensa Médica Argentina, Buenos Aires

30 1035-1084 (June 9) 1943 Partial Index

Gastrointestinal Ulcer M R Caster A L C Maggi and H E T Stocker —p 1037

Asymptomatic Aglycemia in Diabetes Teresa Malamud and N Moguilner —p 1045

\*Pathogenesis of Acute Pancreatitis W Tejerina Fotheringham —p 1068

**Pathogenesis of Acute Pancreatitis**—Tejerina Fotheringham believes that infected biliary lithiasis is the cause of acute pancreatitis. He identified *Clostridium perfringens* in cultures from the bile of the common bile duct, from urine and from fragments of pancreas of patients with acute pancreatitis. The organism was isolated in all acute cases. The collapse which is observed early in the course of acute pancreatitis is a symptom of infection similar to that which is caused by toxemia in burns. Operative treatment of biliary lithiasis is the best preventive measure against acute pancreatitis. The common bile duct, the sphincter of Oddi and the papilla of Vater are carefully examined during the operation. Residual lithiasis of the common bile duct is thus prevented. Early injections of coli antiserum and of *perfringens* antiserum in repeated doses exert a favorable effect on the collapse and the symptoms of acute pancreatitis. Morphine and pantopon are interdicted. Atropine and splanchnic anesthesia are useful in allaying pain, dyspnea, cyanosis and vomiting. Roentgen irradiations are indicated after recovery in order to effect gradual disappearance of the residual epigastric inflammation. Operative intervention on the biliary tract is indicated after recovery from pancreatitis as soon as the patient is strong enough to tolerate the procedure.

### Semana Médica, Buenos Aires

50 1399-1454 (June 24) 1943 Partial Index

Diagnosis of Pulmonary Carcinoma V E de Pablo —p 1399

\*Clinical Significance of Bleeding Nipples A P Cinnelli —p 1409

**Clinical Significance of Bleeding Nipples**—One hundred and thirty-six cases of breast disease were observed by Cinnelli. Six (4.4 per cent) presented a bloody discharge from the nipple. The most frequent causes of this symptom are mammary carcinoma, cystic disease and intracanalicular papilloma. Less frequent are endocrine disturbances and trauma. In 5 of the 6 cases reported the lesion proved to be neoplastic, being a benign tumor in 4 and a malignant neoplasm in 1. In almost every instance the bloody discharge was an early and sometimes the only symptom of the pathologic condition of the breast.

### Archiv für Gewerbepathologie, Berlin

11 131-310 (Dec 31) 1941 Partial Index

\*Disturbances of Liver with Special Reference to Cirrhosis of Liver from Arsenical Poisoning P Rossling —p 131

\*Importance of Vitamin Deficiency of Diet in Arsenical Poisoning E Zimmermann —p 153

Disease of Lungs Due to Inhaling Porphyry Dust W Hortsch —p 160

Danger of Lead Poisoning by Admixture of Tetraethyl Lead as Anti-knock Agent H Wanick —p 165

Incidence and Cause of Furunculosis in Miners and Campaign Against It K H Scholzke —p 170

Metal Welder's Disease in Nonwelders H Wanick —p 179

Occupational Poisoning by Carbon Disulfide F Warnecke —p 198

Hazards of Tetraethyl Lead Poisoning H Kraut and G Lehmann —p 256

**Cirrhosis of Liver from Arsenical Poisoning**—The toxic effect of arsenic on the liver varies depending on the duration and the dose of the drug. Involvement of the reticulo-endothelial system desquamation and necrosis of liver cells, simple catarrhal jaundice and acute yellow atrophy were present in acute cases of arsenical poisoning. Fatty degeneration, necrosis of liver cells, a proliferative process of the bile ducts and occasional periportal proliferation of connective tissue were demonstrated in chronic cases. A short but massive effect of the poison may result in death. Compensation may be more or less completely restored but failure of compensation may result from chronic effect of a small dose of poison. The

occurrence of an atrophic cirrhosis (Laënnec's cirrhosis) due to arsenical poisoning alone does not seem probable. Simultaneous lesions caused by other agents played an important part in all the published clinical cases. Among them were alcohol, lead, nicotine, copper, infections, metabolic disturbances and cachexia. One should be cautious in evaluating results of arsenical poisoning in rabbits, since coccidiosis occurs frequently in these animals and resembles cirrhosis in its characteristics. Mild periportal proliferation, but not cirrhosis, could be experimentally produced by arsenical poisoning (Stoeber). The combined effect of several poisons (lead, arsenic) seems to be of particular importance. Cirrhosis results from the cumulative and supplementary effect of several substances. Chvostek's concept of diathesis of connective tissue and of abnormal predisposition to the development of cirrhosis suggests that the toxic effect of the poison is required only as an exciting agent. Cirrhosis in vine dressers should not be considered an occupational disease caused by arsenical poisoning.

**Vitamin Deficiency in Arsenical Poisoning**—Zimmermann demonstrated that the toxic effect from prolonged feeding of white rats with arsenic trioxide was greater in animals on a diet deficient in vitamin A and B than in those on a normal diet. The arsenic had no effect on the symptoms of avitaminosis. There was no striking difference in the storage of arsenic in the liver of animals placed on a vitamin deficient or on a normal diet. Neither were such differences revealed on microscopic examination. The exaggerated susceptibility to arsenic trioxide of rats placed on a vitamin deficient diet suggests the importance of proper and highly valued vitamin supply in the diet of workmen who are exposed to poisoning in industry.

### Deutsche Zeitschrift für Chirurgie, Berlin

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- \*Peritonitis Fibroplastica W. Hartmann—p. 173
- Clinical Experiments with Sulfathiazole in Surgery O. Schürch and G. Neff—p. 216
- Arteriography, Procaine Hydrochloride Infiltration of Sympathetic Nerve and Sympathectomy in Lesions Produced by Freezing A. Jung and H. Fell—p. 249
- Treatment of Trigeminal Neuralgia W. Sörgo—p. 295
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- Incidents after Intravenous Injections of Serum W. Eickhoff—p. 378
- Question of Increased Mineralization in Fracture Repair Demonstrated on Roentgenologic Examination G. Krockert—p. 398

**Fibroplastic Peritonitis**—Hartmann reports 4 cases of chronic fibrous encapsulating peritonitis in which operation was performed at Rieder's surgical clinic in Leipzig. The patients were from 14 to 40 years of age. Obstructive symptoms were present. At operation the small intestine was found to be involved in all cases. A part of the small intestine which was not involved was seen to enter the membrane, while another short segment of the ileum emerged, so that an afferent and efferent limb similar to a hernial sac could be distinguished. The membrane covering the peritoneum was several millimeters thick and adhered loosely to the serosa, interfering with the motility of the small intestine. Recovery resulted from excision of parts of the membrane which enclosed the small intestine. "Decortication" thus appears to be the method of choice. Enterostomy performed in 2 of the 4 cases resulted in only temporary improvement. Satisfactory results persisted as late as eleven years after the operation. Genesis of this rare disease has remained obscure and its evaluation has been made difficult by the fact that many transitional types were found varying from a membrane covering intestinal loops which were not adherent to one another to a sac-like intestinal mass involving adjacent organs. Inflammation possibly played a role in the author's cases, but there were no indications as to any specific type. A certain parallelism in the localization of abdominal grip and fibroplastic peritonitis suggests that the condition may be a sequel of abdominal grip. The majority of the cases, however, have no history of a previous grip. Parietal mesenteric hernia is the only type of malformation which might be considered as a primary cause of fibroplastic peritonitis. A secondary inflammatory process may obscure the clinical picture. Total or partial enclosure of the small intestine by the mesocolon is theoretically possible and would supply an explanation

for the emergence of one part of the small intestine from the hernial sac-like membrane and for the duodenal stenosis which was found on roentgenographic study of two of the author's cases. The etiologic concept of inflammation is alone not sufficient to explain the almost regular finding of a palpable tumor in the left mesogastric or hypogastric region and the regularity of the detachable membrane.

### Munchener medizinische Wochenschrift, Munich

89 25-46 (Jan. 9) 1942 Partial Index

- Psychopathologic Observations During First World War and During This War Differences and How to Explain Them G. Störing—p. 25
- \*Action of Carbon Dioxide in Epilepsy and Dementia Precox on Basis of Electroencephalographic Observations A. F. Kornmüller—p. 30
- \*Agglutination on Dried Blood in Infectious Diseases and Its Employment in Epidemic and Endemic Typhus W. Steuer—p. 33
- Progress in Conservative Treatment of Myoma E. Vogt—p. 37

**Action of Carbon Dioxide on Electroencephalographic Changes in Epilepsy and Schizophrenia**—Kornmüller investigated the influence of inhalation of carbon dioxide on the electroencephalographic changes in epilepsy and in dementia precox. Patients were subjected to electroencephalography while they breathed alternately ordinary air and 5 or 3 per cent carbon dioxide in pure oxygen. These studies were made on 40 patients, most of whom had either epilepsy or dementia precox. The observations demonstrated that carbon dioxide may decrease or completely counteract the abnormal electroencephalographic manifestations of these diseases. Carbon dioxide, especially its deficiency (hypocapnia), acts directly on the brain, because it is an adequate stimulus for certain parts of the brain. Carbon dioxide increases the cerebral blood perfusion, whereas its lack reduces it. Carbon dioxide also plays a part in tissue respiration. Further investigations are necessary to determine which of the factors assumes the decisive role. The author's observations indicate that some patients with epilepsy or with dementia precox are more or less continuously, and not only during hyperventilation, in an abnormal state that can be counteracted by carbon dioxide. Electroencephalography indicates that this condition involves chiefly parts of the frontal brain which are connected with the midbrain and the hypothalamus. It is possible that these parts of the brain are diseased or that carbon dioxide represents an adequate stimulus for some of these parts. This is also indicated by the effect of voluntary hyperventilation in epilepsy. It is probable that therapeutic effects may be expected from the use of carbon dioxide in epilepsy, dementia precox and other brain diseases. The effects of metrazol, insulin and electric shock treatments may be partly due to the fact that they increase the carbon dioxide content of the brain and blood.

**Agglutination Test on Dried Blood in Typhus**—Steuer describes the technic of the agglutination test for typhus using a suspension of killed proteus X19 as reagent. By using formaldehyde treated bacterial suspensions as reagents the test can be also used for typhoid, paratyphoid and dysentery. The agglutination test on dried blood provides a rapid method for systematic serologic examinations on large numbers of persons in the environment of patients with typhus in order to detect mild, atypical and unrecognized cases. The author's studies indicate that children may have typhus in a mild and unrecognized form. The same applies to young persons and even to some adults, who may have the disease in an ambulatory form. In childhood and youth there seems to exist a natural protection which decreases in adult life. This resistance differs individually. Children and young persons have been known to develop the classic form of typhus. These observations apply to people among whom typhus has long been endemic. Latent infections occur in such endemic regions. Highly positive Felix-Weil reactions are occasionally observed in persons of all ages who are not aware of having had typhus and who had not been immunized against it. The Rickettsia agglutination performed in some of them also were positive. The author stresses that the dry blood test described is to be used for environmental examinations in order to detect all, even the mild latent and asymptomatic cases. The ambulatory and asymptomatic cases are to be included in the isolation and treatment since they may spread the disease.



## Book Notices

**Manual of Fractures Treatment by External Skeletal Fixation** By C. W. Sharr, M.D., F.A.C.S., Captain Medical Corps, United States Navy, and Frank P. Krenn, Jr., M.D., F.A.C.S., Lieutenant Commander Medical Corps, United States Navy. Cloth. Price \$1. Pp. 300 with 145 illustrations. Philadelphia & London: W. B. Saunders Company, 1949.

The purpose of this book is to meet the current need for the treatment of fractures where routine methods are not practicable. It is a handbook for the surgeon interested in external fixation. The authors discuss the pros and cons involved in the use of plaster of paris, skeletal traction, balanced traction, internal fixation and external fixation. They prefer the Stader splint over others for external fixation. If the correct technique is employed with meticulous attention to detail they give assurance that the results will be gratifying. They describe the method they have used for two years. A chapter on a roentgenographic study of bone reaction and changes around pin holes and fracture sites is instructive. Also a chapter on anesthesia in fracture treatment and another on shock in fractures. One of the most interesting sections is on "pin seepage," a subject that has caused much controversy. The authors have had infection from pins in 157 consecutive cases. They differentiate sharply between ordinary pin seepage and actual infection about the pin sites. A small amount of seepage occurs in about 10 per cent of cases. They caution against premature disruption of fixation especially in compound fractures because of this contingency. Errors in treatment by external fixation are enumerated. Delayed union and nonunion are discussed. Special fractures involving the mandible, clavicle, humerus, radius, ulna, femur, pelvis, tibia, fibula and os calcis are reviewed briefly. Other sections consider compound fractures, osteomyelitis, old ununited fractures, malunion of fractures, arthrodesis of joints and bone grafts. The fractures occurring in the military services and the treatment of fractures at sea are discussed.

**Psikhoфизиология maskirovki i razvedki** [By] K. Kh. Kekcheev. [Psychophysiology of Camouflage and Disguise.] Paper. Price 5 rubles. Pp. 103 with 11 illustrations. Moskva: Gosudarstvennoe izdatel'stvo Sovetskaya nauka, 1942.

This monograph reports studies carried out in the Moscow Institute of Psychology, dealing with the physiology and psychology of camouflage. According to the author types of camouflage, as well as modern combat itself are to a considerable degree determined and limited by our visual and auditory receptivity. These senses can be improved or intensified, for the purpose of observing the enemy's movements in a number of ways such as substituting one sense for another resorting to the use of special apparatus, selecting men with highly developed visual or auditory senses and giving special training to these senses. One's position and maneuvering may be camouflaged (a) by utilization of the inadequacy of human visual and auditory acuity (this refers particularly to perception of light, color and sound), (b) by rapidity of movement and (c) by recourse to emotional factors which interfere with visual and auditory performance. The application of the physiologic method to the practice of camouflage under combat conditions is new and interesting. Unfortunately this monograph will be largely inaccessible to our readers because it is written in Russian without the customary summaries in either English or French.

**Annual Review of Biochemistry** Volume XII. James Murray Luck, Editor. James H. C. Smith, Associate Editor. Cloth. Pp. 704. Stanford University Press. Annual Reviews Inc. 1943.

The annual reviews of this series are now widely known and appreciated in scientific circles. This volume contains reviews of some twenty-four subjects in the field of biochemistry. They cover a wide range of subjects such as the chemistry of the hormones, water soluble and fat soluble vitamins, mineral nutrition, the electron microscope in biology and the chemistry of viruses. Extensive bibliographies and author and subject indexes add materially to the value of the reviews.

**Pyle's Surgical Handicraft** A Manual of Surgical Manipulations. Minor Surgery and Other Matters Connected with the Work of Surgical Dressers, House Surgeons and Practitioners. Edited by Hamilton Bailey, F.R.C.S., Surgeon, Royal Northern Hospital, London. Thirteenth edition. Cloth. Price \$6. Pp. 536 with 534 illustrations. Baltimore: William Wood & Company, 1942.

The resiliency of the British as they continue to publish arouses complete admiration. This book enters its thirteenth edition during a span of nearly sixty years. Twice bombed out, it now appears in definitely improved form. The many techniques and details of procedure that are casually mentioned in school and have to be learned at the bedside, often with considerable embarrassment to intern and patient alike, are well described. They range from the proper manner of putting on rubber gloves to the management of a T tube inserted in the common bile duct. Many of the descriptions are accompanied by excellent photographic reproductions and drawings to emphasize important points. The complete coverage of minor surgery and common accidents befalling the novice bespeak the many years of experience which have molded the foundations for this book. It has the added advantage of not presenting too many ways of doing the same thing. This work on surgical handicraft can benefit any intern as well as others whose work with patients is with hand as well as head.

**The Modern Treatment of Syphilis** By Joseph Earle Moore, M.D., Associate Professor of Medicine and Adjunct Professor of Public Health Administration, The Johns Hopkins University, Baltimore, with the collaboration of Harold E. Kemp, M.D. and others. Second edition, second printing with Chapter XXXIII, Intensive Arsenotherapy of Early Syphilis Completely Rewritten and Chapter XXXIV, Venereal Disease Control in the Army and Navy Newly Introduced. Fabrikoid. Price \$7. Pp. 717 with 109 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1943.

The need for this printing was due to the excellent reception given the book by the medical profession. It is now the outstanding book for both the practitioner and the student who is concerned with the treatment of patients who have syphilis. Two new chapters have been added, one on the new intensive measures for the treatment of early syphilis and another on the measures adopted by the military forces to control venereal disease. Apparently Moore and his colleagues did not quickly accept these newer methods of treating early syphilis, and the chapter dealing with this subject indicates certain limitations in their practical experience with the various intensive systems that recently have been recommended. The chapter on efforts at control of venereal disease among the military forces emphasizes what can be accomplished in this regard when an adequate organization, trained in this type of work, is permitted to function properly. The book portrays the author's experience at the Johns Hopkins Hospital clinic and is inclined to minimize the observations of other investigators if their results are contrary or divergent. Otherwise the book deserves recommendation to those interested in the treatment of syphilis. The format and printing are excellent.

**The Practice of Local Anesthesia** By George Bankoff, M.D., D.Ch., FRCP, F.M.S., Surgeon, St. John and St. Elizabeth Hospital, London. New edition. Cloth. Price 17s. 6d. Pp. 244 with 181 illustrations. London: William Heinemann Ltd., 1943.

In addition to discussion of the use of local anesthetic agents the author has attempted to deal with the subject of intravenous anesthesia. The style of expression is often pedantic and vague. Occasional inaccurate statements are noticeable. For example on page 59 one reads that "10 mgm. of pentothal sodium administered in 5 or 10 per cent solution is adequate for major operations." As treatment for respiratory toxic effects during local anesthesia the author suggests the administration of carbon dioxide, heart stimulants and the application of artificial respiration. No reference is made to the use of oxygen. The book shows lack of familiarity with modern opinions regarding local anesthesia as well as lack of appreciation of some of the important fundamental principles involved in the satisfactory use of anesthetic drugs. The fact should be emphasized however that it was written in Europe and the author may have presented matters of distinct value to the readers for whom it was intended. This book could scarcely be recommended either as a textbook for students of anesthesia in America or as a reference book for the experienced American anesthetist.



## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### BLOOD PLASMA BANK

**To the Editor**—We have a blood plasma bank established in this hospital. The appearance of the plasma does not seem normal, here are our difficulties. In flask 1 the blood was taken on August 15 and aspirated on August 21. The plasma is cloudy, of medium tan color and a reddish, flocculent sediment has formed of about  $\frac{1}{2}$  ounce in about 400 cc plasma. In flask 2 the blood was taken on August 9 and aspirated on August 16. The plasma here is cloudy, of a light pinkish color and a heavy, flocculent sediment, tan in color, has formed of about 1 ounce or more in 400 cc of the plasma. We have so far ten flasks of plasma more or less turbid. As indicated, aspiration was done about one week after collection. Sedimentation was accomplished, but without the use of a centrifuge. The specimens were first stored in a common household refrigerator at a temperature of from 30 to 35 degrees until September 26, when they were transferred to the regular blood bank refrigerator and stored at a temperature of about 40 degrees, which temperature was maintained. Is this plasma safe for blood transfusion? Is there danger of embolism? In using this plasma should only the upper portion be used and the flocculent sediment discarded? Should the whole be centrifuged (this seems most reasonable to me)? Can a centrifuge such as is used for the sedimentation of urine also be used for the sedimentation of plasma by exchanging the containers? Perhaps the change in temperature during storage or the method of sedimentation has some bearing on the peculiar appearance of the plasma. We have several donors willing to donate blood but we have postponed collection in order first to make sure that the plasma so far collected can be used safely or not. I myself prefer the administration of solution of sodium chloride or 5 to 10 per cent solution of dextrose in critical conditions. However, in order to conform with the newer methods and since I have to do some work in pathology I was consulted in regard to our recently established plasma bank. M D, Ohio

**ANSWER**—Plasma separated after six to seven days of sedimentation at 30 to 35 F should appear as an opalescent to cloudy, light pink fluid with a flocculent precipitate. The pinkish color is due to hemolysis, but the amount of free hemoglobin present should not exceed 4 to 8 mg per hundred cubic centimeters. It is likely that, if the temperature of refrigeration is maintained between 35 and 40 F, the amount of hemolysis will be less than previously obtained.

The flocculent sediment is due mostly to fibrinogen precipitation, which occurs in both citrated blood and in plasma, especially if maintained at refrigerator temperature. Plasma separated by aspiration from such material would not be safe for transfusion because of danger of embolism. It can, however, be readily made safe by filtration through any of the filters capable of retaining small particulate matter. Four layers of 40 mesh gauze thoroughly boiled in pyrogen free distilled water, dried rapidly and properly sterilized, or a 200 mesh single layer stainless steel filter, are suitable for this purpose. The flocculent material can also be readily removed by centrifugation, but unless the centrifuge is of large capacity this procedure would prove lengthy and expose the material to danger of bacterial contamination.

It appears strongly desirable to check the sterility of the plasma after separation. In any case the filtration of the plasma should be resorted to immediately before administration. The administration of solution of sodium chloride or 5 to 10 per cent solution of dextrose cannot in any way take the place of plasma transfusion.

### VIRUS ETIOLOGY OF INFECTIOUS MONONUCLEOSIS

**To the Editor**—I request information concerning the virus etiology of acute infectious mononucleosis. Lieutenant Colonel, M C, A U S

**ANSWER**—There have been frequent unsubstantiated references to viruses as possible etiologic agents in infectious mononucleosis but extremely little experimental data. The latest report, a series of three articles by L. van den Berghe and his associates (*Compt rend Soc de biol* 130 279, 131 156, 132 90, 1939), claims production of the disease in *Macacus rhesus* inoculated subcutaneously with blood of a child afflicted with infectious mononucleosis, and subsequently serial transmission from monkey to monkey by means of Seitz filtrates. The virus was kept alive in a medium suitable for filtrable viruses at least during ten transfers. Inoculation of the fifth and tenth transfers into 1 *Macacus rhesus* resulted after fourteen and twenty-five days in hematologic and serologic (heterophilic antibody tests) changes in 2 animals which satisfied the authors as proving successful transmission of the disease. Tem-

perature of minus 15 degrees C for from thirty to thirty-five days did not destroy the virus.

The report, though interesting, is sorely in need of confirmation, especially in view of two facts. 1 The hematologic data as recorded for the animals and even for the patient, the original source of the virus, are not in full agreement with what some authorities consider characteristic for the disease. 2 It is not stated whether the heterophilic antibodies have been tested for specificity for infectious mononucleosis with the so-called differential test (Davidsohn, Israel, *Serologic Diagnosis of Infectious Mononucleosis*, THE JOURNAL, Jan 23, 1937, p 289). Other reports of successful transmission have been published, but they have no bearing on the question of virus etiology.

### MONKEY NOMENCLATURE

**To the Editor**—In an editorial on poliomyelitis on page 1250 of The Journal of Aug 28, 1943 reference is made to cynomolgus monkeys. I note that some of the material produced symptoms in these but not in other types of monkeys. I should like a little information clarifying what is meant by the term "cynomolgus," and what features identify these as different from other species. I have checked in Webster's New International Unabridged Dictionary, Stedman's Medical Dictionary, Dorland's Medical Dictionary, the Oxford English Dictionary, Parker and Haswell, 6th edition, Textbook of Zoology, and have inquired at the city library but have been unable to find even the word "cynomolgus." As this word is commonly used in medical literature and has been for many years, it seems to me important to have some identifying features firmly established so that one may be certain that research workers who are using animals of this species are being uniform in their identification.

Lyle A Weed, M D, Indianapolis

**ANSWER**—According to the Encyclopedia Britannica, 14th edition, volume 18, page 488, the macaques are among the most generally adaptable of monkeys. They are usually omnivorous, and the crab eating macaque of India lives chiefly on Crustacea. They have fore and hind limbs of about equal length. Prominent examples are *Macacus rhesus*, the common rhesus monkey, *Macacus cynomolgus*, the crab eating macaque, *Macacus sinicus*, the bonnet monkey, *Macacus silenus*, the lion tailed macaque, all of India, and *Macacus speciosus*, the red faced monkey of Japan. According to other sources of information it seems that the nomenclature of all macaques and related monkeys is in a state of great confusion. The name *Macacus cynomolgus* no longer applies to any species, but the monkey in question is undoubtedly *Macaca irus* of the East Indian region. It is also known as the "crab eating" or "long tailed macaque" and can be recognized at once by its long tail, no other macaque of this region has a tail longer than the body. It is probably as well to use the common English name until the taxonomy of the group has been more thoroughly investigated.

### SERUM FOR TESTING FOR Rh FACTOR

**To the Editor**—Please inform me as quickly as possible where I can obtain serum for testing for the Rh factor and also the technic. Milton Semoff, M D, Albuquerque, N M

**ANSWER**—Reliable serum for testing for the Rh factor can be obtained from the Blood Transfusion Association of New York City or from the Certified Blood Donor Service of Jamaica, N Y.

Detailed directions as to the technic of the tests can be found in

Todd, J C, and Sanford A H. Clinical Diagnosis by Laboratory Methods, ed 10 Philadelphia, W B Saunders Company 1943.  
Wiener A S. Blood Groups and Transfusion, ed 3 Springfield Ill, Charles C Thomas, 1943.  
Wiener A S. Hemolytic Transfusion Reactions. III Prevention, with Special Reference to the Rh and Cross Matching Tests. *Am J Clin Path* 12 302 (June) 1942.

### DICHLOROACETIC ACID FOR WARTS

**To the Editor**—In the issue of The Journal for Sept 25, 1943, the answer to the question "Dichloroacetic Acid versus Trichloroacetic Acid for Warts" does not answer the question asked. The inquirer asked specific questions surrounding the use of bichloroacetic acid as an agent in the treatment of warts. The answer gives a good cost analysis and the results of an experiment when using bichloroacetic and trichloroacetic acid on normal skin, but it does not answer the efficacy of one over the other of these compounds when used on warts. I was interested in this inquiry since Dr E J Kocour and I have used bichloroacetic acid in the treatment of warts on more than 50 college students when we were associated with the Chicago city colleges. It was our impression that bichloroacetic acid is less painful and more slow acting on the overgrowth of epidermal tissue than the trichloroacetic acid and for this reason it seems to have a slight edge of usefulness over the trichloroacetic method of eradication of warts. The acid is slowly disintegrated and dissolved, possibly by catalytic action, by wart is slowly disintegrated and dissolved, possibly by catalytic action, by bichloroacetic acid and the usefulness of the part treated is in no way hampered. Some obstinate cases take rather prolonged treatment and application of the acid every other day for several weeks but this type of treatment. Dr Kocour and I secured rather beneficial results with this type of treatment.

L G Lederer, M D, Washington D C

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## EYE MANIFESTATIONS OF HEAD INJURIES

DONALD J. LYLE, M.D.  
CINCINNATI

The time seems appropriate for a discussion of eye manifestations of head injuries. There are three great classes in which most of these injuries are found. These are (1) the increasing number of automobile and other travel accidents, (2) the industrial accidents multiplied by the acceleration of production to meet the war demand and (3) the head injuries of war itself. This last class appears of less importance at this time to those of us who remain in civilian practice. Nevertheless there is no noticeable difference between the injuries of these three classes. A head injury from a shell fragment and that from a metallic fragment from the bursting of a rapidly revolving piece of machinery are not unlike. Needless to say, travel and industrial accidents are common among the military forces, and firearm injuries are only too prevalent in civilian life. Injuries to the head produce a number of eye symptoms of great importance. Frequently, from them one is able to determine the severity of the cerebral damage, its location and extent. Eye symptoms are produced by a relatively mild blow to the head, when one sees "stars," as well as from blows severe enough to render the victim unconscious. The chief concern in head injuries is with the brain itself and not the skull, which may have been badly damaged or show no evidence of injury. The result of head injuries, as far as they affect the brain, may be classified as concussion, contusion, laceration and compression. A similar classification might be applied to injuries to the eyeball.

### CONCUSSION

Concussion results in a curtailment, more or less, of cerebral function due to a jarring of the central nervous system. Grossly, no change may be in evidence, molecularly the brain may be disturbed. However, in both the brain and the retina of the eye there is usually some ischemia in the early stage with a later development of venous congestion and edema.

If consciousness is not lost, or on its return, the patient usually exhibits a fogging of thought with perhaps loss of memory of events just prior to the accident or immediately following it. Vertigo, nystagmus, dizziness and frequently nausea and vomiting indicate a disturbance in the vestibular mechanism. The medullary centers also may be implicated with the production of embarrassed respiration and circulation which may lead to fatal termination.

In these cases during unconsciousness, the pupils are usually constricted and fixed, probably because of

the general cerebral irritation. Irritative conjugate deviation of the eyes may also be present for a short period.

A condition of major importance immediately after an injury resulting in concussion is the state of shock. There may be loss of consciousness for varying periods, during which time the eyes are closed and the corneal reflex is absent. The pupils are frequently constricted and react, if at all, only sluggishly to light. Other general symptoms are rapid pulse, shallow respiration, low temperature, cold, clammy and pale skin and muscular relaxation.

The retina, like the brain, may become ischemic, with later engorgement of the veins and secondary edema from cerebral concussion or from concussion of the globe itself. This is probably due to a sudden vasoconstriction followed by a vasodilatation (Berlin's retinitis or retinitis commotio). This condition may be accompanied by hemorrhages between the sclera and the choroid. The papilla may show slight edema or, at least, some venous stasis. Localized edema of the retina may occasionally be noted, especially at the posterior pole of the eye (angiopathic traumatic edema of the retina of Purtscher). The causes of this condition are hypothetical. They may be due to (1) a forcing of the cerebrospinal fluid from the nerve sheath into the retina possibly through the perivascular lymph spaces, (2) tears in the vessel walls and retina, (3) fat emboli and (4) autonomic disturbances probably chiefly affecting the vascular system.

### CONTUSION

Contusion is a bruising of the brain usually as a result of its sudden impact against the skull wall. The trauma may occur either on the side of the impact or by contrecoup on the opposite side. A skull fracture or laceration of the scalp does not necessarily accompany a cerebral contusion. The most frequent sites of contusions are at the temporal poles and the under side of the frontal lobes, areas past which the nerves and blood vessels course to and from the eyes (fig 1).

Contusion of the brain results in capillary hemorrhages and edema within its substance. General contusion with edema and petechial hemorrhages is called traumatic encephalitis. The meninges, blood vessels and nerves in the vicinity are usually implicated with the production of meningeal inflammation and adhesions, hemorrhages which may be extradural, subdural or subarachnoid, and paralysis or anesthesia.

The eyeball may suffer contusion resulting in edema, hemorrhages and exudates. These contusions are usually produced by injuries to the orbital tissues surrounding the eye and to the bony wall of the orbit. An example of this is that of a man who was struck by a 0.38 caliber bullet. The bullet (figs 2 and 3) entered the lower right lid from the left side, just missing the nose and the inferior orbital rim at its entrance.

It passed through the soft tissues on the floor of the orbit and broke through the zygomatic bone to lodge in the soft tissue near the temporomandibular joint. Loss of sight was immediate and there was profuse bleeding from the orbital wound. Bleeding into the

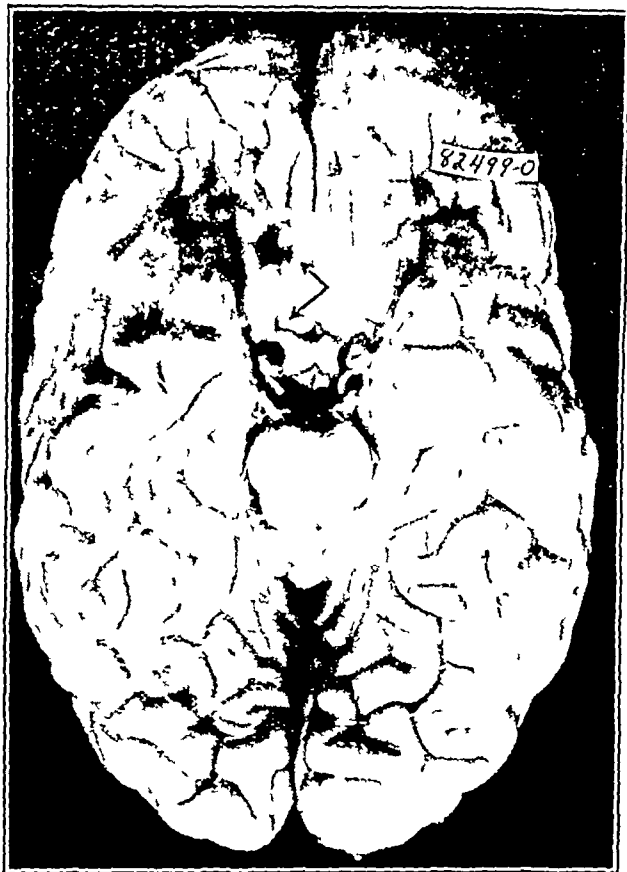


Fig 1—Basal skull fracture resulting in damage to the right inferior frontal lobe with destruction of the right olfactory and optic nerves

anterior chamber prevented immediate view of the fundus. However, several weeks later retinal photographs were taken which revealed diffuse subretinal hemorrhages in the temporal half of the eye (fig 4)

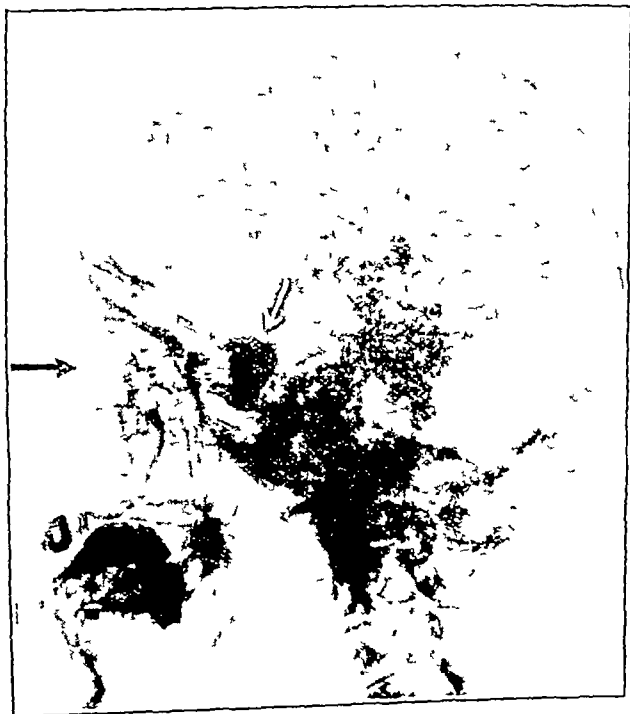


Fig 2—Position of a bullet and its course as indicated by fragments

As the hemorrhage absorbed, vision returned save for a central scotoma of about 10 degrees. There appeared no rupture of the choroid or retina, which seemed likely at the time of the photograph

#### LACERATION

Laceration of the brain may occur with severe closed injury or with penetrating wounds. Visible damage is present in the brain and meninges, evidenced by loss of continuity of tissue. This may occur on the same side as the impact or on the opposite side (contrecoup). Along with damage to the brain and the membranes, nerves and blood vessels may also be implicated.

In the eye, laceration, or a loss of continuity of tissue, may be due either to rupture of the coats of the eye or to penetration by foreign bodies. The choroid is probably most frequently ruptured, although the retina, because of its delicate structure, is usually ruptured with it. The tough sclera is able to withstand greater damage before giving way. Rupture of the choroid is probably more often induced indirectly than directly and more frequently by contrecoup than on the side of the applied force. The posterior pole of the eye is the most common site. The rupture is usually linear and extends in the vertical direction, straight or concentric with the disk margin. In by far the majority of cases it is temporal to the disk. More than one

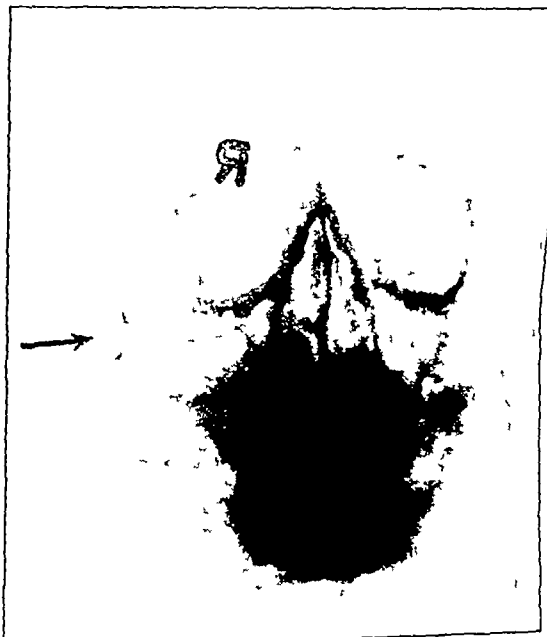


Fig 3—Fragments of bullet

rupture may occur (fig 5). Posterior pole ruptures are usually contrecoup, peripheral ruptures, which are less frequently encountered, are probably due to direct injury to the globe. Detachment of the retina usually resulting from tears may be caused by head injuries. Luxation or dislocation of the lens produced by breaking of the suspensory ligaments also occurs as the result of trauma to the head and eye.

#### COMPRESSION

As a result of damage to the brain and the meninges, with the production of edema, inflammation and hemorrhage and, possibly with the interference with cerebrospinal fluid circulation, pressure develops within the cranium. This causes compression of the brain. Eye changes are among the earliest and most important signs of increased intracranial pressure.

Papillary change consisting of transparent edema, possibly with a few hemorrhages, is seen in early stages of compression and is usually in direct relation to the degree of severity of the injury. This condition is known as Putscher's retinal lesion or traumatic angiopathic retinosis. The early ischemia frequently is replaced by a venous congestion with hyperemia or

the papilla. Papilledema, it must be remembered, does not appear immediately. Most observers state that it develops usually between the third and the eighth day, though some report its presence earlier. The swelling from the papilla extends into the icthna, and hemorrhages occur frequently in and about the nerve head.

As the compression increases consciousness may be lost. The cornea becomes insensitive with loss of reflexes. On the side of the injury the pupil, which at first was contracted from irritation becomes dilated and does not react to light. The opposite pupil may remain normal, with normal light reflex. Later it may also contract and then dilate as it becomes involved in the compression.

#### HEMORRHAGE

Cerebral hemorrhages occurring at the time of the injury may be checked spontaneously or they may continue gradually to form hematomas. Hemorrhages may occur later as the result of cleavage or the giving away of damaged tissues. The hemorrhage may be extradural or subdural, subarachnoid or intraventricular or in the tissues of the brain.

At the time of the injury the patient may or may not lose consciousness. If he has been rendered unconscious he may continue in that state for an indefinite period of time. A later lapse or return to unconsciousness after a lucid interval following an injury almost certainly indicates increasing intracranial pressure, which may be produced by cerebral edema, hydrocephalus or inflammation but most frequently by hemorrhage.



Fig. 4—Damage to the retina from the passage of a bullet through the orbit.

Hemorrhages are classified as to their general location and localized by the special symptoms they produce. Extradural hemorrhage from an injured middle meningeal artery is frequent, although it may occur elsewhere. The following is a history of a severe extradural hemorrhage.

R. R., a young man, fell 35 feet and suffered a linear skull fracture through the right parietal and temporal bones. There was no evidence of depression. He was not unconscious when picked up and was able to answer questions intelligently. But when a doctor saw him an hour later at the hospital he was unconscious. He remained in coma for several days during which time he would occasionally cry out loudly. There was a paralysis of the left arm and leg subsequent to his admission to the hospital. There was incontinence of the bowels and bladder.

Eye examination showed early edema of the disks. On the third day venous congestion and on the fourth day papilledema developed in both eyes. The right pupil was larger than the left. There was conjugate deviation of the eyes (and head) to the right. Other cranial nerves could not be examined because of the patient's condition. Further neurologic examination is omitted. The spinal fluid pressure was 150 mm of water. The fluid was yellow and contained red blood cells. There was no increase in proteins.

An opening was made in the right temporal region and an enormous extradural hematoma which was well organized, was evacuated.

Extradural or subdural hematomas occur frequently in head injuries and may attain great size, producing symptoms of increased intracranial pressure (fig. 6). Papilledema develops, the ipsilateral pupil is usually dilated. Eye muscle paralysis is fairly common. If the patient is conscious, homonymous hemianopsia may be found. In infants, subdural hematoma must be differentiated from hydrocephalus, as there is a progressive enlarging of the head as the intracranial pressure from the developing hematoma increases.



Fig. 5—A double contrecoup rupture of the choroid and retina from a blow on the eye.

Subarachnoid hemorrhages are common at the base of the brain, where most trauma is to the temporal and frontal lobes.

Hemorrhages here occupy the interpeduncular and chiasmatic cisterns through which pass the nerves to the eyes. For this reason paresis or paralysis of the muscles of the eyes and hyperesthesia or anesthesia of the cornea are frequently encountered.

Intracerebral hemorrhages usually occur immediately at the time of the injury and result frequently in instant and continuous unconsciousness. In these cases, symptoms on the part of the eyes may arise. However, if the damage or resulting hemorrhage is large the patients do not usually survive long.

Pressure symptoms from hemorrhage, as well as from the other causes, frequently affect the pupils of the eyes. These changes were mentioned in the discussion of compression but their importance as a clinical symptom is so great that their reactions will be described again. Usually, on the side of the injury,

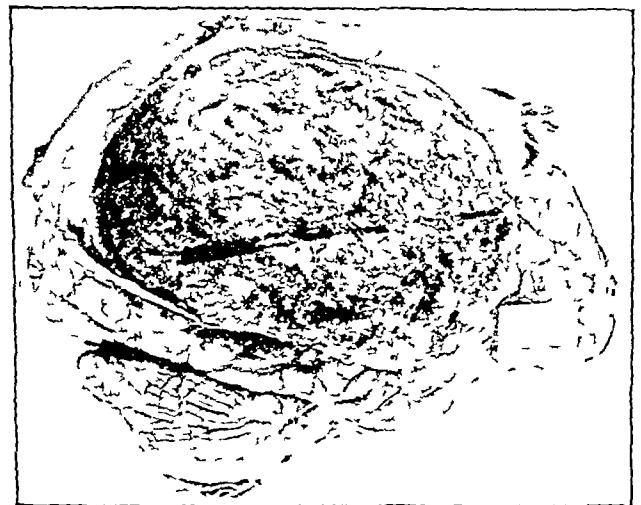


Fig. 6—Extensive extradural hematoma from injury to the middle meningeal artery.

the pupil at first, and for a short period only, becomes contracted. It then dilates and becomes fixed. That is, it does not react to light. The other pupil may remain normal in size and reflex action but usually

follows its fellow and becomes dilated and fixed as its nerve supply is involved in the extending hematoma. Whether these pupillary actions are the result of irritation and pressure on the parasympathetic nerve fibers that accompany the oculomotor nerve through the interpeduncular cistern and middle fossa or whether they are caused by irritation or pressure on certain cortical areas which are known to produce pupillary changes is not definitely understood.

If a patient is seen within a short time after injury and has a dilated and fixed pupil on one side, it will be due, almost without exception, to a laceration of the third nerve or its nucleus. On the other hand, if it begins some time after the accident and is progressive, it is almost without exception due to an intracranial hemorrhage, which in most instances is an extradural clot. Lesions of the first type are usually associated with ptosis of the lid, indicating a complete



Fig. 7—Pin shot in the right eye and orbit

nerve lesion. The dilatation that occurs with expanding lesions is almost entirely confined to the pupil and does not involve, as a rule, the lid or the extraocular muscles. It is probably due to the forcing of the tip of the temporal lobe downward by the incisura of the tentorium, thereby exerting pressure on the brain stem.

As the state of the pupil changes frequently following a cerebral injury and as these changes reveal important information concerning the severity of the trauma and the presence of complications, the eye should be kept under continued observation. Because of the importance of pupillary reactions, mydriatics or cycloplegics should be prohibited, as they mask the symptoms. A competent ophthalmoscopist should be able to determine the state of the papilla and the immediate surrounding area of the fundus through an undilated pupil.

Conjugate deviation of the eyes is a frequent symptom of head injuries and is usually the result of pres-

sure on or damage to the cerebral cortex. There occurs usually a horizontal conjugate deviation, which is frequently temporary or fleeting. The condition may be caused by an irritation to, destruction of or pressure on the eye motor area of the posterior third of the middle frontal convolution or of association tracts of fibers passing to this area from the visuopsychic cortical areas in the occipital and inferior parietal lobes (angular and supramarginal gyri). Whether the initial irritation subsides or a compensatory action takes place as the result of a bilateral supranuclear innervation, early conjugate deviations usually disappear. Permanent conjugate deviations are usually produced by brain stem lesions and may occur later. Vertical conjugate deviations usually arise from lesions implicating the upper part of the midbrain and are frequently accompanied by sympathetic symptoms such as somnolence. Reflex conjugate deviations instigated by the temporal and occipital lobes in response to auditory, vestibular and visual stimuli may possibly be found as a result of head trauma when at the time of the injury the special senses have been affected by a detonation, concussion or light flash such as might accompany an explosion.

#### CEREBRAL LOCALIZATION

Cerebral localization is made possible through the knowledge of the anatomy and physiology of the contents of the cranial cavity. We have seen that concussion and shock are general states of disturbed cerebration. Contusion may be general or local, and lacerations may be large or small. The causes of eye and other symptoms may be due to the effect of an irritation or destruction of, or pressure on, centers of nerves controlling visual or other functions. Foreign bodies may penetrate the skull to damage certain areas of the brain. Parts of the fractured skull may do likewise. Hemorrhages from certain vessels usually localize as hematoma, producing symptoms from pressure. Infections may complicate the injury.

Intracranial foreign bodies produce symptoms according to the area they penetrate or damage either directly or through subsequent inflammation and hemorrhage. They may introduce infection, which frequently complicates and renders quite serious an otherwise relatively favorable prognosis.

Damage to the occipital lobe results in visual field changes of a homonymous type. If the anterior portion is involved with the adjacent angular gyrus the visual psychic area is affected, resulting in the inability to comprehend and recognize visual perceptions. On the major side, which is usually the left, irritation may result in visual hallucinations. Sensory aphasia and types of apraxia may also be produced. Visual reflex eye movements may be affected also by damage to this area. Further forward, in the posterior frontal lobes, damage may result in disturbances of eye movements. Similar symptoms may result from injury to the aberrant fibers leading from these areas through the knee of the internal capsule and cerebral peduncle to the eye motor nuclei in the brainstem. The oculomotor, trochlear and abducens nuclei or nerves, as they course to the eye, may be injured. In like manner the facial nerve to the muscles of the lids, and the ophthalmic branch of the trigeminal, which is the sensory nerve of the eye and orbit, may be implicated. Occasionally, penetrating foreign bodies may affect the autonomic nervous system.

A youth aged 17 years was examined because of loss of vision in his right eye. The history revealed that two years before he sustained a multiple shot wound in the right eye and orbit. Light projection was present but poor. The eye showed no injection or inflammation. X-ray examination revealed the presence of many pin shot in the orbit, several of which were located within the globe (fig 7). The patient was advised to keep the eye under observation, as it might cause trouble at any time.

Several years later, at the age of 20, the patient returned with an acutely inflamed eye. It was slightly proptosed. Hypopyon was present, nearly filling the anterior chamber. The vessels of the globe were much injected. The patient's temperature was 101 F. He was sent to the hospital, where the eye was eviscerated under local anesthesia. An injection of 5 cc of milk was given. Following this the temperature ranged between 105 and 106 F for seventy-two hours instead of the usual rise and fall in the course of six hours. The patient died several days later of cardiac failure. Autopsy was refused.

The history of the case in the interval between the two visits is interesting. The boy had gained very much weight, between 30 and 40 pounds (13.6-18 Kg). He thought nothing of drinking half a case of Vichy water in a day or several pitchers of lemonade at one time. The output was in proportion. His studies at school were a little difficult for him, but he was well and he played center on the football team. There had been no trouble with his eyes until about a week prior to his return, when he stated he had "taken cold" and apparently "it had affected the injured eye."

This case presents a clinical picture of diabetes insipidus with polyuria and polydipsia, a disturbance of temperature regulation and adiposity. This is probably the result of damage to the autonomic nervous system with involvement of the tractus supraoptico-hypophysis to the posterior lobe of the pituitary gland (retinohypothalamico-pituitary fibers).

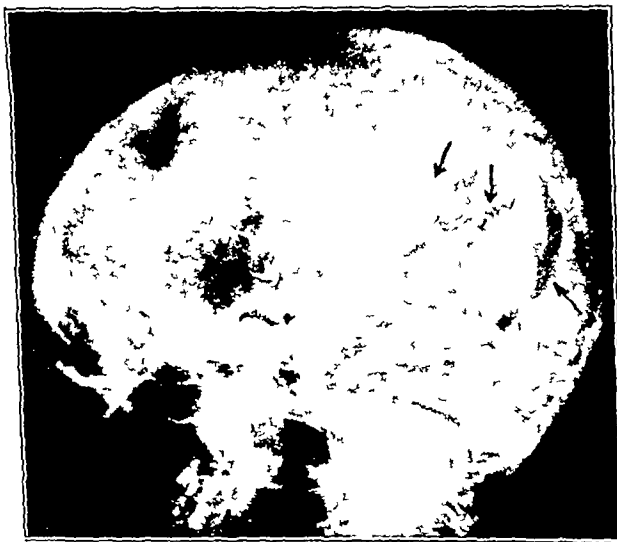


Fig 8—Multiple skull fractures of the occipitoparietal area

Head injury may result in destruction of sympathetic centers, descending sympathetic fibers through the brain stem and cervical cord, and the ascending cervical nerve and ganglions. The smooth muscles of eye and lids are involved with the production of Horner's syndrome. This consists of miosis, ptosis and a relative (in appearance only) enophthalmos.

## SKULL FRACTURES

Fractures of the vertex of the skull usually do not produce as many symptoms on the part of the eyes as do those at the base, where the many nerves and blood vessels passing to and from the eye and orbit may be implicated. However, fractures of the vault

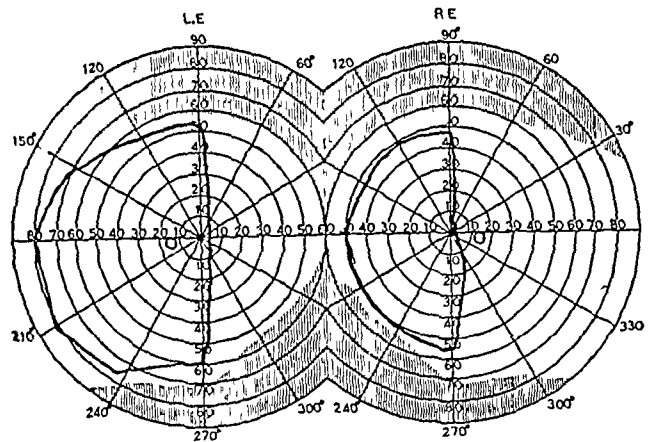


Fig 9—Visual fields showing homonymous hemianopsia from implication of the left optic radiations

may produce eye symptoms by affecting the visuosensory and visuopsychic areas of the occipital and lower parietal lobes and the visuomotor center in the posterior frontal lobes. This may be accomplished through direct damage to the brain or through the pressure of hemorrhages or later by adhesions, cysts and abscesses. The following is an example.

A woman aged 25 suffered a badly comminuted skull fracture with a depression in the left occipital area (fig 8). When first seen, shortly after the accident, the patient was unconscious. The pupils were contracted and equal. There appeared to be a paresis of both external rectus muscles, more pronounced on the right. On return to consciousness, the patient complained of visual hallucinations of a complex form. Ophthalmoscopic examination revealed no edema of the papilla or retina and no retinal hemorrhages. Further examination revealed vision of 20/30 in each eye and the presence of a right homonymous hemianopsia. This visual field change is a common finding in patients with visual hallucinations. A ventriculographic examination of the skull showed the posterior horn of the left ventricle displaced downward and laterally. This portion of the wall of the ventricle, which is partially surrounded by the optic radiations, was the site of the lesion that produced the visual field defect.

Fractures through the frontal areas of the skull may be comparatively insignificant even with implication of the brain, especially the right frontal lobe. If the nasal sinuses or cribriform plate are involved, the chances of infection increase. The orbit is frequently damaged. The eyeball, and more often the optic nerve, may be injured. The following case report is an example.

E D, a man aged 20, received a penetrating wound through the right frontal area from an automobile accident which produced a compound comminuted fracture. He was admitted to the hospital with the knob of the windshield frame projecting from the right side of his forehead.

The piece of metal was removed from the right frontal lobe in which it had deeply penetrated along with particles of bone. The right temporal and frontal bones including the roof of the orbit, were fragmented and removed from the wound with the macerated brain tissue.

Eye examination revealed proptosis of the right eye with very slight eye movement. The pupil was partially dilated and did not react to light. No light perception was present. The upper part of the fundus was seen indistinctly and seemed



normal, but the papilla and lower retina were hidden behind an extensive vitreous hemorrhage.

Three weeks later the area of the head wound was bulging and tense. Twenty cc of subdural hydromic fluid was aspirated, the dura was incised and about 20 cc more of sterile fluid was obtained. Two months later a cerebral fungus the size of a walnut had developed and was removed.



Fig 10—Right oculomotor paralysis caused by a basal skull fracture. A, ptosis, B, dilated pupil and external strabismus.

The eye became phthisical and was enucleated. Plastic surgery of the lids and orbit produced a fairly good cosmetic result. There remains quite a depression in the frontal temporal area where the skull is absent.

Fractures of the base of the skull frequently implicate the abducens nerves as they ascend the brain stem and abruptly turn forward through Dorello's canal and over the petrous ridge, which is a common point of injury. Paralysis of the abducens nerve is often found with increased intracranial pressure, and this finding itself is therefore of no localizing value.

Of the nerves to the eye muscles, the oculomotor nerve is involved next in frequency to the abducens. It may be affected as it passes through the orbital wall or may be damaged by hemorrhages in the interpeduncular space (fig 10). Weber's syndrome, which implicates the emerging oculomotor nerve and the cerebral peduncle producing ipsilateral oculomotor paralysis with contralateral hemiplegia or paraplegia, has been reported as a result of hemorrhages following skull fractures. The trochlear nerve, although it pursues a long course around the brain stem to the orbit, is less frequently affected.

The facial and auditory nerves are possibly more frequently involved in basal skull fractures than are the motor nerves to the eyes. Implication of the facial nerve shows a lower motor type of lesion which affects the closure of the eyelids because of paralysis of the orbicularis oculi. With this condition, when one attempts to close the eyes, the globe is seen to roll upward and outward. This is called Bell's phenomenon. With involvement of the auditory nerve, hearing may be affected and nystagmus and vertigo may indicate vestibular irritation.

The optic nerve may become involved in its course from the globe to the optic chiasm, and other parts of the visual system may also be affected. Within the orbit a lesion between the globe and the entrance of the central retinal vessels, besides damaging the optic nerve, will usually destroy the blood supply to the anterior layers of the retina and to the papilla. A severe injury may produce an avulsion of the optic nerve, in which case there is a complete or partial tearing away of the nerve head from the globe, leaving bloodless vessels and a pale, cavernous papilla (fig 11).

A lesion in the optic nerve farther back, though vision is immediately affected, may not produce evidence of damage in the eye until the atrophy has ascended to the papilla. Pallor of the disk appears at varying intervals, depending on the distance of the injury from the eye (fig 12). Some observers believe that definite atrophy can be noted in three to eight weeks after the injury, however, the time may be much longer.

As a great number of fractures of the base of the skull extend into the orbit and the majority of orbital fractures extend into the optic foramen, the optic nerve is frequently involved in fractures in this location, especially as it is so securely attached to the roof of the canal. As a result of these injuries, vision is frequently seriously impaired by damage from severance of the nerve fibers or pressure on them. If the pressure can be relieved in time, vision may be restored. Therefore, in spite of the usual swelling and ecchymosis, if the state of the patient permits, visual fields should be charted as soon as feasible so that necessary operation can be resorted to with the hope of releasing the pressure on the optic nerve before atrophy develops.

The optic chiasm is well buffered and does not usually suffer in head injuries unless traction on one of the optic nerves tears it. In these cases the chiasm between the decussating nerves usually gives way, resulting in a bitemporal visual field defect.

Infection introduced into the wound may result in meningitis or abscess formation. Adhesions formed either from infection or from injury without sepsis may result in cyst formation, local arachnoiditis or general

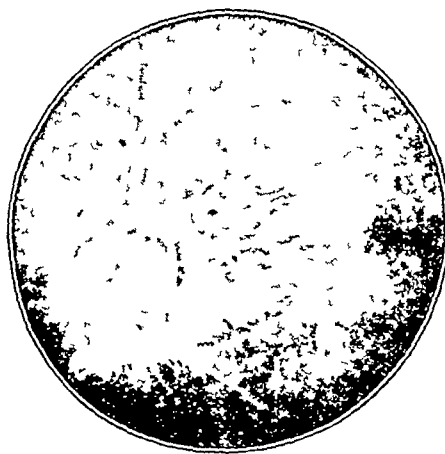


Fig 11—Avulsion of optic nerve resulting in a cavernous optic atrophy and exsanguinated blood vessels.

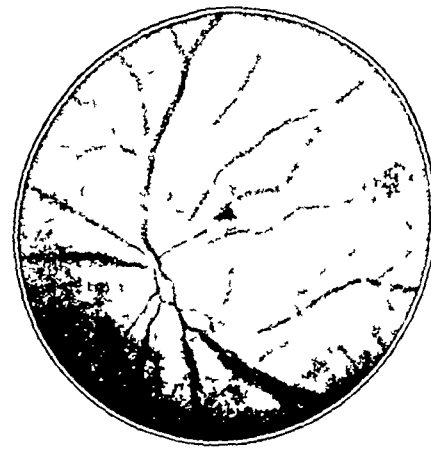


Fig 12—Optic atrophy resulting from an injury to the optic nerve in the optic foramen.

hydrocephalus. Epilepsy may also result from these adhesions. Osteomyelitis, cerebral fungi and other complications may arise.

In basal fractures there may be an injury to the internal carotid artery as it passes through the cavernous sinus. Leakage here results in the formation of an arteriovenous aneurysm. These patients show a

unilateral proptosis with interference with normal eye movements. The lids are edematous, the conjunctiva is chemotic and there is an injection or engorgement of the vessels in the area. The retina and papilla frequently show edema and engorgement. Reduction of vision and occasionally diplopia are complained of by the patient. A bruit is usually heard over the area.

#### CONVALESCENCE AND SQUELAR

Post-traumatic or postconcussion syndromes are frequently found and may be of functional or organic origin. It has been observed that when the patient is not pampered and consoled he may make a better recovery. If he is gotten up and about as soon as possible and is not kept quiet he is apt to readjust more quickly and more completely. Worries and concern over the accident may interfere with recovery.

Rapid fatigue on the part of the eyes is frequently complained of, usually along with general exhaustion, unsteadiness, incoordination of movements and affected cerebation. Nystagmus and vertigo, occasionally with nausea, are common symptoms. Movements of the eyes, usually in all directions, may be an effort. Convergence is difficult. Reading a short period of time tires the patient. Spots "dance" before the eyes. Photophobia is complained of in some instances.

If the nerves or centers controlling eye movements have been implicated, imbalance of the muscles with diplopia, at least in the direction of action of the paralyzed muscle, may remain. Atrophy of the optic nerve, chiasm and tracts may result in loss of vision with ascending optic atrophy.

Visual field changes may remain as the result of irreparable damage to the visual system. Concentric constriction, central scotoma and sector defects are frequently encountered. Occasionally annular or ring scotomas have been reported. These field defects, especially annular and central scotomas and considerably constricted or tubular fields, must be considered in reference to fatigue and hysteria. Concentric constrictions may be due to cortical atrophy or hydrocephalus, although the latter is not found commonly following head injuries. However, although internal hydrocephalus is rare, external compensatory hydrocephalus is observed as the result of the replacement of atrophic brain tissue by the cerebrospinal fluid.

Some investigators believe that the concentric and possibly the annular field defects are confined to the retina of the eyes, possibly the optic nerves and result from the violent vascular changes and disturbed metabolism produced by the injury.

#### ABSTRACT OF DISCUSSION

DR A D RUDEMANN, Cleveland. One is impressed by the large variety of head injuries that occur. The earliest injury is that of compression occurring at the time of birth, mostly in babies who have had forceps delivery. The additional compression of the forceps to the already compressed head is a factor in the production of hemorrhages at the base of the skull and undoubtedly accounts for a number of cases of squint. Also head injuries occur in the first decade in children who are learning to walk, and in careless or unguarded play. In the second decade are injuries associated with more serious and hazardous sports. Beginning in the third decade industrial injuries and accidents are in the majority. Industry has recognized the hazards associated with certain types of work and now provides protecting helmets. It is quite possible that these helmets will decrease the number of injuries as have the goggles diminished the number of eye injuries. Severe intermittent headache subsequent to head injury is an excellent diagnostic symptom when most eye signs have disappeared. Trauma to

the side of the head in the region of the orbit or directly to the eyeball may produce immediate blindness. The force of the blow may be transmitted across the bones of the orbit and produce a compression fracture in the canal, which can be revealed only by plainograph method of x-ray. The second serious result of trauma to the orbit is enophthalmos. More serious is pulsating exophthalmos, produced mainly by fracture at the base coming up along the anterior clinoids and producing a tear in the internal carotid artery and the ophthalmic vein, this produces an exophthalmos by increasing the orbital content and is usually accompanied by much loss of vision. Gunshot wounds to the occipital region involving the visual centers give bizarre field changes without any changes in the eye grounds. Head injuries and litigation are practically synonymous, and it requires careful study to justify a negative finding. The positive findings are usually demonstrable.

DR C W RUTHERFORD, Indianapolis. War wounds are of greater value for research purposes than those met in civilian experience because there are many more of them available at a time and they can be studied in case groups by specially trained investigators. Holmes and Lister (*Brain* 39:34 [June] 1918) studied war wounds of the posterior section of the cranium with reference to their effects on visual fields. The result was a clarifying of cortical localization for macular, paramacular and peripheral vision. Destruction of the margin or lateral surface of the tip of the posterior pole of the brain was exhibited as a central scotoma, lesions only slightly forward from the tip produced paracentral scotomas, while injuries still more anterior in the area striata damaged the vesual cortex or the optic radiations or both and accounted for sharply demarcated quadrant anopsia, or homonymous hemianopsia to the vertical midline, in contrast to preservation of intact macular vision as met in cases of vascular impairment in civil practice. LaGrange (*Atlas d'ophtalmoscopie de guerre*, 1918, and *Fractures of the Orbit and Injuries of the Eye in War*, 1918) investigated wounds of the anterior section of the head and their typical effects on the eyeball and its contents. Ocular lesions were located uniformly anterior to the point of contact in contusions of the globe. Constant relations existed between the site of a lesion and the course of a projectile. Hole in the macula was long accepted as a result of trauma. Almost any patient can be prompted to recall a bump on the head, but few know their visual acuity prior to such a bump. Military examinations record the visual acuity. Allied reports of ocular complications incident to war wounds (World War I) contain a surprisingly small number of cases of hole. A hole can be formed in a predisposed eye with or without a traumatic contribution.

DR WALTER I LILLIE, Philadelphia. This paper divides the traumas into the main divisions of cerebral concussion, contusions, lacerations, compressions, hemorrhages and skull fractures. The ophthalmologic manifestations are either sensory or motor disturbances. This may be in the form of oculomotor palsies, involving either the intraocular or the extraocular muscles, and fundal changes in a certain percentage of the cases. The importance of the pupillary changes during the early and late stages especially noted in the group of compressions and hemorrhages and skull fractures, is stressed by the author. The use of a cycloplegic for a fundal examination masks the important pupillary reflexes which are variable during the course of the condition. If the pupil must be dilated a mydriatic should be used which is fleeting in action and will not mask any change in the pupillary reflexes for any length of time. The fundal changes may vary from vascular manifestations in the form of arteriolar spasm with ischemia, venous congestion, edema of the disk and choking of the disk in the more severe cases. Skull fractures in my experience usually have normal ocular findings during the hospital stay but this does not rule out the possibility of ocular damage at a later date so the prognosis must be guarded. The syndromes of the intracranial pathologic changes are not unlike those produced by vascular inflammatory and neoplastic lesions although the localizing signs may be masked in the earlier stages of the convalescence.

DR DONALD J LYLE, Cincinnati. I wish to thank Drs Ruedemann, Rutherford and Lillie for discussing the paper for stressing certain phases of the subject presented and for adding interesting material to it.

## INTRAOCULAR FOREIGN BODIES

EDWARD STIEREN, MD  
PITTSBURGH

In writing on this topic my object is to emphasize and reiterate that if prompt and proper methods are adopted many injured eyes will be saved and varying degrees of vision retained and to refute the defeatist attitude that an eye with a foreign body in its interior is potentially a lost eye.

My opinions are mainly personal and based on an experience of more than forty-five years in an industrial community. "What thou seest, write in a book" (Revelation, chapter I, verse 11).

There are several abstract principles to be considered first. The history of the accident is all important, for from it one learns whether one has to deal with a magnetic or a nonmagnetic retained foreign body. If the body is nonmagnetic, recovering it becomes more difficult and the prognosis is less favorable, as it entails additional trauma to a delicate and highly specialized organ already grievously injured.

Every patient with an ocular injury either of the globe or the soft parts, should be given an immunizing dose of 1,500 units of tetanus antitoxin, not particularly for its specific action but as a foreign protein for the production of antibodies and the added resistance this will give to the ocular tissues.

Next in order is the determination of the location and the size of the intraocular foreign body. The wound of entrance can usually be detected if recent by direct examination, staining the eye with fluorescein or mercurochrome facilitates this. In small wounds that penetrate through the cornea, slit lamp examination will reveal the path of the foreign body and often the site of its lodgment.

If the media have remained clear the ophthalmoscope will often disclose the position of the foreign body if this is behind the lens, the object will appear fifteen to twenty times larger than it actually is, the dioptric system of the eye magnifying it this much.

If the foreign body cannot be seen, an x-ray localization must be made to determine not only the position but also the size. In borderline cases where it is possible that the piece of metal has penetrated the posterior sclera and lies within the orbit, the localization should be repeated, preferably by another roentgenologist. Any foreign body within the globe will cast a shadow when subjected to x-rays with the exception of optical glass, which contains little or no lead in its composition and is transparent to x-rays.

Should the particle be so small that a negative report is given, repeated plates of different densities should be made, and then one is usually able to determine its position.

With the exception of glass (which appears to be inert) all foreign bodies act as continuous irritants by processes which are partly electrolytic and partly oxidative, metals slowly going into solution in the intraocular fluids. Brass and copper are particularly toxic, and retention of iron or steel is followed by a deposit of iron throughout the eyeball (siderosis bulbi) accompanied by a chronic low grade inflammation of the uveal tract.

A case in point is that of a mill worker who had a minute piece of steel at the periphery of the lens. The eye was entirely quiet, accommodation was not dis-

turbed and he had a perfectly functioning eye with normal vision. As he was above average intelligence the situation was explained to him, that to attempt removal of the foreign body might result in the formation of a cataract, extraction of which would result in aphakia. On the other hand there was a possibility of the foreign body becoming encapsulated and giving no further trouble. He elected the latter course and appeared for inspection at regular intervals for three years with the eye remaining the same. Moving to another city he was lost sight of for five years, and then he appeared with a painful eye, pronounced siderosis and secondary glaucoma, requiring enucleation. There had been no additional trauma. True he had enjoyed normal use of his eye for six or seven years, but the outcome points to the danger of leaving a metallic foreign body within the globe. Glass when retained becomes surrounded by foreign body giant cells and ultimately encysted in scar tissue. I have several cases of glass lying in the bottom of the vitreous chamber readily seen by the ophthalmoscope. One after twenty years has given no further trouble.

In removing sharp foreign bodies from the iris it is advisable to have the patient thoroughly relaxed under intravenous sodium pentothal or a general anesthetic. It can happen under local anesthesia that the patient squeezes against the speculum and the spicule disappears through the iris and zonula to lodge in the vitreous chamber.

When the foreign body lies in the lens the latter should be removed at the same time, with thorough washing out of the anterior chamber. It is all important to extract the lens nucleus even at the expense of a loss of vitreous. This is a better procedure than to postpone removal of lens matter to a future date (hoping for spontaneous absorption), as many eyes are sensitive to lens protein and the evils incident thereto. In addition it lessens the period of convalescence and returns the workman to work sooner.

If the cornea is lacerated and the iris prolapsed, the latter should be drawn out slightly and excised. The corneal wound should be brought together either by direct suturing or with a sliding conjunctival flap that takes in the circumference of the upper half of the cornea and is sutured into the lower fornix. I prefer the flap, as it does not further traumatize the globe and immediately closes the anterior chamber, allowing atropine to exert its effect.

If the wound of entrance involves the ciliary body, I do not try to save the eye but enucleate immediately. It is better to lose one eye than to risk total blindness from sympathetic ophthalmia. This course is recommended by Friedenwald.<sup>1</sup>

In a certain number of cases (3-5 per cent) following perforating wounds of the anterior half of the eyeball there develops an intraocular inflammation which is characterized by its low grade but relentless course, by its resistance to all the usual forms of therapy, by the plasticity of the exudates which accompany it and, above all, by the fact that both eyes, the uninjured as well as the injured, become affected. Aside from its clinical histological appearance little is known about this disease except the fact that enucleation of the injured eye within two weeks of the injury precludes the development of the affection in the uninjured eye.

The number of eyes injured by magnetic in comparison with those by nonmagnetic foreign bodies will vary in different sections of the country. The magnetic

<sup>1</sup> Friedenwald, Jonas S. *The Pathology of the Eye*. New York: Macmillan Company, 1929.

foreign bodies are much more numerous, fortunately, as in this class we have the indispensable aid of the electromagnet versus forceps manipulation and groping in the nonmagnetic group. In my experience about 10 per cent of the injuring materials have been nonmagnetic, and that they gave the poorest results is obvious.

A fairly large piece of copper or brass, coal or stone, wood or lead shot can be felt with a properly designed forceps (such as is made for me by Mueller) introduced closed into the vitreous. With the localization chart directing one's movements and an adequate scleral opening, the forceps is opened and the foreign body is grasped and removed. This may require several attempts and is not good for the integrity of the eye. In this connection it must be remembered that small shot as used in a shotgun are rarely made of lead now but of chilled steel and can be removed by the magnet.

If one fourth of the bulk of the vitreous escapes or it is much disturbed by instrumental manipulations, the globe develops a minus tension and slowly deteriorates, ending in phthisis bulbi.

For this reason all the various shaped tips that come with a magnet except the cone or olive shaped ones should be discarded and not used in the vitreous. To remove small particles of ferrous metal from the anterior chamber I use the angular tip, which I have had ground down to the size of an iris reposer.

I discarded the use of the giant magnet many years ago because it is cumbersome, too strong and often more harmful to an injured eye than the original insult. Most of the damage to be feared by pulling the fragment forward around the lens is either damage that is unavoidable or damage that is due to the unskillful use of a powerful instrument.<sup>2</sup> In the practice of ophthalmology the value of the electromagnet does not depend entirely on its lifting power but depends more on the saturation of the field. The intensity of the magnetic field depends on the number of amperes multiplied by the number of turns of wire around the core. The smaller the wire, the greater the resistance. Thus the strength of the field is proportional to the number of amperes flowing through it, and since such a circuit follows Ohm's law for direct current, the strength of the field is also proportional to the applied voltage, i.e., doubling the voltage will double the field.

This rule holds accurately for field strengths below the "saturation point" of the iron core. Iron is capable of only limited magnetization, of the order of a few thousand gauss, this being termed the saturation point. The use of high voltage—and hence high amperage—in an electromagnet is limited by the magnet's power to dissipate heat. However, if used intermittently and for short periods a hand magnet is not likely to become overheated. Passing 220 volt direct current (available now in most hospitals and clinics for high voltage therapy) through the coil of a magnet up to 25 amperes resistance will about double the magnetic field.

Thus equipped the hand magnet has never failed me, nor is it necessary for the tip of the magnet to come in contact with the foreign body as some operators assert.

The magnetic field decreases proportionately to the size of the tip of the core, the small tips having much less magnetic power than the large one. It is therefore not necessary or wise to introduce a tip into the vitreous,

as the large tip applied to the surgical incision will deliver more magnetism.

My consistent practice is to remove a magnetic foreign body through the cornea when it is anterior to the posterior lens capsule and through a scleral incision when it is in the vitreous, in the choroid or on the optic disk. The wound of entrance can seldom be used, and an incision needs to be made to facilitate removal of the artefact with the least degree of additional trauma. Removal should not be attempted until one knows positively where the object is located and its size. Many different problems will be encountered in removing by the anterior route, each of which the ingenuity of the operator must solve.

The fear of detachment of the retina following trans-scleral extraction is exaggerated. My procedure is to make a conjunctival flap and dissect an opening in the sclera down to the choroid. The knife does not enter the vitreous, and the incision is well above or below the conjunctival incision in order that the two incisions may not come together.

Knowing the size and location of the foreign body, I make the scleral incision large enough to allow the body (now attached to the magnet's tip) to be delivered without tugging. I find that a modified T incision with the vertical arm about half as long as the horizontal allows for an easier delivery. Before the conjunctival flap is sutured into place, and this is the most important step in the procedure, a cotton tipped applicator dipped in pure phenol (carbolic acid) is touched to the scleral incision. This acid acts as an irritant as well as an antiseptic, inducing local choroiditis, which causes adherence of the choroid to the sclera and the retina to the choroid and prevents postoperative separation of the retina. The incision can be ringed with diathermic puncture to achieve the same result, as advocated by others, but this takes time and time is of the essence. I have never observed the retina detach itself when my technic has been used.

I deplore the use of the magnet as a diagnostic instrument to determine whether ferrous metal is within the globe. A live magnet should never be brought to an eye. Only until the method of removal has been determined on and the size and the location of the foreign body are known should the magnet be used. Then the tip of the magnet is placed in the wound of exit and then only should the current be turned on.

Infections and inflammations of the uveal tract limited to the anterior segment of the eye must be combated by the operator's preferred methods. When the sulfonamide compounds first appeared I was encouraged by the immediate favorable result when they were administered internally, then, about the second day, improvement would halt. When penicillin becomes available, perhaps its action will be more reliable and sure against bacterial resistance. In combating infections I depend on systemic shock resulting from injections of foreign protein or intravenous injections of typhoid vaccine. Milk injected into the gluteal muscles is painful and may result in abscess formation. I have had good results from subcutaneous injections of proteolac, but if the reaction produces a body temperature of less than 101 F I change to triple typhoid or typhoid H vaccine, as a temperature of 102 to 103 F is desired.

Should a purulent infection of the vitreous ensue, the case is hopeless and the eye must be enucleated.

An evaluation of the end results in these cases depends on so many factors that reliable statistics are impossible. The structures involved in the injury the

<sup>2</sup> Lancaster, Walter B. The Technic of Extraction of Intraocular Foreign Bodies. *Am J Surg* 42: 14 (Oct) 1953.

time the foreign body has been retained, its composition and the additional trauma required to remove it are all deciding factors. My most favorable results have been obtained when the wound of entrance was through the sclera. It is remarkable how rarely in such cases the tissues are infected—perhaps the vitreous is a poor culture medium or its viscous structure is germ repellent. At any rate entrance of a foreign body through the cornea is much more liable to be followed by infection.

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#### ABSTRACT OF DISCUSSION

DR. ELMERT S. SHIRMAN, Newark, N. J. Faced with the problem of recovering an intraocular foreign body, no one can foretell the ultimate outcome. Factors favoring success are experience, good judgment, ingenuity and proper equipment. Fortunately the invading object is usually magnetizable. In about 10 per cent of Dr. Stieren's cases it was nonmagnetic. In this respect his experience and mine coincide. Some will take exception to his practice of enucleating immediately every eye in which the wound of entrance involves the ciliary body. This seems unnecessarily radical. In at least 10 to 15 per cent of cases the ciliary body is involved and as the lens is usually uninjured the recovery with good vision is probable unless there is other serious damage. Often the passage of a small foreign body through the ciliary body causes but little reaction. Even though the resulting iridocyclitis is more or less severe and if the eye is not blind, one should wait a week before enucleating. In the meantime active foreign protein therapy, in the form of intravenous typhoid vaccine and the removal of focal infection when present, will often give gratifying results. I have never had reason to regret this procedure and feel certain that many eyes have been saved that would have been needlessly sacrificed by a too hasty enucleation. I want to endorse Dr. Stieren's statement that the tear of detachment of the retina following transscleral extraction is exaggerated. If, as he advises, one does not permit a magnet tip or other instrument to enter the vitreous and applies some suitable cauterizing agent to the scleral incision to cause an adhesive choroiditis, detachment of the retina following the removal of recent foreign bodies will seldom occur, either immediately or later. In many magnet cases akinesia of the orbicularis is helpful, especially if there is likely to be any disturbance of the iris or loss of vitreous. It will prevent the squeezing referred to in the paper.

DR. C. A. VEASEY SR., Spokane, Wash. I employ tetanus antitoxin in all cases in which the possibility of tetanus is present. But in those cases in which the action of foreign protein alone was desired, typhoid vaccine was usually used. The location and size of the foreign body should be determined in every case. If this cannot be done by external examination—the use of the ophthalmoscope or slit lamp—it should be done by a proper x-ray examination. The suggestion that in cases in which the x-rays show the foreign body to be possibly in the sclera or just within or external to the eyeball the x-ray examination should be repeated preferably by another roentgenologist, seems to me excellent. If the wound of entrance is through the ciliary body, or what Mr. Nettleship called "the danger zone" of the eye, it is my custom to recommend enucleation. A few have declined and escaped trouble, but it is dangerous and, like Dr. Stieren, I have always felt that it was better to lose the injured eye rather than to risk the grave possibility of sympathetic ophthalmia. Dr. Stieren and I are in agreement on the advisability of avoiding the use of the giant magnet and on the employment of the hand magnet after definite localization of the foreign body. I agree that the magnet should never be employed as a diagnostic instrument to determine whether or not a magnetic foreign body is present. It is damaging in many instances and does great harm to an eye which otherwise might have obtained useful vision if localization by x-ray had been employed first.

DR. GEORGE H. CROSS, Chester, Pa. With the advancement of science, steel has been combined with many different substances, including tungsten, tantalum, molybdenum, columbium, cobalt matrix, chromium and nickel, that render it less mag-

netic, so that we have many more cases of nonmagnetic foreign bodies to remove. I must take exception to Dr. Stieren's use of the term "groping" in removing nonmagnetic foreign bodies. With the assistance of a good roentgenologist and using my method devised in 1926, it is possible to apply special forceps and remove the nonmagnetic foreign body from the eye with a minimum of trauma, even though the eye is filled with blood and no view of the interior is obtainable, and many times on the first attempt, thus saving eyes that previously were immediately enucleated. Dr. Stieren emphasizes the necessity of removing foreign bodies promptly from within the globe. Most surgeons feel, as he does, that an eye with a retained foreign body is always a dangerous eye even though the foreign body may be retained for many years. We all agree with Dr. Stieren in not inserting small magnets into the vitreous. An exception to the immediate removal of foreign bodies should be made in those cases in which the foreign body is located in the lens, where it remains intact as we know there is less reaction to a foreign body here than in any other part of the globe. Sufficient time should be allowed to permit the traumatic cataract to become thoroughly opaque and more solid, keeping the eye under observation as to tension and reaction, and then do an intracapsular extraction by the Knapp method, with the Arruga or Kalt-Arruga forceps, removing the lens intact with the foreign body in it. Glass in the anterior chamber sometimes can be removed if the operator wears high power magnification, as a Bausch and Lomb or Zeiss loupe, and with sharp illumination it is possible to grasp the glass fragment with a fine pair of needle point forceps through a limbal incision.

DR. EDWARD STIEREN, Pittsburgh. Regarding Dr. Sherman's proper criticism of prompt enucleation when the ciliary region has been involved, we assume a tremendous responsibility. There is no way of estimating which of these cases might be followed by sympathetic ophthalmia. All operators who have had this happen to them must regret their conservatism, for there is nothing that can be done to restore vision in either eye once the disease has developed. I am grateful to Dr. Veasey for his concurrence in this belief. Few of us have the valuable aid of a trained fluoroscopist, as Dr. Cross has, to direct the movements of our forceps in removing vitreous nonmagnetic foreign bodies, but even so there must be more or less disturbance of the vitreous as he directs the forceps to be moved up or down, right or left. The more the vitreous is traumatized, the less the probability of saving a useful eye. When I advocate prompt removal of a traumatic cataract I have in mind a lacerated anterior capsule with cortical matter in the anterior chamber.

**Mechanism of Gallstone Formation**—The formation of gallstones cannot be attributed to a single cause but must be referred to a number of pathologic conditions each of which may be due to one or more specific agents. Common observations indicate that one or more of three basic conditions always exist during the formation of biliary calculi, namely (1) stasis of the bile, (2) inflammation of the gallbladder or bile ducts and (3) abnormal metabolism involving the normal constituents of the bile. Of these conditions the first two contribute to the formation of gallstones either through an interference with the specific concentrating function of the gallbladder or through the production of a generally altered physical and chemical composition of the bile. The third condition, disordered metabolism, is important as best we know, because of the resulting formation and excretion of excessive amounts of certain constituents of the bile. Inflammation of the biliary system and bile stasis are almost inseparable conditions and it is therefore impossible to determine their relative importance. Abnormal metabolism usually occurs independent of the other two conditions and therefore must act alone. It should be emphasized that the metabolic disorder referred to is a general process affecting the body as a whole and not a condition referable to the biliary tract, the essential factor in this connection is therefore not the function or structure of the gallbladder and the ducts but the composition of the bile as it is excreted by the liver—Forbus, Wiley D. *Reaction to Injury*. Baltimore: Williams and Wilkins Company, 1943.



INFRA-RED THERAPY OF FLASH  
KERATOCONJUNCTIVITISDAVID G COGAN, MD  
V EVERETT KINSEY, PhD  
AND  
PHILIP DRINKER, CHL  
BOSTON

Recent increase in "flash" keratoconjunctivitis from exposure to welding arcs has revived interest in methods of treatment for this condition. One of the methods currently receiving considerable attention is the use of infra-red radiation. It is reported that the ocular condition produced by exposure to electric flashes "can be cured by direct exposure of the eyes to infra-red rays."<sup>1</sup> There does not appear to be any rationale for this form of treatment, as the biologic effects of the ultraviolet rays which cause the keratoconjunctivitis are fundamentally different from those of the infra-red rays used in its treatment and there is no a priori reason that the one form of radiation would have a "neutralizing effect" on the other. Nevertheless, the importance of the subject at the present time and the wide attention which this form of treatment has received made it advisable to determine whether or not the aforementioned clinical report had an experimental corroboration.

To this end the following experimental procedures were used. After suitable radiation doses had been established, 10 rabbit eyes were exposed to an 85 watt mercury vapor arc with doses of ultraviolet radiation sufficiently above the threshold to cause a reproducible keratoconjunctivitis. After five hours, when the lesions first became apparent, alternate eyes were treated with a therapeutic heat lamp. The eyes were then examined and compared periodically until healed.

The mercury vapor lamp used in producing the lesions and the heat lamp used in its therapy were placed 15 cm from the eye. A hole had been drilled in the glass casing of the mercury lamp to permit the passage of ultraviolet rays less than 3,100 angstroms. Prior to each exposure the rabbit's eye was anesthetized by one instillation of 1 per cent pontocaine and during the exposure the eyelids were held open by a speculum. The heat lamp was found to deliver 0.75 Gm calory per square centimeter per minute at the distance used, as measured by a calibrated thermopile.

The pertinent data leading to the choice of suitable exposures and the results of treatment of experimental ultraviolet keratitis by infra-red radiation are collectively presented in the accompanying table. The ocular reaction is graded from 0 to + + + + according to the following criteria: ±, questionable abnormality; +, minimal mottling of surface and dilatation of blood vessel; ++, mottling of the surface, dilatation of blood vessels and abnormal staining of one half or less of the cornea by fluorescein; + + +, pronounced mottling of surface and dilatation of blood vessels with staining of more than one half of cornea; + + + +, same plus an opacity of the cornea. From part 1 of the table it is apparent that a three minute exposure to the mercury arc lamp under the conditions of the experiment provides a dose somewhat above the threshold while from the latter portion of part 3 of the table it is apparent that the signs from this dose are reasonably

reproducible. Thus, twenty hours after the exposure all the eyes which had been exposed for three minutes showed moderate mottling of the corneal surface, best seen with an illuminated Placido disk; a mild dilatation of the conjunctival and ciliary blood vessels, and a take with fluorescein stain over some portions of the cornea. All corneas were healed in six days. The signs were similar in magnitude to those previously produced by exposing rabbit eyes to welding arcs at a distance of 3½ feet for sixty seconds.<sup>2</sup>

Part 2 of the table indicates the ocular reaction with application of the heat lamp for various times. It is obvious that exposures of fifteen minutes or more under the conditions of the experiment consistently produce corneal lesions that are manifest in twenty hours. Exposure of five minutes, however, produced no visible

*Results of Exposure to Mercury Vapor Arc and to Heat Lamp*

	Time of Exposure to Mercury Vapor Arc Minutes	Time of Exposure to Heat Lamp Minutes	Reaction in 20 Hours	
1 Effect of exposure to mercury vapor arc	1		0	
	2		+	
	3		++	
	3½		+++	
	8½		+++	
	9		+++	
2 Effect of exposure to heat lamp		5	0	
		5	0	
		15	++++	
		15	++	
		15	++++	
		40	++++	
3 Treatment of flash' kerato conjunctivitis by heat lamp	Treated	3	5	++
		3	5	++
		3	5	+
		3	5	+++
		3	5	++
	Control	3		++
		3		++
		3		+
		3		++
		3		++

damage. This latter time was therefore selected as providing an appropriate exposure for the experiments on infra-red therapy.

Part 3 of the table indicates the results of exposing 10 eyes for three minutes to the mercury arc with and without treatment by the heat lamp. No significant difference between the treated and untreated groups was found.

## SUMMARY AND CONCLUSION

Keratoconjunctivitis was produced in rabbits by exposure to a mercury vapor arc. After the establishment of doses that would result in reproducible signs alternate eyes were treated by means of a therapeutic heat lamp. No evidence was obtained to indicate that this form of treatment benefited the keratoconjunctivitis.

243 Charles Street.

From the Howe Laboratory of Ophthalmology, Harvard Medical School and the U. S. Maritime Commission.  
1. Whitehead W. M., and Blanton W. P. Electric Ophthalmia. *Eve Ear Nose and Throat Monthly* 22: 178-179 (May) 1943.

2. Cogan D. G. Self Luminous Placido Disk. *Am J Ophth* 23: 914-915 (Aug) 1940.  
3. Kinsey A. F. Cogan D. G. and Drinker Philip. Measuring Eye Flash from Arc Welding. *J A M A* 123: 403 (Oct 16) 1943.



## VALVULAR HEART DISEASE

PREVIOUSLY UNRECOGNIZED IN MILITARY  
MEDICAL EXAMINATIONS

CAPTAIN JOSEPH H DELANEY

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The cardiovascular sections of the Medical Processing Unit and of the Station Hospital of the San Antonio Aviation Cadet Center, San Antonio, Texas, examined during a number of months approximately 45,000 men who were taking the Army 64 examination for flying. These examinees, between the ages of 18 and 27 years inclusive, were for the most part candidates for aircrew training. All of them had been subjected to at least one screening examination. In spite of this, 100 of them were found to have rheumatic valvular heart disease. Some had been examined routinely as many as twelve times in the course of their military service. Only 11 of this group knew of the presence of a heart murmur while in civilian life.

## METHOD OF EXAMINATION

After experimenting with several methods, we found the following procedure to be the best suited to the careful examination of large numbers of men in a short time.

The medical history of the candidate was obtained, and his pulse rate, blood pressure and Schneider index were recorded prior to his entrance into the heart station. He was then interrogated regarding rheumatism, rheumatic fever, growing pains, joint pains, arthritis, St Vitus dance, scarlet fever, diphtheria, heart murmurs or heart disease. Following a brief general inspection he was instructed to exhale deeply and to lean forward about 20 degrees. Auscultation was then performed with the diaphragm type (Bowles) stethoscope, with particular attention to the aortic area and to the left sternal border. The examiner listened long enough to assure himself of the presence or the absence of significant murmurs. The examinee then exerted himself by briskly executing eight or ten deep knee bending exercises and was immediately examined in the left lateral recumbent position with special attention to the mitral area. The bell type of stethoscope proved to be most effective for this part of the examination. The candidate was first examined by a student officer from the School of Aviation Medicine and then by the staff cardiologist. The average time of each examination was two minutes.

Every examinee with a history of rheumatic disease, heart murmur or heart disease was examined by means of the fluoroscope, studied electrocardiographically and reexamined clinically.

Routine x-ray examinations were made of the chests of all candidates to rule out pulmonary disease. If the heart shadow appeared abnormal on the film, the candidate was recalled for further clinical examination and fluoroscopic study.

Each candidate with a questionable or a definite organic murmur was further studied fluoroscopically, electrocardiographically and often with the use of the teleoroentgenograph. Each was then reexamined clinically at greater leisure. A pulmonic systolic murmur was not considered evidence of valvular disease unless very loud or accompanied by a thrill.

Any cardiac murmur occurring during diastole was considered evidence of organic valvular disease.

Finally, all candidates with questionable, as well as definite, valvular heart disease were sent to the Station Hospital for close observation, complete evaluation and final disposition. Many of these were subsequently transferred to the School of Aviation Medicine at Randolph Field, where they were independently studied and used as teaching material. Every diagnosis was corroborated by the four of us and in many instances by other observers. Each examinee was under close observation for a period of not less than three weeks from the time his medical examination was begun at the Medical Processing Unit until his case was reviewed by the disposition board at the Station Hospital. This study and observation permitted the exclusion of transient murmurs and bruits of extracardiac origin.

Such a plan of study as this is indicated because a carefully considered decision must be made within a relatively short time, without the benefit of examination for progress over a period of several months.

## VALVULAR DISEASE ENCOUNTERED

Table 1 shows the types of valvular involvement encountered and their distribution among these 100 men.

The figures in table 1 are not in agreement with those usually quoted as representative of the total population with rheumatic heart disease.<sup>1</sup> The mitral valve was involved in 57 per cent in our series, compared with the usually reported 95 per cent.<sup>2</sup> The aortic valve alone was involved in 43 per cent of our series, in contrast with the 5 per cent usually seen.<sup>2</sup> Moreover, the number of patients with involvement of more than one valve in the present series is small in comparison with the numbers in other series. This probably pictures the minimal nature of the lesions encountered in this selected group. The preponderance of aortic insufficiency in proportion to its reported occurrence in other series of rheumatic valvular heart disease would indicate that this is the lesion which is most frequently overlooked.

## HISTORY

A history of rheumatic fever or of chorea was obtained from only 30 of the 100 men with valvular disease, a history of growing pains and frequent unexplained epistaxis, from each of 2, and a history of scarlet fever with cardiac damage occurring at the same time, from 1. In all, 35 patients on careful questioning admitted some manifestation of rheumatism. Often the history was concealed at first by the applicant and was elicited only after the candidate knew that he had been eliminated from military training because of the clinical findings and that there was no advantage in further concealment. Usually a history of some manifestation of rheumatic fever can be obtained from over 70 per cent of patients with rheumatic heart disease.<sup>3</sup> While it is well known that bouts of rheumatism are often forgotten, the small number of histories obtained would tend to show that the rheumatic infection was mild or atypical and hence unrecognized or more easily forgotten. Multiple attacks of rheumatic fever had occurred in only 2 men. Two others had experienced both chorea and rheumatic fever. Only 3 patients had had chorea, confirming the fact that this is an uncommon disease in males.

1 Lewis Thomas, *Diseases of the Heart*, ed 2, New York: Macmillan Company, 1937, p 203.  
2 White, Paul D, *Heart Disease*, ed 2, New York: Macmillan Company, 1937, p 238.  
3 White, *Heart Disease*, p 232.

## CARDIAC HYPERTROPHY

All candidates with rheumatic histories and questionable or definite murmurs were examined fluoroscopically. Many of them also had teleoroentgenograms from which the Ungerleider index was computed. By

TABLE 1—Valvular Involvement

Aortic valvular disease alone	43
Aortic insufficiency alone	39
Aortic stenosis alone	0
Aortic stenosis and insufficiency	4
Mitral valvular disease alone	48
Mitral stenosis alone	4
Mitral insufficiency alone	10
Mitral stenosis and insufficiency	34
Combined aortic and mitral valvular disease	9
Aortic insufficiency with mitral stenosis and insufficiency	5
Aortic insufficiency and stenosis with mitral stenosis and insufficiency	1
Aortic insufficiency and mitral insufficiency	3
Tricuspid or pulmonic valvular heart disease	0
Total	100

these examinations the degree of cardiac hypertrophy was estimated.

The incidence of cardiac hypertrophy in this series of patients with valvular disease is shown in table 2.

In only 2 instances did the Ungerleider index exceed plus 20 per cent. Cardiofluoroscopy yielded more helpful information than did evaluation of the heart size by the use of the Ungerleider index for the following reasons: 1. Fluoroscopy often showed enlargement of individual chambers of the heart when the Ungerleider index was within normal limits. This was particularly true as to men with mitral stenosis. 2. The Ungerleider index was often larger than plus 10 per cent when no other evidence of heart disease could be found. This was especially true as to men with slight deformities of the thoracic wall and as to those of strikingly sthenic build.

It is of interest that there were 8 examinees with aortic insufficiency without cardiac hypertrophy whose last known attack of rheumatic fever occurred eight, ten, twelve, twelve, fourteen, fifteen, sixteen and sixteen years prior to this examination. Since it may be assumed that the valvulitis occurred at or before that time, it would follow that minimal degrees of aortic insufficiency may be borne for a number of years without cardiac hypertrophy. Indeed it would seem that as no peripheral signs of aortic insufficiency were present in this group there are a number of persons with minimal aortic valvular lesions which are either stabilized or very slowly progressive in the absence of repeated rheumatic infection. Follow-up examinations of these persons over a long period would be of great interest and importance.

## ELECTROCARDIOGRAPHIC FINDINGS

The electrocardiograph proved to be the least valuable diagnostic instrument used in the study of these candidates. Although electrocardiograms were routinely made on every man who gave a history of rheumatism, even in the absence of physical signs of heart disease no abnormalities were encountered. As a case finding method its value is negligible. In the 100 cases of

valvular heart disease with physical signs only 10 abnormal tracings were encountered, and these were found only in cases of involvement of the mitral valve. First degree auriculoventricular block was encountered five times, bundle branch block once and tall, notched P waves four times.

## AUSCULTATORY FINDINGS

In the final analysis accurate auscultation proved to be the only reliable means of discovering valvular heart disease in this group. The aortic diastolic murmurs were for the most part of high pitch, of low intensity and of long duration, often heard only in the third and fourth interspaces along the left sternal border. In these cases of mitral stenosis the middiastolic rumble was not commonly encountered. The characteristic murmur was the rough presystolic crescendo ending in a loud sharp first tone. Often it was elicited only after considerable exercise on the part of the subject. The importance of listening carefully for this murmur in the presence of a loud first tone at the apex cannot be overestimated. Auscultation over a wide area is necessary for the murmur is sometimes localized over a space no larger than a quarter (24 mm). Differentiation of the presystolic murmur from the split or impure first sound heard at the cardiac apex in a thin chested person with an overactive heart is often a problem. One should recognize the type of person in whom the latter is usually found. The other important things are (1) the duration of the murmur (the presystolic is always longer), (2) the crescendo sound of the presystolic murmur (in the impure first tone the loudest part may be heard first), (3) the fact that every presystolic murmur can be heard in its classic form at some time and that often repeated examinations are necessary, (4) the fact that the characteristic loud,

TABLE 2—Cardiac Hypertrophy

Type of Disease	Enlarged Heart	Normal Sized Heart
Aortic insufficiency alone	10	29
Aortic insufficiency and stenosis	3	1
Mitral insufficiency alone	0	10*
Mitral stenosis alone	0	4†
Aortic insufficiency and mitral stenosis and insufficiency	4	2‡
Mitral stenosis and insufficiency	11	23
Aortic insufficiency and mitral insufficiency	0	3‡
Total	28	72

\* In 3 patients the Ungerleider index was plus 15, 13 and 10. The fluoroscopic findings were normal.

† In 2 patients the Ungerleider index was plus 15 and 10 but fluoroscopy gave normal results.

‡ In 1 patient the Ungerleider index was plus 12. The fluoroscopic findings were normal.

† In 1 patient the Ungerleider index was plus 12. The fluoroscopic findings were normal.

sharp snapping first tone always follows a presystolic murmur. An accentuated or reduplicated pulmonic second tone should always be an indication for careful reexamination of the mitral area.

The most difficult problem was the evaluation of the systolic murmur. We attempted to grade these murmurs according to the classification of Levine.<sup>4</sup> Since

<sup>4</sup> Levine, Samuel. Clinical Heart Disease. Philadelphia: W. B. Saunders Company, 1940, p. 271.

it is impossible for us to follow our examinees over a long period of time, the diagnosis of organic mitral insufficiency was made on the basis of auscultatory signs alone only when the murmur was of grade 3 intensity or louder. With the grade 2 systolic murmur either a definite history of rheumatic infection or some other sign of heart disease had to be present before the diagnosis of organic valvular disease was made. The fact that in many instances a murmur heard at the apex is transmitted from a loud pulmonary systolic murmur soon became evident to us. In these instances the murmur heard at the apex has the same quality and pitch as that identified at the pulmonic area. It can be traced from the point of origin to the cardiac apex is heard only during complete expiration and usually disappears when a small amount of air has been taken into the chest. A number of men with this type of murmur were studied fluoroscopically and electrocardiographically, and no evidence of heart disease could be found.

#### OTHER SIGNS AND SYMPTOMS OF HEART DISEASE

Other signs of heart disease were infrequent in this group. Sometimes the apex impulse could be found displaced to the left. Occasionally the typical mitral facies was encountered. Cardiac thrills were distinctly uncommon, although looked for in all patients. None of the signs of congestive failure were present in the entire group. Clubbed fingers proved in every instance to be a misleading sign. At least 10 examples of this interesting abnormality were encountered. Complete studies in these cases failed to reveal evidence of cardiac or pulmonary disease and led to the conclusion that the condition probably was of congenital origin.

The absence of peripheral signs in most of our cases of aortic insufficiency was striking. A capillary pulse was found only three times, and the other classic peripheral signs of aortic insufficiency were absent. The highest systolic blood pressure encountered in this group was 178 mm of mercury, and the lowest diastolic pressure was 55 mm of mercury.

Symptoms of heart disease were conspicuous by their absence. One man alone in the entire group with valvular disease complained of symptoms referable to the heart, and these symptoms were easy fatigability and palpitation on exertion and at rest. He was judged also to have neurocirculatory asthenia. The absence of symptoms in the other 99 men in the group was striking and in sharp contrast with the plethora of symptoms encountered in the group with neurocirculatory asthenia. The fact that practically all were active in sports is not surprising. The literature contains numerous references to athletic feats performed by persons with valvular heart disease.<sup>5</sup>

#### COMMENT

The presence of a sizable number of men with unrecognized minimal heart disease in a group which had previously been subjected to fairly careful examination seems to us to be an important observation. Cole<sup>6</sup> reported the incidence of heart disease in college stu-

dents, who at least partially resemble this group, as 15 per thousand. He gave no figures as to the percentage in whom heart disease was previously unrecognized. Judging from the occurrence of 2 per thousand in one group there must be a large number of young people with unrecognized minimal valvular disease in the general population. The importance of early recognition of this group from the military point of view is obvious. Despite their good cardiac reserve and absence of symptoms they are under a handicap when forced to extreme physical exertion. They are susceptible to recurrent bouts of rheumatic fever which may make them cardiac cripples prematurely. The danger of subacute bacterial endocarditis always threatens. There is always the possibility that they may become a government charge when and if some one discovers later in their military career that they have heart disease.

The group is also important from the industrial, insurance and public health points of view. The fact that large numbers of physicians do not recognize that such lesions exist is evident. Many physicians are accustomed to think of aortic insufficiency as occurring only in the presence of great enlargement of the heart, a loud diastolic murmur, low diastolic blood pressure and classic peripheral signs. That mitral stenosis occurs in the absence of dyspnea on exertion, a loud, easily audible murmur and a large left auricle is often not appreciated. True enough the unrecognized patients do not consult the doctor because of symptoms of heart disease, but they do go to physicians for other reasons. Careful and attentive auscultation even in the absence of a history of rheumatism will yield fruitful results in the discovery of minimal valvular heart disease.

Once the diagnosis is made, the management must be skilful. It is unfair to make these young men heart conscious. They must be tactfully guided into occupations in which their livelihood is not dependent on their physical endurance. They should be guarded from undue exposure to the weather, and they should not engage in strenuous competitive sports. At the same time the physician must not alarm them unduly. It is all too easy to make cardiac invalids out of them. They should be carefully followed in order that further knowledge may be gained as to the prognosis and ultimate outcome of these minimal lesions.

#### SUMMARY AND CONCLUSIONS

In the examination of a large number of men aged 18 to 27 inclusive, approximately 2 per thousand were found to have hitherto unrecognized valvular heart disease despite the fact that they had all been subjected to two or more physical examinations. The condition most frequently unrecognized was aortic insufficiency. In almost every case the valvular disease was minimal and was associated with minimal cardiac hypertrophy or none.

The fact that only 35 per cent gave a history of any manifestation of rheumatism is in contrast with the fact that in most series the usual figure is 70 per cent or over.

Careful auscultation is the only reliable means of detecting this type of heart disease.

The discovery of such unrecognized heart disease is important from both military and civilian standpoints, hence there should be more careful cardiac examinations.

<sup>5</sup> Jöhl, Ernst, and Suzman, M. M. Aortic Regurgitation and Mitral Stenosis in Marathon Runner, with Special Reference to Effects of Valvular Heart Disease on Physical Efficiency, *J A M A* 114: 467 (Feb 10) 1940.

<sup>6</sup> Cole, Llewellyn R. Cardiac Disease Among 29 189 Newly Entering Students at the University of Wisconsin, *Am J M Sc* 201: 197 (Feb) 1941.

## GRAIN ITCH

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In spite of the fact that *Pediculoides ventricosus* is an apparently widespread habitant of the United States, a review of the literature reveals but little concerning this obnoxious mite. In fact aside from a report<sup>1</sup> of several cases in 1933, a report on harvest itch in Europe<sup>2</sup> and Grove's<sup>3</sup> study on hypersensitivity to *P. ventricosus*, it was necessary to go back to 1909-1910, when original investigation was done to find case reports in American medical literature. Therefore most accounts including treatment and prophylaxis found in the modern textbook, are taken from these original articles.

The disease seems to be fairly common in certain farming districts of the United States, but since it responds rapidly to simple remedies it would appear that many cases are never diagnosed, the cause being attributed to some form of allergy or to mosquito or other insect bites. The epidemic reported in this paper was originally attributed to allergy, and considerable work was done along these lines before the causal agent was discovered.

## SYNONYMS

Among the terms used in describing this condition are grain itch, acarodermatitis urticarioides, barley itch, grain mite dermatitis, straw itch, mattress itch and hay itch.

## SYMPTOMS

The onset of symptoms after exposure varies from twenty minutes<sup>4</sup> to twenty-four hours,<sup>5</sup> Schamberg<sup>6</sup> records sixteen hours as the normal time.

It is thought that *Pediculoides* in the process of abstracting liquid substance from the skin synchronously injects an irritating substance which gives rise to an urticarial type of lesion. These lesions, which may be situated anywhere on the body, are extremely itchy, are pale pink to bright red and vary in size from pin-head to 2 or more inches in diameter. Many lesions are surmounted by a tiny vesicle but no puncture wound is visible. Secondary infection is common as a result of scratching, and pyoderma and impetiginous lesions may occur resulting in enlargement of the neighboring lymph nodes.

Goldberger and Schamberg<sup>7</sup> report a moderate leukocytosis and eosinophilia with occasional albuminuria occurring in many cases which they studied.

Slight malaise is present only when the lesions are very extensive or when decided secondary infection occurs, and persons who have been in frequent contact with the mites, such as farmers, frequently have few or no symptoms, having apparently become desensitized to the obnoxious material.

## ETIOLOGY

The disorder is produced by a mite first discovered by Mr. George Newport of England in 1849 and known as *Pediculosus ventricosus*. In 1872 Sante reported an epidemic "in which a microscopic insect analogous to the acarus of scabies caused an itch."<sup>8</sup> Prior to this time outbreaks of an itching eruption in people sleeping on straw mattresses were observed in Massachusetts in 1829, 1831 and 1845. In France in 1849 similar eruptions were noticed in laborers who handled the straw of wheat and barley. These epidemics were probably due to *Pediculoides*, and while this mite was first identified entomologically in the United States by Webster<sup>9</sup> in 1882 it was not until May 14, 1909 that Dr. Lyman T. Rawles<sup>10</sup> proved conclusively that *Pediculoides ventricosus* was the cause of grain itch. Almost simultaneously Schamberg and Goldberger,<sup>7</sup> reporting on an epidemic of the eruption occurring in and around Philadelphia, demonstrated conclusively the causation of the eruption.

It is interesting to note that in 1902 the mite (which is a parasite of the boll weevil) was brought from Mexico to Texas by Hunter<sup>8</sup> for the purpose of destroying the boll weevil. This experiment was not a success, as the mite was destroyed by a small ant which acted as a natural check.

In 1923 Ancona<sup>11</sup> reported a peculiar form of asthma occurring among workers in grain mills in Florence, Italy, which he attributed to the inhalation of the mite or to its action on the nasal mucosa. In 1925 Storm van Leeuwen<sup>12</sup> regarded this condition as being due to the action of the mite in biting the skin, providing the sensitization necessary for the asthmatic symptoms to result from subsequent contact or inhalation.

The female, which is the larger, measures 0.2 mm in length, and under favorable conditions only six days elapse from the time the young female emerges from the mother before they reproduce a brood of their own. The brood varies in number from a few dozen to over 200. *Pediculoides* lives as an ectoparasite on various insects especially in their larval stages. Probably the most common of these is the grain moth (the adult of which is a small gray moth not unlike a cloth moth, and its larvae feed on the grain of cereals) and the abundance of the mites varies in direct proportion to the number of insects present.

At winter temperatures but little development takes place, the mites appearing over winter as gravid females.

The microscopic examination of the cutaneous lesion as described by Schamberg<sup>6</sup> demonstrates the fact that the mite does not burrow into the skin as does the acarus of scabies and that the pathologic changes in the skin are characteristic of urticaria. There is a circumscribed elevation of the epidermis with thinning of the horny layers and absence of the stratum granulosum with the rete cells showing some alteration. The papillary zone is infiltrated with round cells, polymorphonuclear leukocytes and mast cells. There is considerable dilatation of the blood vessels and lymph spaces. No trace of a puncture can be discerned.

From the Lois Grunow Memorial Clinic.

1 Kirtledge H. E. Grain Itch. Report of 2 Cases Occurring in Small Epidemic. *Virginia M. Monthly*, 60: 357-360 (Sept.) 1933.

2 von Wallenrodtt Haupt A. Harvest Itch in Europe. *Urol. & Cutan. Rev.* 3:4 744-748 (Nov.) 1930.

3 Grove E. F. Studies in Specific Hypersensitivity. Asthma and Dermatitis Due to Hypersensitivity to *Pediculoides ventricosus*. *J. Immunol.* 12: 263-271 (Oct.) 1926.

4 Swan D. C. Dermatitis Caused by Mite (*Pediculoides ventricosus*) and Its Occurrence in Australia. *M. J. Australia* 2: 5-3 578 (Nov. 3) 1934.

5 Sutton R. L. and Sutton R. L. Jr. Diseases of the Skin ed 10. St. Louis C. V. Mosby Company 1939 pp 1345-1348.

6 Schamberg J. F. Grain Itch (Acarodermatitis Urticarioides). A Study of a New Disease in This Country. *J. Cutan. Dis.* 28: 67 (Feb.) 1910.

7 Goldberger, Joseph and Schamberg J. F. Epidemic of an Urticarioid Dermatitis Due to a Small Mite (*Pediculoides ventricosus*) in the Straw of Mattresses. *Pub. Health Rep.* 2:4 973-975 (July 9) 1909.

8 Quoted in Schamberg<sup>6</sup>.

9 Webster F. M. and Reeves G. I. Wheat Straw Worm Circular 106 U. S. Dept. of Agriculture 1909.

10 Rawles L. T. Straw Itch. *Indiana M. J.* 2: 337 1909. *Dermatitis Pediculoides ventricosus*. *Synonym Grain Itch*. *ibid.* 3: 351-364 1910.

11 Ancona G. Asma epidemica da *Pediculoides ventricosus*. *Istituto clinico (medical section)* 30: 45-70 (Feb.) 1923.

12 Storm van Leeuwen W. Allergic Diseases. Philadelphia, J. B. Lippincott Company 1923 p 24.

## DIFFERENTIAL DIAGNOSIS

The disease must be differentiated from urticaria, scabies, pediculosis, chickenpox and erythema multiforme. A history of previous contact with straw, the occurrence of the eruption in families or groups of laborers and the urticarial type of reaction surmounted by the vesicle are positive aids in the diagnosis of grain itch.

In urticaria the lesions are evanescent in character, different stages of the lesions are seen and the eruption is frequently preceded by constitutional symptoms.

Scabies with its characteristic distribution is positively identified with the findings of the acarus by microscopic examination.

The lesions of *Pediculosis corporis* are usually limited to the trunk, and the hemorrhagic puncta found on the scapular region and around the waist are characteristic. By searching the seams of the undergarments the pediculi are usually found.

Chickenpox is seen more commonly in children. The eruption appears in successive crops and usually develops without apparent preceding erythema.

Absence of the history of external injury aids in the diagnosis of erythema multiforme, which is characterized by purplish red macules, papules or nodules, is symmetrical in its distribution and often assumes characteristic shapes. The absence of itching and the appearance of new lesions when the patient is removed from his work are of diagnostic value.

Some cases of dermatitis medicamentosa may resemble grain itch, so a history of taking drugs is most important.

## TREATMENT

While *Pediculoides* cannot thrive on human blood, nevertheless, when its normal food supply is cut off it will feed on any flesh, hence it remains attached to the human skin for only a short time and so treatment with the view of destroying the mite is useless. Thus remedies for relieving the subjective symptoms are all that are necessary. This may be accomplished by the use of warm demulcent baths such as oatmeal, or limit starch and mild antipruritic lotions as phenol 15 minims (1 cc), zinc oxide 1 ounce (30 Gm), glycerin 1 drachm (4 cc), lime water 4 drachms (15 cc.) and rose water to 4 ounces (120 cc).

Concern should be given to the prevention of the disease, and with this end in view cooperation of the farmer and state entomologist is necessary. Burning the grain stubble during the fall or spring has been suggested,<sup>13</sup> the control of the insect on which the mite feeds being essential.

Cory<sup>14</sup> states that the mite can be got rid of by dusting the buildings, granaries and other material that comes in contact with grain and straw with powdered sulfur.

## REPORT OF CASES

In the fall of 1941 it was found that men handling bales of hay at the Tovrea Packing Company, Phoenix, Ariz., were breaking out in a cutaneous eruption anywhere from eight to twenty-four hours after being in contact with the hay, which had been brought in from different parts of the state. A form of allergy was suspected and samples of the hay were sent to the Department of Bacteriology of the University of Ari-

zona in Tucson, where alleigens were made. These were sent to the packing company with instructions to have the men tested for sensitivity. For some reason this was not done, and since the supply of hay was almost exhausted no further action was taken.

In November 1942 a case of cutaneous eruption was referred to me from this company. The patient was a laborer aged 50 whose job was to open bales of hay and to load it into trucks prior to the hay being ground up for feed. He presented a generalized urticarial type of eruption which was extremely itchy and which had developed a day after he began working on the hay pile. The individual lesions were discrete and papular, with many showing the characteristic wheal formation of urticaria. They differed from urticaria, however, in that those which were not excoriated were surmounted by a tiny central vesicle varying from pinpoint to pinhead size and filled with a clear fluid. Secondary infection was present in numerous areas, especially about his groins and axillas, where pyoderma-like lesions had developed. No examination for parasites was made. Limit starch baths and the aforementioned antipruritic lotion were prescribed, applications of which gave rapid relief, the patient finding it not necessary to return for further investigation.

In February 1943 a call was received from the manager of the same company with the information that a fresh outbreak of the eruption had occurred and that the men refused to work on the hay which had been received the previous fall. Several men were examined, all of whom presented a similar picture to the case seen in November.

Insect bites were suspected and samples of hay were collected from both the outside and the inside of the bales, and at this time it was noticed that there were many grain moths and other insects infesting the stacked up hay. An interesting fact was that the foreman who had worked on the job for years was the one man who did not complain of any irritation in spite of the fact that he was in constant contact with the hay.

Microscopic examination of the samples of hay and straw revealed the cause of the epidemic, *Pediculoides ventricosus*, which was found to be present in considerable numbers in all specimens collected. Most of the men responded to the same treatment as already mentioned, while a few received considerable relief from itching by rubbing themselves with alcohol.

Preventive measures were then tried in an effort to get the men back to work. Greasing of the body followed by change of clothing, as suggested by Goldberger<sup>7</sup> and by Chandler<sup>13</sup> was ineffective and troublesome, as was the method of dipping the underclothing in a mixture of sulfur, naphtha soap and alcohol and allowing it to dry before wearing. However, the full cooperation of the men using these methods was difficult.

Sublimed sulfur dusted on the skin and underclothing as suggested by Riley and Johannsen<sup>15</sup> was tried and proved effective for several days, when the men again began to break out. About this time the supply of hay ran out and no further trouble has been reported. It was learned afterward that five of the men on their own initiative sprayed themselves with Shell Oil Fly spray and claimed immunity from the bites of the mite. This product of the Shell Oil Company, Inc., consists of a pyrethrum extract (the irritating properties having

<sup>13</sup> Chandler, A. C. *Animal Parasites and Human Disease*, New York, John Wiley & Sons, 1918, pp. 337-339.  
<sup>14</sup> Cory, E. N. Grain Itch Mite or the Louse Mite (*Pediculoides ventricosus*), University of Maryland and U. S. Department of Agriculture, Cooperating Extension Service, Release of August 1942.

<sup>15</sup> Riley and Johannsen, quoted in Chandler<sup>13</sup>.

been removed) and an odorless, highly refined kerosene. Since kerosene is irritating to the skin this method is not to be recommended.

#### CONCLUSION

Apparently the diagnosis of grain itch is frequently missed, owing to the ease with which the symptoms subside after removal of the patient from the infected material.

Preventive measures consist in enlisting the aid of both the farmer and the state entomologist.

### RECURRENT DISLOCATION OF THE SHOULDER

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AND

JAMES K. STACK, M.D.

CHICAGO

When one finds described in the literature many operations for the correction of a mechanical fault it is a fair assumption that none of them are entirely satisfactory in establishing permanent cure. Certainly recurrent dislocation of the shoulder is not an infrequent condition, but its cause has certainly never been established satisfactorily.

Analyzing the condition from the anatomic standpoint, it seems to us that the glenoid has little or no function in maintaining the head of the humerus in position. It is almost flat and should be smooth, if it is not smooth, the patient's use of the shoulder is so hampered that recurrent dislocation could not take place. The capsule of the joint is a weak and loose bag which is attached well above and well below the actual articular surface and has little part in holding the head of the humerus in contact with the surface of the glenoid. In circumflex paralysis the head of the humerus will drop away from the scapular attachments a full inch, and the weight of the arm will continually stretch the capsule until the head of the humerus lies practically under the glenoid.

If these two anatomic structures do not support the head of the humerus, how are we to assume that it is maintained in its position against the articular surface of the glenoid? It is quite apparent that the muscles of the shoulder and arm originating at the shoulder girdle and inserting in the humerus or below are responsible for maintaining this position. It has been fairly well established through the experience of many men that the head of the humerus is dislocated primarily when the arm is abducted to 60 to 90 degrees, extended back of the lateral midplane of the body and internally rotated, with the force applied to impel the head of the humerus downward and forward. In this position the great adductors of the humerus attached to the upper third of the shaft anteriorly are pulled tight. The pectoral muscle of this group, attached to the anterior lip of the bicipital groove and very close to the head of the humerus, pulls the head downward and forward, and this is a powerful muscle. The latissimus dorsi and teres major pull downward more than forward especially with the arm in internal rotation. What is there to oppose these muscles and keep the head of the humerus from dislocating downward and forward? When the arm is in the abducted extended position especially in internal rotation the head of the humerus is thrown forward against the anterior part of the capsule. It is held backward by the external rotators and abductors, namely the supraspinatus, infraspinatus

and teres minor, which come together laterally and somewhat forward to attach to the greater tuberosity, not passing through or forming part of the capsule of the joint. On the other hand, the subscapularis comes beneath the head of the humerus and winds around anteriorly to attach to the lesser tuberosity over the anterior surface of the head of the humerus (fig. 1). This is an internal rotator, and with the arm in abduction and extension and internal rotation this muscle is relaxed. Normally the subscapularis attachment blends with the anterior part of the capsule of the joint and forms a broad heavy ligamentous support around the upper end of the head of the humerus. When this support is pulled tight it is adequate to hold the head of the humerus against the pull of the pectoral and adductor muscles if it is broad and strong. If, however, it is narrow or weak, when the arm is in the abducted extended position the attachment of the muscle has a tendency to slip up between the head of the humerus and the glenoid, or between the head of the humerus and the coracoid (fig. 2).

The supraspinatus, infraspinatus and teres minor, of course, do exert some effect in holding the head of the humerus back in the glenoid. It is not infrequent to

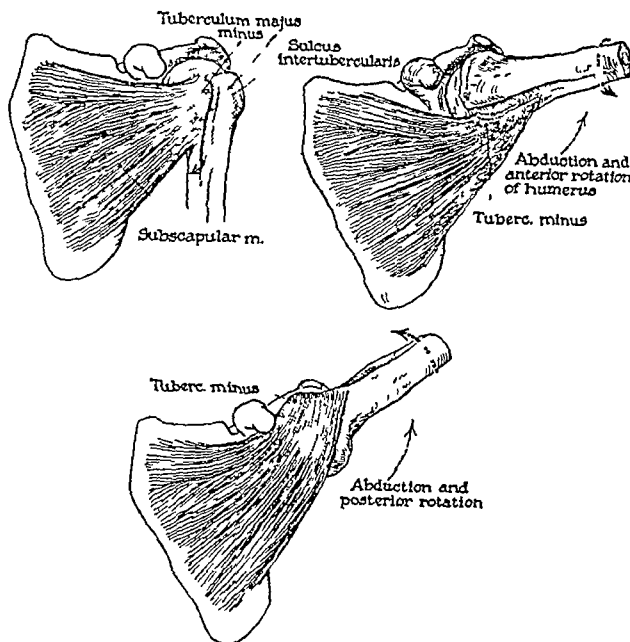


Fig. 1—Attachment of subscapularis to lesser tuberosity of humerus

see the attachment of these muscles pulled off with a shell of the greater tuberosity in a forcible dislocation of the head of the humerus downward and forward. Unless these muscles are attached at their proper site external rotation cannot be maintained and therefore the subscapularis cannot support the head of the humerus normally but permits internal rotation, which relieves the tension on the part of the capsule supported normally by the subscapularis.

All these muscles working in harmony as a group would seem to be the main support of the head of the bone in resisting the pull of the pectoralis major and the other adductors as well as the force of any blow or torsion which might dislocate the head of the humerus. This being true, it follows that these muscles must be properly attached and must work in harmony in order to maintain the head of the humerus in its normal position under circumstances of stress when the arm is in the abducted extended position.



The Nicola operation<sup>1</sup> contemplates overcoming the tendency of the humeral head to displace, by inserting through it what is essentially a ligamentum teres. For this the long head of the biceps is used, and in many cases it serves to cure recurrent dislocation. In my

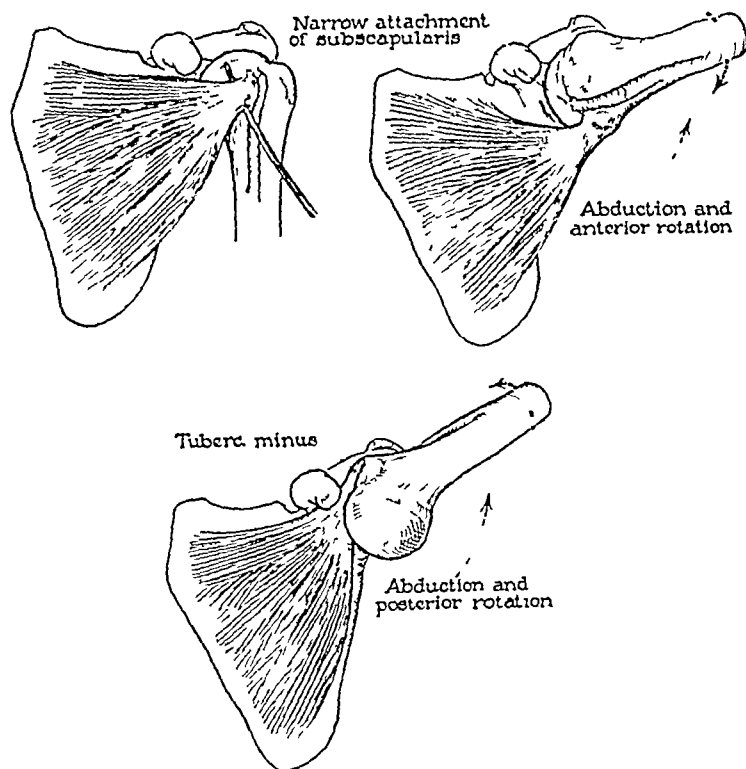


Fig. 2—Tendon slipping between head of humerus and coracoid when arm is placed in abduction and extension

experience, however, it does not meet the mechanical requirements in a man whose occupation necessitates frequent strong pull on the muscles of the shoulder. We have had about 20 per cent recurrences after this operation all in individuals who were doing strenuous work or exercise. In 2 cases—four shoulders in twins—one recurred after a Nicola operation, whereas the other three shoulders are still intact and without displacement after five years. The recurring recurrent dislocation was caused by forcible hypertension with the arm in abduction at the second operation it was found that the tendon was torn completely loose from its attachment in the head of the humerus. Keinwein<sup>3</sup> has made sections of the bone and contained tendon, and he finds only a few strips of fibrous tissue remaining in the tunnel of bone. The tendon does not keep its character as a tendon where it passes through bone. He has repeated this experiment on animals and finds that there remains only an attachment of tendon on the surface of the bone after a few months.

Bankart<sup>4</sup> believes that recurrent dislocation is due to the capsule being torn from the glenoid, which leaves a gap for the head to descend without resistance. Undoubtedly this is true in some cases, but in the recurrent dislocations on which we have operated, amounting to 21, we have not found this condition although the capsule has been opened anteriorly to permit inspection of the glenoid lip. Also with the capsule as loose as it normally is I cannot see that it adds very much support to the head of the humerus or

control of its tendency to displace downward and forward when strong pull is exerted by the pectoralis major and other adductor muscles.

McLaughlin<sup>5</sup> says "Operative findings on both acute single and chronic habitual lesions of this type have proved pretty definitely that soft part tears accompanying dislocations are many and varied, both as to location and extent. It is our present impression that the pathologic circumstances predisposing to habitual dislocation consist of certain combinations of the soft part lesions, but we are not yet sure just which combination does the trick. It appears reasonably certain that a longitudinal tear through the aponeurosis joining the supraspinatus and the subscapularis, occasionally involving the subscapularis itself, but in any case allowing the latter tendon to recede forward and downward away from the external rotators, constitutes one digit in the correct formula of soft part lesions leading to recurrent dislocation."

With this we are in full agreement, because it is only reasonable to conclude that any relaxation in the attachment or extension of the muscles from the scapula to the head of the humerus interferes with the strength and resistance of these muscles to the displacing effect of the pectoralis major and the hyperextending force on the humerus which resists the forward displacement of the head as the elbow moves backward. If any of these circumstances exist, tightening of the grip of the subscapularis around the head of the humerus by moving its attachment to the greater tuberosity might correct all or any one of such tears or relaxations.

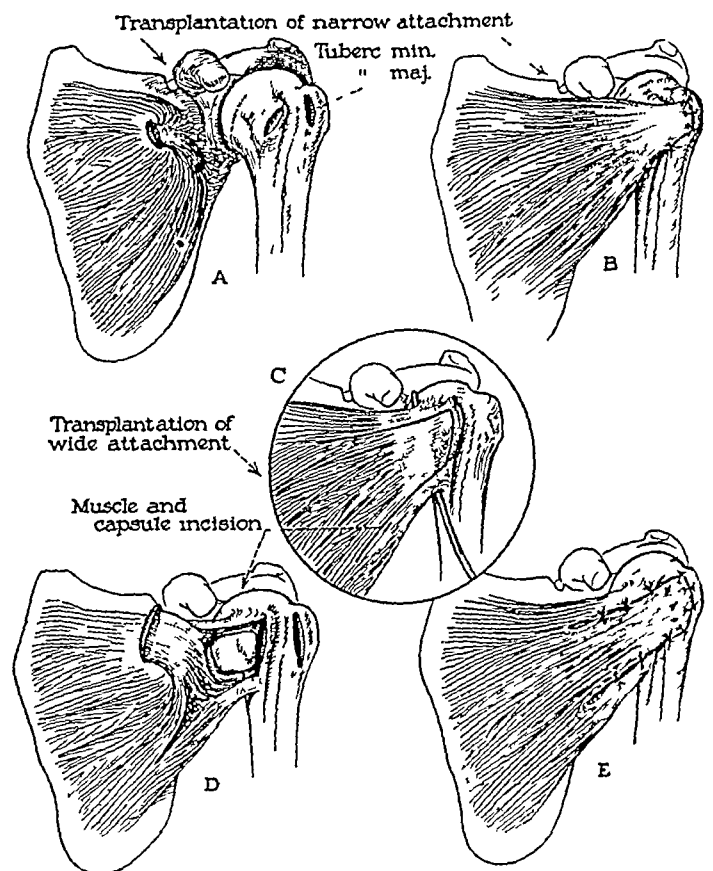


Fig. 3—Medial reflection of tendinous attachment and exposure of head of humerus

McLaughlin and we may be viewing the disability from opposite sides and arriving at the same conclusions. To our minds this explanation is much more reasonable from the anatomic pathologic standpoint than weakening of the capsule. In all probability it is a

1 Nicola, Toufick. Recurrent Anterior Dislocation of the Shoulder, *J. Bone & Joint Surg.* 11: 128-132 (Jan.) 1929.  
2 Stack, James K. and Magnuson, Paul B. The Nicola Operation—An Analysis of Failures, *Quart. Bull. Northwestern Univ. M. School* 14: 108-113 (No. 2) 1940.  
3 Keinwein, Graham. A Study of Tendon Implantation into Bone, *Surg., Gynec. & Obst.* 75: 794 (Dec.) 1942.  
4 Bankart, A. S. Blundell. The Pathology and Treatment of the Recurrent Dislocation of the Shoulder. *Brit. J. Surg.* 26: 23 (July) 1938.

5 McLaughlin, Harrison J. Personal communication to the author.

combination of improper support anteriorly by the tendons of the subscapularis and partial detachment of the supraspinatus and infraspinatus, which leaves a gap above the shoulder and weakens the support that normally resists the adductor muscles and the violence

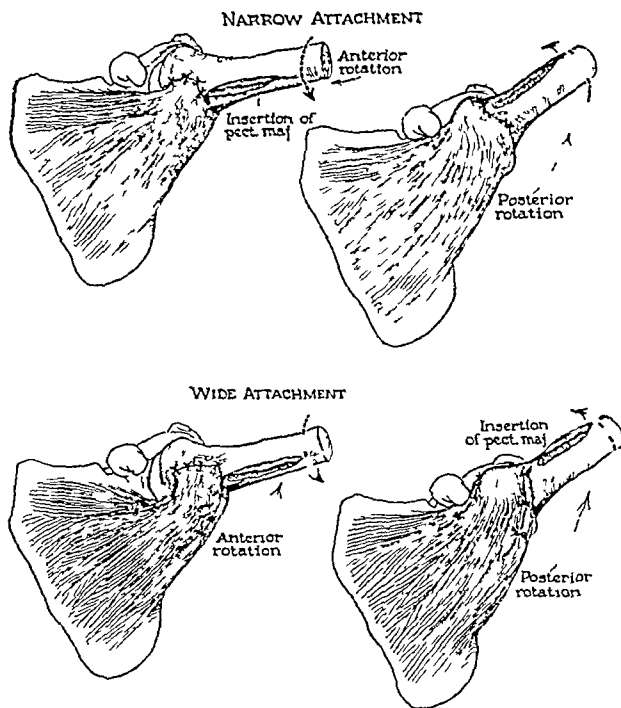


Fig 4—Method of attachment of muscle and tendon under head of humerus

Recurrent dislocations occur in epileptic much more frequently than in any other class of patients. This would seem to indicate that muscle imbalance and non-synchronization between groups of muscles have definitely to do with recurrent dislocation. The group of 6 cases here reported with a new operation for the cure of recurrent dislocation of the shoulder includes 2 with epilepsy who had had many recurrences, 3 recurrent dislocations, all in men performing heavy work or violent exercise, and 1 patient on whom there had been no previous operation. Not enough time has elapsed to call the cures 100 per cent. The first operation was performed two years ago and the last six months ago. All the patients have normal shoulder function and none have had any recurrence to this date. Five year cures are much more impressive than one year cures, however, it does seem that the operation here described is much more simple, more easily performed and more logical than others so far devised, and it is therefore being reported, possibly prematurely, but with the hope that other surgeons will attempt it and report in the future.

#### OPERATION

An incision is made over the junction of the anterior and medial third of the deltoid extending from the acromion downward. Muscle fibers are split and separated to expose the anterior surface of the capsule. The arm is rotated externally and the tendon of the subscapularis is picked up with a narrow smooth retractor. Observation is made of the width of this attachment and how far toward the origin of the subscapularis the blending of the tendon and capsule occurs. In one of our cases there was no blending whatever the tendon

was entirely separate from the capsule up to its attachment and was so narrow that with the arm placed in abduction and extension the tendon could be seen to slip between the head of the humerus and the coracoid (fig 2). In this particular case there was no support from this muscle when the arm was in the extended abducted position.

If it is found that the tendon blends with the capsule, the tendon is pulled tight with the retractor and an incision is made, following the upper and lower borders of the subscapularis muscle from the musculotendinous junction to its attachment along the anterior lip of the bicipital groove. A chisel is then driven in on the distal side of the attachment medial to the lip of the bicipital groove, so that this groove is not weakened or made shallow. The tendinous attachment, with a wedge shaped piece of bone, is lifted, and the capsule and the tendinous attachment are reflected medially to expose the head of the humerus and the anterior edge of the glenoid (fig 3). Inspection can be made of the glenoid and the head of the bone through this opening, and it can be determined easily whether or not the capsule has been torn loose from the glenoid.

After inspection, the arm is brought into internal rotation and, with a suture through the attachment of the subscapularis tendon, the tendon is stretched across the bicipital groove to the greater tuberosity and held there while the arm is manipulated to see how much external rotation will be permitted by the subscapularis muscle. The attachment of this muscle should be moved over onto the greater tuberosity far enough really to tighten it up in 50 per cent external rotation, thus forming a roof for the long head of the biceps. When the new location for the subscapularis attachment is determined, a sharp, thin bladed chisel is driven into the greater tuberosity, with the edge of the blade held parallel to the long axis of the bone. The chisel is moved back and forth laterally to spread the cancellous bone and leave a wedge shaped gutter, into which is forced the wedge shaped piece of bone attached to the

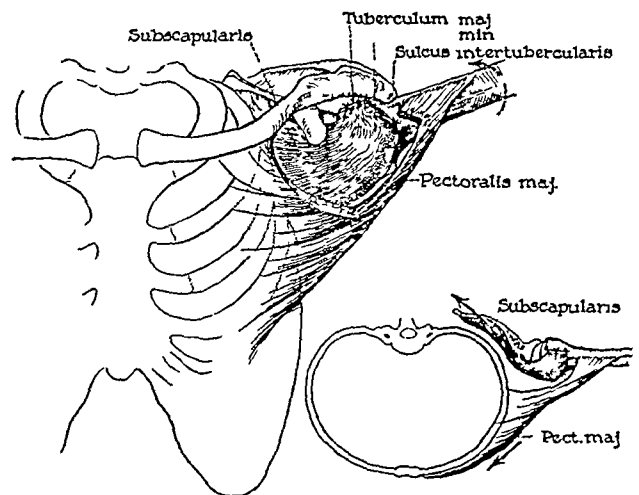


Fig 5—Tendon and muscle of subscapularis winds firmly around head of humerus

subscapularis tendon. The tendon is sutured to the capsule with a doubled 00 chromic catgut suture and the sutures are repeated on both sides of the edge so that the sides of the gutter are firmly in contact with the inserted bone. The lower border of the muscle and tendon arc then tacked down by interrupted sutures

far enough under the head of the humerus so that the muscle and capsular tendon have a firm grip around the head, with no tendency to slip up toward the coracoid and glenoid when the arm is brought into abduction and external rotation (fig 4)

If the operation is properly performed there will be, at its conclusion 25 to 50 per cent limitation of external rotation. The arm should be moved through internal and external rotation to see whether the mechanical requirements have been achieved and that the tendon and muscle of the subscapularis winds firmly around the head of the humerus in both positions (fig 5). If the details have been properly carried out the procedure forms a musculotendinous cup around the head of the humerus in both external and internal rotation, which resists the downward and forward displacing effect of the adductors of the humerus—a powerful group. In this group of cases the operation has served to maintain the head of the humerus in position under severe stress, when other forms of operation have failed.

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## CHANGES IN THE ELECTROCARDIOGRAM INDUCED BY ACUTE PANCREATITIS

A CLINICAL AND EXPERIMENTAL STUDY

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Acute pancreatitis frequently presents many bizarre symptoms and physical signs, so that its differential diagnosis from other acute conditions, especially acute coronary occlusion and perforated peptic ulcer, presents many difficulties. As most observers are in agreement concerning the conservative or nonoperative treatment of acute pancreatitis and the entirely dissimilar treatment of acute coronary disease, the importance of making a correct diagnosis is obvious.

We were impressed by a series of changes observed in the electrocardiographic patterns in a number of cases of acute pancreatitis, and this has led us to believe that a new aid in diagnosis might be made available. Our first experience with this phenomenon is presented in the following case report.

**CASE 1**—G. S., a man aged 38, admitted on May 30, 1938, gave a history of chills and fever starting four days before admission. Two days after the onset he began to have severe pain in the right upper quadrant of the abdomen, which radiated to the right loin and back. There was nausea but no vomiting. The pain became progressively worse, and an electrocardiogram taken before entering the hospital showed changes which were interpreted as indicative of acute coronary closure. On admission the patient's temperature was 102 F, the pulse rate 96 per minute, the respiratory rate 24 per minute. The heart was not enlarged, and the sounds were of good quality and regular. There were no murmurs. The blood pressure was 110 mm systolic and 54 mm diastolic. There was no abdominal distention, but pronounced tenderness in the right upper quadrant associated with muscle spasm and rebound tenderness was present. Laboratory examinations showed a white blood cell count of 17,500 per cubic millimeter with 85 per cent polymorphonuclear leukocytes. The urine was alkaline and negative

except for a faint trace of albumin. A scout film of the abdomen was negative. On May 30, 1938 an electrocardiogram showed notching of P<sub>2</sub> and P<sub>3</sub> and premature auricular contractions. Because of the persistence of the abdominal signs and the difficulty in excluding acute gallbladder disease, an exploratory celiotomy was decided on and performed on June 1. A small amount of free fluid was found, and there were fresh fibrinous adhesions between the gallbladder and the duodenum. The latter organ showed subserosal hemorrhages. The omentum was studded with areas of fat necrosis. A diagnosis of acute pancreatitis was made. The postoperative course was marked by progressive distention, temperature elevation and evidence of peritonitis. Death occurred on the fifth postoperative day. No autopsy was obtained.

Shortly after this patient was observed, Dittler and McGavack<sup>1</sup> reported a similar case, an abstract of which follows.

A man aged 53 was seen four hours after the onset of severe abdominal pain, which was associated with gaseous eructations, nausea, vomiting and substernal oppression. He had had several similar episodes previously. Examination revealed the patient to be cyanotic, orthopneic, cold and clammy and complaining of severe abdominal pain. The auricles were fibrillating, and the ventricular rate was 120 per minute. The abdomen was tender throughout. Laboratory examinations revealed a leukocytosis and an elevated blood sugar. The electrocardiogram was interpreted as indicative of a posterior myocardial infarction. Further clinical course suggested coronary thrombosis, but upper abdominal pain, fever, abdominal tenderness and diarrhea persisted. The urinary diastase was normal. The patient died on April 26, 1937, forty-one days after the onset. Autopsy showed the pancreas to be converted into a boggy, soft mass which microscopically presented complete necrosis. The heart showed no evidence of coronary occlusion. The vessels were patent. The heart muscle was hypertrophied and showed little or no myocardial fibrosis.

In both of these cases definite electrocardiographic changes were observed during the course of the illness leading to a diagnosis of acute coronary disease, and in both the subsequent course demonstrated the presence of acute pancreatic necrosis. Our interest in this phenomenon was stimulated, so that we began to do routine electrocardiographic studies on patients with acute abdominal complaints. We have observed 4 subsequent cases, in all of which the diagnosis of acute pancreatitis was confirmed by either the clinical course (including blood amylase studies), operation or autopsy. Case reports are appended herewith.

**CASE 3**—E. B., a Negro aged 38, admitted to the Hospital for Joint Diseases on Dec 5, 1941, had had abdominal pain, nausea, vomiting and obstipation for five days following directly after severe alcoholic excesses. The pain was severe and cramp-like. The vomitus contained bile but no fecal material. On admission the temperature was 99.8 F, the pulse rate 88 per minute, the respiratory rate 18 per minute. The lungs were normal. The heart sounds were good, no murmurs were present, and the blood pressure was 105 mm systolic and 82 mm diastolic. The abdomen was not distended. Tenderness was present in both upper quadrants with rebound tenderness and muscle spasm. A scout film of the abdomen showed several fluid levels. Laboratory examinations were normal except for a slight leukocytosis, a faint trace of albumin in the urine and a positive test for blood in the stools. The Kahn test was 1 plus and the sedimentation rate 65 mm. Several blood amylase studies were performed. On admission the blood amylase was 410 units. This progressively declined until on December 11 it was 315 units, on December 22, one day before discharge, it was 303 units and on December 28 it was 254 units. Several electrocardiograms were taken. On December 5 the

<sup>1</sup> Dittler, E. L., and McGavack, T. H. Pancreatic Necrosis Associated with Auricular Fibrillation and Flutter, *Am Heart J* 16:354 (Sept) 1938.

electrocardiogram showed a depressed RT, and diphasic  $T_1$ . This was interpreted as evidence of myocardial damage. On December 8 there was inversion of  $T_1$ ,  $T_2$  was diphasic, RT, was depressed, and again the diagnosis of myocardial damage was made. On December 11  $T_1$  were isoelectric, and  $T_2$  was inverted. The clinical course was very suggestive of pancreatitis, and within two weeks all symptoms had subsided. On many occasions the heart was examined and was found perfectly normal despite the changes in the electrocardiograms, which were interpreted by the cardiologists as indicating coronary thrombosis. On discharge the patient was completely well. Follow-up studies revealed normal electrocardiograms.

CASE 4—R H, a woman aged 50, admitted to the Hospital for Joint Diseases on Sept 24 and discharged on Nov 3, 1941, complained of diffuse cramplike pain in the abdomen, particularly on the left side, two days before admission. The pain radiated to the back, was intermittent in character and fairly severe, and was accompanied by nausea and vomiting. There were no fever and no previous history of gastrointestinal disturbances. Examination on admission to the hospital was essentially negative except for tenderness and muscle spasm in the left upper quadrant of the abdomen. The blood amylase was elevated to 367 units. Other laboratory findings were within normal limits except for a moderate leukocytosis. Two days after admission a fairly severe paralytic ileus developed and persisted for several days but eventually responded to suction treatment with a Miller-Abbott tube. The blood amylase decreased to 89 units three days after admission. Complete roentgenographic examination of the gastrointestinal tract after recovery revealed only a poorly functioning gallbladder. The electrocardiographic findings were of great interest. On the day of admission the tracings showed a slurring of QRS. Three days later the electrocardiogram was still abnormal, showing a slurring and notching of QRS, low  $T_1$ , and depressed RT. On October 7, by which time recovery was almost complete, the electrocardiogram was normal. At no time was there any clinical evidence of heart disease.

CASE 5—I B, a man aged 63, admitted to the Hospital for Joint Diseases on March 13 and discharged on April 29, 1941, first experienced severe, cramplike epigastric pain about twenty-four hours before admission to the hospital. He had four watery, black bowel movements. The pain became progressively more severe and was associated with vertigo and shortness of breath. On admission the patient was in acute distress, orthopneic and dyspneic. The temperature was 101 F, the pulse rate 96 per minute and the respiratory rate 22 per minute. The heart was normal except for an accentuated and bell-like aortic second sound and an occasional extrasystole. The blood pressure was 164 mm systolic and 110 mm diastolic. There were definite resistance to pressure in the epigastrium and great tenderness and rebound tenderness in this area. No masses were palpable. The urine was normal except for a diastase of 968 units. The white blood cells numbered 21,600 per cubic millimeter. The sedimentation rate was 26 mm and the blood amylase was 133 units. Several days after admission the blood amylase rose to 353. The course continued acute for about six days, and then the patient improved rapidly. The diagnosis of acute pancreatitis was made by both medical and surgical services.

The electrocardiographic findings were as follows:

March 13 (5 a m)	$T_1$ inverted	$T_2$ low
March 13 (4 p m)	$T_1$ & inverted	
March 14	$T_1$ & inverted	
March 17	$T_1$ & inverted	
March 21	$T_1$ and $T_2$ inverted	$T_3$ diphasic
	ventricular contractions	Occasional premature
April 1,	$T_1$ and $T_2$ diphasic	$T_3$ upright
April 3	$T_1$ low and upright	$T_2$ and $T_3$ normal
April 28	$T_1$ & diphasic	(interpreted as normal)

CASE 6—D W, a woman<sup>2</sup> aged 68, had been in good health except for hypertension for many years. The day prior to admission she complained of nausea and vomited three or four times. Weakness was pronounced at the onset and shortly thereafter she experienced severe upper abdominal pain which

was relieved by morphine. She became progressively more prostrated and went into shock about one hour before admission. At this time she appeared acutely ill, in shock, with rapid sighing respirations, cyanosis, particularly acral cyanosis, and cold upper extremities. The neck veins were distended. There were no heart murmurs, and the blood pressure was 50 mm systolic and 40 mm diastolic. There was a gallop rhythm over the entire precordium. The abdomen was slightly distended. The liver edge was not palpable. All reflexes were absent. The temperature on admission was 104 F. The electrocardiogram showed a sinus tachycardia, left axis deviation, small  $Q_1$ , deep  $Q_{2,3,4}$ , RT elevation in all leads,  $T_1$  low. The changes were characteristic of acute anterior and posterior wall infarction, and the clinical diagnosis of acute coronary thrombosis was made. Death occurred three hours after admission. The autopsy revealed acute pancreatitis with fat necrosis involving the body of the pancreas, an acute fibrinopurulent peripancreatitis and early acute peritonitis. The pericardial cavity contained 50 cc of brownish red fluid. There was slight dilatation of the left ventricle. The coronary arteries were patent throughout. There was no acute infarction. The mitral valves showed a chronic rheumatic valvulitis.

The preceding case reports illustrate a consistent occurrence of electrocardiographic changes in pancreatitis. Some of the patients had only a mild pancreatitis, while others manifested a true hemorrhagic pancreatitis. The changes in the electrocardiographic pattern were not the same in all cases, yet they were of sufficient degree to be interpreted as myocardial infarction or coronary thrombosis. In all patients in this group the subsequent course with either death or recovery showed no evidence of an actual pathologic condition of the heart and we felt justified in assuming that the transitory changes in the electrocardiograms were due to the pancreatitis.

In an effort to determine whether these changes could be duplicated, a series of animal experiments was undertaken. It is very easy to induce acute pancreatitis in dogs by the injection of various materials into the pancreatic duct. The following technic was used.<sup>3</sup> Dogs weighing about 8.5 Kg were anesthetized with intravenous pentobarbital sodium (0.2 cc per pound). A preoperative electrocardiogram was then taken. Through a midline incision the accessory pancreatic duct was isolated and a suture placed around it but not tied. The duct was entered with a fine hypodermic needle and 5 cc of 12 per cent sterile sodium taurocholate solution was injected into the pancreas. The needle was withdrawn and the suture tied around the duct. The abdomen was closed in layers. Usually the pancreas became hemorrhagic immediately after injection, and within a few minutes large black or dark purple areas appeared throughout the gland. All dogs developed acute hemorrhagic pancreatitis. Electrocardiograms were taken immediately and at intervals of twelve or twenty-four hours until the animals died. The survival period varied from one to twelve days and at autopsy acute pancreatic necrosis was found in each animal. Five dogs were operated on in this manner. Control electrocardiograms were taken on anesthetized but dogs not operated on to rule out the possibility that any changes noted might be due to anesthesia. In all dogs in which pancreatitis was produced, distinct aberrations of the electrocardiographic tracings were observed. These changes were inconstant in pattern but were usually interpreted as being indicative of myocardial damage. In none of the dogs was there

<sup>2</sup> This patient was in the service of Dr. Eli Moenchowitz at the Mount Sinai Hospital who gave us permission to report the case.

<sup>3</sup> Gottesman, Julius, Casten, Daniel and Beller, A. J. Electrocardiographic Changes Associated with Acute Pancreatitis. *Proc. Soc. Exper. Biol. & Med.* 49: 165 (March) 1942.

either gross or microscopic evidence of myocardial damage or infarction. It must be mentioned that electrocardiograms in dogs are difficult to interpret and show variation due to changes in position and shifting of the mediastinum. To overcome this source of error, a normal pattern was established for each dog and standard conditions for obtaining the electrocardiographic tracing were observed.

#### ANALYSIS AND INTERPRETATION OF RESULTS

Changes in the electrocardiographic patterns have been observed in a variety of abdominal conditions particularly those associated with disease of the biliary system such as cholelithiasis, chronic cholecystitis or common duct stones. The mechanism of these changes is in dispute. It has been postulated that these variations are the result of reflex stimulation of the autonomic nervous system. Chamberlain, Scudder and Zwemer<sup>4</sup> observed changes in the electrocardiograms of cats in which a hyperpotassemia was induced by intraperitoneal injection of potassium chloride. In several clinical conditions associated with release of potassium ion from damaged cells such as intestinal obstruction or pancreatitis these observers noticed electrocardiographic changes. The frequent association of pancreatic pathologic changes in the presence of chronic biliary tract disease may account in the light of our clinical and experimental studies for the changes so frequently observed in the electrocardiogram.

The clinical similarity between acute coronary thrombosis and acute pancreatitis is too well known to require further elaboration. We wish to point to a triad of symptoms which we feel should help to establish definitely this difficult diagnosis. These are (1) elevated blood amylase, (2) signs of upper abdominal peritoneal irritation and (3) variation from the normal in the electrocardiographic tracing, which may simulate coronary disease or myocardial infarction.

The possibility that these electrocardiographic changes could be produced by shock regardless of the causative factors, has been entertained. We have made repeated electrocardiographic studies on patients in clinical shock as a result of perforated peptic ulcer, intestinal obstruction, and after extensive surgical procedures on the gastrointestinal tract (gastrectomy, abdominoperineal resection, cholecystectomy for acute cholecystitis), and in none of these patients was the electrocardiogram interpreted as abnormal.

#### SUMMARY AND CONCLUSIONS

1 In a series of cases of acute pancreatitis, electrocardiographic abnormalities suggestive of myocardial infarction or coronary thrombosis was noted.

2 These changes in the electrocardiograms were induced in experimental acute pancreatitis in dogs.

3 Routine electrocardiographic studies in patients presenting acute upper abdominal syndromes should be done.

4 The triad of (a) elevated blood amylase, (b) upper abdominal peritoneal irritation and (c) electrocardiographic changes should establish the clinical diagnosis of acute pancreatitis.

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<sup>4</sup> Chamberlain, F. L., Scudder, John, and Zwemer, R. L. Electrocardiographic Changes Associated with Experimental Alterations in Blood Potassium in Cats, *Am Heart J* 18: 458 (Oct.) 1939.

## NAIL PUNCTURE WOUNDS

### SUMMARY OF THE RESULTS OF TREATMENT IN 721 CASES

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The care of nail puncture wounds in industry is important, especially in construction projects. In such projects boards containing nails are ubiquitous, and it is a simple matter to puncture some part of the body, especially the foot, by coming in contact with a nail. If the ground is muddy the injuries become even more common and the danger of infection more acute. Furthermore, the workman who suffers a nail puncture faces the possibility of two undesirable conditions: (1) secondary infection with a possible loss (or loss of function) of some part of the body and (2) tetanus, owing to the fact that nail puncture wounds are ideal for the growth of anaerobic organisms. The management is concerned not only with the loss of time on the part of useful employees but also with the expense incurred in caring for these occupational injuries. It is of interest to every one to have any data which might aid in the satisfactory treatment of such injuries.

A review of the literature of the last eight years reveals few reports of a nature comparable to that which we are presenting. Bowen<sup>1</sup> reported 661 cases of nail puncture wounds with no deaths, no tetanus and a disability average of 0.6 day. He opposed probing the wound and gave tetanus antitoxin to all. Walker<sup>2</sup> reported 220 cases with a method similar to that described here with no time lost except the remainder of the working day. He gave tetanus antitoxin to all and advised against soaking the foot. Festerling<sup>3</sup> reported no cases but described his method; he used a silkworm gut drain and did not give tetanus antitoxin. Kerrigan<sup>4</sup> did not give separate statistics but described the technic used in 445 puncture wounds. This consisted of scrubbing with neutral white soap solution, debridement at the point of entry, immobilization and injection of tetanus antitoxin in every case. There are many reports on the general care of wounds, but they do not concern puncture wounds by themselves.

#### REPORT OF CASES

At the Sunflower Ordnance Works Hospital during the period of June 1942 to March 1943 721 men were treated for nail puncture wounds. The results of treatment are set forth briefly in the accompanying table.

In the consideration of this subject we should call to mind that the period of time mentioned was accompanied by an excessively large amount of rain in Kansas and that most of the construction work was done (literally) in mud.<sup>1</sup> Furthermore, the mud was typical black Kansas soil supposed to be well contaminated with anaerobic organisms of the tetanus type.

From the Medical Department, Sunflower Ordnance Works.  
<sup>1</sup> Bowen, F. H. Report of Six Hundred and Sixty One Nail Puncture Wounds, *J. A. M. A.* 119: 413-414 (May 30) 1942.  
<sup>2</sup> Walker, M. A. Treatment of Nail Puncture Wounds, *J. Kansas M. Soc.* 43: 453 (Nov.) 1942.  
<sup>3</sup> Festerling, E. G. Simple Treatment for Puncture Wounds, *Am J Surg* 36: 360-361 (April) 1937.  
<sup>4</sup> Kerrigan, R. I. Exclusive Use of Soap and Water in Traumatic Wounds, *Surg. Gynec. & Obst.* 57: 165-169 (Aug.) 1942.

**Technic**—The area surrounding the puncture wound was scrubbed well with liment of soft soap and water, then wiped dry with sterile gauze. With pointed scissors and small thumb forceps the edges of the wound were trimmed away through the entire thickness of the skin, leaving a round hole the edges of which did not approximate. The wound was then probed gently with a rough probe. This served to remove small particles of foreign matter and to determine the direction and the depth of the puncture. A blunt needle attached to a syringe was inserted in the direction and to the depth indicated by probing. From 1 to 2 cc of antiseptic solution was injected and allowed to return outside the needle, thus irrigating the wound from its deepest point outward. This served to wash out small foreign bodies and other contaminants. Hydrogen peroxide solution tincture of mercuriolite and tincture of metaphen were used for this purpose. As more wounds were treated it was felt that a nonalcoholic antiseptic solution was better, hydrogen peroxide being found satisfactory. A dry sterile dressing was applied, and the patient was told to continue working and report back the next day, any swelling or excessive tenderness, however was to be reported immediately.

Tetanus antitoxin, 1,500 units, was given in 544 per cent of the cases. The decision as to whether or not tetanus antitoxin should be given was left to be determined in each individual case. Any person whose wound showed evidence of gross

small piece of rubber boot was removed. The patient recovered immediately.

Patients with mild infection were told to soak the affected part at home in hot epsom salt water. For more severe infection this treatment was supplemented with daily soaks at the hospital. Patients whose infection was frankly serious were hospitalized at the plant or referred to outside physicians to be cared for in the home or a hospital.

#### COMMENT ON RESULTS

The extremely low disability in all cases is significant. Furthermore, as we have already pointed out, a large share of these puncture wounds were from nails contaminated by soil, and in many cases the shoe itself, in which the patient had been working, was sodden with mud. A few patients were actually working in old manure areas. The average disability listed is only 0.07 day. The highest percentage of disability was 0.118 day per patient. There were no days lost by patients with wounds other than in the foot or the hand. Of the 721 men treated only 8 lost any time whatever. This figure is only 1.1 per cent of the total number. The average number of days lost for those who did lose time was  $6\frac{1}{2}$  days per patient.

We attribute the extremely low disability to two things: (1) the cooperation of employees in coming in immediately for treatment and (2) proper cleansing of the wound. There is nothing further to say, as the description of our procedure and the table itself, are sufficiently explanatory.

#### SUMMARY

The recent literature contains few reports of the nature of this one.

In a nine month period of much rain and mud 721 men were treated for nail punctures with satisfactory results. The average disability was only 0.072 day per injury.

The technic used consisted of (a) cleansing the outside of the wound, (b) trimming skin flaps and wound edges, (c) probing to the bottom of the wound, (d) irrigating with antiseptic solution from the bottom of the wound—hydrogen peroxide solution recommended, and (e) dry, sterile dressing.

Tetanus antitoxin was not given routinely. It was used when punctures were exceptionally deep or showed gross contamination or signs of infection.

In no patient did tetanus develop. Forty-three patients had secondary infection, 6 had infection severe enough to lose time. There were no deaths.

Results of Treatment of Nail Puncture Wounds

Site of Injury	Cases in Which Tetanus Antitoxin Was Given		Treatments per Case		Morbidity in Days*	Cases in Which Wound Was Infected		Disability in Days		Cases in Which Time Was Lost		Days Lost per Each Case
	No.	%	No.	%		No.	%	No.	%	No.	%	
Foot	474	27.5	65	1.56	2.93	24	5.6	0.118	7	1.6	7.14	
Hand	208	86	41	1.55	2.26	16	7.7	0.096	1	0.5	2.0	
Arm	42	18	4	1.62	2.05	1	2.4	0.0	0	0.0	0.0	
Leg	24	10	30	1.44	1.82	2	5.0	0.0	0	0.0	0.0	
Body	3	1	33	1.35	1.67	0	0.0	0.0	0	0.0	0.0	
Head and neck	10	2	90	1.00	2.00	0	0.0	0.0	0	0.0	0.0	
Totals	721	392	54	1.56	2.22	43	6.0	0.072	8	1.1	6.5	

\* This includes time until calls at the hospital were discontinued.

contamination was given tetanus antitoxin immediately. Many times it was given merely because the wound seemed excessively deep. Practically all those with wounds over  $\frac{1}{2}$  inch deep were given the serum. Men with severely contaminated wounds were given mixed gas bacillus tetanus antiserum. Several of the patients requested the serum themselves. The final decision as to whether or not to use it was usually made on the second day. Signs of infection—pain, tenderness, fever, swelling and regional adenopathy—were taken as evidences of contamination and tetanus antitoxin was given. When administering tetanus antitoxin it was the rule to start with the intradermal sensitivity test. To those giving positive reactions, either the serum was not given or if definitely indicated, was given in divided doses. Tetanus antitoxin was given to 392 patients. There were five reactions: none constitutional and none severe.

Local infection developed in 43 of the 721 patients. Eleven of the 43 had not reported the wound until an average of 2.5 days had elapsed from the time of injury. Six of the 43 had infection severe enough to lose time losing 8.16 days on the average.

Two men, one with a puncture of the hand and one with a puncture of the foot, lost two and one days respectively, because of local tenderness, but no other signs of infection were present. One wound healed quickly and gave no trouble until twenty-eight days later when tenderness developed. When the wound was reopened a foreign body which seemed to be a

**First Medical Schools in America**—In the American colonies the early medical schools developed within the academic organization. The first of these was set up at Philadelphia in 1765 as part of the College of Philadelphia (later the University of Pennsylvania). The Medical School of King's College in New York (which was eventually to become the College of Physicians and Surgeons of Columbia University) was the second in 1768. The Harvard Medical School the third institution of its kind in the colonies was opened in 1783 having developed from a lecture course in anatomy given to Harvard College students during the three previous years by the surgeon John Warren. All three of these schools were organized by the best qualified physicians of the respective communities; they set a high standard and had a strong influence on the subsequent development of American medicine.—Hargensen, C. D. and Lloyd Wyndham, E. B. *A Hundred Years of Medicine*. New York: Sheridan House, Inc. 1943.



## Clinical Notes, Suggestions and New Instruments

### MASSIVE RESECTION OF THE JEJUNUM AND ILEUM FOR GUNSHOT WOUNDS OF THE SMALL INTESTINE AND ITS MESENTERY

METABOLIC STUDY FOLLOWING RECOVERY

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Resection is frequently indicated in the treatment of penetrating wounds of the small intestine and its mesentery. Wounds which have destroyed a section of the bowel, impaired its blood supply by injuries to its mesentery or caused large contiguous lacerations cannot be closed. Such wounds require resection. These lesions requiring resection may be multiple, involving various segments of the intestine with normal bowel between them. It is important to determine whether a single resection of the multiple wounds can be performed or whether multiple resections of the involved segments shall be undertaken. It is recognized that multiple resections definitely increase the mortality. There is no recorded case of a successful triple resection during World War I. If a single resection of the involved segments of bowel is elected, it may be necessary to remove an extremely long section. Therefore the total length of small bowel which can safely be removed without inducing severe metabolic disturbance must be known. Haymond,<sup>1</sup> in a review of 257 cases of massive resection of the small intestine, states that 33 per cent of the small bowel can be removed without nutritional disturbance, 50 per cent removal being the upper limit of safety.

The case reported here illustrates the metabolic balance obtained after removal of 8 feet of jejunum and ileum for multiple gunshot wounds involving the bowel and its mesentery.

#### REPORT OF CASE

E A T, white, a private First Class, aged 26, was admitted to Walter Reed General Hospital on Dec 9, 1942 by ambulance from a nearby army camp. One hour and fifteen minutes before admission the patient had been accidentally shot in the abdomen with a 0.45 caliber revolver. The point of entrance of the bullet was in the left lower quadrant, there was no point of exit.

Examination on admission revealed that the patient was in shock, the extremities were cold, the skin pale. The blood pressure was 90/60, the pulse 120, weak and thready in character. Abdominal examination revealed a bullet wound in the left lower quadrant 10 cm below and 7 cm to the left of the umbilicus. There was pronounced rigidity throughout the abdomen, associated with exquisite generalized tenderness. Liver dullness was not obliterated. There was shifting dullness in both flanks. The red blood count was 3,640,000, the hemoglobin 65 per cent, the white blood count was 40,000 with 74 per cent polymorphonuclears. The hematocrit was 25 per cent. A scout film of the abdomen showed that the bullet was embedded in the right acetabulum.

The signs and symptoms indicated intraperitoneal hemorrhage associated with intestinal perforation, and immediate operation was performed.

At operation, two and one half hours after injury, with cyclopropane-oxygen anesthesia, the abdomen was opened through a long left rectus incision. Approximately 1,200 cc of blood was found in the peritoneal cavity and fresh bleeding occurred from three large lacerations in the mesentery of the small bowel. There were seven perforations in the jejunum and ileum, three of these destroying more than two thirds of the circumference of the bowel. The highest perforation was approximately 8 feet from the ligament of Treitz, the others, except for one, were situated in the adjoining 8 feet of the

jejunum and ileum. One perforation 15 cm in diameter was in the terminal ileum 5 cm from the ileocecal valve. There were three large wounds in the mesentery of the small intestine near its base, and the bowel in two areas of approximately 2 feet in length was blue-gray, showing definite evidence of impaired circulation. There was gross contamination of the peritoneal cavity by fecal contents of the small bowel. There were no perforations in the large bowel, bladder or stomach.

The massive hemorrhage from the mesenteric wounds was first controlled. Eight feet of jejunum and ileum, including the six perforations and the bowel with impaired circulation, was resected after ligation of the mesentery with suture ligatures. A side to side anastomosis was performed after the open ends of the small bowel were inverted. The perforation in the terminal ileum was closed with Connell suture, the closure being reinforced with Lambert stitches. No attempt was made to remove the bullet from the right acetabulum. Ten Gm of sulfamidamide was placed in the peritoneal cavity and the wound was closed in layers without drainage. The bullet wound of entrance in the abdominal wall was rapidly debrided. During operation 1,500 cc of citrated blood and 2,000 cc of plasma were given and, at the close of the operation, the blood pressure was 145/90 and the pulse rate 100.

TABLE 1—Nitrogen Balance

Date	Nitrogen Intake Gm	Fecal Nitrogen Gm	Nitrogen Absorbed Gm	Urinary Nitrogen Gm	Nitrogen Balance Gm
3/31/43	13.28	1.72	11.56	11.2	+0.36
4/2/43	13.28	1.9	11.38	10.8	+0.58

TABLE 2—Study of Feces

Date	Weight Gm	General Appearance	Blood	Total Fat Per Cent
3/31/43	184	Normal	Negative	20.8
4/2/43	175	Normal	Negative	22

TABLE 3—Serum Proteins

Date	Total Proteins, Gm per 100 Cc	Serum Albumin, Gm per 100 Cc	Serum Globulin, Gm per 100 Cc	Albumin Globulin Ratio	Non-protein Nitrogen, Mg per 100 Cc
3/22/43	5.13	2.2	2.93	1/1.3	30
4/12/43	5.89	3.85	2.04	1.9/1	30
4/14/43	6.24	4.62	1.62	2.6/1	28
4/21/43	6.91	5.2	1.71	3/1	30

Immediately after operation a Levine tube was placed in the stomach and continuous suction applied. The patient was given sulfadiazine intravenously and the blood level was maintained at 12 mg per hundred cubic centimeters. Fluid balance was maintained by daily infusions of 5 per cent dextrose and saline solution, blood plasma and blood transfusions. To maintain fluid balance it was necessary on the fourth postoperative day to give 6,000 cc of fluid intravenously. A daily blood count and hematocrit were taken and the blood chlorides checked repeatedly. The patient developed a mild alkalosis with the carbon dioxide combining power 71 volumes per cent, which was controlled by intravenous sodium chloride. On the fifth postoperative day the Levine tube was removed and 1 ounce (30 cc) of water given every hour. This amount was increased to 2 ounces the following day, and thereafter increasing amounts of fluid and food were given. Vomiting did not occur at any time after operation. The first bowel movement was on the sixth postoperative day. For several days the bowels moved three or four times daily and the stools were watery. However, after the tenth postoperative day the bowels moved once daily and the stools were solid. The temperature remained at 102 F until the tenth postoperative day, when it dropped to normal and remained normal throughout convalescence. The operative incision healed by first intention and the bullet wound of entrance healed cleanly by granulation. The patient was

From the Surgical Service, Walter Reed General Hospital.  
1 Haymond, H. E. Massive Resection of the Small Intestine, Surg Gynec & Obst 61: 693 (Nov.) 1935

allowed out of bed on the twenty-eighth postoperative day. He was given a furlough, and on return metabolic studies were instituted.

#### METABOLIC STUDIES

On March 19, the eighty-ninth postoperative day, the patient was placed on a general diet containing 3,127 calories, with protein 83 Gm, fat 111 Gm and carbohydrate 448 Gm. The nitrogen content of this diet was 13.28 Gm. The factor 1/625 was used for conversion to nitrogen. Stools and urines were collected, the former in concentrated sulfuric acid, the latter under xylene, and the twenty-four hour contents of the twelfth and fourteenth day were determined for nitrogen and fat. The micro Kjeldahl method was used to determine the urinary nitrogen and serum proteins, while the macro Kjeldahl was used for fecal nitrogen. All determinations were done in triplicate. Total fat was done by Soxhlet's method. The results are shown in tables 1 and 2. Serum protein studies are presented in table 3.

In addition to the results shown a dextrose tolerance test and gastric analysis were normal. The blood cholesterol was 188 mg per hundred cubic centimeters, cholesterol esters 81 mg per hundred cubic centimeters, calcium 10.4 mg per hundred cubic centimeters and phosphorus 3.7 mg per hundred cubic centimeters. Routine hematologic and urine examinations were normal. The patient showed a progressive gain in weight as follows: Jan 5, 1943, 145 pounds (66 Kg), February 4, 152 pounds (69 Kg), March 7, 156 pounds (71 Kg), April 23, 160 pounds (72.6 Kg). The patient's normal weight, prior to the accident, was approximately 165 pounds (75 Kg).

The results indicate that the patient's metabolic functions were normal. The fact that the studies showed a positive nitrogen balance and a progressive increase in serum proteins indicated that a depletion of body protein had existed for several months subsequent to operation but was being rectified.

It cannot be ascertained from this case just how much bowel can be resected without causing pronounced metabolic changes. However, it is shown that normal metabolic function can be maintained with resection of 8 feet of the small intestine.

#### FOLLOW-UP

The patient was examined on June 1, six months after operation. He had maintained his weight at 160 pounds. His bowels moved once daily and the stools were formed. The wounds were firmly healed. A gastrointestinal series showed that the stomach, duodenum and upper jejunum were normal. The distal jejunum showed slight dilatation and exaggerated peristalsis, while the mobility and peristalsis of the ileum were normal. The ileocecal region appeared normal and there was no abnormal retardation of the barium meal.

#### COMMENT

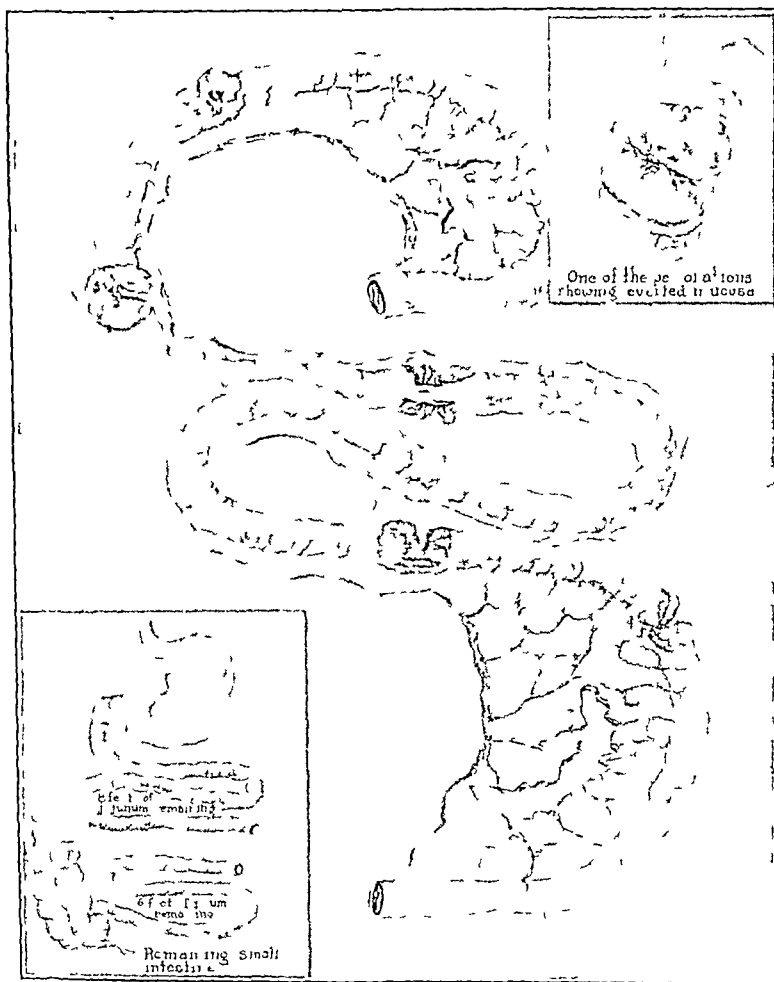
This case illustrates several problems in the treatment of gunshot wounds of the small intestine.

Three segments of bowel required resection, the upper and lower segments because of pronounced impairment of their blood supply, the middle because of destruction of two thirds of the bowel wall in one area and almost complete severance in another. These three segments were all contained within 8 feet of small intestine. It was believed that a massive resection of the involved segments, together with interposed normal intestine, could be more rapidly and safely performed than three separate resections of the involved areas. Fortunately, many penetrating wounds of the intestine can be closed by suture and these wounds should never be resected. However, if the wounds are of such a nature that there is no alternative to resection it is suggested that a single resection, rather than multiple resec-

tions, be performed if the involved segments occur within an 8 to 10 foot length of bowel.

The thought of fecal contents pouring into the peritoneal cavity may be appalling and lead one to concentrate on rapid control of this contamination. It is the control of hemorrhage which must receive first attention. It is important to have blood available and flowing into the patient before the peritoneum is opened, for often bleeding temporarily stopped will recur on the first exploratory manipulation. At times, massive transfusions will be required to control shock during operation. This patient required 1,500 cc of citrated blood and 2,000 cc of plasma.

Too much emphasis cannot be placed on the importance of a final, careful search for additional perforations. It has been



Appearance of specimen showing multiple perforations of the small bowel and its mesentery. Inset shows location of removed segment. (Army Medical Museum)

written that such a search should be made only if the patient's condition warrants it. Bohrer<sup>2</sup> states that 'no matter what the condition of the patient, he will never be in better condition to close the last perforation.' It was only after the final search in this patient that the perforation of the terminal ileum was discovered.

#### SUMMARY

- 1 In a case of multiple gunshot wounds of the small intestine and its mesentery requiring resection normal metabolic function was maintained following resection of 8 feet of jejunum and ileum.
- 2 The treatment of associated hemorrhage is important.
- 3 If resection is indicated, a single resection rather than multiple resections should be performed for lesions lying within an 8 foot segment of intestine.

2 Bohrer, John V. Personal communication to the author.

## Special Article

### AMERICAN HEALTH RESORTS

#### THE ADMINISTRATION, SUPERVISION AND CONTROL OF HEALTH RESORTS

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*These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.*

#### I OWNERSHIP

Unlike most spas in continental Europe American health resorts are generally privately owned. Such resorts as Hot Springs, Va., French Lick, Ind., Glen Springs and Sharon Springs, N. Y., Arrowhead Springs, Calif., those at Mineral Wells and at Marlin, Texas, and many others are in the hands of privately formed corporations or individuals. The best known examples of government owned resorts are the Thermal Water Reservation at Hot Springs, Ark., the New York State Spa at Saratoga Springs, the state controlled springs at Thermopolis, Wyo., and the municipal development at Excelsior Springs, Mo. A survey of the field shows that the form of ownership seemingly bears little relation to the extent of the medical and physical development of a resort.

#### II ADMINISTRATION

Ownership is not always the deciding factor in the type of administration. Perhaps the factors of extent of objective and of medical and physical development may be more truly determined by the type of administration than of ownership. Privately owned resorts may range from single sanatoriums of long time family ownership all the way through various median arrangements to the true spa of tremendous natural resources and extensive physical equipment, exacting medical control and adequate financing. Many privately owned health resorts in this country are under strictly private control whether by direct ownership or by control of a holding corporation. Where the owner is an individual, he or a close associate usually heads the administrative setup and may also be the executive head of the project, with the probable addition of medical, engineering, chemical or other technical administrators as needs may arise. Some of the better known watering places of this country, such as Mount Clemens, consist of a group of hotels or sanatoriums which has grown up around the source of mineral waters or in an area in which such waters are readily found.

If the administration of the health resort is the function of some governmental unit, several possibilities arise. At Hot Springs, Ark., the mineral water and the lands on which they emerge are owned by the federal government, and water is metered to a government owned charity bath house as well as to many privately owned hotels and bath houses which are operated for private

gain but under very strict regulations set up by the United States Department of the Interior. State owned health resorts are generally administered by commissions or committees which are essential parts of major state departments. They may direct the complete operation of the spa or may grant concessions for its operation by private individuals or corporations. At Saratoga Springs the springs and lands are state owned with activities of the spa directly state operated, except the Cure Hotel.

In any case of course, the duties of the administrative body of a health resort include the establishment of a general policy by defining the accredited values of the waters or climate and by determining the types of ailments to be treated, the types of patients to be received and the kind of accommodations and treatments to be furnished. A second duty is to plan for the financial setup of the resort. Such planning must cover the original investment—purchase of land and erection of buildings, installing equipment and so on—as well as an operating budget, including taxes, debt service and depreciation. It must also explore all sources of revenue either from endowment or from current receipts or, in the case of government owned spas, from legislative appropriation for maintenance or a combination of all or any of these. The third duty of the administering body is the setting up of a definite operating organization with a corresponding program of duties and responsibilities.

#### III OPERATION

For any health resort, whether large or small, a general operating outline can be considered which will naturally adapt itself to variations in the size, nature and objectives of any such resort. Essentials of such an organization are of course an executive head whatever his title, and under him the necessary branches of responsibility, perhaps as follows:

- (a) Medical
- (b) Engineering and construction
- (c) Chemical
- (d) Accounting
- (e) Legal
- (f) Maintenance
- (g) Public relations

Only in large organizations will entirely separate departments be formed for each of these titles, but problems under each heading will exist and must be handled by the executive head or by some one under his direction. These various branches of the organization with proper interrelations will cover all fields of activity, which might be listed somewhat as follows:

- (1) Mineral water control and conservation
- (2) Bath houses (therapeutic treatments)
- (3) Hotels and boarding houses and sanatoriums
- (4) Recreational facilities (a) library, concerts, theater, sporting events, (b) paths and drives, golf, other sports, winter sports
- (5) Parks, grounds and landscaping
- (6) Merchandising all by-products, including bottled waters
- (7) Publicity, promotion and advertising
- (8) Research and investigation
- (9) Planning
- (10) Maintenance and construction

These activities can be carried forward only through cooperation among the various branches of the organi-

zation, with, nevertheless a careful subdivision of the work and of the responsibility of each of these groups

(a) *Medical*—The medical staff will establish regulations governing the methods of treatment will provide for training and instructing attendants and directing their work with patients and will of course, exercise complete supervision of administering all treatments to patients. This not only will apply to giving of mineral baths packs, inhalations and other treatments with mineral waters but will also cover the use of adjunct physical therapeutic treatments

Only in large institutions will it be practicable for the medical department to establish a formal school for attendants. Yet much training can be accomplished by informal methods of teaching in connection with the direction and supervision of the new attendants who have received training and experience either in special schools or at other spas. One very important point in such training is the instruction of the attendant in the recognition of danger signs which may appear with various medical conditions. Such danger signs must be reported immediately to the medical staff or to the patient's physician.

Medical care may be provided in three general ways. First, the direct and complete supervision of the patient's entire program by a physician employed by the institution offers most complete control, with consequent close relationship between the institution and the patient. However, extreme seasonal variations in the number of patients at most health resorts make it difficult to maintain the large year round medical staff which is required.

A second method is through a more general administrative supervision of the patient's program by medical personnel. This plan offers less individual control of each patient but is of course possible of operation with a much smaller medical staff.

The third way of providing medical care of patients at a health resort is the most usual one. The patient places himself under the care of a regularly practicing physician of the vicinity who is experienced in the program of treatments at the resort. This physician prescribes treatment, watches the patient's progress and advises him. This relation is entirely outside the control of the institution, except that most resorts are prepared to give to their patients a list of available experienced physicians.

Patients at private institutions are practically all paying patients, while governmental institutions frequently make considerable provision for charity cases. At Hot Springs, Ark., and at the Saratoga Spa such patients are required to submit proof of inability to meet costs of treatment. In such cases living accommodations during the treatment period are usually provided through charitable organizations, friends of the patient or other sources. This group of patients receives medical direction from physicians of the staff without charge.

Cooperation with the medical profession should provide for complete information to the patient's home physician by correspondence or conference. General dissemination of sound medical information to the profession is accomplished through the publication of explanatory literature and of scientific articles, as well as through lectures before medical organizations. Other important duties of the medical department will be the careful planning of a program of investigation and

research as to the use of the natural curative agents available and the collaboration of such research work with the chemical and physical departments, as well as the establishing of a library of reference works or scientific publications on the subject.

(b) *Engineering and Construction*—In establishing and operating a health resort, particularly in widening the scope of its activities, engineering problems of prime importance arise. The engineer must give deep study to the unusual conditions to be met in specifying the design of plant, buildings and equipment for a health resort, and proper construction and installation must be in the hands of competent engineers and architects. Falling as it does between the field of use of a hotel and that of a hospital care must be taken not to lapse into the error of accepting design and methods for either of these alone as a satisfactory standard. Of no small importance is the layout of parks and grounds with appropriate landscaping, and such design must be integrated into the whole plan, under the general policy set forth by the administrative body.

Conservation and care of sources of mineral water or other natural therapeutic agents should be completely in the hands of the engineering department, with thorough cooperation from the chemical and medical departments as required. Supervision of technical maintenance and physical operation comes within the jurisdiction of this department, as do manufacturing methods if a product is manufactured. The engineering department must offer complete research cooperation with the chemical and medical branches, and the adoption of research results to methods of operation must be a responsibility of the engineer in charge.

(c) *Chemical Control*—A chemical department will arrange for and carry on routine control analyses of the waters and of possible products, without which control neither the medical nor the engineering department can proceed on a firm footing. The chemical department will cooperate with the engineering department in the care and conservation of sources of the water and will provide technical advice on problems of operation and maintenance, particularly in the maintenance of plant and equipment. This department will have a large share in research investigation as laid out in collaboration with the medical director. Such research will obviously strive for one or more of the following objectives:

- (1) Information regarding the origin and sources of the mineral waters, or other natural therapeutic agents

- (2) Correct practice in the known uses of the natural resources in treatment of disease

- (3) Search for new and improved therapies using the natural resources

(d) *Accounts*—The accounting department is responsible for periodic profit and loss statements of operation, furnishes information for control of finances, should have entire charge of and responsibility for handling and reporting receipts and income and should furnish cost accounting in detail for all branches of the business of the resort.

(e) *Legal Division*—The legal department will be perhaps more responsible to the administering body than to the executive and will furnish legal advice and opinions to the administrative group. It will draw or approve all contracts and other legal papers and will handle all court actions of any nature whatsoever or will

advise as to the employment of necessary counsel. This department should provide supervision of legal safeguards of operation, with consultation for the executive head of the resort, including interpretation of federal, state and municipal laws which may apply, and including also advice as to requirements for insurance coverage of all kinds.

(f) *Operation and Maintenance*—Operation and maintenance will cover the innumerable items of physical maintenance and repair of plant, administering of treatments, providing means for entertainment of patients and visitors and manufacture of by-products if they exist. This department will be in charge of personnel, their selection, instruction, direction and supervision, with particular attention to the attitude of the personnel toward patients and visitors. Here is the closest and most continuous relationship with visitors, and courtesy and consideration, tact and honesty must be stressed. This division can be of inestimable value to the resort in its recommendations to the administrative body for future planning of operations or of enlargements.

(g) *Public Relations*—The public relations of a resort may be only a portion of the duties of the owner or general manager or it may blossom forth into a complete department. At any rate its function will include supervision of direct paid advertising in newspapers, periodicals and radio programs, and displays of any sort ranging from small window displays to large exhibits at conventions or fairs. Likewise there will be promotional instruction of the resort personnel in their work with patients and visitors. The writing of pamphlets and articles and the editing of technical publications of the research or technical departments offers a wide field. All such material will be subject to review by the medical staff.

The director of public relations will carry on much of the correspondence, including careful answering of inquiries, circularizing of physicians and keeping in contact with past and potential patients. In all these activities the public relations department will find means of attracting patients to the resort. Organization of entertainment and recreation for patients and visitors is so important that it might well be made a separate branch of the work, requiring tact and skill.

If by-products of any nature are marketed by the health resort for public consumption, a separate sales organization will undoubtedly be set up. However, its advertising and sales material must be subject to the same considerations of accuracy and honesty as are all other spa publications.

#### IV OPPORTUNITIES AND RESPONSIBILITIES

Opportunities and responsibilities which will come to every health resort include:

The opportunity for the development of natural therapeutic resources with the responsibility that it be accomplished along scientifically controlled lines.

The opportunity for the alleviation of chronic ailments, with the responsibility for frank accrediting to all factors involved.

The opportunity for the direct care of patients with the responsibility for strict observance of medical and business ethics.

The opportunity to advance public knowledge of the benefits of Spa Therapy with the responsibility for avoiding any savor of "showmanship."

## Council on Pharmacy and Chemistry

### REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT  
AUSTIN E. SMITH, M.D., Secretary

#### THE METRIC SYSTEM

Announcement by the Council on Pharmacy and Chemistry<sup>1</sup> that New and Nonofficial Remedies, Useful Drugs, the Epitome of the U. S. Pharmacopeia and National Formulary and Interns' Manual (with the consent of the Council on Medical Education) as well as other Council publications will henceforth give quantities and dosages exclusively in the metric or centimeter-gram-second system marks a step of no little importance in the progress of rational medicine. The necessary conversion tables will of course be printed in each volume.

The traditional system of measures and weights (later codified as the imperial or foot-pound-second system) and the centimeter-gram-second systems afford an entertaining contrast. Each system is based on units of length, mass and time. The traditional measures are ancient in origin and historically have been derived from anatomic structures or articles of common use. The foot was originally the length of any one's foot regardless of size and style of shoe. This very variable measure prevailed until Edward II (A. D. 1324) decreed that "three barley corns, round and dry, shall make an inch, twelve inches a foot, three feet a yard." In recognition of the need for uniformity, it was decreed that the barley corns must be taken from the center of the ear and placed end to end.

Other units of length were the cubit, or the length of the forearm, thus was used in ancient Egyptian, Hebrew and Roman mensuration, the yard, which Henry I is said to have decreed should equal the distance from the point of the king's nose to the end of the regal thumb; the rod, which was defined<sup>2</sup> as the "combined length of the left feet of sixteen men when lined up 'heel to toe' as they left church on a Sunday morning."

Bulk was first measured by the armful, the handful and the pinch, the latter also being known as the pugil and, according to a footnote in a 1793 edition of Wesley's Primitive Physics, consisting of "as much as you can take between your thumb and two forefingers."

When clearer standardization of bulk measurement came it was based first on cereals (whence we get our present method of estimating weight by grains) and later on coinage, as illustrated by the pound—in England both a weight and a money and established thus in 1266.

"An English penny, called a sterling, round, and without clipping, shall weigh thirtv-two wheat corns from the midst of the ear, and twenty pence shall make an ounce, and twelve ounces one pound, and eight pounds do make a gallon of wine, and eight gallons of wine do make a London bushel, which is the eighth part of a quarter."

A standard yard has of course been preserved as a basic measure, however, since the time of Henry VII and Elizabeth, the Imperial Standard Pound is preserved as a standard of mass and there is a standard gallon as a corresponding measure of volume. The unit of time is fortunately the same in the imperial and the metric systems.

In the middle ages nearly all the principal towns or seats of commerce had their own weights and measures, the pound, foot gallon and so on varying from one town to another. The avoirdupois system was introduced into England from Bayonne about A. D. 1300 and is substantially the Spanish system<sup>3</sup>. The pound avoirdupois is the standard weight of Great Britain. One pound avoirdupois = 16 ounces = 256 drachms (= 7,000 grains troy).

The pound of Troyes (a town in France) in the early part of the fourteenth century was adopted to some extent in other places and in England. Later troy weight lost recognized connection with a locality and was adopted for British coinage in

<sup>1</sup> Annual Meeting of the Council on Pharmacy and Chemistry, J. A. M. A. 121: 839 (March 13) 1943.

<sup>2</sup> The Pitt Morian 6: 78 (Nov. Dec.) 1941.

<sup>3</sup> The Century Dictionary, Revised and Enlarged Edition, New York 1914.

1527 It is now used only for weights of gold and silver One pound troy = 12 ounces = 240 pennyweights = 5,760 grains

Apothecaries' weight, the system of weights formerly in Great Britain and still in the United States, employed in dispensing drugs, differs only in its subdivisions from troy weight One pound apothecaries' weight = 12 ounces = 96 drachms = 288 scruples = 5,760 grains

By the British medical act of 1858 and the act of 1862, the General Council of Medical Education and Registration of the United Kingdom are authorized to issue a "Pharmacopeia" with reference to the weights and measures used in the preparation and dispensing of drugs and so on<sup>4</sup> The British Pharmacopeia issued by the Council in 1898 made no alteration in the imperial weights and measures required to be used by the Pharmacopeia of 1864 For all pharmaceutical purposes, however, the use of the metric system alone was employed in all paragraphs relating to analysis, whether gravimetric or volumetric The new British Pharmacopeia employs metric measures of capacity

Information supplied by Dr E Fullerton Cook reveals that in colonial days the English system of weights and measures was largely employed in American medicine, and these naturally found their way into the early U S Pharmacopeia, which was modeled after the London Pharmacopeia The metric system, however, began to gain popularity and at the convention of 1870 its adoption in all formulas of parts by weight was recommended, apparently as a sort of halfway measure The Revision Committee of 1870 failed to carry out this proposal and explained it in the following statement (See U S P 1870 preface, page iv)

"In the series of resolutions passed by the Convention for the guidance of the Committee, it was directed 'that measures of capacity be abandoned in the Pharmacopeia, and that the quantities in all formulas be expressed both in weights and in parts of weight' To execute such directions entails the use of a metrical system not employed in this country or in England, and which would have to be constructed for the purpose Such a change would involve changed proportions in almost every formula and would produce a corresponding disturbance in many of the doses Moreover, such directions were not anticipated in any of the revisions handed to the Committee, and to institute such extended experiment as would cover the whole ground of the directions of the Pharmacopeia would entail so much expenditure of time, labor and cost as to render the plan impracticable This view of the question was unanimously taken by the Committee at a meeting consisting of ten members"

The failure to meet this modern development was severely criticized and led to a movement which changed materially the Pharmacopeia In the U S P 1880 parts by weight were introduced for formulas, but the metric system was established for all tests and reagents Each convention since 1880 has specifically directed the inclusion of the metric system in Pharmacopoeial formulas and tests However, when the convention of 1900 directed the introduction of average doses it directed that the metric system be used in expressing doses but that the approximate equivalent in ordinary weights and measures be inserted in parentheses This is the only use of the apothecary system of weights and measures in the body of the present Pharmacopeia Not only does the Pharmacopeia give "preference to the metric system, but the convention of 1940 'instructed' the Committee on Revision to retain the metric system of weights and measures

The origins of the metric system, in contrast to the traditional or natural system, are relatively modern and completely rational The plan on which the decimal system of interrelated measures and weights is based was devised in 1783 by the English engineer James Watt who is declared to have thought this his greatest invention<sup>5</sup> Watt conferred with Laplace and other eminent French scientists in Paris in 1786 The actual units of the metric system were established by a committee of the French Academy of Sciences acting for the French government The metric standards were officially adopted in France in 1799<sup>6</sup>

The fundamental unit of the metric system is the unit of length or meter, the unit of volume or liter is a cube of 1/10 meter side, the gram, or unit of weight, is 1/1,000 the weight of a liter of water at 4 C, its temperature of greatest density

From the meter and gram are derived, by merely moving the decimal place, the scientific measures of length required from geographic distances to the units of cytology ( $\mu$ , microns) and those used in the measurements of atomic spacing and radiation (angstrom units) and all metric units of mass and volume The scientific units of velocity, acceleration, force, energy, work and power are simply and logically derived from the fundamental metric units, as indeed the complex units of all the pure and applied sciences may, with the aid of certain conversion constants, be derived step by step without break in logic

The metric system was in 1937<sup>7</sup> obligatory in Argentina, Austria, Hungary, Belgium, Brazil, Chile, France, Germany, Greece, Italy, Mexico, Netherlands, Norway, Peru, Portugal, Rumania, Spain, Sweden, Switzerland and Yugoslavia Its use is legalized in Egypt, Britain, Japan, Russia, Turkey and the United States In 1875 there was constituted at Paris the International Bureau of Weights and Measures, which is managed by an international committee The object of the bureau is to make and provide prototypes of the meter and kilogram for the various subscribing countries

A search of the older issues of THE JOURNAL and the still earlier Transactions of the American Medical Association will reveal that there was some discussion of the use of the metric system prior to 1878, but in that year a resolution was introduced and passed by the American Medical Association which recognized the value of the metric system and "recommends to all physicians the use of the same in their practice and in their writings and teachings" The next year a report by Dr Seguin of New York closed with a resolution which was unanimously adopted, as follows "That the American Medical Association adopts the International Metric System, and will use it in its transactions, papers, requests the medical boards of the hospitals and dispensaries to adopt the Metric System" In 1880 the Metric Executive Committee of the American Medical Association, after reviewing the situation, "Recommends the teaching and practice of the metric system in medical colleges, clinics dispensaries etc Charges its Executive Metric Committee with the duty to report annually on the above institutions which teach, and those who do not teach the metric system Authorizes said committee to enter into communication with the Metric Committee of the British Medical Association, in order to concert such plans as may render the use of the metric system simultaneous and uniform in both countries"

THE JOURNAL for 1890 carries a letter from a committee of the American Association for the Advancement of Science appointed in 1889 to promote the use of the metric system This letter states in part "One of the principal reasons why the metric system has not yet been adopted in this country by professional men is the indifference shown by our professional schools

As the metric system is legal throughout the United States, any physician is entitled to present a metric prescription to the druggist All boards of examiners in medicine and pharmacy whether state or collegiate are justified by law to exact and should demand from every candidate for graduation or for license a knowledge of the metric system' It was also recommended "that schools of medicine cease to give instruction in the apothecaries system of weights and measures for which there is no longer any reason"

Other resolutions and discussions have appeared frequently in THE JOURNAL

A member of the headquarters staff of the American Medical Association out of curiosity called four leading pharmacies in the Chicago loop to ask what percentage of their prescriptions were written in the metric system The results were as follows

(a) Seventy-five per cent in metric more and more are using the metric system

(b) Forty per cent using the metric system Some physicians use both metric and apothecaries in the same prescription

(c) Twenty-five per cent using metric Not increasing

<sup>4</sup> Encyclopedia Britannica ed 14 15 138 1937  
<sup>5</sup> Drury A The Metric Advance All America Standards Council San Francisco 1926 p 12

<sup>6</sup> The Metric versus the English System of Weights and Measures National Industrial Conference Board Research Report No 42 New York Century Company October 1921

<sup>7</sup> The Encyclopedia Britannica ed 14 15 362 363 1937



(d) Seventy per cent using metric Number increasing The younger men are more inclined to use metric

It would seem that some small progress has been made Further progress can be developed by employing the metric system whenever possible, especially in teaching centers and during the preparation of papers for publication, and by the adoption of this system of dosage by drug manufacturers Apparently the use of this system would not be objected to by official bodies, regulatory or otherwise

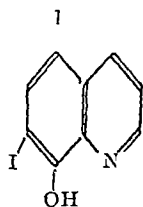
The universal use of the metric system in scientific work, its adoption for general purposes in many countries and its practical simplicity have always been sound reasons for the use of the metric system in medicine The immediate and practical stimulus to the Council in deciding to adopt the metric system exclusively in its publications has been the occurrence of serious accidents in dosage due to confusion between the two systems The Council particularly would like the cooperation of teachers and students in our medical schools and of the firms making pharmaceuticals and biologicals in using the metric system It would like to invite its engineering colleagues to consider an equivalent step The universal adoption of the metric system would be a manifestation of rationality and of interprofessional and international cooperation of high practical utility

## NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION

AUSTIN E SMITH, M D, Secretary

**DIODOQUIN**—5,7-Diodo-8-hydroxyquinoline,  $C_8H_6N_2O$   
 $I_2$ —A compound resulting from the introduction of two atoms of iodine into 8-hydroxyquinoline



**Actions and Uses**—Diodoquin is proposed as an antiprotozoan agent for use in amebic dysentery and in the treatment of *Trichomonas hominis* (intestinalis) infections

**Dosage**—Adults—seven to ten tablets a day for fifteen to twenty days

### Tests and Standards—

Diodoquin occurs as a yellowish brown, practically odorless powder It is almost insoluble in water sparingly soluble in alcohol ether and acetone, soluble in hot pyridine and in hot dioxane Diodoquin melts between 200 and 215 C with extensive decomposition

Warm a few crystals of diodoquin with 1 cc of concentrated sulfuric acid vapors of iodine are evolved Heat 0.5 Gm of diodoquin mixed with 5 Gm of anhydrous sodium carbonate in a deep crucible, cool extract the mixture in 10 cc of water acidify with diluted nitric acid Filter and add 13 cc of tenth normal silver nitrate solution to the filtrate Shake to coagulate the precipitate and filter Add 1 cc of tenth normal silver nitrate solution to the filtrate shake and filter through a fresh filter paper Wash the precipitate on the filter a yellow color is observed (distinction from *visform*, which gives a white precipitate)

Dry 1 Gm of diodoquin over phosphorus pentoxide for twenty four hours the loss in weight is less than 0.1 per cent

Incinerate about 1 Gm of diodoquin the ash is not over 0.5 per cent

Mix about 0.15 Gm of diodoquin, accurately weighed, in a nickel crucible with 5 Gm of anhydrous potassium carbonate (or sodium carbonate) Mix thoroughly with a dry stirring rod, settle the mixture by tipping the crucible, overlay with 5 Gm of potassium carbonate (or sodium carbonate) and ignite at about 600 C for from three to five minutes Cool, transfer the crucible to a 500 cc wide mouth conical flask and extract with about 20 cc of distilled water Acidify the solution carefully, dropwise, with five normal hydrochloric acid (about 30 cc) Filter the solution quantitatively into a 250 cc glass stoppered flask, using two 20 cc portions of water to rinse the flask and filter paper The volume at this point should be about 100 cc Add a filtered mixture of 35 cc of hydrochloric acid, 35 cc of distilled water, cooled mixture of 35 cc of hydrochloric acid, 35 cc of distilled water, and add 10 cc of purified chloroform Titrate with tenth normal potassium iodate to the disappearance of pink color in the chloroform layer (add iodate solution dropwise and shake vigorously near the endpoint) One cc of tenth normal potassium iodate solution is equivalent to 0.00423 Gm of iodine Diodoquin contains not less than 60.5 per cent nor more than 64.0 per cent of iodine

G D SEARLE & Co, CHICAGO

Tablets Diodoquin 0.21 Gm

U S Trademark No 336,484

## Council on Foods and Nutrition

AT THE REQUEST OF THE COUNCIL, THE BOARD OF TRUSTEES APPROVED A SMALL GRANT FOR CONDUCTING A STUDY OF THE NUTRITIVE VALUE OF PREPARED CEREAL FOODS AND THE GRAINS FROM WHICH THEY ARE MADE THE FOLLOWING REPORT REPRESENTS A PRELIMINARY ACCOUNT OF THE RESULTS THAT HAVE BEEN OBTAINED IN THE ANALYSIS OF A NUMBER OF PRODUCTS IN AUTHORIZING PUBLICATION OF THIS REPORT THE COUNCIL DESIRES TO EXPRESS ITS APPRECIATION OF THE COOPERATION OF DR C A ELVEHJEM AND MR GEORGE KITZES

GEORGE K ANDERSON, M D Secretary

## VITAMIN CONTENT OF PREPARED CEREAL FOODS

GEORGE KITZES, M S

AND

C A ELVEHJEM, PH D

MADISON, WIS

Grain products have always been an important component of the American diet Flour and bread have been the subject of much discussion, but comparatively little attention has been given to other prepared cereal foods Many of the prepared cereal foods now on the market have been processed in order to improve flavor and palatability with the consequence that some nutritional value is lost Some of the manufacturers have undertaken the restoration of the vitamin content to that of the whole grain cereals from which they are made Since the individual whole grains vary in their vitamin content, and since the vitamin content of enriched cereals is generally labeled in terms of the minimum daily human requirement, it is often difficult for the physician to compare one cereal product with another As an aid to persons interested in the nutritive value of these products and as a guide to manufacturers, the Council on Foods and Nutrition has attempted to obtain some factual information about the amounts of thiamine, riboflavin and niacin in readily obtainable products

For the purposes of this preliminary report no attempt has been made to obtain a complete assortment of all the available products The products which have been examined were purchased at local markets in the spring and early summer of 1943 It is important to point out that only a limited number of analyses have been made on each product, and hence the values presented may not be typical and, as the investigation proceeds, certain revisions may have to be made It is hoped, however, that the figures presented in the table for thiamine, riboflavin and niacin may be of some value to those dealing with this problem The thiamine was determined by the thiochrome method<sup>1</sup> and the riboflavin and niacin by microbiologic procedures<sup>2</sup> In order to compare the results for the prepared products with the vitamin content of the original whole grains, values for the latter compiled by the Food and Nutrition Board of the National Research Council are included Those cereals which have been enriched either with natural material or with the synthetic vitamins have been indicated in the table

From the Department of Biochemistry College of Agriculture University of Wisconsin

Published with the approval of the director of the Wisconsin Agricultural Experiment Station University of Wisconsin Madison

1 Hennessy, D The Determination of Thiamine in Cereal Products Cereal Chemist Bull 2, 1942

2 Strong F M and Carpenter L E Preparation of Samples for the Microbiological Determination of Riboflavin, Induct & Engin Chem (Anal) 14 909, 1942 Krehl W A Strong F M, and Elvehjem C A Determination of Nicotinic Acid ibid 15 471 1943

## Vitamin Content of Whole Grains

(Data Compiled by the Food and Nutrition Board, National Research Council)

Product	Thiamine (Expressed as Mg per 100 Gm)	Riboflavin	Niacin
Wheat whole	0.44 to 0.66	0.03 to 0.20	5.4 to 8.0
Corn whole	0.37 to 0.58	0.08 to 0.24	1.7 to 2.7
Oats	0.66 to 0.88	0.12 to 0.17	0.88 to 1.76
Rice	0.33 to 0.56	0.08 to 0.25	4.4 to 6.6

## Vitamin Content of Certain Prepared Cereal Foods

Products Derived Largely from Wheat	Manufacturer	Thiamine	Riboflavin	Niacin
All Bran	Kellogg Company	0.52	0.48	17.5
Post's Bran Flakes *	General Foods Corporation	0.55*	0.29	8.5
Breakfast Wheat	H. J. Heinz Company	0.05	0.08	2.9
Coco Wheats *	Little Crow Milling Company	0.48*	0.07	2.3*
Cream of Wheat	Cream of Wheat Corporation	0.07	0.05	0.77
Cream of Wheat *	Cream of Wheat Corporation	0.41*	0.06	1.0*
Farina	The Quaker Oats Company	0.66	0.06	0.82
Farina *	Pillsbury Flour Mills Company	0.37*	0.05	2.1*
Grape Nut Flakes *	General Foods Corporation	0.52*	0.26	4.9
Grape Nut Wheat Meal *	General Foods Corporation	1.00*	0.12	5.0
Post Grape Nuts *	General Foods Corporation	0.84*	0.20	4.0
Krumbles	Kellogg Company	0.07	0.21	4.0
Krusty Bran †	Battle Creek Food Company	0.46	0.26	14.3
Maltex Cereal	The Maltex Company Inc.	0.32	0.13	4.6
Malt-O Meal	Campbell Cereal Company	0.07	0.06	1.4
Monarch Food of Wheat	Reid Murdoch and Company	0.05	0.05	0.91
Muffets	The Quaker Oats Company	0.54	0.10	4.0
Pep *	Kellogg Company	1.50*	0.25	6.5
Puffed Wheat Sparkies *	The Quaker Oats Company	0.54*	0.12	7.9*
Ralston Instant Whole Wheat Cereal †	Ralston Purina Company	0.43	0.16	5.5
Ralston Whole Wheat Cereal †	Ralston Purina Company	0.52	0.14	5.1
Rolled Wheat (Pettijohn's)	The Quaker Oats Company	0.31	0.13	3.6
Shredded Ralston	Ralston Purina Company	0.16	0.12	4.5
Shredded Wheat	Kellogg Company	0.23	0.19	4.5
Shredded Wheat	National Biscuit Company	0.24	0.15	4.3
Shreddies	National Biscuit Company	0.20	0.11	4.3
Sturdiwheat †	Sturdiwheat Company	0.58	0.17	3.8
Toasted Wheat	Doughboy Mills Company		0.13	6.2
Wheatena	Wheatena Corporation	0.13	0.15	4.0
Wheat Flakes	Miller Cereal Mills	0.08	0.12	4.2
Wheaties *	General Mills Inc.	0.60*	0.22*	4.1
Wheat Krispies	Kellogg Company	0.13	0.18	4.1
Wheat Puffs	Thuringer Macaroni Company		0.11	6.3
Wheatworth Cereal	National Biscuit Company	0.46	0.12	5.0
Products Derived Largely from Corn				
Corn Flakes	Kellogg Company	0.45	0.07	1.6
Corn Flakes	General Foods Corporation	0.40	0.10	1.2
Corn Meal yellow	The Quaker Oats Company	0.10	0.06	0.90
Kix †*	General Mills Inc.	0.44*	0.20*	2.1
Products Derived Largely from Oats				
Cheerlents *	General Mills Inc.	0.80*	0.25*	1.5*
Instant Oatmeal *	Harold H. Clapp Inc.	1.06*	0.32	2.0
Quaker Oatlets *	The Quaker Oats Company	0.99*	0.11	0.60
Quick Quaker Oats	The Quaker Oats Company	0.55	0.14	1.0
Ralston Instant Oatmeal	Ralston Purina Company	0.63	0.14	1.0
Strained Oatmeal *	Gerber Products Company	1.50	0.59	2.2
Products Derived Largely from Rice				
Puffed Rice Sparkies *	The Quaker Oats Company	1.50*	0.07	1.2
Rice Krispies	Kellogg Company	0.40	0.07	8.0
Rice Krispies	H. J. Heinz Company	0.15	0.18	4.0
Whiffs O Rice	Pophitt Cereal Company	0.01	0.0	0.52
Products Not Otherwise Classified				
Bran and Fig †	Battle Creek Food Company	0.44	0.5	15.5
Cereal Food	H. J. Heinz Company	1.5	0.54	2.5
Cereal Food	Gerber Products Company	1.50	0.27	5.0
Cereal Food	Harold H. Clapp Inc.	1.03*	0.6	5.4
Crackles	The Quaker Oats Company	0.65	0.65	1.6
Little Kernal	The Quaker Oats Company	0.65	0.65	0.55
Pablum	Mead Johnson and Company	1.50	0.25	2.5
Wheat Germ	Liam Mill Inc.	1.5	0.5	6.2
Zo' (ready to eat)	Battle Creek Food Company	0.25	0.15	4.2

† Enriched with synthetic vitamins or vitamin concentrates    † Enriched with wheat germ

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 4, 1943

## THE MODES OF SPREAD OF INFANTILE PARALYSIS

At the conference of the Federation of Sewage Works Associations in Chicago in October Maxcy and Howe<sup>1</sup> reviewed the significance of the occasional presence in sewage of the virus of infantile paralysis. The demonstration of the virus in the stools of patients and of carriers has been supplemented by the finding of the virus several times in urban sewage in periods of maximal incidence of the disease. This observation at once raised the question whether the virus in sewage can make its way into water supplies for drinking and for swimming pools and thus perhaps spread the disease. Maxcy and Howe point out that the virus can live only a short time in sewage so far as known now and that there is no likelihood of its surviving the passage through water purification plants. There is no evidence at hand that the virus can live on or multiply in water. Maxcy and Howe stressed the fact that infantile paralysis does not behave like a water borne disease. It has not been "correlated with poor water supplies nor have explosive outbreaks of widely scattered cases appeared in cities with municipal water systems," which would be expected to occur if virulent virus was disseminated in the water mains. Cities with water supplies remote from human abodes suffer from infantile paralysis as frequently as cities whose water comes from sewage polluted sources. Indeed, the epidemic spread of the disease has been quite independent of common water supplies. There is no record of any explosive outbreak of infantile paralysis attributable "to simultaneous exposure of a group of people to a common source of water." Consequently it seems safe to conclude that the presence under certain circumstances of the virus of infantile paralysis in sewage is without significance as far as the general spread of the disease is concerned.

1 Maxcy, K. F., and Howe, H. A. The Significance of the Finding of the Virus of Infantile Paralysis in Sewage. A Review. Sewage Works Journal to be published.

Maxcy and Howe consider also the transmission of infantile paralysis by flies and by personal contact. The virus has been demonstrated in flies in epidemic areas, but flies are not invariably associated with the disease and the disease would not "attack children preponderantly, as is the case, were it transmitted primarily by the fly or any other insect." How about the patient himself and the carrier as sources of infectious virus? In both the virus is present in the stools, the secretions and the walls of the pharynx, hence it can pass to other persons by means of fecal contamination of the hands, food, milk and other objects as well as by droplets of pharyngeal mucus.

Present knowledge points to contact infection as the most important means of spreading infantile paralysis. This being the case, everything in human power must be done to prevent contact infection. Unquestionably there is need now for closer isolation than has been carried out in the past. The discovery of practical methods for detection of the virus and for determination of infectiousness on the part of the patient and of potential carriers is a task for the future, not to mention the possibility of finding means to hasten the destruction of the virus in the human body.

## HYPOTHERMIA IN EXPERIMENTAL INFECTIONS

Prolonged artificial reduction of body temperature to levels 10 to 15 degrees below normal was suggested as a method of treatment for incurable cancer.<sup>1</sup> This suggestion renewed clinical interest in the physiologic effects of hypothermia, particularly in its effects on antimicrobial resistance. The earlier tests of the effects of chilling on natural and acquired immunity<sup>2</sup> are inconclusive because of the relatively small reduction of body temperature then studied and the relatively short duration of the hypothermia. Hardy and his colleagues<sup>3</sup> of Cornell University Medical College have therefore tried to produce hypothermia in laboratory animals of the same severity and duration as that suggested in cancer therapy.

By giving rabbits a massive intraperitoneal dose of sodium pentobarbital and then placing them in a special refrigerator the rectal temperature could be lowered to 88 to 91 F for as long as ninety-six hours without lethal effects. Guinea pigs would tolerate the same degree of hypothermia for periods as long as twenty-four hours. Two twenty-four hour periods of hypothermia per week were well borne by these animals.

Applying this technic, Duerschner and her colleagues<sup>4</sup> studied the effect of biweekly twenty-four hour

1 Smith, L. W., and Fry, Temple. Temporary Factors in Cancer and Embryonal Cell Growth, J. A. M. A. 113: 653 (Aug. 19) 1939.

2 Foord, A. G. J. Infect. Dis. 23: 159 (Aug.) 1918.

3 Hardy, James D., Duerschner, Dorothy, Rhodes, and Muschenheim, Carl. Hypothermia in Experimental Infections. I. Preliminary Observations on Tolerance of Guinea Pigs and Rabbits to Induced Hypothermia. J. Infect. Dis. 72: 179 (May-June) 1943.

4 Duerschner, Dorothy R., Muschenheim, Carl, and Hardy, J. D. Hypothermia in Experimental Infections. II. The Effect of Hypothermia on Tuberculin Sensitivity in Guinea Pigs, *ibid.* p. 183.

periods of hypothermia on the course of experimental tuberculosis in guinea pigs. Sixty guinea pigs weighing 300 to 500 Gm were infected subcutaneously with virulent human tubercle bacilli. Beginning the day after inoculation, a group of 20 of the infected guinea pigs were subjected twice weekly to a twenty-four hour period of hypothermia for a period of six weeks. Twenty drug controls were given equivalent amounts of sodium pentobarbital but were not subjected to chilling. The remaining 20 animals were maintained as untreated normal controls. At the conclusion of six weeks all surviving animals were maintained under standard conditions until they succumbed from tuberculosis.

Significant differences were not observed in the survival time in the three groups or in the amount and distribution of the tuberculous lesions in the various organs as found at necropsy. The development of tuberculin sensitivity of the skin, however, differed in the hypothermic groups. Practically all animals of the two control groups developed 4 plus skin sensitivity to routine tuberculin tests on or before the fifth week. In the hypothermic group little or no skin sensitivity was noted at this time. The difference was equally pronounced at the end of seven weeks. A month or more later, however, after the hypothermia had been discontinued, the tuberculin reactions became equally intense in all three groups. Repeated biweekly reduction of body temperature to levels from 7 to 14 degrees F below normal of twenty-four hour duration over a period of six weeks thus did not have either beneficial or injurious effects on experimental tuberculosis in guinea pigs except in delaying the development of skin allergy.

Muschenheim and his associates<sup>5</sup> have applied the same technic to a study of the effects of continuous hypothermia (ninety-six hours) on experimental pneumococcal infections in rabbits. Their most striking results were obtained with rabbits inoculated intradermally with relatively avirulent type III pneumococcus. This strain is nonlethal under ordinary conditions even in high dosage. The induced hypothermia inhibited or reduced the local dermal inflammatory reaction but usually resulted in an overwhelming bacteremia and death. It thus changed a normally nonlethal to a lethal pneumococcal infection. Local chilling of the skin at the site of the inoculation also inhibited the local dermal inflammatory reaction but did not cause fatal bacteremia. The change of a nonlethal to a lethal pneumococcal infection was seen also in intravenously injected rabbits. There was no depression of leukocyte count and no evidence of impaired phagocytic function to account for these results. Alterations in circulating antibodies have not yet been reported.

## Current Comment

### THE METRIC SYSTEM

Attention is called to the announcement elsewhere in this issue (p 900) that future editions of *New and Nonofficial Remedies*, *Useful Drugs*, the *Epitome of the U S Pharmacopeia and National Formulary and Interns' Manual* (with the consent of the Council on Medical Education and Hospitals) as well as other Council publications, will give quantities and dosages exclusively in the metric system. This step is in harmony with the growing and current practice of prescribing vitamins, hormones and sulfonamide preparations. The Council's concise historical presentation of the units of measure formerly in common use emphasizes the value of adopting a uniform method of presenting quantities and dosages. While daily living may have been governed for many years by grains and barley corns, the kingly nose and regal thumb, and the combined length of the left feet of "sixteen men who lined up heel to toe as they left church on a Sunday morning," workers in the exact sciences appreciate the value of the simplicity, convenience and precision of the metric system. Universal adoption of this system will be a manifestation of rationality and of interprofessional and international cooperation of great practical utility.

### NEUROPSYCHIATRY IN THE ARMED FORCES

A soldier suffering from what would ordinarily be called a nervous breakdown, a condition classified as a neuropsychiatric disorder, was punished quite unnecessarily by a general. This incident serves to focus attention again on the exceeding importance of proper organization of neuropsychiatry in the medical services so that the most possible can be done to prevent situations of this type in the future. With the beginning of the Selective Service examinations the importance of preliminary neuropsychiatric study became clear. Just recently the Selective Service Administration has improved its technic for this purpose. Originally it was contemplated that great numbers of neuropsychiatrists would be associated with the examinations of men for military service especially on the induction boards and that sufficient time would be allowed for such study. The speed of recruitment and the lack of sufficient personnel, as well as the failure to develop dependable technics, combined to prevent the type of study that needs to be made in any considerable number of potential cases is to be eliminated from admission to the service. Up to April 1943 almost half a million men had been rejected for psychiatric reasons. About one third of all casualties now being returned from overseas are neuropsychiatric. The strain of this war affects leaders with the added stress of leadership even more than it does the men in subordinate rank. Already it is clear that constant attendance by qualified neuropsychiatrists may serve to detect potential breakdown among aviators and to restore men in such condition to active service.

<sup>5</sup> Muschenheim, Carl, Duerchner, Dorothy R., Harb, J. D. and Stoll, Alice M. Hypothermia in Experimental Infections. III. The Effect of Hypothermia on Resistance to Experimental Pneumococcus Infection. *Infect Dis* 72: 187 (May June) 1943.

far more quickly than would otherwise be the case. The death of Col. Roy Halloran deprives the division of neuropsychiatry of the Medical Department of the Army of a distinguished leader who was well on the way to the development of adequate personnel and improved services. A successor has not yet been appointed. Since neuropsychiatric breakdown now constitutes a leading cause of disability, resulting in the loss of services of tremendous numbers of men both in the Army and in the Navy, the Secretaries of War and of Navy might well consider whether neuropsychiatry should be a major division in the organization of the administration of the Medical Departments of the Army, the Navy and the Air Forces.

#### THE CHILD WITH THE CLEFT PALATE

The Department of Speech and the Institute for Human Adjustment of the University of Michigan has issued a booklet for parents on the subject of cleft palate. The aim of the booklet is to aid parents in acquiring an accurate and sensible understanding of the problems involved and to guide them in solving these problems. The nature of the anomaly is explained and a correct attitude of the parents toward the child and toward the anomaly is suggested. The first preventive measure is to feed the baby with the bottle and nipple so that he can have exercise in sucking and swallowing. The lip defect is to be repaired preferably during the first month by a surgeon who specializes in oral surgery. As soon as the baby reaches the age at which children usually start to chew, he should be taught to chew on solid food. These chewing activities are the muscle movements out of which speech develops. A baby with cleft palate should be encouraged to coo and to babble. The operation on the palate should be performed sometimes between the eighteenth and the twenty-fourth month. When the palate has been repaired, the first problem is to train the soft palate to function. The best plan to follow at this time is for the parents to consult a speech clinic. The booklet contains a number of practical suggestions for the parents, with illustrations. The contents of the brief booklet are well calculated to create a hopeful attitude in parents and to indicate the program which, if followed, will go a long way toward alleviating the drawbacks of the anomaly.

#### NEWSPAPER ADVERTISING OF PROPRIETARY MEDICINES

The better newspapers in this country for years have attempted to exclude the more blatant advertisements of proprietary remedies. A few—too few—have even banned advertising of this class altogether. In Britain, where the situation with regard to extravagant claims has been generally much worse than here, a long step forward has just been taken. As told elsewhere in this issue (p. 920), London newspapers, through their trade association, voluntarily have adopted regulations which should greatly improve the standard of control over such advertising claims. In this country too the time seems ripe for more positive voluntary action by

publishers to avoid the danger of control from above by decree, as in Argentina (p. 921), where almost complete government control of drugs and drug advertising has been established.

#### CONGENITAL BILATERAL ANOPHTHALMOS

Genuine anophthalmos as distinguished from an extreme degree of microphthalmos is rare. From the point of view of embryologic development three types may be distinguished: (1) that due to failure of the optic pit to deepen and to form an outgrowth from the forebrain, (2) that due to complete suppression or an abnormality of the whole of the forebrain and (3) that due to degeneration of an optic vesicle that has formed and its later disappearance. Experimental studies and clinical observations suggest that this maldevelopment occurs as a result of some unfavorable environmental change early in pregnancy and is not of germinal origin. Hare<sup>1</sup> reports 2 instances of congenital bilateral anophthalmos. One of the 2 boys thus afflicted was fitted with prostheses. Hare points out that a child whose appearance is improved by artificial eyes is more acceptable to his parents, relatives and future associates than is one who is disfigured. This, in turn, tends to diminish the emotional trauma to his parents and makes the patient better equipped emotionally to face life. The histories of his 2 little patients also demonstrate the need of placing a child with bilateral anophthalmos under the care of a trained worker.

#### ETIOLOGIC RESEARCH ON REGIONAL ENTERITIS

Morphologically regional enteritis is an infectious granulomatous process. Heretofore all efforts to discover a causative agent have failed. Staining and cultural methods, animal experiments and immunologic tests have yielded uniformly negative results. With the increase in the knowledge and understanding of venereal lymphogranuloma, which may invade rectal and other abdominal structures, the question has arisen whether regional enteritis may not be caused by the lymphogranulomatous virus, but so far the Frei intracutaneous tests of patients with regional enteritis have not been positive.<sup>1</sup> Rodaniche, Kirsner and Palmer<sup>2</sup> failed also in neutralization tests of the lymphogranulomatous virus with the serum of enteritis patients and in attempts to isolate the virus from resected intestinal segments and mesenteric lymph nodes in regional enteritis. It appears that regional enteritis as ordinarily understood is not caused by the virus of lymphogranuloma. It is of interest that in the reports of these and other cases of regional enteritis there is no mention of any history of typical clinical venereal lymphogranuloma. Regional enteritis shares with Hodgkin's disease the distinction of successfully resisting the search for a specific causative agent.

<sup>1</sup> Hare, Robert. Congenital Bilateral Anophthalmos, *Arch. Ophthalmol.* 30:320 (Sept.) 1943.  
<sup>2</sup> Koster, Harry, Kasman, L. P., and Scheinfeld, William. Regional Enteritis, *Arch. Surg.* 32:789 (May) 1935. Stafford, E. S. Regional Enteritis and Ulcerative Colitis, *Bull. Johns Hopkins Hosp.* 6:399 (April) 1938. Rodaniche, Kirsner and Palmer.  
<sup>3</sup> Rodaniche, Enid C., Kirsner, J. B., and Palmer, W. I. The Relationship Between Lymphogranuloma Venereum and Regional Enteritis: An Etiologic Study of 4 Cases with Negative Results. *Gastroenterology* 1:687 (July) 1943.

# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## ARMY

### AVIATION MEDICAL EXAMINERS

Graduation exercises were held on October 27 for aviation medical examiners following the course on aviation medicine, which is now given in its entirety at the School of Aviation Medicine, Randolph Field, Texas. This is the first class to complete this changed program, which began on August 26. The list of students graduating follows:

**ALABAMA**  
Luther L. Hill, Major Montgomery  
James F. Trucks, 1st Lieut. Birmingham

**ARIZONA**  
Carlos C. Craig, Captain Phoenix  
Robert M. McLennan, 1st Lieut. Phoenix

**ARKANSAS**  
Jones W. Lamb, Captain Paragould  
Waldo A. Regnier, Captain Ciossett  
Euclid M. Smith, Major Hot Springs National Park

**CALIFORNIA**  
Robert T. Gardner Jr., 1st Lieut., Chula Vista  
Ralph G. Gladen, Captain Patton  
George E. Hall, Captain Los Angeles  
Maurice J. Hoshen, Captain Eureka  
Clinton B. H. Hollister, Captain Santa Barbara  
Cecil C. Hunnicutt, Captain Montebello  
George Q. Lee, 1st Lieut. Oakland  
Grant V. Lund, Captain Glendale  
Douglas F. McDowell, 1st Lieut. Santa Barbara  
Wallace B. Parkinson, Captain Porterville  
Delbert F. Rey, 1st Lieut. Glendale  
Emmett L. Schield, Major Pomona  
Hume A. Thomason, 1st Lieut. Santa Monica  
Frank Elwood Tufts, Major Sacramento  
H. Clyde Washburn, 1st Lieut. El Monte  
Richard F. Webb, Captain Pasadena  
Thomas S. Whitelock, Captain San Diego  
Richard A. Young, Major Oakland

**COLORADO**  
Harry A. Alexander, Major Boulder

**CONNECTICUT**  
Harold A. Bergendahl, Captain Tralfville  
John H. Gilbert, 1st Lieut. Stamford

**DISTRICT OF COLUMBIA**  
Clifton D. Howe, Captain Washington  
Francis I. Zuzi, 1st Lieut. Washington

**FLORIDA**  
Noel C. Mellen, 1st Lieut. Pensacola  
Jack O. W. Rash, Captain Miami

**GEORGIA**  
Harry M. Kandel, Major Savannah

**ILLINOIS**  
Maurice Blinski, 1st Lieut. Chicago  
Clarence H. Boswell, Lieut. Col., Rockford  
Charles G. Freundlich, 1st Lieut. Chicago  
Carl N. Graf, Captain Chicago  
Mervin W. Greenberg, 1st Lieut., Chicago  
Alexander J. Jones, Captain, Springfield  
Francis H. Ketterer, Major Breese  
Robert J. McKeever, 1st Lieut., Chicago  
Arnold H. Maloney Jr., 1st Lieut., Stockton  
John R. Peffer, 1st Lieut., Chicago  
Carl M. Pohl Jr., 1st Lieut. Chicago  
Lewis R. Pummer, 1st Lieut., Chicago  
Morton H. Rose, 1st Lieut. Chicago  
Michael Schubert, 1st Lieut., Toluca  
William F. Seifert, Captain Rockford  
Burton J. Soboroff, 1st Lieut. Chicago  
Roger A. VanAtta, 1st Lieut. Chicago  
Robert E. Williams, Major Chicago

**INDIANA**  
Alfred J. Danko, Captain East Chicago  
Dillon D. Geiger, Major Bloomington  
George W. Herrold, Captain Lafayette  
Loren H. Martin, Captain Indianapolis  
Robert B. Smallwood, Captain Bedford  
Ira C. Whitehead, 1st Lieut. Terre Haute

**IOWA**  
Jerome C. Burke, 1st Lieut. Clinton  
Edwin A. Crowell Jr., Captain Iowa City  
Francis C. Dunn, Captain Cedar Rapids  
Martin J. Ryan, Captain Sioux City

**KANSAS**  
Robert C. Anderson, 1st Lieut. Topeka  
Carl T. Buehler Jr., 1st Lieut. Hilstead  
Paul F. Craig, Captain Coffeyville  
Oliver L. Martin, 1st Lieut. Baxter Springs  
George E. Stafford, Captain Salina  
Ralph M. Wyatt, 1st Lieut. Hewanatha

**KENTUCKY**  
Richard W. Oliver, Captain Louisville  
Ernest C. Strode, Captain Louisville

**LOUISIANA**  
Frank H. Davis, Captain Lafayette

**MAINE**  
Allan J. Stinchfield, Captain Skowhegan

**MARYLAND**  
William K. Allen, 1st Lieut., Baltimore  
Marshall P. Byerly, Captain Baltimore  
Emmett L. Jones Jr., Major Cumberland  
William H. Morrison, Captain Baltimore

**MASSACHUSETTS**  
Frank L. Armstrong, 1st Lieut. Boston  
Cornelius E. Hagen Jr., Captain Fall River  
Nelson Newmark, Captain Springfield  
Cyril P. Rosston, Captain North Adams  
Carl A. Weiss, Captain Lawrence

**MICHIGAN**  
David W. Davis, 1st Lieut. Pontiac  
Myron Fink, Captain Ann Arbor  
Wilfred S. Ley, 1st Lieut. Lansing  
William S. Lovas, 1st Lieut. Detroit  
John R. Lukas, Major Dearborn  
Frederick P. Maibauer, Captain Wyandotte  
Donald B. Morrison, Captain Tekonsha  
David G. Morton, Captain Detroit

**MINNESOTA**  
Fabian J. McCaffrey, 1st Lieut. Minneapolis  
Horace D. McGee, 1st Lieut. St. Paul  
Melvin E. Lenander, Captain St. Peter  
Theodore W. Stransky, Captain Owatonna  
William F. Vaudreuil, 1st Lieut. Duluth

**MISSISSIPPI**  
William O. Biggs, Captain Osyka  
Santo T. Coppola, Captain Jackson

**MISSOURI**  
Alfred J. Cone, Major St. Louis  
Joseph H. Delany, Captain Columbia  
George E. Moore, Major Fulton  
Darwin W. Neubauer, Captain St. Louis

**NEBRASKA**  
Albert E. Harrington, Captain Hastings  
Reynolds J. O'Donnell, Captain Columbus

**NEW JERSEY**  
Charles I. Binder, Captain Newark  
Samuel Edelson, Captain Neptune  
Ferdinand K. Engelhart, Captain Trenton  
John J. Hamlen, Captain Newark

**NEW MEXICO**  
Robert H. Greeley, 1st Lieut. Deming  
Carroll L. Womack, Major Alamogordo

**NEW YORK**  
Willard F. Ande, 1st Lieut. Brooklyn  
Melvyn Berlind, Major Brooklyn  
Chester B. Bland, 1st Lieut. New York  
Charles P. Catalano, 1st Lieut. New York  
William Chester, Major Mamaronck  
Robert T. Curley, Captain Brooklyn  
Nicholas F. Fiegoli, Captain New York  
Charles T. Fried, Captain New York  
Edward L. Glynn, Captain Richmond Hill  
Sylvan A. Hertz, Captain New York  
Nathan Hilfer, 1st Lieut. Long Island City  
Nathan B. Ludwig, Captain Brooklyn  
Louis A. Maglio, Captain New York  
William S. Maurer, Captain New York  
Albert H. Meyer, Captain Brooklyn  
Albertus W. Rappole, Captain Jamestown  
Louis Razinsky, Captain Far Rockaway  
Louis E. Rosiello, Captain Amsterdam  
George A. Smith, Captain Brooklyn  
Bernard P. Sochner, Major Rochester  
Aaron Stein, 1st Lieut. Bellerose  
Herman Tarnower, Captain Scarsdale  
Lester A. Wall Jr., Captain Valhalla  
Guy M. Walters, Captain Willard  
Edward C. Wood, Major White Plains

**NORTH CAROLINA**  
William H. Kaufman, Captain Hope Valley

**OHIO**  
Edwin H. Artman, 1st Lieut. Chillicothe  
William W. Corwin, Captain Galion  
Philip B. Demaine, 1st Lieut. Akron  
Benjamin S. Gillette, Captain Barnevillie  
Donald C. Sellins, 1st Lieut., Cleveland  
Ervin S. Ros, Major Cincinnati  
Joseph R. Schaefer, Captain Dayton



Lester I Williams, 1st Lieut,  
Mount Vernon

OKLAHOMA

Elder D Padberg, 1st Lieut, Ada  
Ernest R Vahlberg, Major, Okla  
homa City

OREGON

Albert B Baker, Major, Strusfield  
William W Brum, Major, Salem  
Marvin J Robb, 1st Lieut, Bend

PENNSYLVANIA

Joseph A Balm, Captain, Phila  
delphia  
William P Bradley Jr, Captain,  
Sewickley  
Joseph M Bruu, 1st Lieut, Easton  
Paul Budura, 1st Lieut, Bethlehem  
Joseph E Forman, 1st Lieut,  
Philadelphia  
Richard H Gollings, 1st Lieut,  
Pittsburgh  
Joseph L Hunsberger, 1st Lieut,  
Norristown  
Walter Klein, 1st Lieut, Pitts  
burgh  
Marvin L Konecke, Captain,  
Wilkes Barre  
Louis Koolpe, 1st Lieut, Philadel  
phia  
William T Lamberti, Captain,  
Scranton  
Daniel H Maunz Major, Bradford  
Edward A Miller, 1st Lieut,  
Gettysburg  
Joseph W Millron, 1st Lieut,  
Kittanning  
Joe G Reed, 1st Lieut, Sayre  
Stoughton R Vogel, Captain Phila  
delphia

SOUTH CAROLINA

John M Davis, Major, Columbia

TENNESSEE

Hamilton V Gayden, Major, Nash  
ville

TEXAS

Bernard H Bloom Captain, San  
Antonio

Wilfred P Bonin, Captain, Hous  
ton  
John J Delany, 1st Lieut, Galves  
ton  
Guy T Denton Jr, Captain, Dallas  
Francis C Goodwin, Major, El  
Paso  
Harold B Griffin, 1st Lieut, Sana  
torium  
Abe Hauser, Major, Houston  
James E Loveless, 1st Lieut,  
Slaton  
Robert A McCall, Captain, San  
Antonio  
Charles O Moody, Captain, Cole  
man  
A William Muthauf, Major, El  
Paso  
Theodore S Wittels, Captain, New  
ton

UTAH

Junior E Rich, Major, Ogden

WASHINGTON

John T Abraham, Captain,  
Wenatchee  
Carroll C Carlson, Captain,  
Tacoma  
Harold J Gunderson, Captain,  
Everett  
Norman E Marsh, Captain, Che  
halis  
Walter E Narrocki, 1st Lieut,  
Cle Elum  
Joseph H Whitmore, 1st Lieut,  
Spokane

WEST VIRGINIA

Anthony A Yurko, Captain, Holli  
days Cove

WISCONSIN

Marcellus C Haines, Captain, Osh  
kosh  
John B Hitz, Major, Milwaukee  
Francis C Johnson, 1st Lieut,  
Madison  
Harvey G Mallow, 1st Lieut,  
Watertown  
John H Rendok Captain, Madison

the length of ordinary railroad cars and was designed pur  
posely to negotiate the sharp curves, narrow bridges and tunnels  
of foreign railways The train is olive drab and displays all  
hospital and Red Cross markings in accordance with Geneva  
Convention agreements The train also includes a pressure  
ventilating system, complete sterilization units, and emergency  
operating areas in each ward car Personnel of the train  
includes four medical officers, six army nurses and thirty-three  
enlisted men, most of whom are technical specialists trained in  
medical work Quarters for train personnel have been pro  
vided in two cars Major Thomas Purser Jr of McComb,  
Miss, is commanding officer of the train, and 1st Lieut Serene  
Berg of Stoneham, Mass, is chief nurse

GRADUATE MEDICAL ADMINISTRATIVE  
OFFICERS

The twenty-sixth class of the Camp Barkeley Medical  
Administrative Corps Officer Candidate School graduated  
November 17 following a sixteen weeks course of training  
Since the organization of the Medical Administrative Corps  
their duties have been expanded to take over more and more  
of the nonmedical functions of the medical department Among  
the varied positions now handled by the Medical Administrative  
Corps are litter bearer platoon leaders, motor maintenance  
officers, assistant registrars of large hospitals, supply and mess  
officers for all types of medical units, personnel adjutants and  
company commanders of training units The graduation address  
was delivered by Dr Rupert N Richardson, president of the  
Hardin-Simmons University, Abilene, Texas Certificates of  
graduation and letters of commission were presented to the new  
officers by Brig Gen Roy C Heflbower, school commandant

SUPERINTENDENT NAMED FOR  
OCCUPATIONAL THERAPY

Mrs Winifred C Kahmann, director of occupational therapy  
and physical therapy at the Indiana University Medical Center,  
Indianapolis-Bloomington, has been appointed superintendent of  
the new occupational therapy program of the Surgeon General's  
Office of the Army Mrs Kahmann has been associated with  
the medical center since 1926, first as director of occupational  
therapy of Riley Hospital and later supervising that field of  
work for the entire medical center She was granted a leave  
of absence by the university to start her new activities in Wash  
ington, November 17 Mrs Kahmann will work as an assistant  
to Major Walter E Barton, M C, A U S, formerly engaged  
in neuropsychiatric work in the Army, who has been placed in  
charge of the reconditioning division in the Surgeon General's  
Office

NURSE ENDS LONG PERIOD OF SERVICE

On November 12 Lieut Col Lyda M Keener, A N C,  
principal chief nurse at the Walter Reed General Hospital,  
Washington, D C, retired to end the longest period of service  
in the history of the Army Nurse Corps Colonel Keener had  
completed thirty-seven years and five months of duty with the  
corps She was born in Greensburg, Pa, and graduated at the  
McKeesport General Hospital in September 1905 She entered  
the Army Nurse Corps in June 1906 The letter assigning her  
to her first station, San Francisco, was signed by Dita H  
Kinney, first superintendent of the corps Capt Gertrude Thom  
son, A N C, Lovell General Hospital, Fort Devens, Mass,  
has been assigned to Walter Reed General Hospital to succeed  
Colonel Keener

ARMY CAMP IN NEW ZEALAND NAMED  
AFTER DR CLAUDE E HALE

The War Department recently informed the wife of Capt  
Claude E Hale Jr, who met his death as a result of a motor  
vehicle accident on Nov 5, 1942 in New Zealand, where he  
was serving in the medical corps, that the United States Army  
camp located at Auckland Domain, Auckland, North Island,  
New Zealand, has been named Camp Hale in honor of her  
husband Dr Hale graduated from Vanderbilt University  
School of Medicine in 1917 and entered the service in May 1941

MAJOR JAY PAUL ROLLER AWARDED  
SILVER STAR

Major Jay Paul Roller, formerly of Luckey, Ohio, was  
recently awarded the Silver Star for gallantry in action in  
Tunisia The citation accompanying the award was as follows  
"For gallantry in action On the 11 April 1943, at about  
1900 hours, Capt Jay P Roller organized and personally led  
four ambulances under heavy artillery and small arm fire to  
evacuate patients On the 11 April 1943, in the 11 sector,  
Tunisia, he personally led litter squads to the actual battle field  
and personally supervised evacuation of wounded to the col  
lecting company This greatly expedited the proper treatment  
of the wounded This was definitely above and beyond his  
line of duty, which does not call for him to go as far as the  
actual battle field While returning he saw other groups of  
litter bearers who were from an entirely different unit and  
under fire for the first time scattering in panic Without regard  
to his personal safety and in spite of the vast number of shells  
and mortar fire exploding all around him, he reorganized these  
men, leading them to safety without injury to a single man"  
Dr Roller graduated from the University of Louisville School  
of Medicine in 1939 and entered the service Jan 5, 1941

ARMY'S FIRST OVERSEAS TYPE  
HOSPITAL TRAIN

The War Department announced recently that the Army's  
first overseas type hospital train, built specifically for use in  
theaters of operations, will be used temporarily for training  
purposes at the California-Arizona Maneuver Area (formerly  
the Desert Training Center) The new traveling hospital unit,  
of all steel construction, has been designated the Third Hos  
pital Train It consists of ten cars, including six ward cars,  
a kitchen car, utilities car and two personnel cars for officers  
and enlisted men Each of the cars is slightly more than half

## MEETING OF MEDICAL OFFICERS

Brig Gen Fred W Rankin, formerly President of the American Medical Association and now consultant in surgery, Surgeon General's Office, addressed the monthly meeting of medical officers at the Army Medical Center, Washington, D C, October 18, on "Observations of a Recent Visit to Theaters of Operation" Col Crawford W Sims, M C, who recently returned from overseas service and is now at the Medical Field Service School, Carlisle Barracks, Pennsylvania, spoke on "Medical Experience in the Middle East"

Air Marshal Sir Harold Wittingham of England addressed the meeting extemporaneously

## TWO ARMY NURSES KILLED WHILE ON DUTY OVERSEAS

Two army nurses from West Virginia were killed recently while on duty overseas Lieut Louise Link of Richwood was killed in action, probably in Sicily, and Lieut Martha Thurmond of Charleston was killed in a jeep accident in North Africa Lieutenant Link graduated from the McMillan Hospital school of nursing, Charleston, in 1941 and later served on the nursing staff at Charleston General Hospital Lieutenant Thurmond was formerly on the nursing staff at St Francis Hospital, Charleston

## NAVY

### JAPANESE ATTACK U S NAVAL FIELD HOSPITAL DURING OPERATION

Lieut Comdr Gordon Bruce, formerly of New York City, in a recent news dispatch from Torokina Cape, Bougainville Island, described how the Japanese attacked a United States Navy field hospital on November 7 during a battle near the Koromokina River, which read as follows 'We set up our tents near the beach on the left flank At noon marine casualties from that sector began coming in and at 1 o'clock we had 32 patients The Japs began their attack on the hospital then My surgeons were operating on a marine when shots ripped through the tent I ran to the beach with a couple of corpsmen and unscrewed three machine guns from Higgins boats which were smashed in the original landings We brought the guns back to the hospital and I drafted a few marines to operate them and set up a defense line A sniper's bullet through the top of the tent went into the lung of a chief pharmacist's mate We evacuated him at once It began to rain, and water filled up our foxhole operating rooms At 2 o'clock the firing increased and I sent a runner to ask a marine commander on the beach for help He had only fifteen men and couldn't spare them Then I got two marines plodding up a jungle trail to take up guard positions in the jungle 30 feet from the tent The corpsmen piled sandbags around tents Finally a platoon of marines came to our aid and set up a defensive position My surgeons continued operating until 9 o'clock Only then did we evacuate the patients, now numbering 50 Not 1 died Once during the fighting I was told we had better evacuate, but we couldn't because some marine patients required delicate surgery for brain injuries before they could be moved The two marines I impressed into service were found late that afternoon They had been killed by rifle fire and stripped of everything except their pants The Japs even took their identification tags I feel terrible about these two boys, who were so willing to help Our operations were performed under small battery powered lights I can't pay enough tribute to my men Lieut Herbert Hawley, Elwood, Neb, dentist attached to our unit, is the most completely fearless individual I ever knew"

Surgeons performing operations under fire included Lieut Comdr Raymond R Callaway, Birmingham, Ala, and Lieuts James Emert New York City, William Peck, Falls City, Neb, Frank Adair St Paul, and W F Barker, Corpus Christi, Texas Helping the wounded was 1st Lieut Leo Halatek, Chicago marine quartermaster Dr Bruce was commander of the medical unit

### OXYGEN THERAPY CLASSES AT U S NAVAL HOSPITAL IN SAN DIEGO

Lieut Comdr Paul L Yordy USNR, former anesthetist at the Miami Valley Hospital, Dayton Ohio, has been named co supervisor of oxygen therapy classes which are being held at the U S Naval Hospital San Diego Calif The intensive program, the first of its kind in a military hospital, is designed to train several hundred Navy men and Waves to operate the iron lung, oxygen tents and similar pieces of apparatus and are taught to improvise their own equipment on the battlefield or aboard ship to aid doctors in the care of patients during emergencies While war casualties have not increased the use of

the iron lung in individual military hospitals, training of operators has been deemed essential because of the opening of numerous new hospitals in widely separated areas The oxygen tent, nasal catheters and B L B masks are used more often than ever before at naval base hospitals and in mobile hospitals on the war fronts because of the large number of operations necessitated by war injuries They are also used during postoperative treatment to enrich the system The San Diego hospital unit maintains a twenty-four hour watch ready to serve with oxygen apparatus

Dr Yordy graduated from the Ohio State University College of Medicine in 1926, received his commission in March 1942 and was assigned to the Dayton Medical Specialist Unit at the San Diego Hospital under the leadership of Comdr Walter Simpson of Dayton, Ohio

### LIEUTENANT COMMANDER BUNCH AWARDED NAVAL RESERVE MEDAL

The chief of the Bureau of Naval Personnel announced recently that Lieut Comdr Charles Bunch (MC), USNR, formerly of Charlotte, N C, and now stationed at a naval hospital in the Caribbean area, has been awarded the Naval Reserve Medal for his long service and action in the reserve Dr Bunch graduated from the Medical College of the State of South Carolina, Charleston, in 1931, entered the reserve as a junior grade lieutenant in 1933 and was promoted to lieutenant in 1937 and lieutenant commander in January 1942 He was on active duty before the war began and was on recruiting duty at the Charlotte and Raleigh stations He has seen service at sea, in the Navy hospital in Washington and on the surgical staff of the navy hospital at Parris Island, S C Dr Bunch in addition to the new award also holds the Defense Service medal and the America Area Campaign medal

### PHYSICIAN HONORED

The theater in the Aleutians of the Navy's Fifty-Second Construction Battalion has been named 'Connolly Hall' in honor of Lieut (jg) Henry Hill Connolly (MC), USNR, who died three days before the outfit left the United States Dr Connolly died on January 5 of meningococcic meningitis aged 27 The decision to name the theater, which is also used for religious services, was made by the men in a contest conducted to select the most appropriate name The young medical officer resided in Beverly Mass (THE JOURNAL July 3 p 693)

### PRISONER OF THE JAPANESE

Lieut Comdr Herbert C Brokenshire (MC), USNR who was reported missing in action following the capture of Manila in 1941 was recently reported a prisoner of the Japanese at the headquarters of the military prisons of the Philippines according to the Boston Evening Globe September 3 Dr Brokenshire graduated from Cornell University Medical College in 1924 and since 1926 has served as a medical missionary at Davao on the island of Mindanao in the Philippines

## MISCELLANEOUS

MAJOR GENERAL MAGEE BECOMES  
EXECUTIVE OFFICER OF INFOR-  
MATIONAL SERVICE

Prof Ross G Harrison, chairman of the National Research Council, has announced the appointment of Major Gen James Carre Magee, Medical Corps, United States Army, retired, as executive officer of the Informational Service of the Council's Division of Medical Sciences. This service has been established by the National Research Council under the recent grant of the Johnson and Johnson Research Foundation, by which the sum of \$75,000 was made available to the council for the period ending June 30, 1945. The purpose of the grant was to enable the council to assemble and disseminate, as far as possible, medical information pertaining to the war effort.

General Magee has had a distinguished record in the Medical Corps of the Army. A graduate of Jefferson Medical College in 1905, he has spent his entire professional life in the medical service of the Army. He was assigned to the Philippines before the outbreak of the first world war and then recalled for European duty from 1917 to 1919. He was appointed Surgeon General of the Army in 1939, and on May 31, 1943 he was retired on completion of the four year term of duty. It was under his direction that the Medical Corps was enormously expanded to meet the demands of the present war and the program of service adopted which has led to the remarkable health record of the Army. General Magee holds the honorary degree of doctor of science from Jefferson Medical College and was recently awarded the Distinguished Service Medal for outstanding accomplishments as Surgeon General.

General Magee, on assuming his duties, will devote full time to the organization of a central office in the National Research Council which will collect medical reports and records widely dealing with military medical practice, civilian practice as affected by the war, medical education and research and the distribution of diseases. The materials collected will, so far as military necessities permit, be made available by publications, summaries and notes.

CARE OF THE WOUNDED IN  
WORLD WAR II

The Office of War Information in a recent report on the care of wounded soldiers, sailors, marines and coast guardsmen, based on information obtained from the Army and Navy medical departments, shows that the battle casualty who escapes outright death has a better chance of coming out alive in this war than he did in the last, because of the speedier and more effective treatment of their wounds. It has been estimated by the Army Medical Department that between 80 and 90 per cent of the wounded get first aid treatment within an hour of being wounded.

## FIGURES INCONCLUSIVE

The figures indicate that the ratio of killed in action to battle casualties is twice as high in this war as it was in the last, but the mortality rate among the wounded is only half as high in this war as it was in the last. Three main reasons are given: (1) the use of blood plasma to combat shock and hemorrhage, (2) the use of sulfonamide to combat infection and (3) the mobility and organization of medical services which insure prompt and efficient medical and surgical treatment.

Capt Winchell M. Craig, chief of surgery at the Naval Medical Center, Bethesda, Md., cited a report of head wound casualties in one of the Egyptian campaigns which showed a mortality rate of only 9 per cent as against a mortality rate of between 50 and 60 per cent for head wounds in the last war. Major Gen Albert W. Kenner, Assistant Surgeon General of the Army, credited blood plasma with saving the lives of many of the 400 American sailors who were burned when their ship was blown up 5 miles out from Casablanca. Capt M. J. Aston of the Navy Medical Corps reported that during twenty months

he was senior medical officer of a naval hospital ship in the South Pacific, 360 burned patients were treated with a loss of only 3 lives, only 1 of them from burns alone. Treatment consisted in cleaning the wounds with soap and water, applying sulfathiazole and pressure dressings, and grafting skin over the burned areas as soon as possible. In the field of surgery, medical officers regard highly the guillotine or flapless type of amputation, which is being used widely in both branches of the service.

## MENTAL CASES

In the last war 3 per cent of the men were rejected at induction as mentally unfit for military life. In this war between 8 and 10 per cent of the men examined have been rejected at induction for the same reason. Despite this more rigid screening, the incidence of neuropsychiatric disorders has been high, particularly among combat troops. In the various overseas theaters hospital admissions for such cases have been as high as 20 to 25 per cent of hospital admissions for all causes due to combat.

The late Col Roy D. Halloran, chief of the Neuropsychiatry Branch of the Army Medical Department, said that "Ordinarily one thinks of nervous breakdowns as occurring only in weaklings or in people who are fundamentally unstable. This is not true in warfare. Obviously, some people break down or give up sooner than others, but under the extremes of horror and fatigue of modern warfare the best and strongest among us has his breaking point at which the will to fight is lost and a nervous breakdown occurs." Fatigue, lack of food, fear, noise and the sight of wounded and dying comrades are common causes of breakdown in combat. The more these causes can be eliminated or diminished, the fewer will be the casualties from nervous breakdown. The effects of fatigue and lack of food can be best counteracted by frequent use of reserves, which, however, may not be possible in a war of movement. Colonel Halloran further said that "the soldier must be taught that fear is a normal reaction and is not the mark of a coward. It is experienced by even the bravest. It is important, however, to substitute fear of the consequences of defeat or fear of combat."

## WARTIME GRADUATE MEDICAL MEETINGS

Among the subjects scheduled for early presentation under the auspices of the Wartime Graduate Medical Meetings are the following at Camp Lee, Va.: Amputations, Upper and Lower Extremities, Dr James T. Tucker, December 10; Fractures, Lieut Col Martillus H. Todd, December 17; Psychoneurosis, Maladjustment Neuropsychiatry, Dr O. B. Darden, January 7; Dysenteries, Dr J. A. Scherer, January 14; Newer Drugs and Their Uses in Practice, Dr Harvey B. Haag, January 21; Diagnosis and Treatment of Contagious Disease, Dr Harry Walker, January 28.

At Fort Eustis, Virginia: Psychoneurosis, Maladjustment Neuropsychiatry, Dr David Cole Wilson, December 16.

At the U. S. Naval Hospital and U. S. Naval Academy Dispensary, Annapolis, Md.: Treatment of Chest Injuries, Dr Frederick C. Fishback, December 17; Psychoneurosis Among the Armed Forces, Dr Riley H. Guthrie, January 21; Rickettsia, Diagnosis, Treatment and Prevention (demonstrated with lantern slides), Dr Rolla E. Dyer, February 18.

At Norfolk Naval Hospital, Portsmouth, Va.: Treatment of Fractures (Demonstrated with X-Rays), Dr Custis Lee Hall, December 9; Diagnosis and Treatment of Gastrointestinal Infections, Dr T. Neill Barnett, December 10.

At Camp Shanks, Orangeburg, N. Y.: Orthopedic Problems in the Soldier, Dr J. C. McCauley, December 23; Nephritis, Dr A. M. Fishberg, January 13; Common Skin Diseases in Soldiers, Dr G. C. Andrews, January 27.

At Station Hospital, Indiantown Gap, Pa.: Psychiatry, Dr Edward Strecker, December 10.

## CIVILIAN DEFENSE

### HEALTH AND MEDICAL COMMITTEES URGED TO ASSIST WITH WAR- TIME HEALTH PROBLEMS

In a pamphlet recently issued by the Office of Civilian Defense, it is recommended that medical advisory councils organized in the developmental period of civilian defense as part of the Emergency Medical Service of local defense councils should merge with health and medical committees of the Civilian War Services branch of defense councils. In addition to advising the chief of Emergency Welfare Service, the committee should support the health officer and serve as a means of mobilizing community support for meeting health problems.

The purposes of the health and medical committees suggested in the pamphlet, entitled "Health Service in Wartime," are (1) development of adequate wartime coordinated health programs in each community and (2) the building up of citizens' understanding and participation.

Membership in the committee should include the local health officer, the local chief of Emergency Medical Service and representatives of the local welfare and education departments, of the medical and nursing professions, of organized labor and industry or farming, and of the voluntary health and social agencies, parent-teacher associations, and civic groups.

It is recommended that the health and medical committee of a local defense council act as a steering committee for functional subcommittees. Because health and medical problems vary greatly among communities, the pamphlet does not present a blueprint for subcommittee organization and work. It does, however, list examples of the problems that face many communities in wartime and suggests how the health and medical committee may assist in solving them. It is emphasized that the work of the health and medical committee should not duplicate or interfere with the activities of other agencies, if an adequate working group has been established in any health field, it should be requested to serve as the appropriate subcommittee.

Among the suggested health and medical problems which the program of the health and medical committees of defense councils might include are communicable disease control, maternal and child health including school health programs, health of young workers and day care for children of working mothers, accident prevention, nutrition and conservation of essential foods, environmental sanitation, provision of medical and nursing care and the use of volunteers in health programs.

### OFFICE OF CIVILIAN DEFENSE ISSUES MANUAL ON EMERGENCY CARE OF INJURED

The Medical Division Office of Civilian Defense, Washington, D. C., recently issued a new manual in which is described the immediate care that can be given to injured persons at the site of a disaster and techniques of transporting them to safety and medical attention. The work is based on procedures and organization developed by the Office of Civilian Defense and careful study of three years of British and other air raid experience.

The 117 page book is divided into three parts, "Civilian Defense," "Emergency Field Care and Transportation of the Injured." Part I describes the organization and operation of the field casualty service developed by the Medical Division, which includes mobile medical teams, based on hospitals wherever possible, express parties made up of a medical team, a rescue squad, an ambulance and a car for sitting cases dispatched through the control center to a disaster for immediate action, casualty stations for the care of casualties with minor injuries, stretcher teams and ambulances.

Part II includes a discussion of the injuries and conditions most frequently encountered in wartime disaster, namely hemorrhage, shock, fractures, burns, suffocation and carbon monoxide poisoning. There are chapters on principles of bandaging with detailed illustrations, marking of casualties and disposal of the dead, methods of blanketing a casualty and methods of lashing a casualty to a stretcher.

Special attention is given to crush and blast injuries. Crushing wounds may result from falling masonry, girders, beams or whole floors dislodged by bomb explosions. Although these injuries may be immediately fatal, casualties often show little sign of injury when released, the manual points out. Their condition may appear good for a few hours and yet they may die of kidney failure several days later. Directions for first aid are included, and workers are warned that any person "who has been trapped by debris which has pressed on any part of the body must be regarded as a serious casualty." The importance of administering by mouth abundant quantities of fluids and alkalis (sodium bicarbonate) is stressed.

Persons exposed to blast from high explosive may also suffer serious internal injury without external evidence of it. The manual urges all persons concerned with the handling of casualties to "suspect blast injuries in every person found near the site of a bomb explosion, especially those who have obviously suffered injury and yet show no external evidence of it."

More extensive discussions of these two types of injury are included in the recent OCD publication "Clinical Recognition and Treatment of Shock."

The section of the manual devoted to transportation of the injured describes regular and improvised stretchers and gives directions for stretcher bearing, with a separate section on types of injury that require special care in moving. Another chapter explains methods of carrying the injured without stretchers, and the final chapter explains the ambulance service of the civilian defense organization and presents specific instructions for loading and unloading ambulances. The latter instructions describe procedures required if war gases are encountered.

The manual is intended primarily for the training of rescue workers, medical auxiliaries, ambulance drivers and attendants, and stretcher bearers of the Emergency Medical Service. In the appendix are a schedule of training based on the manual, the OCD operations letter describing the work of stretcher teams, the Rescue Service and instructions on self aid in case of exposure to war gas and a section on electrical hazards.

### ENROLMENT OF HOSPITAL PERSONNEL IN THE U S CITIZENS DEFENSE CORPS

The Office of Civilian Defense, Washington, D. C., issued on November 9 Circular Medical Series No. 34 on the "Enrolment of Hospital Personnel in the U S Citizens Defense Corps," which presents the Office of Civilian Defense policy covering the enrolment of hospital personnel in the Citizens Defense Corps under the provisions of Office of Civilian Defense Regulations No. 3 revised in August 1943 and is intended for the guidance of commanders, chiefs of emergency medical service and hospital administrators. Certain hospital personnel may be enrolled in the following units of the Citizens Defense Corps provided all requirements regarding eligibility, registrations, training, appointment and oath as set forth in the Regulations are met.

**Medical Unit.** Persons who have duties related to the care of casualties and who are expected to report and work at the hospital as volunteers on an air raid alert.

**Nurses Aides Unit.** Volunteer Nurses Aides.

**Other Units.** Persons who have specific assignments related to the maintenance of hospital services or to the protection of hospital personnel, buildings or grounds who are expected to report and work as volunteers on air raid alerts. Such persons should be trained for and enrolled in appropriate units of the Citizens Defense Corps (Air Raid Wardens, Fire Guard, Communications, Emergency Welfare, Utility Repair and so on).

Provision for the movement of other essential hospital personnel during restricted periods can be made by the local defense council through appointment of such personnel to the Civilian Defense Auxiliary Group (Operations Letter No. 37 and supplements).

Registered trainees for and enrolled members of all units of the U S Citizens Defense Corps are eligible for War Civilian Security benefits if injured in the performance of official duties.

"Performance of official duties" includes activities at the time of an air raid alert, activities undertaken in training, drills and exercises approved in accordance with Office of Civilian Defense Regulations No 3, Revised in August 1943, and going to and from posts of duty in connection with such activities

### TEMPORARY HOSPITALIZATION FOR CIVILIANS INJURED AS RESULT OF ENEMY ACTION

The Office of Civilian Defense, Washington, D C, issued on November 10 Circular Medical Series No 12, which is an amendment to the agreement between the Federal Security Agency and the Office of Civilian Defense (THE JOURNAL, March 21, 1942, p 983) regarding temporary hospitalization for civilians injured as the result of enemy action Under the agreement announced on March 13, 1942 the Public Health

Service planned to pay \$3.75 per patient day for hospitalization of patients of the Emergency Medical Service in both casualty receiving hospitals and emergency base hospitals This rate was based on that in effect for government hospitals at the time of the agreement as established by the Federal Board of Hospitalization Effective July 1, 1943 the Federal Board of Hospitalization has raised the per diem for government hospitals to \$4.25, and this change has been approved by the President As of July 1 the Public Health Service agreed to pay the salaries of a limited number of graduate nurses to be recruited by the Emergency Medical Service to supplement the nursing staffs of institutions designated as emergency base hospitals if and when such hospitals are activated Also effective July 1, 1943 the Public Health Service will pay the necessary minimum cost for the transportation of patients ordered by respective state chiefs of Emergency Medical Service to be transferred to emergency base hospitals

## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

### HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan 1, 1944

1 Prospective interns who have not yet obtained a hospital appointment should communicate with these institutions either directly or through the office of the dean of their medical school Assistant residents and residents should direct their applications to the hospital superintendent in the usual manner

2 Institutions having a shortage of interns or residents are again invited to make their needs known to the Council on Medical Education and Hospitals In reporting shortages, hospitals should indicate the number of interns, assistant residents and residents needed to complete their quotas for Jan 1, 1944

### Hospitals Reporting Vacancies for Interns or Residents

(Continuation of list in THE JOURNAL, November 27, p 843)

#### ARIZONA

St Joseph's Hospital, Phoenix Capacity, 244, admissions, 9,709  
Sister M Eucharist, Superintendent (1 intern)

#### CALIFORNIA

Glendale Sanitarium and Hospital, Glendale Capacity, 277, admissions, 6,729 Dr A W Truman, Medical Director (2 interns)  
California Babies' & Children's Hospital, Los Angeles Capacity, 30 admissions, 475 Rosanna Stockley, Superintendent (resident—pediatrics)  
Mary's Help Hospital, San Francisco Capacity, 155, admissions, 4,536 Sister Basil, Superintendent (interns, resident)  
Santa Barbara Cottage Hospital, Santa Barbara Capacity, 190, admissions, 3,651 Mrs Gladys Smits, Superintendent (1 resident)  
Santa Barbara General Hospital, Santa Barbara Capacity, 312, admissions, 2,175 Mrs Eva L Wilson, Superintendent (resident—mixed)

#### COLORADO

Colorado General Hospital, Denver Capacity, 265 admissions, 4,340 Dr Maurice H Rees, Medical Superintendent (6 residents, including radiology, ophthalmology)  
Colorado Psychopathic Hospital, Denver Capacity, 78 admissions, 876 Dr Charles A Rymer, Acting Director (resident—psychiatry)  
St Anthony Hospital, Denver Capacity, 220 admissions, 5,275 Sister M Mechtildis, Superintendent (2 interns)  
Colorado State Hospital, Pueblo Capacity, 4,387, admissions, 775 Dr F H Zimmerman, Superintendent (3 residents—psychiatry)

#### CONNECTICUT

Meriden Hospital, Meriden Capacity, 147, admissions, 3,552 Miss Nellie K Ferguson, Superintendent (2 interns)  
New Haven Hospital, New Haven Capacity, 589, admissions 11,488 Mr James A Hamilton, Director (2 residents—psychiatry)  
Lawrence and Memorial Associated Hospitals, New London Capacity, 291, admissions, 4,341 Mr Richard J Hancock, Administrator (3 interns)  
Laurel Heights State Tuberculosis Sanatorium, Shelton Capacity, 382, admissions, 311 Dr Edward J Lynch, Medical Director (resident—tuberculosis)

#### DELAWARE

Delaware State Hospital, Tarnhurst Capacity, 1,247, admissions, 340  
Dr M A Tarumianz, Superintendent (resident—psychiatry)

#### DISTRICT OF COLUMBIA

Gallinger Municipal Hospital, Washington Capacity, 1,450, admissions, 15,828 Dr Edgar A Bocock, Medical Superintendent (3 assistant residents—OBG, ENT)

#### FLORIDA

Pensacola Hospital, Pensacola Capacity, 197, admissions, 6,248 Sister Vincent, R N, Superintendent (intern, resident—mixed)

#### ILLINOIS

City of Chicago Municipal Tuberculosis Sanitarium, Chicago Capacity, 1,219, admissions, 1,811 Dr Leo M Czaja, General Superintendent (resident—thoracic surgery)  
Cook County Hospital, Chicago Capacity, 3,188, admissions, 67,328 Dr Ole C Nelson, Medical Superintendent (7 residents—pathology, radiology, psychiatry)

#### INDIANA

St Vincent's Hospital, Indianapolis Capacity, 340, admissions, 8,480 Sister Andrea, Superintendent (2 interns)

#### IOWA

Jennie Edmundson Memorial Hospital, Council Bluffs Capacity, 157, admissions, 3,010 Miss Dorothea Ely, Superintendent (1 intern)  
University Hospitals, Iowa City Capacity, 954 admissions, 20,996 Mr Robert E Neff, Administrator (7 residents)

#### KENTUCKY

Kentucky Baptist Hospital, Louisville Capacity, 150, admissions, 5,003 Mr H L Dobbs, Superintendent (3 interns)  
St Anthony's Hospital, Louisville Capacity, 163, admissions, 4,476 Sister Mary Edigna, R N, Superintendent (1 intern)

#### MARYLAND

Bon Secours Hospital, Baltimore Capacity, 190, admissions, 3,832 Sister Helena, R N, Superintendent (2 interns)  
Hospital for Women, Baltimore Capacity, 162, admissions, 3,369 Dr Merrill L Stout, Medical Director (2 interns)  
St Joseph's Hospital, Baltimore Capacity, 302, admissions, 6,910 Sister M Pierre, R N, Superintendent (4 interns)  
Union Memorial Hospital, Baltimore Capacity, 384 admissions, 7,847 Dr Willard L Quennell, Director (Intern, resident—OB)  
Spring Grove State Hospital, Catonsville Capacity, 2,100, admissions, 619 Dr Silas W Weltmer, Medical Superintendent (residents—psychiatry)

#### MASSACHUSETTS

McLean Hospital Belmont Capacity, 232, admissions, 212 Dr W Franklin Wood, Medical Director (4 residents—psychiatry)  
Gardner State Hospital Gardner Capacity, 1,425, admissions, 178 Dr Charles E Thompson Medical Superintendent (3 residents—psychiatry)  
Danvers State Hospital, Hathorne Capacity, 2,371 admissions, 794 Dr Clarence A Bonner Medical Superintendent (resident—psychiatry)  
Lawrence General Hospital, Lawrence Capacity, 218, admissions, 4,774 Miss Beatrice K Barnes R N, Superintendent (1 intern)  
Medfield State Hospital Medfield Capacity, 1,859 admissions, 191 Dr Earl K Holt Medical Superintendent (resident—psychiatry)  
St Luke's Hospital New Bedford Capacity, 339 admissions, 7,500 Mr Scott Whitcher Superintendent (1 intern)  
House of Mercy Hospital Pittsfield Capacity, 243 admissions, 4,003 Miss Edith Atkin R N Superintendent (2 interns)  
Middlesex County Sanatorium Waltham Capacity, 380 admissions, 330 Dr Sumner H Remick Medical Superintendent (resident—tuberculosis)

Waltham Hospital Waltham Capacity 215 admissions, 3,172 Mr Walter K Amesbury, Administrator (3 interns)  
Westfield State Sanatorium Westfield Capacity 239 admissions 876 Dr Roy Morgan Medical Superintendent (2 residents—TB)  
Belmont Hospital Worcester Capacity 250 admissions, 987 Dr Huston K Sprangler Medical Superintendent (residents—TB, communicable diseases)  
Worcester City Hospital Worcester Capacity 550 admissions 11,941 Dr George A MacIver Medical Superintendent (4 interns)

#### MICHIGAN

Mercy Hospital Bay City Capacity 150 admissions 3,960 Sr Mary Thomisine RN Superintendent (2 interns)  
Evangelical Deaconess Hospital Detroit Capacity 220 admissions 8,653 John I Ernst Superintendent (resident—mixed)  
St Mary's Hospital Detroit Capacity 187 admissions, 9,429 Sister Marie RN Superintendent (6 interns)  
Highland Park General Hospital Highland Park Capacity 225 admissions 7,008 Mr R L Geoghegan Superintendent (three interns)  
Mercy Hospital Jackson Capacity 150 admissions 4,087 Sister Margaret Mary RN Superintendent (2 interns)  
Traverse City State Hospital Traverse City Capacity 2,743 admissions 606 Dr R Phillip Sheets Medical Superintendent (residents—psychiatry)

#### MISSOURI

Robert Koch Hospital Koch Capacity 688 admissions 311 Dr George D Kettelkamp Superintendent and Medical Director (2 residents—TB)  
Lutheran Hospital St Louis Capacity 190 admissions 5,136 Rev E C Hofius Superintendent (1 intern)  
City Sanatorium St Louis Capacity 3,500 admissions 756 Dr W L Moore Superintendent (4 residents—psychiatry)

#### NEBRASKA

Bishop Clarkson Memorial Hospital Omaha Capacity 150 admissions 4,067 Miss Cecelia Meister RN Superintendent (interns resident—surgery)

#### NEW HAMPSHIRE

New Hampshire State Hospital Concord Capacity 2,386 admissions 665 Dr Charles Hall Dolloff Medical Superintendent (resident—psychiatry)

#### NEW JERSEY

Bayonne Hospital and Dispensary Bayonne Capacity 250 admissions 4,592 Mr Joseph Brady Superintendent (4 interns)  
New Jersey Sanatorium for Tuberculosis Diseases Glen Gardner Capacity 494 admissions 512 Dr S B English Superintendent (resident—TB)  
Jersey City Hospital Jersey City Capacity 900 admissions 18,432 Dr George O Hanlon Medical Director (15 interns)  
Morristown Memorial Hospital Morristown Capacity 158 admissions 3,382 Col Charles Rees Lloid Director (interns)  
Fitkin Memorial Hospital Neptune Capacity 190 admissions 4,235 Mr William L LeStrange Superintendent (1 intern)  
St Francis Hospital Trenton Capacity 343 admissions 7,104 Sister M Regulata RN Superintendent (2 interns)

#### NEW YORK

Binghamton City Hospital Binghamton Capacity 559 admissions 9,690 Mr Jerome F Peck Superintendent (resident—psychiatry)  
Coney Island Hospital Brooklyn Capacity 300 admissions 6,399 (2 interns)  
St Peter's Hospital Brooklyn Capacity 241 admissions 3,234 Rev Sister Chritas Superintendent (interns)  
Our Lady of Victory Hospital Lackawanna Capacity 180 admissions 3,991 Sister M Bathilde Superintendent (2 interns)  
Middletown State Homeopathic Hospital Middletown Capacity 3,538 admissions 685 Dr Walter A Schmutz Medical Superintendent (2 residents—psychiatry)  
New Rochelle Hospital New Rochelle Capacity 309 admissions 6,516 Mr Alex E Norton Superintendent (1 intern)  
Bronx Hospital New York City Capacity 409 admissions 8,897 Mr William D Seltzer Superintendent (4 interns)  
French Hospital New York City Capacity 332 admissions 6,074 Sister Mary of St Odile Superintendent (intern 2 residents—anesthesia OB)  
Harlem Hospital New York City Capacity 763 admissions 16,959 Dr E Lifshutz Medical Director (2 interns)  
Knickerbocker Hospital New York City Capacity 200 admissions 3,550 Mr B E Foss Superintendent (5 interns)  
Misericordia Hospital New York City Capacity 263 admissions 4,061 Sister St Theresa RN Superintendent (2 interns)  
Montefiore Hospital for Chronic Diseases New York City Capacity 713 admissions 1720 Dr E M Bluestone Director (resident—dermatology)  
New York City Hospital New York Capacity 880 admissions 8,538 Dr Thomas I Price Superintendent (resident—neurology)  
New York Polyclinic Medical School and Hospital New York Capacity 374 admissions 8,356 Mr A A Jaller Executive Officer (2 interns 2 assistant residents—anesthesia EENT)  
Riverside Hospital New York Capacity 360 admissions 606 Dr John A Cahill Medical Superintendent (4 asst residents—TB)  
Municipal Sanatorium Otisville Capacity 420 admissions 588 Dr I D Bobrovitz Medical Superintendent (2 residents—TB)  
John Monroe County Tuberculosis Sanatorium Rochester Capacity 170 admissions 332 Dr Ezra Bridge Medical Superintendent (resident—TB)  
Sea View Hospital Staten Island Capacity 2,008 admissions 2,251 Dr Morris A Jacobs Medical Superintendent (12 residents—TB)

Staten Island Hospital Staten Island Capacity 304 admissions 5,506 Mr William E P Collins, Superintendent (5 interns)  
Troy Hospital Troy Capacity 296 admissions, 4,546 Sister Angela Superintendent (4 interns)  
White Plains Hospital White Plains Capacity 202 admissions 4,297 Mr Thomas T Murray Superintendent (2 interns)  
Harlem Valley State Hospital Wingdale Capacity 4,627 admissions 492 Dr Harry A La Burt Medical Superintendent (3 residents—psychiatry)  
St Joseph's Hospital Yonkers Capacity 197 admissions 2,554 Sister Mary Barbara, Superintendent (2 interns)

#### NORTH CAROLINA

Parl View Hospital Rocky Mount Capacity 120 admissions, 2,782 Mr J I Melvin Superintendent (1—mixed)

#### NORTH DAKOTA

St John's Hospital Fargo Capacity, 230 admissions 6,605 Sister Harriet RN Superintendent (2—mixed)

#### OHIO

Deaconess Hospital Cincinnati Capacity 205 admissions 5,042 Mr William H Frersling Superintendent (2 interns)

#### OREGON

Oregon State Hospital Salem Capacity 2,800 admissions 999 Dr John C Evans Medical Superintendent (residents—psychiatry)

#### PENNSYLVANIA

Allentown Hospital Allentown Capacity 375 admissions 8,293 Mr George W Sherer Superintendent (1 intern)  
Altoun Hospital Altoona Capacity 185 admissions 3,634 Mr Robert L Gill Superintendent (2 interns)  
Mercy Hospital Altoona Capacity 180 admissions 3,867 Mother M Otilia Superintendent (interns)  
Nesbitt Memorial Hospital Kingston Capacity 130 admissions 3,248 Mr Kingsley A Eckert Superintendent (1 intern)  
Norristown State Hospital Norristown Capacity 4,308 admissions 915 Dr Arthur P Noyes Medical Superintendent (3 residents—psychiatry)  
Philadelphia Hospital for Contagious Disease Philadelphia Capacity 1,000 admissions 4,933 Dr Pascal F Luches Superintendent & Medical Superintendent (2 assistant residents)  
St Joseph's Hospital Philadelphia Capacity 269 admissions 4,093 Sister Eulalia RN Superintendent (interns)  
Warren State Hospital Warren Capacity 2,700 admissions 698 Dr Robert H Israel Superintendent (residents—psychiatry)  
White Haven Sanatorium White Haven Capacity 240 admissions 274 Mr Harold Prentzel Administrator (residents—TB)  
Wilkes Barre General Hospital Wilkes Barre Capacity 403 admissions 7,894 Mr Elmer E Matthews Administrator (1 intern)

#### RHODE ISLAND

Memorial Hospital Pawtucket Capacity 196 admissions 4,382 Mr Walter E Wright Superintendent (4 interns)  
Butler Hospital Providence Capacity 174 admissions 167 Dr Arthur H Ruggles Medical Superintendent (resident—psychiatry)  
Rhode Island Hospital Providence Capacity 463 admissions 10,059 Dr D L Richardson Medical Superintendent (1 intern)

#### TEXAS

Texas Scottish Rite Hospital for Crippled Children Dallas Capacity 50 admissions 580 Miss Annie Laurie Little RN Superintendent (assistant resident—orthopedics)  
St Mary's Infirmary Galveston Capacity 235 admissions 4,338 Sister Mary Lelia Superintendent (resident—mixed)  
Nix Hospital San Antonio Capacity 188 admissions 4,768 Miss Ellen Louise Brient RN Superintendent (1 intern)  
Robert B Green Memorial Hospital San Antonio Capacity 270 admissions 4,803 Dr Alexander Mileau Jr Medical Superintendent (resident—mixed)

#### UTAH

Holy Cross Hospital Salt Lake City Capacity 274 admissions 6,250 Sister Mary Virginia RN Superintendent (intern resident—mixed)

#### WASHINGTON

Western State Hospital Fort Steilacoom Capacity 3,034 admissions 967 Dr William N Keller Medical Superintendent (resident—psychiatry)  
Eastern State Hospital Medical Lake Capacity 2,099 admissions 489 Dr M W Conway Superintendent (resident—psychiatry)  
Children's Orthopedic Hospital Seattle Capacity 117 admissions 1,423 Miss Lillian M Thompson RN Superintendent (1 resident)  
Virginia Mason Hospital Seattle Capacity 208 admissions 6,078 Mr John A Dare Administrator (resident—medicine)

#### WEST VIRGINIA

Hopewell Sanatorium Hopewell Capacity 57 admissions 409 Dr David Salkin Medical Superintendent (2 residents)  
St Joseph's Hospital Parkersburg Capacity 14 admissions 3,039 Sister M Adelaide RN Superintendent (1 intern)

#### WISCONSIN

Wilwaukee Hospital Milwaukee Capacity 59 admissions 8,722 Rev William G Solt Superintendent (1 intern)  
St Mary's Hospital Madison Capacity 274 admissions 6,655 Sister Mary Bernadette RN Superintendent (intern resident—OB)



# ORGANIZATION SECTION

## COUNCIL ON MEDICAL SERVICE AND PUBLIC RELATIONS

### THE PURPOSES AND FUNCTIONS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED THE PUBLICATION OF THE FOLLOWING  
STATEMENT  
J W HOLLOWAY JR, Acting Secretary

The Council was authorized by the House of Delegates of the American Medical Association at its annual session in Chicago in June 1943. The members of the Council were immediately appointed by the Board of Trustees. Section 4 of chapter IX of the By-Laws provides that the duties of the Council shall be as follows:

"(1) To make available facts, data and medical opinions with respect to timely and adequate rendition of medical care to the American people,

"(2) to inform the constituent associations and component societies of proposed changes affecting medical care in the nation,

"(3) to inform constituent associations and component societies regarding the activities of the Council,

"(4) to investigate matters pertaining to the economic, social and similar aspects of medical care for all the people,

"(5) to study and suggest means for the distribution of medical services to the public consistent with the principles adopted by the House of Delegates, and

"(6) to develop and assist committees on medical service and public relations originating within the constituent associations and component societies of the American Medical Association.

"In the exercise of its functions, this Council, with the cooperation of the Board of Trustees, shall utilize the functions and personnel of the Bureau of Legal Medicine and Legislation, the Bureau of Medical Economics and the Department of Public Relations in the Headquarters Office."

The Council is also bound by the actions of the House of Delegates on the subject of medical care and its distribution, notably the platform adopted in 1937 as amended and amplified in subsequent years by the various resolutions and reference committee reports adopted by the House of Delegates.

In order to carry out these functions, the Council has organized as follows:

#### ORGANIZATION

Officers—The Council shall elect annually

A chairman

A vice chairman

A full time secretary

An executive committee of three shall be created, which shall include the chairman, the Council member of the Board of Trustees and a third member to be chosen annually from the duly appointed or elected members of the Council on Medical Service and Public Relations. This committee shall exercise such functions as are delegated to it by the Council.

The central office of the Council is to be located in the office building of the American Medical Association in Chicago.

The functions of the Council outlined in the By-Laws are closely integrated and cannot well be considered separately. To carry them out, it is obvious that the Council must have adequate sources of information, maintain close contact with constituent associations and component societies, and establish close relationship with the already existing bureaus and departments of the Association.

The Council, therefore, subject to the approval of the Board of Trustees, has decided on the following methods of operation:

1 In carrying out the directive in the By-Laws as to relationship with the other bureaus and departments of the Association, the Council has established close collaboration (a) with the Bureau of Medical Economics, which has been asked and has expressed the willingness to do the research on many of the economic problems necessary for the Council's study, and which

is well equipped to carry out such research, (b) with the Bureau of Legal Medicine and Legislation. Joint bulletins will be issued with that bureau on legislative matters. Attempt will be made to effect wider distribution and, if necessary, more frequent publication of such bulletins, (c) with the Department of Public Relations. The Council shall utilize the sources of information of this department, and joint bulletins may be issued from time to time with it and, if indicated, with other bureaus of the American Medical Association. All planning will be to avoid overlapping of functions and duplication of effort.

2 The Council on Medical Service and Public Relations has extended the sources of information of the American Medical Association on problems with which the Council is specifically concerned. Through its membership and by cooperation with constituent associations and component societies and the utilization of other facilities, the Council will disseminate such information toward effecting its objectives. The secretary of the Council, with its approval, will undertake such travel as may be necessary.

3 In order that constituent associations and component societies may be kept informed of the activities of the Council and of proposed changes in the status of medical care, and that the Council may be of assistance to those associations and societies, the Council has requested each state association to designate an existing committee or create a new committee to function with the Council on a state level.

Each state organization has also been requested to contact each component society in the state and ask it similarly to designate or form a committee to function in connection with the programs of the Council. Where such organization is feasible, it has been suggested that committees be created along the lines of congressional districts.

Such state and county committees have been urged to keep the Council informed of their local problems and activities.

State organizations also will be requested from time to time to conduct experiments in the various methods of medical care and to inform the Council of their results so that the Council may study and evaluate the experiments and transmit the information acquired to all concerned.

4 The Council feels that under its directive it is its duty to endeavor to evolve such modifications of our present system of medical care as may be necessary to cover all the people and be in accord with the traditions of American medicine as to high standards of medical care and the American tradition of free enterprise as already outlined in paragraph 1 of the Council's policies previously published. To accomplish this, study must be made of all economic, social and similar aspects of such care.

5 In order that the above program may be effectively carried out, the secretary of the Council, with the guidance of the Council in conformity with the above expressed relationships with other bureaus and departments, shall inform the profession through the various state organizations of all pending national legislation and bureau directives affecting the practice of medicine. It shall likewise be his duty, with the guidance of the Council, to arrange for medical representation at meetings and hearings pertaining to medical care, collaborating in the representation with other councils and bureaus of the American Medical Association that have an interest in this same subject.

6 The secretary is instructed, with the supervision of the Council and in collaboration with the Department of Public Relations, to disseminate information concerning the activities of the Council through the publications of the American Medical Association and the various state medical journals, and to prepare and release information on medical care.

The Council has already issued its Statement of General Policies, and it will act in accordance with those Policies and the above methods of functioning.

## MEDICAL LEGISLATION

## MEDICAL BILLS IN CONGRESS

*Changes in Status*—S 763 has passed the Senate and House, proposing to amend in several respects the Selective Training and Service Act of 1940. Among other things, this bill would direct the President to appoint a commission of five qualified physicians to examine the physical, mental and moral qualification requirements for admission to the Army, Navy and Marine Corps and to recommend to the President any changes therein which it believes can be made without impairing the efficiency of the armed services. This commission, it is contemplated, will consist of one Army officer, one Navy officer and three qualified civilian physicians not employed by the federal government. As passed by the House, section 1 of this bill concluded with the following proviso: "Provided, That no individuals shall be called for induction, ordered to report to induction stations, or be inducted because of their occupations, or by occupational groups or by groups in any plant or institutions." The conference committee on the bill added to the foregoing proviso this exception: "except pursuant to a requisition by the land or naval forces for persons in needed medical professional and specialist categories." The recommendation of the conference committee was accepted by the House and Senate, and the bill is now before the President for executive action. H R 3687 has passed the House a bill to provide revenue. It is estimated that as passed by the House this bill will produce revenue in the amount of \$2,139,300,000 instead of the \$10,500,000,000 as requested by the Treasury Department. Personal income taxes will be increased by \$154,800,000; taxes on corporations by \$616,000,000; various excise taxes by \$1,201,700,000; and postal rates by \$166,800,000. The credit for earned income will be eliminated, and the normal tax rate on individual incomes will be increased from 6 to 10 per cent. The victory tax has been eliminated. Section 112 of the bill will require many associations now exempt from federal income taxes under section 101 of the Internal Revenue Code to file annual informational returns with the Commissioner of Internal Revenue stating specifically the items of gross income, receipts and disbursements and such other information as the Commissioner may require. The pending bill does not contemplate that any tax at this time will be imposed on the income of associations now exempt, the return requirement being solely for the information of the Bureau of Internal Revenue. Exempt from this return requirement will be broadly stated, religious, educational and charitable organizations. The new tax bill also provides for a special deduction for blind persons in the amount of \$500.

SPECIAL SUBCOMMITTEE OF SENATE ON  
WARTIME HEALTH AND EDUCATION  
TO HOLD HEARING

The first field hearings of the Special Senate Subcommittee on Wartime Health and Education have been scheduled for December 16-18 in Pascagoula, Miss., Senator Claude Pepper, chairman of the subcommittee, announced on Monday. The hearing will be preceded by a four week investigation in Pascagoula and vicinity by staff investigators of the committee.

The Pascagoula study is one of a series from which the committee will "draw a national pattern of the nation's state of wartime health," Senator Pepper said. The investigations and hearings will establish facts which will be the basis of committee recommendations of remedial measures when the field series has been completed, he said.

The subcommittee on Wartime Health and Education was established by Senate resolution in June. It is charged with the responsibility of making "full and complete study and investigation regarding the distribution and utilization of medical personnel, facilities and related health services" and "deficiencies in health and education among persons otherwise fit for service with the armed forces and persons otherwise fit to be employed to the best advantage in agriculture, industry and other activities, so as best to promote the war and victory for our cause."

Pascagoula, Senator Pepper pointed out, is a production center which has grown "almost overnight" from a small community to "a crowded boom town." It presents most of the wartime health problems of the typical congested area, he said.

"Many of the state and federal agencies working in the Pascagoula area already have offered cooperation in making this field study thorough and successful," the senator said. "We feel that by sampling the nation's health in a number of these field studies we shall be in a position to report accurate and complete findings to the Senate and to recommend scientifically sound legislative remedies for the unsatisfactory conditions we discover."

Committee staff investigators arrived in Pascagoula Thursday of last week. They will study conditions in the fields of medical care, food and nutrition, housing and hospital and clinic facilities. This study will not deal with problems in education other than those directly related to health, Senator Pepper said. Other members of the committee are Senators Elbert D. Thomas of Utah, James M. Tunnell of Delaware, Robert M. LaFollette Jr. of Wisconsin and Kenneth S. Wherry of Nebraska. Randolph Feltus, staff director of the committee, is in charge of the investigation.

## WOMAN'S AUXILIARY

## Georgia

Mrs. Olin S. Cofer of Atlanta, president of the Woman's Auxiliary to the Georgia State Medical Society, indicated that the Georgia auxiliary will stress nutrition, tuberculosis, cancer and venereal disease education this year. She said "The auxiliary feels that health education is its most urgent responsibility, not only for the present war period but for future generations."

The Georgia auxiliary awards a cup (the Mrs. James N. Brawner trophy) to the local auxiliary making the highest score on a carefully worked out plan of credits. There are eighteen worthwhile items on the standard of excellence.

## Michigan

The seventeenth annual meeting of the Woman's Auxiliary to the Michigan State Medical Society was held in Detroit September 20-22, with sixty-three delegates and forty-three guests attending. There were a number of social events including the annual banquet where Dr. H. H. Cummings, president of the Michigan Medical Society, spoke, stressing the need of unity at this time. Dr. F. E. Reeder, chairman of the advisory council, urged that doctors wives be acquainted

with legislative bills pending. Mrs. Eben J. Carey, national president, explained the Nurses Cadet Corps project, which the national auxiliary endorses as a project for immediate work.

Mrs. Gordon L. Willoughby, state president, presided over convention sessions. Twenty-two county presidents gave reports of the work done in their counties. The new officers elected are Mrs. John J. Walch, president; Mrs. H. L. French, president-elect; Mrs. L. C. Harnie, vice president; Mrs. R. G. Alter, treasurer; Mrs. Otto Hult, secretary; and Mrs. R. H. Frazier, director of the Student Loan Fund. In her inaugural address Mrs. John J. Walch urged the continuance of war service projects, registration of nurses, study of child delinquency and the need of the auxiliaries taking as a new project the Nurses Cadet Recruiting and keeping informed on medical legislation.

At the auxiliary's annual luncheon Mrs. Gordon L. Willoughby, retiring state president, presented a medical kit to Lieut. William E. Tracy for use in the Submarine Chaser P. C. 1139. Exhibits showing the results of the tuberculosis radio contest and the press books for the year were on display.

## Medical News

(PHYSICIANS WILL CONFERR A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATIVE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Personal**—Dr Herbert S Chapman, Stockton, has been appointed a member of the state board of medical examiners to succeed Dr Fred R DeLappe, Modesto, a member of the board since 1931 and president for a number of times—Dr Charles H Bulson, Napa, recently completed fifty years in the practice of medicine. He is a medical examiner for the draft board and chairman of the medical staff of Victory Hospital, Napa—Dr Alexander Simon, who has been senior medical officer at St Elizabeths Hospital, Washington, D C, for the past twelve years and associate professor of neurology at the George Washington University School of Medicine, has been appointed assistant medical director of the Langley Porter Clinic for Mental Diseases.

**Surgical Prizes Awarded**—First prize in the San Francisco Surgical Society's annual prize essay contest recently was awarded to Capt Sanford E Leeds, M R C, for his paper entitled "The Effects of Occlusion of Experimental Chronic Patent Ductus Arteriosus on the Cardiac Output, Pulse and Blood Pressure of Dogs." Second prize went to Dr Victor Richards, San Francisco, for his paper on "Refrigeration Anesthesia in Surgery." The San Francisco Surgical Society inaugurated the contest in 1942, announcing at that time that the first and second prizes were to be \$150 and \$100 respectively (THE JOURNAL, January 23, page 270). The authors were to be physicians in the field of general surgery and in the period of graduate training not more than six years removed from graduation from medical school.

**Psychoanalytic Society Now Active**—The San Francisco Psychoanalytic Society, a group organized in 1942 but which became active only recently, held a meeting in the Ambassador Hotel, Los Angeles, October 23-24, under the presidency of Dr Ernst Simmel, Los Angeles. The following program was presented:

- Capt Joseph Biernoff, M R C, Psychiatric Notes from an American Station Hospital in Australia
- Lieut Comdr E C Moloney (MC), U S Navy (subject not announced)
- Dr Jacob S Kasanin, San Francisco, Neuroses of War Wives
- R Nevitt Sanford, Berkeley, Optimistic and Pessimistic Attitudes Toward the War and the Peace
- Hon Edward R Brand, judge of the Los Angeles Superior Court, War and Crime
- Mrs Susan A Bernfeld, Patriotism of Prison Inmates
- Siegfried Bernfeld, Ph D, San Francisco, Psychology of Witnesses in Rioting and Lynching
- Anna Maenchen, Ph D, San Francisco, Superego Development in War time
- Dr Simmel, Remarks on War and Mental Hygiene
- Dr Malcolm H Finley, San Francisco, Blood Pressure and Its Relation to Masochism and Suicide
- Dr May E G Romm, Beverly Hills, Aggression in Fetishism
- Dr Otto Fenichel, Los Angeles, The Manic Depressive Mental Disorders
- Dr Donald A Macfarlane, Berkeley, The Psychoanalyst's Personal Attitude in Relation to the Phenomenon of "Acting Out"

The society has pledged itself to disseminate knowledge about psychoanalysis in California and to train medical psychoanalysts under the auspices of the Topeka Institute for Psychoanalysis, located in Topeka, Kan, with branches in Los Angeles and San Francisco. Other officers of the San Francisco Psychoanalytic Society are Dr Bernhard Berliner, San Francisco, vice president, and Dr Kasanin, secretary-treasurer.

### COLORADO

**Dr Clark Lectures on Tropical Diseases**—Dr Herbert C Clark, director of the Gorgas Memorial Laboratory, Panama, lectured in Denver, November 29-30, under auspices of the John and Marv R Markle Foundation and the National Research Council. The titles of his lectures were "Malaria Precautions in the Unsanitary Areas of the Tropical Lowlands" and "Distribution and Complication of Amebic Lesions Found in One Hundred and Eighty-Six Postmortem Examinations."

**Personal**—Mr Walter J Bailey has resigned as superintendent of the Memorial Hospital, Colorado Springs, formerly known as the Beth-El General Hospital and Sanatorium—Dr Edward R Mugrage, president-elect of the Colorado State Medical Society, was awarded one of two Alumni Recognition Medals given by the Alumni Association of the University of Colorado, October 23, "on the basis of his scientific achieve-

ments, and particularly because of his interest in, and assistance to, many generations of students in the medical school of the university"—Dr Thomas E Carmody, Denver, has been elected a member of the honor society of the American Academy of Ophthalmology and Otolaryngology.

### CONNECTICUT

**Secretary Named for Alumni of Alcohol Studies**—In an effort to maintain contact with the alumni of the first School of Alcohol Studies at Yale University, New Haven, Rev Wayne W Womer, 59 Lexington Road, West Hartford, has been named secretary. He will keep in touch with the alumni of the school, which recently completed a six weeks session, and compile a record of their activities. The School of Alcohol Studies, which opened on July 8 under the direction of Elvin M Jellinek, Sc D, of the Yale Laboratory of Applied Physiology, was said to be the first formal school in the academic history of the United States to study the consequences of alcohol (THE JOURNAL, June 12, p 454). The school has undertaken a study of children of alcoholic parents, psychotic parents and normal parents who were brought up in foster homes. This work is financed by a grant-in-aid from the Carnegie Corporation in New York and was begun by the late Barbara S Burks, Ph D, but will be continued by Anne Roe, Ph D, secretary of the psychology section of the New York Academy of Sciences, who has joined the staff of the School of Alcohol Studies. Seiden Bacon, Ph D, assistant professor of sociology at Yale, is a new member of the research staff. The alcohol school plans to publish an alumni bulletin twice a year.

### DISTRICT OF COLUMBIA

**Personal**—Dr Philip S Owen, technical aid to the subcommittee on medical food requirements, advisory to the Office of Price Administration, has been named technical aid to the division of medical sciences, National Research Council, Washington, D C, to succeed Dr George K Anderson, now Secretary of the Council on Foods and Nutrition of the American Medical Association—Dr Winfred Overholser, medical superintendent of St Elizabeths Hospital, has been appointed associate editor of *Medical Annals*, official publication of the Medical Society of the District of Columbia.

### GEORGIA

**Physician Observes Ninety-Seventh Birthday**—Dr Thomas D Longino, College Park, observed his ninety-seventh birthday, September 7. Dr Longino graduated at the Medical College of Georgia, Augusta, in 1870 and at the Jefferson Medical College of Philadelphia in 1882.

**Quarantine on Patients with Communicable Tuberculosis**—The state department of health has established a quarantine on residents of Georgia suffering from communicable tuberculosis who refuse to obey medical instructions, newspapers reported, November 14. Violators of the order, which was adopted on November 12 by the state board of health, will be punished for a misdemeanor, it was announced.

### ILLINOIS

**Change in Health Officers**—Dr Fred O Tonney, formerly director of laboratories and research of the Chicago Board of Health, has been named health officer of district number two, comprising Lake, McHenry and Boone counties, with headquarters in Woodstock.

**Society News**—The Whiteside County Medical Society will be addressed at Sterling, December 9, by Drs Donald D M Cook and Muriel K Fuller, Chicago, on "The Cook-Fuller Theory of the Cause of Gastric and Duodenal Ulcer. Its Implications on the Medical and Surgical Treatment of Ulcer."

### Chicago

**First Neighborhood Forum on Cancer**—On December 1 the first neighborhood public forum on cancer, arranged by the Chicago Cancer Committee, Inc, was held in the Jewish People's Institute with Dorph Brown, dean, Herzl Junior College, acting as moderator and Dr Ludwig Hektoen, chairman of the cancer committee, presenting the introductory statement. Other speakers were:

- Dr Bowman C Crowell, The Course of Cancer
- Dr Josiah J Moore, The Causes of Cancer
- Dr Herbert E Schmitz, The Diagnosis of Cancer
- Dr John A Wolfer, The Curability of Cancer
- Dr Frederick W Merrifield, What the Patient Can Do About It

**Personal**—Dr Charles Edward Remy has been returned to inactive duty status by the U S Public Health Service to develop plans that are arising for postwar projects in the hospital field—Harold C Wiggers, Ph D, assistant professor

of physiology at the Western Reserve University School of Medicine, Cleveland, has been appointed associate professor of physiology at the University of Illinois College of Medicine. —Mr Homer F. Singer, in charge of hospital activities of the Council on Medical Education and Hospitals, American Medical Association, will retire from the staff on January 1. Mr Singer has been with the Council for more than twenty-four years, with the exception of a short time in 1921 when he served as superintendent of the Central Free Dispensary.

#### INDIANA

**Treasurer for Forty Years**—Dr Charles Hupe was recently given a testimonial dinner in recognition of his sixty years as a practicing physician in Lafayette. Dr Hupe, who is 86 years of age, has been treasurer of the Tippecanoe County Medical Society for more than forty years. He is considered the county's oldest practicing physician.

**Dr Donchess Named Chief Surgeon of Steel Corporation**—Dr Joseph C. Donchess has been appointed chief surgeon of the Gary Steel Works, where he has been assistant surgeon and the Gary Sheet and Tin Mill, according to the Carnegie-Illinois Steel Corporation. He succeeds the late Dr Frank W. Merritt. Dr Donchess, who graduated at the University of Pittsburgh School of Medicine in 1932, has been assistant surgeon on the Gary Works medical staff since January 1937.

#### IOWA

**Harlan Wood Goes to Minnesota**—Harlan G. Wood, Ph.D., since 1936 research assistant in bacteriology at the Iowa State College of Agriculture and Mechanic Arts Ames, has been appointed associate professor of physiologic chemistry at the University of Minnesota. He will be responsible for studies on the biochemical aspects of the virus-host relationship in poliomyelitis in the research program now being conducted at the University of Minnesota under the auspices of the National Foundation for Infantile Paralysis. Dr Wood received the 1942 Eli Lilly Company research award for his contributions to bacterial physiology (THE JOURNAL, February 13, page 531).

#### LOUISIANA

**Honor Society Holds Key Ceremony**—On November 9 the annual ceremony of presentation of keys to the newly elected members of the Circle honorary scholastic society of the Louisiana State University School of Medicine, New Orleans, was held. Dr Chester A. Stewart, professor and director of the department of pediatrics, who was chosen honorary member for the year, gave an address entitled "Medicine Marches On." New members of the society who were presented with keys are Miss Evelyn Katz, Alfredo Perez, Ellis Mischle, Sydney Lewis and John Signorelli of the senior class and James Decuers, Miss Anna Costanza and Elliott Roy of the junior class. After the ceremony a banquet was held in honor of Dr James D. Rives, clinical professor of surgery, who is retiring as chairman of the faculty advisory committee of the society.

**Medical Ethics**—The Louisiana State University Society of Medical Sciences conducted a round table discussion on Medical Ethics November 15 at the Louisiana State University Medical Center, New Orleans. The session aimed to show the practical problems in ethical relationships encountered by the practitioner. Among the speakers were Drs Edgar Hull, Isidore Cohn and Edwin L. J. Zander, all members of the faculty at Louisiana representing the specialties of medicine, surgery and obstetrics-gynecology. Herbert Derman, senior medical student and president of the society, acted as moderator. The discussion covered such questions as fee splitting, professional secrecy, abortion, the position of the Catholic doctor on contraception, the extent and abuses of professional courtesy, obligations of the physician advertising euthanasia and establishment of fees.

#### MASSACHUSETTS

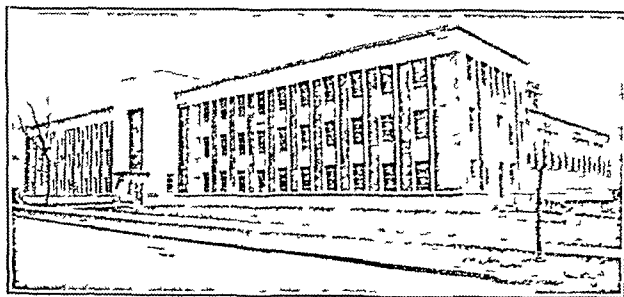
**Gonococcus Culture Service Inaugurated**—The Massachusetts Department of Public Health announces a new gonococcus culture service to physicians of the state. In the department's opinion the utilization of cultural methods will be of aid in the control of certain types of gonococcal infections. Physicians wishing to use the service should request mailing kits from the bacteriologic laboratory, Room 527 State House, Boston. All containers will be stamped with an expiration date and if not used by that time should be returned to the laboratory, whereupon fresh outfits will be sent to the physician.

**Children's Center Fills Need**—The Children's Center in Boston, established in January 1943 under the auspices of the Judge Baker Guidance Center and aided by a grant from the Rockefeller Foundation, is proving to be a valuable organization, according to the *New England Journal of Medicine*. During the first half year of its existence applications were received for nearly 250 children, stemming from thirty-seven agencies, private physicians and direct neighborhood contacts. The center was established in Roxbury near a low income community, as an independent organization with its own staff, under the direction of Dr Marian C. Putnam and Mrs Beata Rank. Its purpose is to provide day nursery care and psychiatric consultation and treatment for infants and pre-school children. It has been furnishing day nursery care, which is open to a group of 30 to 35 children with an age range from infancy to 5 years, inpatient care for a few children whose residence at home is temporarily inadvisable, therapeutic and educational work with parents and children, a consultation service available to the whole community, and facilities for the training and teaching of students in the various fields of child care. In this last respect, teaching programs are being offered for various professional people—social workers, nursery school teachers, volunteers and students in child care and, ultimately, psychiatrists and pediatricians. A special grant from the Rockefeller Foundation helps to open the opportunity for study and research.

#### MICHIGAN

**New Department of Tropical Diseases**—Dr Lowell T. Coggeshall, professor of epidemiology, has been appointed professor and chairman of the newly organized department of tropical diseases at the School of Public Health, University of Michigan, Ann Arbor. The new arrangement divides tropical diseases from the old department of epidemiology, of which Dr Thomas Francis Jr is chairman.

**New School of Public Health**—The University of Michigan School of Public Health, Ann Arbor, is now completed and officially functioning. A series of dedicatory addresses given primarily for the benefit of the students at the school will constitute the official dedication of the school, the first of which was delivered by Thomas Parran, surgeon general of the U. S. Public Health Service during the recent Inter-American Conference of Schools of Public Health at Ann Arbor on "The Service of the Public Health Schools to the Nation's Health." The building and its equipment cost \$750,000, of which \$400,000 was provided by the W. K. Kellogg Foundation, \$300,000 by the Rockefeller Foundation and \$50,000 by the National Foundation for Infantile Paralysis. The site was offered by the university. The school embraces a three story



New School of Public Health

section and two wings forming a U. The U is closed by a service and animal unit thus completing a rectangle. The three story section is devoted to academic instruction in the fields of public health practice, epidemiology, physiologic hygiene, child health, public health statistics, nutrition, mental health, public health dentistry and health education. An auditorium seats 200 students and is adjoined by a museum for health education. There is a library on the third floor and a series of conference seminar and teaching rooms for programs in continued education and postgraduate service. The south wing is devoted to laboratories for epidemiology and public health laboratory service. The first floor being devoted to virus diseases, the second floor to parasitic and tropical diseases. The north wing is designed for services in environmental health, industrial health, laboratories are on the first floor and public health engineering laboratories on the second floor.

## MISSOURI

**Medical-Dental Bowling League**—The Jackson County Medical-Dental Bowling League held its first meeting of the season on October 28. Officers include Drs Oliver S Gilliland, Kansas City, president and Chester M Counsell, Kansas City, secretary.

**Changes in the Faculty at Washington University**—Announcement is made of the following promotions in the faculty of Washington University School of Medicine, St Louis, among others:

Dr Edward G McGivern to professor of public health administration and acting head of the department of public health.  
Dr Margaret G Smith to associate professor of pathology.  
Dr Frederick O Schwartz to associate professor of clinical ophthalmology.  
Dr Gerty T Cori to associate professor of research biologic chemistry and pharmacology.  
Lieut Col Earl H Perry, M C, U S Army, retired, to associate professor of military science and tactics.  
Drs Carl G Harford and John R Smith to assistant professor of medicine.  
Drs Paul O Hageman, Samuel B Grant, Walter Fischel, Alfred Goldman, Arthur Strauss and Llewellyn Sale to assistant professor of clinical medicine.  
Dr Adolph H Conrad to assistant professor of clinical dermatology.  
Drs William O Russell and Paul A Wheeler to assistant professor of pathology.  
Drs Howard Rommell Hildreth and Carl C Beisbarth to assistant professor of clinical ophthalmology.  
Hiromu Tsuchiya, Sc D, to assistant professor of parasitology.

New appointments to the faculty include those of Dr Thomas Dale Stewart Washington, D C, as visiting professor of anatomy, Dr Samuel H Gray, St Louis, as associate professor of pathology, Dr Hans B Mollholm, Akron, Ohio, as assistant professor of psychiatry and Dr Harry W Wiese, St Louis, as instructor in clinical medicine. The following members of the staff have retired recently with the titles indicated: Dr Harry W Lyman, professor emeritus of clinical otolaryngology, Dr Frederick E Woodruff, associate professor of clinical ophthalmology, Drs Walter Baumgarten and Louis H Henipelmann, assistant professors emeritus of clinical medicine, Dr Adolph G Schlosstem, assistant professor emeritus of clinical obstetrics and gynecology, and Dr Thomas B Pote, lecturer emeritus in pathology. Dr David McK Rioch has resigned as professor of neurology at the school to become director of research at the Chestnut Lodge Sanitarium, Rockville, Md.

## NEBRASKA

**First "Quick Treatment" Venereal Hospital Opened**—On November 1 the first state-federal "quick treatment" hospital for venereal patients opened at the former home of the Salvation Army Booth Memorial Hospital in Omaha. A federal grant of \$100,000 was reported to assist in the financing of the hospital.

## NEW YORK

**Personal**—Drs Henry L Bibby and Frederick W Holcomb, Kingston, have been named in charge of a new committee for Russian War Relief of Kingston—Dr Harry A LaBurt, medical superintendent of the Harlem Valley State Hospital, Wingdale, has been named to a similar position at Creedmore State Hospital, Queens Village. Dr Jesse L Bennett has been acting superintendent and will remain there as first assistant, it is reported.

## New York City

**Personal**—Students of the School of Nursing of St Luke's Hospital presented a sum of money to the medical library of the hospital for the purchase of books as a memorial to the late Dr Theophilus P Allen, associate attending physician, who died January 27—Dr Edward I Salisbury has been made medical director of United Fruit Company to succeed Dr Roland C Connor, executive vice president.

**Finances of Physicians' Home**—The annual financial statement of the Physicians' Home for the fiscal year started Oct 1, 1942 and ended Sept 30, 1943 shows total assets of \$62,928.38, with \$48,689.54 of this a general fund surplus and \$14,238.84 in restricted funds. During the year the home received \$13,558.76, of which \$12,015.16 was from dues and contributions and \$1,543.60 income from investments. It expended \$5,988.88, the care of guests taking \$5,295.65.

**Dr Cowles Wins Appeal in License Revocation**—The revocation of the license to practice medicine of Dr Edward Spencer Cowles for one year was set aside by unanimous vote of the appellate division, third department, the New York Sun reported, November 11. Dr Cowles's license had been suspended on April 16 by the board of regents, which found him guilty of "fraud and deceit" in the conduct of his Body and Mind Foundation, specifically for permitting Rudolph (Robert) Rebold to work at the Body and Mind Clinic though he had

no state license (THE JOURNAL, May 1, p 50). The court ruled in the recent decision that Dr Cowles was justified in believing that Rebold was licensed.

**Fugitive Physician Must Return to Serve Sentence**—Dr Louis G Small, who early this year was the subject of a countrywide search and who was subsequently arrested in Eastman, Ga., on charges of practicing medicine there without a license, a misdemeanor in Georgia, must return to New York to serve a three to six year jail sentence in accordance with a ruling by the Georgia Supreme Court. Dr Small was sentenced after his General Sessions conviction for operating an abortion mill with two other physicians (THE JOURNAL, May 15, p 188). According to newspaper reports, when New York detectives went to Eastman to return Dr Small to New York, residents there supported the physician because of the shortage of doctors in the town and threatened violence to the detectives. After the physician's subsequent arrest in Eastman on charges of practicing without a license, Governor Ellis Arnall of Georgia granted extradition to New York, it was stated, but a superior court judge in Eastman blocked the proceedings by ruling that the city court of Eastman had a prior claim. On November 10 the Georgia Supreme Court ruled that the Eastman court must waive its right to try Small on the misdemeanor charge. In arguments before the Supreme Court it was pointed out that Georgia authorities had made no effort to proceed against the doctor and that he was allegedly still practicing medicine there.

## NORTH DAKOTA

**District Health Office Abandoned**—The district health office which has been maintained at Valley City for six years has been discontinued as the result of the action by the board of county commissioners. The board is said to have repudiated a promise made by the state authorities to sign a contract contemplating the appropriation of funds to carry on a county program. The city of Valley City had voted cooperation and funds but gave the state health department a release from its arrangements following the county commissioners' action of refusal to enter the program. This change results in Dr Elvin L Sederlin, former Fargo City health officer and lately district health officer at Valley City, being transferred to Bismarck.

## OHIO

**Annual Meeting to Be in Columbus**—The Ohio State Medical Association has decided to present an "old fashioned" three day annual session at Neil House, Columbus, May 9-11. A real medical assembly will be presented unless conditions resulting from the war become especially acute.

**New Tuberculosis Society**—The Cleveland Society of Tuberculosis Physicians was recently organized with Dr Raymond C McKay as president and Dr William F Hulse as secretary-treasurer. The purposes of the new group are to support the local antituberculosis program and to maintain high standards of treatment.

**Personal**—Rev J A Dickmann has resigned as superintendent of the Bethesda Hospital, Cincinnati, after serving as a member of the staff for thirty-two years. He has been succeeded by Albert N McGinnis, business manager, who will combine the positions of superintendent and business manager—Dr and Mrs Hugh R Brownlee, Cleveland, observed their fiftieth wedding anniversary, November 7.

**Graduate Course**—The tenth annual postgraduate course of the University of Toledo, Toledo, was held November 5. This year the meeting was dedicated to the memory of the late Dr Francis W Alter, president of the Toledo Academy of Medicine in 1923. Speakers were Dr Lyman Weeks Crossman, New York, on "Refrigeration Anesthesia for Extremity Surgery," "Preservation of Traumatized and Devitalized Tissues," and "Case Reports—Operative and Nonoperative Treatment," and Dr William A Sodeman, New Orleans, "Medical Treatment for Peptic Ulcer," "The Protein Picture of Amebiasis," and "Management of the Nephritic Patient."

## TENNESSEE

**Society News**—The Middle Tennessee Medical Association was addressed at Mount Pleasant, November 11, among others by Dr Samuel S Riven, Nashville, on "Coronary Occlusion," Dr Amos Christie, Nashville, "Recent Advances in Immunization Procedures in Children" and Capt Frederick R Brown, M C, A U S, "Allergy in Relation to Flying." A symposium on burns was a feature of the meeting—Dr Herbert Acuf, Knoxville, discussed "Carcinoma of the Cervix and Breast" before the Knox County Medical Society, November 23.



## TEXAS

**Personal**—Dr and Mrs David A Mann observed their fiftieth wedding anniversary in Beaumont, October 22 — Dr Augustus D Cloyd Sr, Omaha, medical director of the Woodmen of the World, has been appointed acting superintendent of the Woodmen of the World War Memorial Hospital, San Antonio

**State Society Forms Speakers Bureau**—Fifteen Council Districts of the State Medical Association of Texas have selected a group of speakers under the direction of Dr Charles S Venable, San Antonio, to function as a speakers bureau, principally to combat socialized medicine The men selected will be available by county medical societies for addresses before all groups of men or women

## VERMONT

**Personal**—Dr William J McNamara, Fair Haven, has been elected supreme physician of the Knights of Columbus in January Dr McNamara will take up residence in New Haven, Conn, national headquarters of the order

**University News**—Dr Louis S Goodman, professor of pharmacology and physiology at the University of Vermont College of Medicine, Burlington, addressed the Chittenden County Medical Society, December 2, on "The Advancing Frontiers of Medical Therapy" Dr William Dameshek, Boston, delivered the Osler Clinical Society Lecture at the university, November 9, on "Role of the Spleen in Disorders of the Blood" He also addressed the student body on "Etiology, Diagnosis and Therapy of Anemias" Dr Douglas S Riggs, New Haven, Conn gave an Osler Clinical Society Lecture, November 18, on "Biochemical Aspects of Thyroid Disease"

## WASHINGTON

**New Venereal Treatment Center**—Dr Fred W Harb, U S Public Health Service has been assigned as medical director of the new Seattle Treatment Center for women with venereal diseases The Florence Crittenton Home will be leased by the society as a headquarters for the center

**Hospital News**—The Longview Memorial Hospital, Longview recently purchased by the Sisters of St Joseph, has been renamed the St John's Memorial Hospital The hospital had been closed on July 1 December 1 was set as the tentative date for opening after alterations had been completed

**Society News**—Dr John F Fiorino, Everett, was elected president of the Washington State Obstetrical Society at its meeting in Seattle October 2, Dr David H Johnson, Tacoma, vice president and Dr Henry H Skinner, Yakima, secretary-treasurer Among the speakers at the dinner were Capt Francis L McPhail, M C, A U S, on "Further Observations on the Use of High Fluid Intake in the Treatment of Toxemias of Pregnancy" and Buell S Bindshedler, assistant surgeon, U S Public Health Service, reserve, "Caudal Anesthesia"—The Walla Walla Valley Medical Society, as guests of the Veterans Administration Facility, Walla Walla was addressed in November by Drs James R Deagen on "Observations of the Kenny Treatment of Infantile Paralysis," Frederick B Nather, "Diagnostic Problems in Pulmonary Tuberculosis" and Ernest M Tapp, "Food Poisoning," all of the Veterans Administration —The King County Medical Society will be addressed January 3 in Seattle by Lieut Comdr Walter L Voegtlin (MC), U S Naval Reserve, on "New Naval Hospital at Pearl Harbor (illustrated)" and Lieut Comdr John P McVay (MC), U S Naval Reserve, "With the Marines in Guadalcanal"

## WEST VIRGINIA

**Basic Contract Adopted for Medical Service Plan**—The central state committee of the West Virginia State Medical Association and a group representing hospital service plans now operating in the state have agreed on a basic contract to be used by component societies in the application of regional nonprofit medical service plans (THE JOURNAL, October 16 p 430) No attempt was made by the committee to draft a contract that can be used in its entirety by county or area groups organized to provide medical service Instead the committee has presented only a suggested form that can be amended or corrected to meet local needs, making it possible for one fee schedule suitable for one locality to be revised to meet conditions existing in another The project to launch these regional nonprofit medical services was submitted to the council of the state medical association at its meeting of September 29 and approved the following day They will be operated by group hospital service with the joint supervision of an advisory com-

mittee elected by the county medical society and a central state committee appointed by the state medical association A number of component societies have already taken steps to organize their plans

## GENERAL

**Annual Forum on Allergy**—The sixth annual forum on allergy will be held at the Statler Hotel, St Louis, January 22-23 Fifteen study groups will be available to cover the various specialties, the program to include lectures, motion pictures, demonstrations, symposiums and panel discussions

**Hospital Warns Physicians of Fraudulent Staff Member**—St Vincent's Hospital, Los Angeles, writes that a person using the name "John E O'Malley, M D" has been traveling about the country obtaining loans of money under false pretenses The hospital states that O'Malley claims to be in its pathologic department and presents engraved cards showing his name with the written identification of the hospital The man is described as being small, dark and refers to himself as a "Filipino doctor," claiming to have had an Irish grandfather He always appears to be well dressed and is apparently well educated His story is usually plausible when he requests a loan, stating that he is temporarily out of funds Inquiries from the New England states have been received by St Vincent's Hospital

**Mac Cahal Joins Southwestern Medical Foundation**—Mac F Cahal, executive secretary of the American College of Radiology, Chicago, has been appointed executive officer of the Southwestern Medical Foundation, Dallas Mr Cahal will take over his new work when his successor with the American College of Radiology has been selected In 1937, after serving five years as executive secretary of the Sedgwick County Medical Society, Wichita, Kan, Mr Cahal filled a similar position with the newly created Inter-Society Committee for Radiology, representing the American Roentgen Ray Society, Radiological Society of North America American Radium Society and the American College of Radiology When this committee was discharged in 1939 he assumed his current position with the American College of Radiology

**Annual Meeting of Nutrition Foundation**—Grants totaling \$396,040 for research in nutrition have been made by the Nutrition Foundation, Inc, during the two years that the group has been in operation, it was announced at its second annual meeting in New York, November 12 These grants, providing for studies in many fields of nutrition and seeking improved living conditions through dietary advances, have been made to forty-one universities, medical centers and other research institutions throughout the United States and Canada, it was announced The board of trustees at the meeting approved twelve new grants in aid amounting to \$29,900 and thirteen renewals of earlier grants amounting to \$36,000 The new grants include the following projects

Paul R Burkholder Ph D Yale University New Haven Conn nutrient values of soybeans  
Leopold R Cerecedo, Ph D Fordham University, New York growth reproduction and lactation in rats on highly purified diets  
Max S Dunn Ph D, University of California, Los Angeles micro biologic analysis of amino acids  
Paul F Hahn Ph D University of Rochester School of Medicine and Dentistry Rochester N Y absorption of iron compounds in anemia  
Robert S Harris, Ph D Massachusetts Institute of Technology Cambridge Mass the nutritive role of hydroxy fatty acids  
Howard B Lewis Ph D University of Michigan Ann Arbor, experimental lathyrism (toxic lathyrus)  
Hubert S Loring Ph D Stanford University Calif pyrimidine nucleosides or nucleotides as growth factors  
Dr De Witt Stetten Jr Columbia University Morningside Heights N Y carbohydrate metabolism  
Dr Robert R Struthers McGill University Faculty of Medicine Montreal Que nutrition in relation to relapses in rheumatic fever  
Dr Josef Warkany University of Cincinnati College of Medicine, diet and congenital malformations  
Wilfred W Westerfeld Ph D and Albert B Hastings Ph D Harvard University Cambridge Mass pyruvate metabolism

The Nutrition Foundation supported by the food industry as a contribution to the well-being of the American public, has in its first two years received \$1,278,000 to carry on its work

## PUERTO RICO

**Medical Society Encourages Reading**—The fortieth annual meeting of the Asociacion Medica de Puerto Rico will be held in the assembly hall of the School of Tropical Medicine San Juan December 10-12 The association through its committee of library plans to establish an annual observance to be called Day of the Book to emphasize before medical and public populations the need of reading for educational purposes On this day the daily press will publish book notice items of the most important books and the price of all volumes will be reduced for the day in the book stores Donations of books to libraries will be made by individuals, scientific and other groups book stores and literary societies



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct 23, 1943

#### Control of Advertisements of Proprietary Medicines

Blatant claims to cure all sorts of diseases made in the newspaper advertisements of proprietary medicines have long been a scandal. At last, this practice is to be checked. The Newspaper Proprietors Association has unanimously adopted the following rules: 1 No advertisement will be accepted for any medicine or treatment which is claimed to be effective in Bright's disease, cancer, tuberculosis, diabetes, epilepsy, fits, locomotor ataxia, disseminated sclerosis, osteoarthritis, spinal, cerebral and venereal diseases, lupus or paralysis or for preventing any of these ailments, for the cure of amenorrhea, henna, blindness, rheumatoid arthritis or any ailment of the auditory system, for procuring miscarriage, for the treatment of habits associated with sexual indulgence, or for any ailment connected with these habits. 2 No advertisement will be accepted from any advertiser who by printed matter, orally or in his advertisement, undertakes to diagnose any condition or to receive a statement of any person's symptoms with a view to advising or providing for treatment by correspondence. 3 No advertisement will be accepted containing a testimonial other than one limited to the actual views of the writer, or any testimonial given by a doctor other than a recognized British medical practitioner. 4 No advertisement will be accepted containing illustrations which are distorted or exaggerated to convey false impressions. 5 No advertisement will be accepted which may lead persons to believe that the medicine emanates from any hospital or official source, or is any other than a proprietary medicine advertised by the manufacturer for the purpose specified unless the advertising agent submitting the copy declares that the authority of such hospital or official source has been duly obtained.

These rules are now in operation in all the London morning, evening and Sunday newspapers. Also all advertisements will be submitted to medical scrutiny and the products advertised to chemical analysis if this is considered necessary. This is the first time leading newspapers have unanimously laid down and insisted on a standard of control over claims made in advertisements.

#### Germans Bomb Another Hospital Ship

The latest German outrage in this war is the bombing of another hospital ship. Survivors of the hospital ship *Newfoundland*, which was set on fire by German bombs off Salerno on September 13 during the early stages of the battle there, have arrived at a Scottish port. At the time of the attack there were no wounded on board, but six nurses, all the doctors and the ship's officers—twenty-three in all—were killed. A dental surgeon escaped. The British seamen who were landed emphasized that, in accordance with the Geneva convention, the ship carried all her lights and could not have been mistaken for other than a hospital ship. The ship entered Salerno harbor to pick up the wounded but had not had time to embark any when German raiders launched heavy attacks on all shipping in the harbor. The ship was ordered to move out of the harbor, clear of other shipping. The attack which finished it came the next morning. All the lights were on, and the Red Cross was clearly visible. Twice raiders swooped down, and bombs fell. One plane came a third time and released an aerial torpedo which hit the deck. Fierce fires broke out and all the lifeboats on the port side were quickly ablaze. Orders were given to abandon

ship, and efforts were concentrated on removing the sick, many of them stretcher cases. Only two lifeboats could be lowered, but other hospital ships came to the rescue. An attempt was made to take the *Newfoundland* in tow, but she could not be saved.

#### Gifts to Royal College of Surgeons

An immediate gift of \$500,000 for endowment of the department of pathology and the establishment of a chair of human and comparative pathology has been made to the Royal College of Surgeons by Mr W H Collins, who has also made provision in his will for another \$500,000 for endowment of the department of anatomy and to establish a chair of human and comparative anatomy. His gifts are inspired by gratitude for recovery from a dangerous illness after three operations performed by the president of the college, Sir Alfred Webb-Johnson. Mr Collins also wishes to help in the restoration of the buildings to their unique position in the surgical world after the grievous damage done by German bombs. The museum of the college, the greatest anatomic and pathologic collection in the world, was based on the famous collection of John Hunter. It is hoped that the new chairs of human and comparative anatomy and pathology will help to counteract the narrowing effect of specialization in present day research.

#### The Hospital Physicists Association

The latest association connected with medicine—the Hospital Physicists Association—recently held its inaugural meeting, which was attended by thirty-seven physicists from all over the country. The aim was to discuss a branch of scientific work which has grown up mainly in recent years. At the meeting Dr H T Flint discussed technic with various radium gram units, Prof F L Hopwood discussed betatron, Prof Gilbert Stead, teaching for the diplomas, and Prof Sidney Russ, professional equipment of a hospital physicist. Professor Russ stated that the first full time appointment of a hospital physicist was made thirty years ago. Today there are between fifty and sixty physicists engaged in hospital work or in medical research. It was arranged for meetings to be held at least three times yearly.

#### A Naval Surgeon's Bravery

With a gale blowing, Surg Lieut M J Hood risked his life by jumping from the ice covered deck of his ship to another to attend to 81 wounded. While his ship was on convoy escort duty last winter a signal was received from another escort ship asking for medical attendance for wounded. Weather conditions made it impossible to get boats away, and the only alternative was for one ship to go alongside the other. This was done, but owing to wind and swell it was dangerous for the ships to remain together for more than a few seconds. As the vessels, both covered with ice, closed, Hood jumped—an act which might have cost him his life. Then for thirty hours he worked unceasingly among the wounded. His operating table was the seamen's mess deck. To help him keep steady as the ship pitched and rolled two men supported him as he worked. He has been awarded the D S C.

#### Grandson of Sir Thomas Barlow Appointed to His Hospital

Sir Thomas Barlow, pediatrician, has recently celebrated his ninety-eighth birthday. His grandson Dr Andrew Barlow has just been appointed house surgeon to the Hospital for Sick Children, Great Ormond Street. It was at this leading British children's hospital that his grandfather did much of the pediatric work which made him famous.

## BUENOS AIRES

(From Our Regular Correspondent)

Oct 8, 1943

## New Laws on Preparation and Sales of Drugs

New laws have recently been passed in Argentina concerning the preparation and sale of drugs. A department for the control of specialized drugs and a national committee in charge of the enforcement of some of the laws were recently established. The new department and committee are organized under the National Department of Hygiene. The committee (Comision de Arancel y Contralor de Productos Medicinales) consists of members of the National Department of Hygiene, pharmacists and representatives of manufacturers of drugs and biologic products. All preparations will be under scientific control of the committee.

The salaries of professional men and women and technicians who prepare these products as well as salaries of other personnel in the field and the sales prices of the products will be determined by the board of directors of the committee. The salaries and prices are to be fixed in relation to the cost of the substances used in the products and the expenses of their preparation.

The profits for manufacturers and sellers are limited as follows. Twenty per cent based on the actual cost of the drug for manufacturers, 30 per cent for pharmacists and 13 per cent for drug stores. The percentages of profit will be calculated on a progressive scale in relation to costs. Importers will obtain a 6 per cent profit. The unit price of sale to the public will be declared on the containers of the drugs and must remain unchanged. The fixed prices will be uniform throughout the country. The greatest allowance for advertising expenses is 20 per cent of the total amount of all expenses. A 20 per cent reduction in the price of biologic preparations will be allowed to hospitalized patients, but the reduction is not allowed for other drugs. New specialized drugs of formulas similar to those of others previously registered are unacceptable. The scientific formula and therapeutic value of specialized drugs and specialized products which have been previously accepted will be reviewed for reapproval or rejection. Specialized biologic laboratories will be under the supervision of specialized physicians, veterinarians or biochemists who have been previously registered in the National Department of Hygiene, acting as technical directors. Information on the expenses of a product and the price wanted by manufacturers must be provided to the National Department of Hygiene together with drugs which are sent to the department for examination.

The commercial names given to the preparations may not indicate special effects of the drug on a given organic function. Words such as 'pure', 'very pure' and 'harmless' may not be used on labels to describe the drugs. Perishable preparations must have on outer and inner labels the dates of preparation and expiration of the proper therapeutic effect, as well as instructions in the necessary precautions for preservation. Sending free samples of specialized drugs to physicians is prohibited. In order to verify the therapeutic effect of new preparations, samples can be sent to public hospitals in the appropriate specialty. Manufacturers can obtain authorization from any hospital to have their products used in the hospital for six months.

The functions of the committee include: (1) obtaining information from manufacturers on the amount of drugs produced and imported and on the quality and perishability of drugs and products; (2) determining that specialized laboratories have the proper equipment; (3) prohibiting substitution of a given drug for another one in pharmacies and drug stores; and (4) supervising enforcement of the law. Offenders will be punished by the National Department of Hygiene according to national penal

laws or will receive orders from the department to close their laboratories and discontinue the manufacture and sale of their products. Advertising must be submitted to the National Department of Hygiene for approval. Drugs advertised as "infallible" or sold in unauthorized places are unlawful. Laboratories for clinical analysis have to be registered in the National Department of Hygiene, must meet the requirements and have the personnel demanded by the department and be supervised by the Bacteriologic and Chemical Institutes of Argentina, which are branches of the National Department of Hygiene.

## School of Nurses in Colombia

The National School for Nurses of the National University of Colombia is to be opened soon. It is to be supported by the government with the cooperation of the Pan American Sanitary Bureau, the Rockefeller Foundation and the Inter-American Cooperative Department of Public Health. The school will be under the auspices of the Ministry of Work, Hygiene and Social Aid and the National University. The first course will admit no more than 50 students having high school certificates. Scholarships are to be given to qualified students. The course of study and the school regulations will be prepared by the Ministry of Work and approved by the university. The course will consist of three years of study in physics, biologic and sociologic sciences, hygiene, sanitation, preventive and curative medicine, nursing and correlated studies. Miss Helen Howitt and Miss Johanna Schwarte were appointed by the Pan American Sanitary Bureau to teach nursing in Buenos Aires.

## Brief Items

The Ateneo of Medicine was founded in La Paz, Bolivia, two years ago. Weekly medical meetings and scientific medico-legal lectures to which professors of the various Latin American countries are invited take place regularly. Forty-five such meetings were held during the past year. Recently a medical week, the Jornadas Internas de la Institucion, was observed. The Ateneo makes arrangements for postgraduate courses for its members in various universities in Pan American countries.

The hospital of the Academia Nacional de Medicina of Buenos Aires is to be constructed on a site of 10,000 square meters that the Bunge y Born Ltda. Company donated to the academy.

## Marriages

MARTIN OSMOND GRIMES, Newport, R. I., to Miss Elin Christine Nelson of Astoria, Long Island, N. Y., in August.

WILLIAM MEAD GRIFFIN, Hackensack, N. J., to Miss Shirley Mayfourth of Barrie, Vt., in New York, September 11.

ROGER WILLIAM BREYTSMAK to Miss Evelyn Lucille Grimm both of Gilbertsville, Ky., in Benton, October 26.

WILLIAM ERNEST BRACKETT to Miss Sarah Louise Faulkner both of Hendersonville, N. C., November 3.

LESLIE S. FREEMAN Easton, Pa. to Miss Muriel Hilda Messinger of New York in September.

GEORGE ALEXANDER CARDEN JR. to Miss Constance Seeger Sullivan, both of New York recently.

GILES QUAPLES GILMER Lebanon, Va. to Miss Sue Wilson at Silver Springs, Md. October 18.

JAMES R. CASH Charlottesville, Va. to Mrs. Mary Frazier Meade at Miquon, Pa. in October.

HORACE MILTON DALTON Norton, Va., to Miss Lalla Lee Laffitte of Estill, S. C. August 10.

ANTHONY P. DONOHUE Davenport, Iowa to Miss Margaret McGivern at LeClaire, October 2.

MARIO D. CAPIO Paterson, N. J., to Miss Max Veenstra of Midland Park, recently.

JOHN W. GILSON Butler, Pa. to Miss Margaret Hummel at New Holland, recently.

## Deaths

**Archibald Johnston Buist** ♂ Charleston, S C, Medical College of the State of South Carolina, Charleston, 1896, since 1939 professor emeritus of gynecology at his alma mater, where he had formerly been professor of gynecology, professor of abdominal surgery and gynecology, professor of clinical and minor surgery and assistant instructor in pathology, bacteriology and histology and lecturer on minor surgery and bandaging, past president of the Charleston County Medical Society, member of the Southern Surgical Association and the South-eastern Surgical Congress, fellow of the American College of Surgeons, a founder member of the American Board of Surgery, at one time a member of the city board of health, formerly surgeon general of the South Carolina State Militia, chairman of the third district medical advisory board of South Carolina during the draft period of World War I and chairman of the local chapter of the American Red Cross, president of the board of trustees, Charleston Museum, visiting surgeon, and member of the board of commissioners, Roper Hospital, visiting surgeon to the Riverside Infirmary, Baker Memorial Sanatorium and St Francis Xavier Infirmary, died September 12, aged 71, of coronary thrombosis.

**Herbert Maskell Goddard** ♂ Philadelphia, Medico-Chirurgical College of Philadelphia, 1905, assistant professor of otology at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania, member of the American Academy of Ophthalmology and Otolaryngology, founder of the Philadelphia Laryngological Society, fellow of the American College of Surgeons, served as assistant director of public health, county coroner, president of the board of trustees of the Eastern Penitentiary, otorhinolaryngologist, Philadelphia General Hospital, Jewish Hospital, Matilde Adler Loeb Dispensary, Home for Hebrew Orphans and the National Stomach Hospital, Philadelphia, and Eagleville (Pa) Sanatorium for Consumptives, consultant, Nanticoke (Pa) State Hospital, Eastern State Penitentiary Hospital and Shrimers' Hospital for Crippled Children, died November 23, aged 63.

**Ralph Alvin Bowdle** ♂ East Ely, Nev, Medical College of Ohio, Cincinnati, 1909, a founder member of the American Board of Surgery, fellow of the American College of Surgeons and state chairman, International College of Surgeons, American Association of Industrial Physicians and Surgeons and the American Association of Railway Surgeons, past president of the Nevada State Medical Association and the White Pine County Medical Society, member of the state board of medical examiners, served during World War I, chief surgeon of the Steptoe Valley Hospital, Nevada Northern Railway and Nevada Mines division of the Kennecott Copper Corporation, a charter member of the Ely Rotary Club and a director of the Ely National Bank, died suddenly October 31, aged 59, of coronary occlusion.

**Frederick William Mitchell** ♂ Houlton, Maine, Baltimore Medical College, 1898, fellow of the American College of Surgeons, past president of the Maine Eye and Ear Association, at one time chairman of the medical advisory board of the southern Aroostook district, at one time a member of the Maine House of Representatives and state senator, member of the governor's council in 1939 and 1940, member of the Republican State Committee from 1934 to 1937, a director and vice president of the Houlton Trust Company and formerly chairman of the local school committee, a charter member and second president of the Rotary Club, surgeon and for many years president of the staff, Aroostook General Hospital, where he died September 5, aged 69, of Parkinson's disease.

**John Ernest Toye** ♂ Arlington, N J, Dartmouth Medical School, Hanover, N H, 1901, fellow of the American College of Surgeons, head of the orthopedic department of the board of education of Newark, a captain in the medical corps of the U S Army during World War I, served as chief surgeon, Hospital and Home for Crippled Children, Newark, attending orthopedist, Hospital of St Barnabas and for Women and Children, and St Michael's Hospital, Newark, and West Hudson Hospital, Kearny, consulting orthopedist, Children's Country Home, Westfield, and the Betty Bacharach Home for Afflicted Children, Longport, a member of the board of directors of the First National Bank of Kearny, died September 17, aged 67, of coronary thrombosis.

**William Joseph Martin**, Davidson, N C, University of Virginia Department of Medicine, Charlottesville, 1890, member of the Medical Society of North Carolina, adjunct pro-

fessor of science at the Davidson College, 1890-1891, Chambers professor of chemistry from 1896 to 1912, bursar from 1896 to 1899, proctor from 1908 to 1912, president from 1912 to 1929 and later president emeritus, instructor of chemistry at the University of Virginia from 1892 to 1896 and professor of sciences at the Presbyterian College, Clinton, S C, 1888-1889, president of the General Assembly's Training School, Richmond, Va, from 1930 to 1933, died in Richmond, Va, September 7, aged 75, of pneumonia.

**Alva Lawrence Peckham** ♂ Poughkeepsie, N Y, Hahnemann Medical College and Hospital of Philadelphia, 1899, specialist certified by the American Board of Pathology, Inc, member of the American Society of Clinical Pathologists, past president of the Dutchess County Medical Society and the New York State Association of Public Health Laboratories, secretary of the Dutchess County Health Association, secretary of the board of trustees of the Vassar Institute, for many years pathologist on the staff of the Vassar Brothers Hospital, where he died September 13, aged 68, of septic thrombophlebitis and secondary anemia.

**Haldor Barnes** ♂ Toledo, Ohio, Københavns Universitet Laegevidenskabelige Fakultet, Denmark, 1924, medical officer with the first Byrd antarctic expedition from 1928 to 1930, served in the medical corps of the Danish army for three years, formerly acting assistant surgeon, U S Public Health Service, at one time Marinette County (Wis) physician a member of the Gillette Clinic, died in the Robinwood Hospital September 12, aged 49, of cerebral hemorrhage.

**John Mason Blake**, Barton, Vt, University of Vermont College of Medicine, Burlington, 1898, past president of the Northeastern County Medical Society, died in the Orleans County Memorial Hospital, Newport, September 13, aged 68, of complications following an operation for strangulated umbilical hernia.

**J Gaspard Boucher**, Woonsocket, R I, School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1893, formerly city physician, a consulting member of the courtesy staff, Woonsocket Hospital, died September 21, aged 76, of bronchial asthma and cerebral hemorrhage.

**Robert J Burns**, Freeport, Ill, Rush Medical College, Chicago, 1896, formerly health commissioner of Freeport, past president of the Stephenson County Medical Society, served on the staff of St Francis Hospital, died September 15, aged 72, of myocarditis.

**William P Callen**, Port Neches, Texas, Medical Department of Tulane University of Louisiana, New Orleans, 1888, died September 14, aged 84, of senility.

**Edward Thomas Carberry** ♂ Wharton N J, New York Homeopathic Medical College and Flower Hospital, New York, 1923, served during World War I, police surgeon, school physician, health officer and director of civilian defense, on the staff of the Dover General Hospital, died September 20, aged 45, of pulmonary embolism.

**John Lovell Cass** ♂ Kankakee, Ill, St Louis University School of Medicine, 1904, for many years on the staff of the Kankakee State Hospital, died September 22, aged 63, of coronary occlusion.

**Albert Emery Chase**, Santa Ana, Calif, Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1907, member of the California Medical Association and the Radiological Society of North America, Inc, roentgenologist, Orange County Hospital, died September 15, aged 63, of carcinoma of the bladder.

**John S Clark**, Ivanhoe, Va, University College of Medicine, Richmond, 1900, member of the Medical Society of Virginia, died suddenly September 25, aged 65, of heart disease.

**Lawrence Edward Clark** ♂ Ennis, Texas, University of Nashville (Tenn) Medical Department, 1900, on the staff of the Ennis Municipal Hospital, member of the school board, died September 10, aged 67, of coronary thrombosis.

**Harry Edwards Clyde**, Evanston, Ill, Medico-Chirurgical College of Philadelphia, 1899, formerly on the staff of the Evanston Hospital, died September 3, aged 68, of carcinoma of the stomach.

**Lewis E Cochran**, Peck, Mich, Western Reserve University Medical Department, Cleveland, 1891, member of the Michigan State Medical Society, health officer and a member of the school board, died September 2, aged 75, of cerebral hemorrhage.

**John Milton Colley**, Palestine, Texas, University of Georgia Medical Department, Augusta, 1881, past president of the Anderson County Medical Society, formerly city and county health officer, died September 30, aged 88, of arterio sclerosis

**Chandos Burton Conner**, Boston, College of Physicians and Surgeons, Baltimore, 1895 died September 15, aged 69, of congestive heart disease

**Nielson Pharr Coppedge**, Candor, N C North Carolina Medical College, Davidson, 1903, died September 26, aged 63

**Harley Franklin Davis**, Miami Fla, St Louis University School of Medicine, 1924 member of the Florida Medical Association, served during World War I, first lieutenant in the medical reserve corps of the U S Army, assigned to the 76th Coast Artillery at Fort Bragg, N C honorably discharged because of physical disability on April 29, 1942 died in the Jackson Memorial Hospital October 16, aged 44, of extradural hematoma and skull fracture received in a fall

**Merrill B Dean**, Candor, N Y, University of Pennsylvania Department of Medicine, Philadelphia, 1894, president of the village and health officer, died in a hospital at Miami, Fla September 5, aged 73 of arteriosclerosis

**Wright Wiley Diamond**, Magee, Miss St Louis College of Physicians and Surgeons, 1919, member of the Mississippi State Medical Association owner and medical superintendent of the Magee General Hospital, formerly assistant superintendent Mississippi State Charity Hospital Jackson died September 13 aged 64 of coronary thrombosis

**Richard Maxwell Fancher**, Napa, Calif, University of Nashville (Tenn) Medical Department, 1911 served during World War I died in September, aged 59

**Henry Elmer Fernald** East Boothbay, Maine, Dartmouth Medical School Hanover N H, 1894, health officer of the town of Boothbay died September 15, aged 77, of hemorrhage due to ruptured aneurysm

**Jacob B Feuerstein**, Atlantic City, N J, Baltimore University School of Medicine 1892, served during World War I formerly on the staff of Mount Sinai Hospital, Philadelphia died September 17, aged 84, of acute dilatation of the heart, general arteriosclerosis and chronic myocarditis

**John Lake Fortson**, Tecumseh, Okla, University of Texas School of Medicine Galveston, 1909 member of the Oklahoma State Medical Association served during World War I city and county physician physician in the Shawnee Indian Agency for many years, died September 9, aged 67

**John Rollin French**, Los Angeles University of Southern California College of Medicine Los Angeles 1906 member of the California Medical Association, formerly owner and superintendent of the Golden State Hospital, died September 28, aged 63 of coronary heart disease

**Hamilton Redd Frye**, Beallsville Pa Jefferson Medical College of Philadelphia, 1882 died September 6 aged 87 of chronic endocarditis

**John Wesley Gallagher** Perry N Y, University of Pennsylvania School of Medicine, Philadelphia 1923 diplomate of the National Board of Medical Examiners decorated with the Purple Heart for gallantry in action for his service with the American Expeditionary Forces in France during World War I, health officer for the towns of Perry and Covington, county coroner member of the library board and Rotary Club died in the Wyoming County Community Hospital Warsaw, September 18 aged 46 of leukemia

**Franklin D Garrett**, Denton Texas Baltimore Medical College 1898 member of the State Medical Association of Texas, died in September aged 67

**John Andrew Gartlan**, Paden City W Va Medical Department of Western University of Pennsylvania, Pittsburgh 1906 died September 6 aged 64 of arteriosclerosis and gangrene

**William Robert Grady**, Meridian Miss Atlanta School of Medicine 1911 member of the Mississippi State Medical Association veteran of the Spanish American War died in Rush's Infirmary September 4 aged 64 of cerebral hemorrhage

**Edwin Wakefield Grubb** Akron Ohio Cleveland Homoeopathic Medical College 1903, on the staffs of Peoples and St Thomas hospitals, died September 23 aged 73 of angina pectoris

**Albert John Guerinot** Pittsburgh University of Louisville (Ky) School of Medicine 1912 member of the Medical Society of the State of Pennsylvania senior attending surgeon

and attending bronchoscopist on the staff of St John's General Hospital, a member of Phi Chi Medical Fraternity, author of articles on the eye and ear, died in the Suburban General Hospital, Bellevue, September 18, aged 56

**William Alonzo Harvey**, San Carlos, Calif, California Medical College, San Francisco, 1888, St Louis College of Physicians and Surgeons, 1895 at one time a member of the board of health of San Francisco, died in a San Mateo hospital September 1 aged 75, of carcinoma of the throat

**Nicholas Edward Hausmann** Kewaskum, Wis, Rush Medical College, Chicago, 1899, past president of the Washington Ozaukee Counties Medical Society, health officer, died September 13, aged 68, of arteriosclerosis

**Kenneth Philip Henderson** Pleasantville, N J, Temple University School of Medicine, Philadelphia, 1933, urologist, Shore Memorial Hospital, Somers Point, where he died September 10, aged 34, of chronic glomerular nephritis with hypertension and chronic appendicitis

**Oliver Ernest Hensley** Herculaneum, Mo St Louis University School of Medicine, 1903, past president of the Jefferson County Medical Society, past president of the board of education of Herculaneum, died September 15, aged 68 of heart disease

**Edward John Hill**, Eureka, Calif, University of California Medical Department, San Francisco, 1894 died in the Humboldt County Hospital September 15, aged 77, of cerebral hemorrhage

**Max S Hirschfield**, Duluth, Minn, Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1902, member of the Minnesota State Medical Association on the staffs of St Mary's and St Luke's hospitals, died in Beverly Hills, Calif, September 4, aged 76, of acute heart disease

**Samuel A Myers Hubbard** Ridge Farm, Ill, Loyola University School of Medicine, Chicago, 1916, past president of the Vermilion County Medical Society, served during World War I, member of the Selective Service Board number 2 of Vermilion County, company surgeon for the Nickel Plate Railroad, on the courtesy staffs of St Elizabeth and Lake View hospitals, Danville, died September 9, aged 54, of cerebral thrombosis

**Erastus Mead Hudson**, Washington, D C Columbia University College of Physicians and Surgeons, New York, 1917 senior medical officer, Federal Trade Commission, an honorary surgeon in the New York City police department served in the medical corps of the U S Navy, died in the Veterans Administration Facility September 12, aged 55 of chronic nephritis

**Charles Warren Hunter**, Port Byron, Ill, Rush Medical College Chicago 1894 served during World War I, died September 4 aged 73 of cerebral hemorrhage

**Charles Bruce Irwin** Chicago, University of Maryland School of Medicine, Baltimore, 1904 clinical assistant in medicine at the Northwestern University Medical School, vice president and medical director of the North American Life Insurance Company, died September 21, aged 62 of heart disease

**Charles Edgar Kahle**, Oklahoma City Medical College of Indiana, Indianapolis 1897 a member of the chamber of commerce and Rotary Club died September 15 aged 76

**William Frederick Keck**, Brownsville Pa Jefferson Medical College of Philadelphia, 1920 member of the Medical Society of the State of Pennsylvania on the staff of the Brownsville General Hospital died in the Mercy Hospital Pittsburgh, September 8 aged 44 of carcinoma of the stomach

**Sylvester Carl Kehl** Chicago University of Illinois College of Medicine, Chicago 1919 for many years pediatrician for the Infant Welfare Board of Health served during World War I major, medical reserve corps U S Army not on active duty on the staff of the Holy Cross Hospital died in the Evangelical Hospital September 23 aged 48 of cerebral hemorrhage

**Abraham Ober Kleinman** Hartford Conn Tufts College Medical School Boston 1933 died in the Peter Bent Brigham Hospital Boston September 12 aged 35 of leukemia

**Royal Estabrook LaGrange** Fort Ann N Y Albany Medical College 1912 health officer formerly physician for the Great Meadow Prison Comstock served on the staff of the Albany Hospital died in the Glens Falls Hospital September 4 aged 59 of coronary thrombosis

**Corvus Council Lang**, Des Moines, Iowa, St Louis College of Physicians and Surgeons, 1893, served during World War I, died in the Veterans Administration Facility, Hines, Ill., September 14, aged 72, of chronic cholecystitis, cholelithiasis and coronary heart disease

**Edwin S Leach**, Junction City Kan, Ensworth Medical College, St Joseph, Mo., 1894, died in the Junction City Municipal Hospital September 15, aged 76, of nephritis

**Joseph Milton Levine** @ Brooklyn, Cornell University Medical College, New York, 1922, on the staff of the Beth Moses Hospital, died in the Triboro Hospital, Jamaica, N Y, September 21, aged 45, of tuberculosis

**George Henry Lewis**, Lakewood, Ohio, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905, member of the Ohio State Medical Association, on the visiting staffs of the Fairview Park and St John's hospitals, Cleveland, and the Lakewood Hospital, died September 28, aged 67, of chronic myocarditis and cardiovascular disease

**Harry Chamberlain Low**, Hanover, Mass, Harvard Medical School Boston, 1899, formerly on the staffs of the Massachusetts General, Boston City and the Children's hospitals, all of Boston, for two years a member of the department of tuberculosis, Massachusetts State Department of Public Health, died September 13, aged 72, of cerebral embolism

**Wilfred Francis Lowe** @ Jackson, Calif, Rush Medical College Chicago, 1930, served as city physician and as a member of the board of trustees of the grammar school district, on the staff of the Mercy Hospital, Sacramento, where he died September 11, aged 40, of an accidental gunshot wound

**Thomas Donald MacRossie**, Copiague, N Y, University of the City of New York Medical Department, 1897, served during World War I, died in the Veterans Administration Facility, New York, September 1, aged 71, of arteriosclerosis and heart disease

**James Albert McClure** @ Columbus, Ohio, University of Wooster Medical Department, Cleveland, 1881, on the staffs of the Grant and White Cross hospitals, died September 10, aged 88, of acute endocarditis

**John Henry McCormick**, Mobile, Ala, National University Medical Department, Washington, D C, 1891, member of the Medical Society of the District of Columbia, president of the White County Tuberculosis Sanitarium, died September 15, aged 73, of heart disease

**Henry Madison McCracken**, Argos, Ind, University of Louisville (Ky) Medical Department, 1907, member of the Indiana State Medical Association, died September 11, aged 70, of cerebral hemorrhage

**Oscar Lee McFadyen Sr**, Fayetteville, N C, North Carolina Medical College, Charlotte, 1912, member of the Medical Society of the State of North Carolina, secretary and past president of the Cumberland County Medical Society, secretary-treasurer of the Fifth District Medical Society, a member of the Rotary Club, died September 26, aged 52, of coronary sclerosis

**John Newton McGrath**, @ St Louis, St Louis University School of Medicine, 1920, on the staff of St John's Hospital, where he died September 21, aged 48, of heart disease

**Charles Havelock Beverly Meade**, Stamford, Conn, University of Louisville (Ky) Medical Department, 1902, member of the Connecticut State Medical Society, a member of the associate staff of the Stamford Hospital, died September 6, aged 65, of arterial hypertension and cardiac decompensation

**Joseph Edward Miller** @ Los Angeles, Wisconsin College of Physicians and Surgeons, Milwaukee, 1912, specialist certified by the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology and the Pacific Coast Oto-Ophthalmological Society, fellow of the American College of Surgeons, formerly instructor in otolaryngology at the College of Medical Evangelists, on the staff of the Santa Monica Hospital, died, September 13, aged 54, of coronary disease

**William R Miller**, Brownsville, Tenn (licensed in Tennessee in 1912), died in the Haywood County Memorial Hospital September 6, aged 53

**Charles Weston Morey**, Detroit, Trinity Medical College, Toronto, Ont, Canada, 1890, died September 30, aged 87, of pneumonia

**John A Moore** @ El Dorado, Ark, Memphis (Tenn) Hospital Medical College, 1898, first vice president of the Mid-South Medical Association, secretary of the staff of the Warner Brown Hospital, died in St Joseph's Infirmary, Hot Springs National Park, September 9, aged 70, of coronary occlusion

**William Nagin**, Brooklyn, Long Island College Hospital, Brooklyn, 1913, on the staff of the Unity Hospital, died in the Long Island College Hospital September 19, aged 59

**Samuel D Nevling**, St Louis (licensed in Missouri in 1896), died September 23, aged 77, of myocardial failure

**King Allen Norris**, Columbus, Ohio, Ohio Medical University, Columbus, 1898, died September 4, aged 72

**Edward Sylvester Norton**, Brooklyn, Long Island College Hospital, Brooklyn, 1908, formerly director of the chamber of commerce of Flatbush, died September 21, aged 67

**Samuel Joseph Ottinger**, Philadelphia, Jefferson Medical College of Philadelphia, 1892, member of the Medical Society of the State of Pennsylvania, died September 15, aged 80

**George Philo Pitkin** @ Bergenfield, N J, Albany (N Y) Medical College, 1908, fellow of the American College of Surgeons, on the staff of the Holy Name Hospital, Teaneck, where he died September 3, aged 58, of acute appendicitis with local peritonitis and pneumococcal bronchopneumonia

**William Pinkney Reeves** @ Washington, D C, Georgetown University School of Medicine, Washington, 1899, formerly clinical professor of surgery at the George Washington University School of Medicine and at his alma mater, died September 11, aged 72, of angina pectoris

**James Lee Rogers**, Spokane, Wash, University of Minnesota College of Medicine and Surgery, Minneapolis, 1905, member of the Washington State Medical Association, fellow of the American College of Surgeons, died suddenly September 3, aged 65, of coronary occlusion

**John Randolph Rogers** @ Grand Rapids, Mich, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1895, past president of the Kent County Medical Society, for many years president of the Grand Rapids Association for the Blind and for Sight Conservation, fellow of the American College of Surgeons, visiting surgeon on the staff of the Butterworth Hospital and the D A Blodgett Home for Children, died September 10, aged 74, of heart disease

**William Roush**, Lima, Ohio, Cincinnati College of Medicine and Surgery, 1891, fellow of the American College of Surgeons, radiologist at St Rita's Hospital and the Lima Memorial Hospital, where he died, September 11, aged 78, of aplastic anemia

## KILLED IN ACTION

**Malcolm Lewis Pratt** @ Bellefontaine, Ohio, Jefferson Medical College of Philadelphia, 1914, a founder member of the American Board of Surgery, served with the Fifth Marine Regiment during World War I and was awarded the Navy Cross, citations from the United States government and a French decoration, commissioned a lieutenant commander in the medical corps of the U S Naval Reserve on March 29, 1941, regimental surgeon of the Fifth Marine Regiment at New River, N C, reported missing in action, Aug 13, 1942, while attached to the First Marine Division, Fleet Marine Force, when certain personnel failed to return from a reconnaissance patrol near Matanikau Village, Guadalcanal, Solomon Islands, aged 51, officially declared dead by the Navy Department Aug 14, 1943



LIEUT COMDR MALCOLM L PRATT  
(MC), USNR, 1891-1942



## Bureau of Investigation

### SOME MISCELLANEOUS MEDICAL FRAUDS

#### A Variety of Schemes Debarred from the Mails

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of THE JOURNAL. Following are abstracts of some fraud orders not dealt with previously.

**"Dr." D K Tucey, D K Tucey Herb Company and Tucey Chinese Herb Company.**—The D K Tucey who does business from Los Angeles under these names has long advertised himself as a Chinese Herbalist offering a Chinese Remedy for ulcers, eczema and fistula and various herbal "cures" for a variety of disorders including tonsillitis, catarrh, asthma, colds, appendicitis, epilepsy, kidney and bladder complaints, neuritis, rheumatism and some twenty other conditions. As long ago as December 1924 the California state licensing board had Tucey arrested on the charge of violating the state medical practice act and on his plea of guilty to the charge he was fined \$1,000 in a local court. Nevertheless his herbal business seems to have thrived until the Post Office Department learned that Tucey solicited through the mails remittances for his Chinese herbs representing that these would cure tuberculosis, rickets, cancer, gall stones, syphilis, gonorrhea and (with the assistance of his salve) pellagra. Accordingly that Department notified Tucey to show cause why a fraud order should not be issued against the business but neither he nor any one representing him appeared at the hearing. Government witnesses testified that Tucey's real name was Loy S Tucey and that he had come to this country from China in 1904 conducted his herb activities since 1912 had storage room for more than 1,000 different kinds of herbs and admitted that his office sales amounted to \$300 a month and those by mail to about \$400. It was further shown that Tucey claimed to have studied herbs both in China and in America and thus to be qualified as a "herbal doctor" to select a proper treatment for any disease he diagnosed after reading the symptoms described by his customers in their letters. His literature included a book, *Health Through Nature—How to Obtain and How to Keep It*. The government's expert medical witness testified as to various diseases for which Tucey prescribed his herbs but which they could in no sense cure. In consequence of all the evidence presented a fraud order closing the mails to this scheme was issued on May 22, 1943 against the trade styles D K Tucey, Dr D K Tucey, D K Tucey Herb Company and Tucey Chinese Herb Company.

**F O Redfield.**—This person and his psoriasis cure business have been known to the American Medical Association since 1931 when he was promoting one such treatment from Woodside Long Island N Y. According to a government investigator Redfield claimed that he discontinued his mail order business from 1931 until 1942 when he resumed it at Wilmington Del. Redfield's circulars claimed that by studying diet he cured himself and a friend of psoriasis. His method could be learned from his book, *How I Rid Myself of Psoriasis*, price \$17.50 which to hesitant prospects was sometimes gradually reduced to \$3.00. In addition to diet rules the book advised taking an enema of warm water and castile soap every night before retiring. After due investigation the Post Office Department summoned Redfield to a hearing in Washington on charges of fraud. A specialist in skin diseases testified for the government on the causes and scientific treatment of psoriasis and showed that it would be impossible for a layman accurately to diagnose a case of psoriasis since that condition might easily be mistaken for the various types of eczema and other skin diseases and that only the medical profession by laboratory microscopic analysis could definitely identify psoriasis. Further he stated that the medical profession had experimented extensively with the use of diets in treating psoriasis and had found them worthless. He testified specifically that the diet recommended in Redfield's booklet would be useless in treating psoriasis and that neither the laxatives described in the book nor the elimination of coffee from the diet would benefit the patient. Redfield in his own defense represented that his book was intended only to relate the method or means by which he rid himself of psoriasis and that in it he nowhere claimed that it would cure any other person afflicted with psoriasis. Since he was unable to disprove the charge that he was conducting a fraudulent scheme the mails were closed to him under a fraud order issued July 15, 1943 against the trade styles F O Redfield and F O R.

**G B Taylor M.D.**—At Cameron Texas Dr Green Benjamin Taylor practices as a specialist in eye, ear, nose and throat disorders. Dr Taylor was graduated from Memphis Hospital Medical College Memphis Tenn in 1900 and licensed to practice in Texas by the Act of 1907. He is reported to be a member of his local medical society but not a Fellow of the American Medical Association. In addition to his practice Dr Taylor for a time was engaged in selling through the mails a preparation called Orine for deafness, head noises and other hearing disorders besides Nerve and Kidney Tablets for various diseases and ailments. After the Post Office Department had investigated the business it notified Dr Taylor to appear for hearing before that Department in Washington on May 20, 1941 and show cause why a fraud order should not be issued against his enterprise. Thereafter it is reported Dr Taylor offered to discontinue it entirely. In the latter part of 1942 however the Post Office Department undertook a second investigation of the scheme after obtaining evidence that Dr Taylor was again offering treatments for deafness and head noises through the mails. It was learned that in answering one inquirer Dr Taylor pointed out that he had been secretary of his county medical society for 25 years and at other times its president as well as president of the district medical society, vice president of the state medical association and a Fellow of the American Medical Association for many years besides operating his private hospital

and attending the various ear hospitals in Chicago for many years. His letter went on to discuss the anatomy of the ear and to solicit an order for his Two Way Prescriptions—\$3.00 down and an additional later payment of \$2.00 if the customer was satisfied. One person who sent the money received in return a so-called "Ear Prescription" and an "Ear Nose Prescription". The first of these called for 8 grains each of bicarbonate and bicarbonate of sodium and ½ ounce each of distilled water and glycerin to be placed in each ear for three successive nights and washed out on the fourth day once a week for three weeks to soften and dissolve ear wax in the outer ear canal that does cause deafness and noises. The Ear Nose Prescription called for 2 grains each of menthol and gum camphor and 2 ounces of chlorotone inhalant, sprayed into the nose night and morning to relieve catarrhal inflammation. There was added the comment: "You should feel your ears pop when blow as directed." Dr Taylor also played up a Three Way Prescription which apparently differed from the Two Way variety in that a third mixture was recommended under the name Nerve Prescription. This called for "Prostigmin Bromide Tablets 15 Mg aa No 20" and directed the user to take one tablet at night to "relieve and relieve [sic] the auditory nerve that can be causing deafness [sic] and head noises." At the hearing of the case an expert medical witness for the government testified that among other things deafness and head noises are due to a number of causes, which he detailed and went on to show that Dr Taylor's treatment would not be effective in most ear and nose disorders and in some cases might actually be harmful. He further testified that prostigmin bromide the only drug contained in the Nerve Prescription would tend merely to tone up the muscles and would not and could not overcome deafness, head noises or their numerous causes. Although the brief filed by Dr Taylor as an answer to the charges denied that the Ear Prescription as now sold was identical with Orine which he formerly purveyed the expert testimony introduced by the government at the hearing showed that both were composed mainly of glycerin and that their effect was merely to soften and make easier the removal of ear wax. Again though Dr Taylor's brief contended that prostigmin bromide contained in his so-called Nerve Prescription had been used successfully in the treatment of deafness both by himself and by many other ear specialists attending the larger hospitals in the east he submitted no evidence whatever other than his own statement in support of these contentions and even admitted that he himself had been slightly deaf with head noises and atrophic rhinitis for several years. The outcome of the hearing was a fraud order issued by the Post Office Department April 9, 1943 against Dr G B Taylor.

**Menade Products and T E Bonestell.**—Bonestell was manager of the concern known as Menade Products Pasadena Calif which sold tablets under the name Menade by mail. It represented that the product, when used as directed would restore sexual vigor and pep and mainly virility to every man lacking these attributes, renew normal functioning of the male glands and give boundless health to persons suffering from physical disabilities. Following up some complaints\* the Post Office Department investigated the scheme and eventually charged Bonestell with fraud. He neither put in an appearance at the hearing nor was represented by counsel. A chemist testified for the government that each Menade tablet contained talc and chalk (mostly in the coating), 0.15 grain of iron and a negligible amount of organic iodine plus some glandular matter, yeast, small amounts of phosphoric pentoxide (P<sub>2</sub>O<sub>5</sub>) presumed to be from the glandular matter and traces of sulfate, sodium chloride and potassium. The witness added that the claimed vitamins might be present. A physician testified for the government that a lack or lessening of sexual power or vigor is due primarily to old age and general decadence of the tissues throughout the body including those of the glands and that chronic ailments or psychic disturbances may be contributing factors. His testimony further showed that Menade would not and could not restore sexual vigor and pep and mainly virility to every man lacking therein or bring back normal functioning of the male glands as claimed. Accordingly a fraud order was issued on May 14, 1943 debarbing Menade Products and T E Bonestell Manager from further use of the mails.

**Peptonik Mineral Company and J T Atkinson.**—J T Atkinson was reported to be the proprietor of the business at Huntsville Ala. The Post Office Department ordered the concern to show cause why a fraud order should not be issued. Neither the respondents nor their legal counsel put in an appearance at the hearing. They were given until June 1, 1943 to submit whatever brief or argument they desired. They simply returned the transcript without any accompanying reply. The Post Office memorandum on the case charged that the concern sold Peptonik Mineral through the mails under claims that when used as directed it would overcome arthritis, kidney and bladder trouble, gallstones, high blood pressure, weak heart, stomach trouble, pellagra, eczema, prostate disorder and any sore or skin disease regardless how old it might be or the cause thereof that the product when used as directed would be more effective in the treatment of the disease and conditions for which it is sold than any other known treatment that it would obviate the necessity for needed surgical operations and that when taken according to directions it would produce results identical with or similar to those described in the testimonial letters that were embodied in the advertising. At the hearing a government chemist summarized his analysis of the product by testifying that the mixture was just a preparation of iron with traces of these other minerals. The government's expert medical witness testified that the iron or ferric sulfate was the only drug in the product which would have any substantial therapeutic effect and that even so ferric sulfate is not recognized as a proper drug for internal use because of its irritant effect and because there are other forms of iron much more useful and not so irritant to the stomach and teeth. This witness further testified that Peptonik Mineral would not be an effective treatment for rheumatism, arthritis or the other disorders for which it was recommended. Accordingly the Peptonik concern and J T Atkinson were found to be conducting a scheme for obtaining money through the mails by means of false and fraudulent pretense, representations and promises and a fraud order debarbing them from the mails was issued on June 23, 1943.



## Correspondence

### THE PRESENT DAY STATUS OF CAUDAL ANESTHESIA IN OBSTETRICS

*To the Editor*—In an attempt to forestall any possible decline in the popularity which caudal anesthesia, both the single injection and the continuous injection variety, have attained, this statement weighing the advantages and disadvantages of each is presented

Differences of opinion as to the merits of single injection caudal and continuous caudal prevail among the advocates of caudal anesthesia. Each has its place, dependent on the facilities and training of the personnel. The following points are listed to enable an impartial comparison of the two

1 The indications, contraindications and preanesthetic preparation of the patient are the same for the two types of caudal anesthesia. The obstetrician or the trained assistant administering caudal anesthesia must be constantly on guard against complications

2 The single injection caudal anesthetic may be given by the obstetrician or the trained assistant just prior to the termination of the second stage of labor, while the continuous caudal analgesia and anesthesia may be given by the obstetrician or the trained assistant during the first stage of labor and controlled by a trained assistant throughout labor and delivery

3 The likelihood of an intrathecal or an intravenous injection of the anesthetic solution is less with single injection caudal anesthesia because the needle is introduced into the sacral canal just far enough to insure proper distribution of the anesthetic solution and is well within the limits of safety. In continuous caudal anesthesia inadvertent intrathecal or intravenous injection of the anesthetic solution is possible since the needle is introduced up to its hilt (2½ to 3 inches) and is left in place, accidental movement of the needle collar might result in puncture of the dural sac or a vein

4 There is less quantity of anesthetic solution needed with single injection caudal anesthesia since the second stage of labor is well advanced at the time of the administration of the anesthetic. Under continuous caudal anesthesia a greater quantity of anesthetic solution is needed since analgesia and anesthesia are developed and maintained from early in the first stage of labor

5 In single injection caudal anesthesia a stiff needle is used, needle breakage is practically nil. In continuous caudal anesthesia malleable needles are used of necessity and if the same needle is used too often it may break, however, needle breakage is practically nil

6 The introduction of the stiff needle into the sacral canal as used for single injection caudal anesthesia is easier than the insertion of the malleable needle into the sacral canal as used for continuous caudal anesthesia

7 The chance for infection at the site of the needle insertion is slight with single injection caudal anesthesia, there being a minimum of trauma present since but a single injection is made, the needle withdrawn and the area sealed. The chance for infection at the site of the needle insertion is increased with continuous caudal anesthesia since the needle must be left in place for several hours, during which time the site of injection may be contaminated as the result of its location, the needle may become maladjusted (motion in and out resulting in contamination) as the result of inadvertent movements of the patient, trauma of tissues may develop from needle pressure when the patient is in the supine position for any great length

of time and there may be unintentional contamination of the tubing, syringe and anesthetic solution during a prolonged period of maintaining analgesia and anesthesia

8 No special equipment is needed for single injection caudal anesthesia, while special instrumentarium as devised by Drs Hingson and Edwards and others who have modified the technic is needed for continuous caudal analgesia and anesthesia

9 In both methods of caudal anesthesia the percentage of failure is directly proportional to the skill and judgment of the operator

10 Under single injection caudal anesthesia the patient may be given adequate sedation (barbiturates, morphine or scopolamine) during the first and second stages of labor and the anesthetic administered for the termination of the second stage of labor. On the other hand, with continuous caudal anesthesia, as analgesia and anesthesia are maintained throughout the major portion of the entire labor, sedation is unnecessary but may be given in small quantities if desired

11 In single injection caudal anesthesia untoward reactions are apparently nil if the patient is under mild sedation (barbiturate). Untoward reactions may be expected with continuous caudal anesthesia unless the patient is given a small quantity of sedation (barbiturate) prior to the administration of the anesthetic. However, in any event, untoward reactions are infrequent

12 Under single injection caudal anesthesia, malpresentations do not develop as a result of the anesthesia. Malpresentations may develop under continuous caudal anesthesia as a result of prolonged pelvic floor relaxation. However, the correction of malpositions is greatly facilitated by the profound pelvic and perineal floor relaxation characteristic of either type of caudal anesthesia

13 Precipitate deliveries do not occur under either type of caudal anesthesia

14 Spontaneous deliveries in primiparas are infrequent under either type of caudal anesthesia. However, spontaneous deliveries may occur in multiparas not infrequently under either type of caudal anesthesia if voluntary effort is encouraged at the time of uterine contraction

15 The blood loss in the third stage of labor is definitely lessened under either type of caudal anesthesia

16 Rest, diet and hydration of the patient must be watched throughout the course of labor if a patient is to receive single injection caudal anesthesia. However, rest, diet and hydration offer little or no problem when a patient receives continuous caudal analgesia and anesthesia since the parturient is comfortable and willingly partakes of food and drink during the course of her labor

17 There is less apt to be a fall in blood pressure with small single injection caudal anesthesia, although a fall in blood pressure may be evidenced with the large single injection of anesthetic solution. Under continuous caudal analgesia and anesthesia there is a slight fall in the blood pressure

18 Since single injection caudal anesthesia is not given for the first stage of labor but only when the termination of the second stage of labor is imminent, there is no danger of interfering too early with the second stage of labor. As continuous caudal analgesia and anesthesia shortens the first stage of labor but prolongs the second stage, interference with the second stage of labor too early must be avoided

19 The variety of operative procedures needed in the complicated delivery may be performed with facility under either type of caudal anesthesia. However, continuous caudal analgesia has a distinct advantage in the unexpectedly prolonged operative case. The incidence of outlet forceps definitely is increased under either single injection or continuous caudal anesthesia

20 No deleterious effects have been noted on the fetal heart tones or the response of the fetus at the time of delivery under

Dr Thurston Scott Welton, director of the Obstetrical and Gynecological Service, Greenpoint Hospital, Brooklyn, permitted this communication to be submitted from his service. The author has since been commissioned Assistant Surgeon (R) in the U S Public Health Service. This article has been approved for publication by Dr Thomas Parran, Surgeon General, U S P H S

single injection caudal anesthesia. Fetal distress has not been evidenced under continuous caudal analgesia and anesthesia although, should the drop in maternal blood pressure be more than the usual drop expected (20 mm of mercury), fetal distress will be reflected and if the fall in blood pressure is inadvertently prolonged it will be deleterious to the fetus.

21 Postpartum complications such as urinary difficulty or subinvolution of the uterus are rarely encountered, in fact, the postpartum course actually seems expedited with the use of either variety of caudal anesthesia.

Caudal anesthesia, like any innovation, can be used feasibly only by those adequately trained. It is not possible for continuous caudal analgesia and anesthesia to be used without the aid of a trained assistant. In many instances, since the element of time plays an important role, the accoucheur may choose to use single injection caudal anesthesia for termination of the second and third stages of labor. Emphasis should be placed on the fact that the administration of caudal anesthesia is technically difficult.

Some physicians have attempted caudal analgesia and anesthesia without having sufficient knowledge of anatomy or the dangers which accompany such a major procedure, the administration of which is technically more difficult than would appear on the surface. This, if it continues, will result in constantly increasing failures, accidents of technique, morbidity and even mortality which in all likelihood will discourage its use.

There are fads in medicine just as there are in fashion, but a fad becomes an established method of procedure when it is built on a firm foundation of scientific investigation. Caudal anesthesia is of unquestionable value and, if given a sound scientific trial, will assume its proper position among accepted procedures.

ROBERT M. MITCHELL, M.D., Brooklyn

Resident Physician in Obstetrics and  
Gynecology, Greenpoint Hospital

### PRETIBIAL FEVER

To the Editor --In THE JOURNAL, June 5, appeared an article entitled "Pretibial Fever, An Obscure Disease," by Lieut. Col. Worth B. Daniels and Capt. H. Arthur Grennan. In this article a case is made for a new syndrome characterized by fever and headache of the orbital type initiated by chills or chilly sensations and further characterized by the appearance shortly after the onset by splotchy erythematous coalescing lesions involving the anterior surface of both legs predominantly. In my experience with several hundreds of cases of dengue in an area where dengue is hyperendemic, the clinical manifestations of the disease were no different from those described in the article mentioned with the exception of the predominance of pretibial lesions. Such pretibial lesions, however, were not uncommon in this series, although they were generally associated with similar lesions on the trunk. In an article written by Rice (*Am J Trop Dis* 3:73 [March] 1923) the cutaneous manifestations of dengue fever in an epidemic in Galveston are described which were "characteristically multi-forms or polymorphous, bilateral and symmetrical with some urticarial element present [and] suggest a great similarity to the erythema multiforme group. The eruption seemed to show a predilection for the face, forehead, neck, upper chest, forearms, legs, palms and soles." For all the limitations of black and white photography, the lesions in the illustrations appear identical with those which I have seen here.

The absence of the saddle backed temperature curve in certain epidemics has been noted. Siler, Hall and Hitchens (*Philippine J Sc* 29:1 [Jan-Feb] 1926) said "Casual observation of a number of clinical cases in the wards of the Sternberg General Hospital had convinced us that the disease as manifested in Manila shows the diphasic temperature of the classic description only rarely." In the encyclopedic monograph

on dengue by George F. Lumley and Frank H. Taylor published by the Department of Health of the Commonwealth of Australia as Service Publication (School of Public Health and Tropical Medicine) No. III the following statement appears on page 4: "There is no characteristic form of fever in dengue. Truly the diphasic forms are often regarded as characteristic and classic, though clinicians have often expressed dissatisfaction of such a viewpoint. If there be a clear recognition that the fever may assume one of many forms, then the clinical appreciation of dengue will rest on a firmer base."

Comparatively few of our patients showed prolonged "post-febrile depletion or depression" and on the average were returned to duty in approximately eight to ten days after the onset.

Cough was reported in dengue by W. E. George in 1925 in a report on an epidemic of dengue in Townsville, North Queensland (Australia), unpublished.

Sore throat has been described by Goldschmidt and Crosse in the *Medical Journal of Australia*.

A slight dry cough and mild sore throat were noted with a fair degree of frequency in our cases of dengue.

Case 2 as described by the authors is typical of dengue as it is seen in this area.

Lumley and Taylor state "It is a singular circumstance that dengue fever is not medically well known. This is not the fault of the individual practitioner but is principally due to the fact that relatively few have to deal with the disease and that literature on dengue fever is largely buried in journals inaccessible outside large libraries. Other factors aggravate this position, for example the conflict of undoubted good clinical descriptions. This raises perhaps a major consideration. Most conflicts of opinion on description are probably more apparent than real. There has been tendency to regard dengue fever as a single clinical entity, whereas the truth may well be that the term dengue fever covers a group of diseases. In fact the term 'the dengue fevers' is emphasized by some authors. There may be different strains or types of the causative agent."

The disease described as pretibial fever so closely resembles dengue that, until further evidence is presented, the postulation of a new clinical entity will not serve to clarify our understanding of a disease already known to exist in the South Atlantic seaboard and which may have increasing importance in the United States.

NATHANIEL A. COHEN, Captain M.C., A.U.S.

### CITRATE WITH PROCAINE IN FRACTURE TREATMENT

To the Editor --The role of procaine hydrochloride as a local anesthetic in fracture reduction is so well known as to require no additional comment. For many years I have used equal parts of 2.5 per cent sodium citrate and procaine as a local anesthetic. The theoretical advantages of this procedure consist in delaying the formation of any blood clot and thus aiding later reduction procedures. A certain percentage of all fractures are necessarily later operated on. When this has been done an opportunity has been afforded for visualizing the effects of the citrate.

The condition of the fracture site even in such major joints as the knee has been found to be much better than when the citrate was not added. The procedure is extremely simple, merely using 50 per cent of citrate and procaine of double the strength usually preferred. The anesthetic thus has the same effect. This procedure has been used for a sufficient number of years with satisfactory results to warrant bringing it to the attention of surgeons doing this type of work.

CHARLES MURRAY GRATZ, M.D., New York

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL*, Nov. 27, page 859

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Jan. 17-19 *Part III* Various centers, Dec. and Jan. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY *Oral Part II* Chicago, June 12-16 Final date for filing application is March 12 Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York

AMERICAN BOARD OF DERMATOLOGY & SYPHILOLOGY *Written* Various centers, May 8 *Oral* Chicago, June 9-10 Final date for filing application is April 1 Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston

AMERICAN BOARD OF INTERNAL MEDICINE *Written* Various centers, Feb. 21 Final date for filing application is Dec. 15 Ass't Sec., Dr. William A. Werrell, 1301 University Ave., Madison Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Part II* May or June Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6, Pa.

AMERICAN BOARD OF OPHTHALMOLOGY New York, June Final date for filing application is Dec. 15 Chicago October Sec., Dr. John Green, 6830 Waterman Ave., St. Louis

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Written and Oral Part II* Chicago, Jan. 21-22 Sec., Dr. Guy A. Caldwell, 3503 Prytanis St., New Orleans, La.

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Los Angeles Feb. 2-5 Sec., Dr. Dorn M. Lierle, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PEDIATRICS *Written* Locally, Feb. 4 *Oral* Philadelphia March 25-26, and San Francisco, May 6-7 Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *Oral* Locally, Dec. 20-21 Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY February Final date for filing application is Dec. 15 Sec., Dr. B. R. Kiklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY *Written Part I* March Final date for filing application is Jan. 1 Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia

AMERICAN BOARD OF UROLOGY *Oral* Chicago Feb. 15-17 *Written* Various Centers Dec. 4 Sec., Dr. Gilbert J. Thomas, 1409 Willow St., Minneapolis

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Compensation of Physician Liability of Employee for Fees of Physician Treating Industrial Injury**—Scott, an employer subject to the workmen's compensation act of North Dakota, insured in the monopolistic state workmen's compensation fund of that state, and himself personally entitled to benefits conferred by the act, was injured in the course of his employment. The physician plaintiff treated him for his industrial injuries. Subsequently the physician sued both Scott and the state workmen's compensation bureau, an agency of the state administering the fund, for the reasonable value of the services he had rendered, alleging, in the words of the court whose opinion is here abstracted

that both Scott and the bureau employed the plaintiff to render medical services to Scott, that the services were worth a thousand dollars, and no part of this has been paid except the sum of \$250 paid by the bureau.

Each defendant demurred and from the overruling by the trial court of both demurrers the defendants appealed to the Supreme Court of North Dakota.

Apparently Scott's demurrer was based on the theory that, because of his contract with the workmen's compensation bureau,

the bureau alone was liable for the medical services rendered to him. This position cannot be sustained, said the Supreme Court. Even though Scott was entitled to share in the compensation fund, and therefore it was the duty of the bureau to furnish him medical service, this does not relieve him from his own personal liability for the medical services rendered him. The complaint in this case alleges that Scott made a contract with the physician for medical services. It shows the reasonable amount of the services and the amount paid. For the purposes of Scott's demurrer, those allegations are admitted to be true. Clearly, then, the complaint states a cause of action against Scott.

A physician, continued the court, under the applicable law in North Dakota, is not compelled to perform medical services for a workman in an employment subject to the workmen's compensation act. He is not legally bound to render medical services either for the injured workman or for the workmen's compensation bureau. He may make such legal contract as he sees fit and therefore he may contract with the injured workman without reference to the bureau. In *Hannon v. Interstate Power Co.*, 65 S. D. 493, 275 N. W. 358, construing the workmen's compensation act of South Dakota, which in all respects here material is similar to the North Dakota act, a physician who had rendered services to an injured employee instituted action against the employer. The employer defendant set forth that it "was operating under the Workmen's Compensation Law" and that the industrial commissioner had exclusive jurisdiction. The Supreme Court of South Dakota in that case pointed out that "physicians are neither employers [n]or employees within the meaning of the act and are not within the class of persons who can either elect or refuse to come under the provisions of the law." While under the North Dakota law there is no liberty of election as to whether an industry shall or shall not come within the provisions of the workmen's compensation act, nevertheless physicians are not one of those who must render service. If the defendant Scott employed the plaintiff physician to furnish medical service for himself he must pay the reasonable value of those services when no express agreement was made as to the amount of the fees, and this is so regardless of what amount the workmen's compensation bureau may allow for medical services. The court accordingly concluded that Scott's demurrer was properly overruled. The court expressly stated, however, that in sustaining the action of the trial court in this respect it was not determining any right the physician might have to compel payment out of the workmen's compensation fund, since that matter was not involved in determining the propriety of the trial court's action with respect to Scott's demurrer.

The Supreme Court held, however, that the physician could not properly maintain a suit against the workmen's compensation bureau since it was not a legal entity subject to suit. The Supreme Court accordingly reversed the action of the trial court in overruling the demurrer interposed by the workmen's compensation bureau.—*Henderson v. Scott*, 10 N. W. (2d) 490 (N. D., 1943).

## Society Proceedings

### COMING MEETINGS

American Society of Anesthetists New York Dec. 9 Dr. McKinnie L. Phelps, 745 Fifth Ave., New York 22, Acting Secretary

Annual Forum on Allergy, St. Louis, Jan. 22-23 Dr. Jonathan Forman, 394 East Town St., Columbus, Ohio

Association for Research in Nervous and Mental Diseases New York Dec. 17-18 Dr. Thomas E. Bamford Jr., 115 East 82d St., New York 28, Secretary

Southern Surgical Association, New Orleans, Dec. 7-9 Dr. Allen Ochsner, 1430 Tulane Ave., New Orleans, Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1913 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Journal of Hygiene, Baltimore 38 113-224 (Sept) 1943

- \*Field Studies on Immune Response to 17D Yellow Fever Virus. Relation to Virus Substrain, Dose and Route of Inoculation. J. P. Fox, S. L. Kossobudzki, and J. F. Da Cunha—p. 113
- Immunization to Typhoid and Paratyphoid Fevers. D. Longfellow and G. F. Luippold—p. 139
- Behavior of 17D Yellow Fever Virus in Rhesus Monkeys. Relation to Substrain, Dose and Neural or Extraneural Inoculation. J. P. Fox and H. A. Penna—p. 152
- Varieties of Salmonella Isolated in Florida During 1942. Mildred M. Galton and Alice Lee Quan—p. 173
- Experimental Studies on Trypanosoma Cruzi Infection and Reticuloendothelial Blockade in Rats. Nadene Demison—p. 178
- Alcohol Preserved Tissue Cultivation Medium. Methods of Preparation and Use and Results Obtained in Cultivation of Nyctotherus Cordiformis. E. C. Nelson—p. 185
- \*Field Study of Alum Precipitated Combined Pertussis Vaccine and Diphtheria Toxoid for Active Immunization. Pearl L. Kendrick—p. 193
- Transmission Experiments with Spirochaeta Turicata and Spirochaeta Venezuelensis with Four Species of Ornithodoros. L. Mazzotti—p. 203
- Relation Between Scarlet Fever Morbidity and Streptococcus Carrier Rates. F. F. Schwenker—p. 207
- Malaria Infections by Four Species of Plasmodium in Duck and Chicken and Resulting Parasite Modifications. R. D. Manwell—p. 211

**Immune Response to 17D Yellow Fever Virus**—Fox and his associates report 3 large scale yellow fever vaccination experiments. In the first experiment, conducted on a group of 550 nonimmune persons, the antigenicity of 4 substrains of 17D virus was studied. Small differences in the degree of immune response suggested that substrain 17D-NY 104 and substrain EP were slightly more antigenic. Evidence that small virus doses might result in a better immune response than larger doses was also obtained. In the second experiment it was established on the basis of a study of 15 vaccine lots that sister lots of vaccine prepared under the seed lot system are of uniform antigenicity. It was also established that the new type of serum free vaccine can be safely applied when the virus content permits in saline dilutions as high as 1 in 100, since of 918 vaccinated persons who were studied all became immune. Evidence was obtained that the immune response to 17D virus by persons up to the age of 14 years is directly related to age, the average protective capacity of the serums increasing with the age of the donors. In the third experiment evidence was obtained that human susceptibility to intradermally or intramuscularly inoculated virus of substrain 17D-NY 104 is greater than that to virus administered subcutaneously. No significant differences related to route of inoculation could be detected in the immediate immune response or in the average level of immunity one year after vaccination. The differences in susceptibility therefore are not considered sufficient to outweigh the technical advantages of the subcutaneous route. A considerable discrepancy was encountered in the safe minimum human immunizing doses indicated by the first and third experiments since in the latter experiment the minimum dose was found to be but one fiftieth of that indicated in the initial experiment. Pending further study the larger dose is recommended.

**Combined Pertussis Vaccine and Diphtheria Toxoid**—Kendrick tested the use of alum precipitated combined diphtheria toxoid and pertussis vaccine in 126 preschool children in comparison with a noninjected control group of 1,511 chil-

dren. The diphtheria antitoxic titers in the injected children demonstrated good response to the diphtheria toxoid in the combined antigen, and opsonocytophagic tests as well as tests for agglutinins and complement fixing bodies indicated response to the Haemophilus pertussis vaccine. The incidence of pertussis in the injected group of 0.9 attack per hundred person years of observation, in comparison with 10.4 attacks for the control group, indicated substantial protection due to the antigen used. The attacks which did occur among the vaccinated children were in general milder than those which occurred among the controls. The combined antigen offers a method for simplification of the immunization procedure by reducing the number of injections.

#### Am J Roentgenol & Rad Therapy, Springfield, Ill 50 293-432 (Sept) 1943

- \*Roentgen Signs of Patent Ductus Arteriosus. Summary of 50 Surgically Verified Cases. M. S. Donovan, E. B. D. Neuhauser and M. C. Sosman—p. 293
- Angiocardiography in Congenital Heart Disease. II. Patent Ductus Arteriosus. M. F. Steinberg, A. Grishman and M. L. Sussman—p. 306
- Correlation Between Roentgenographic Changes in Lungs in Left Ventricular Failure and Circulation Rates. B. S. Epstein and D. Young—p. 316
- Roentgenologic Appearance of Bronchiogenic Cysts. L. L. Robbins—p. 321
- Discussion of Pathology and Histogenesis of Ewing's Tumor of Bone Marrow. A. P. Stout—p. 334
- \*Roentgenologic Aspects of Ewing's Tumor of Bone Marrow. P. C. Swenson—p. 343
- Eosinophilic Granuloma of Tibia. Case Report. T. Horwitz—p. 355
- Optimum Kilovoltage Technique in Military Roentgenography. A. W. Fuchs—p. 358
- Roentgenographic Technique. Soft Tissue Surface Detail. Foreign Body Localization. R. B. Barnes and D. McLachlan Jr.—p. 366
- Metabolic Changes Occurring as Result of Deep Roentgen Therapy. I. Effect of 200 Kilovolt Roentgen Therapy. D. Goldman—p. 381
- Id. II. Effect of 1,000 Kilovolt Roentgen Therapy. J. E. Robertson—p. 392
- Radium Dosage for Linear Sources. B. S. Wolf—p. 400

**Roentgen Ray Signs of Patent Ductus Arteriosus**—Donovan and his associates direct attention to the successful ligation of a patent ductus arteriosus, pointing out that a total of 50 cases have now been ligated or divided by Gross, with three deaths. Seven of these patients had subacute bacterial endocarditis (Streptococcus viridans infection), this being such a frequent complication that the authors considered it best to include them in this study. All the patients were studied preoperatively by roentgenologic methods and many of them postoperatively as well. The roentgenologic signs of patency of the ductus arteriosus have a definite value, although they do not prove the diagnosis, nor does their absence rule it out. A thorough roentgenographic study helps the surgeon evaluate the results of operation. The roentgenographic findings in 50 cases of patent ductus arteriosus verified at operation are presented. These findings in order of frequency are: (1) dilatation of the pulmonary artery, (2) cardiac enlargement, (3) dilatation of the left auricle, (4) engorgement of the intrapulmonary vessels, (5) exaggerated pulsation of the left ventricle and the pulmonary artery, (6) hilar dance, or pulsation of the vessels in the hili of the lungs.

**Roentgenologic Aspects of Ewing's Tumor of Bone Marrow**—Swenson reviews a group of 26 cases of Ewing's tumor of the bone marrow which were collected from the files of the Presbyterian Hospital and the medical and surgical pathology departments of Columbia University College of Physicians and Surgeons. He shows that there is no typical roentgenologic picture of this disease and that a definite diagnosis can rarely be made from the roentgen examination alone. The disease may spread from the area of obvious primary involvement throughout the soft tissue of the marrow cavity without producing bone destruction which would betray its entire extent. It is important to take this fact into consideration in planning roentgen therapy. Though arrest of the disease has been reported from either surgery or roentgen therapy alone, the evidence suggests that a combination of the two methods will probably give the best results.

## Archives of Ophthalmology, Chicago

30 421-584 (Oct) 1943

- New Answer to Question of Mycular Spring F H Verhoeff—p 421  
 \*Penicillin and Sulfadiazine in Treatment of Experimental Intraocular Infection with *Pneumococcus* I von Sallmann—p 426  
 Combined Intracranial and Orbital Operation for Retinoblastoma B S Ray and J M McLern—p 437  
 Exophthalmos Due to Chronic Orbital Myositis J H Dunnington and R N Berke—p 446  
 \*Vitamin E (Whit Germ Oil) in Treatment of Interstitial Keratitis S Stone—p 467  
 Pathologic Anatomy of Myopic Eye with Regard to Newer Theories of Etiology and Pathogenesis of Myopia F W Stocker—p 476  
 Comparison of New Sensitometric Method with Usual Techniques of Refraction M Luckiesh and F K Moss—p 489  
 Tuberos Sclerosis Elizabeth F Constantine—p 494  
 Operations for Glaucoma W S Knighton—p 499  
 Fixational Corneal Light Reflexes as Aid in Binocular Investigation C Krimsky—p 505  
 Quantitative Comparison of Methods of Administering Physostigmine J L Boyd—p 521  
 Clinical Study and Review of Tonometry G Iriman—p 526

## Penicillin and Sulfadiazine in Intraocular Infection—

According to von Sallmann, *Diplococcus pneumoniae* is considered the most frequent cause of severe intraocular infections following perforating injuries. Although statistical data on the types of pneumococci in cases of endophthalmitis and panophthalmitis following various perforating injuries are not available, it is justifiable to apply to intraocular infections the figures of the incidence of the various pneumococcal types present on the normal conjunctiva, because it is assumed that the micro-organisms from the surface of the conjunctiva and cornea, drawn into the eye by the penetrating foreign body, generally become the source of infection. By injections of a dilution of a twenty-four hour broth culture into the anterior chamber of adult chinchilla rabbits a fairly well standardized infection with a typical course was obtained and used as the test object. The action of two chemotherapeutic agents, sulfadiazine and penicillin, was studied. It was found that experimental intraocular infection caused by *D. pneumoniae*, type III and type X, was not stopped or was only temporarily improved by intensive local treatment with sodium sulfadiazine combined with sulfadiazine feeding when the treatment was initiated six hours after inoculation. Severe intraocular infection caused by types III, X and VII was usually checked by local treatment with the sodium or the ammonium salt of penicillin in solutions of 0.25 per cent and 0.1 per cent even when this treatment did not start until twelve to thirteen hours after inoculation. The local applications were generally continued from two to four days. Intraocular infection caused by the injection of types III and X with simultaneous injury of the lens capsule was treated successfully with penicillin in most instances in which the treatment was started six hours after injection and continued five to six days. The iontophoretic introduction of the penicillin salt in 0.1 and 0.25 per cent solutions was occasionally more effective than the corneal bath (0.25 per cent solution) when the infection was very severe. If repeated iontophoretic applications of 0.25 per cent solution were used because of the severity of the infection, corneal damage was noticed in the form of a large abrasion, which usually healed without residual opacity after a few days. Strains of types VI, XIV, XIX and XXIII showed in vitro the same sensitivity to penicillin as the strains of types III and VII used in the infection of eyes of rabbits.

**Vitamin E in Interstitial Keratitis**—Stone used vitamin E in treating 10 patients with advanced interstitial keratitis. All had received ample antisyphilitic therapy in the past. Four had received artificial fever therapy a number of months earlier because of associated involvement of the central nervous system without its effectively influencing the course of the keratitis. Two patients were given artificial fever treatments shortly after therapy with vitamin E was begun. Vitamin E was mainly effective in hastening absorption of superficial and deep corneal exudates, it helped to relieve the associated photophobia and reduce excessive corneal vascularization and circumcorneal congestion. In extensive opacities and corneal scarring its administration for a period of months has produced a

gradual and continuous clearing of the cornea with a return of normal vision. Riboflavin when administered alone or in combination with vitamin E was effective primarily in relieving some of the photophobia and reducing the extent of circumcorneal injection and capillary proliferation. It appeared to have no effect on the rate of absorption of corneal opacities and scars. It is suggested that vitamin E combined with vitamin B complex is a most valuable adjunct in the treatment of interstitial keratitis.

## Archives of Surgery, Chicago

47 221-318 (Sept) 1943

- Carcinoid Tumors (So Called) of Ileum Report of 13 Cases in Which There Was Metastasis M B Dockerty and F S Ashburn—p 221  
 Operation for Scaphocephaly W E Dandy—p 247  
 Suppurative Anterior Mediastinitis in an Infant Following Intrasternal Blood Transfusion Operation and Recovery M M Rivitch—p 250  
 Therapy of Shock in Experimental Animals with Plasma and Serum Protein Solutions III Freezing Shock, Concentrated Plasma and Serum Therapy With and Without Amputation of Damaged Extremity E E Muirhead, L A Kregel and J M Hill—p 258  
 Frozen Shoulder, Periarthritis, Bicipital Tenosynovitis R K Lippmann—p 283  
 Progress in Orthopedic Surgery for 1942 Review Prepared by an Editorial Board of American Academy of Orthopedic Surgeons—p 297

## Arkansas Medical Society Journal, Fort Smith

40 59-84 (Sept) 1943

- Analysis of Thyroid Surgery J H Haves—p 59

40 85-102 (Oct) 1943

- Gallbladder Problem R L Sanders—p 85

## Bull of the U S Army Med Dept, Washington, D C

69 1-90 (Oct) 1943

- \*Ambulatory Treatment of Cerebral Concussion E W Shearburn and E H Mulford—p 36  
 Military Ski Fractures W E Brown Jr and M J Brown—p 42  
 Perineal Urethrostomy for Drainage of Neurological Bladders L G Lewis—p 46  
 Communicable Disease Control at Camp Grant, Illinois N C Bullock—p 49  
 Dohbie Mark Dermatitis T Fitz Hugh Jr, C S Livingood and A M Rogers—p 55  
 Dermatitis Venenata Caused by Ink from Bich Nut S P Waud and H Fein—p 59  
 Code Neurosis J Chornyak—p 61  
 Study of 1000 Cases Separated from Army on Certificate of Disability for Discharge R E Kinsey—p 64  
 Tumigation of Barracks by Sulfur Dioxide P Zancr—p 76  
 Atypical Neuralgia the Result of Impacted Teeth F E Klee—p 79  
 Use of Coliform Test in Controlling Quality of Pasteurized Milk C J Babcock—p 81  
 Inspection of Powdered Whole Milk R E Thompson—p 85

**Ambulatory Treatment of Cerebral Concussion**—Shearburn and Mulford report the results of treatment of 90 acute head injuries with cerebral concussion during a period of ninety-eight days in an evacuation hospital in Casablanca, North Africa. Unconsciousness varied from momentary to ninety-six hours, with an average of five and four tenths hours. For purposes of analyzing the early ambulation method of treatment the patients were divided into two groups. Group A includes patients on whom it was possible to utilize the method. This group contains 72 patients with head injury only or with head injury plus some other injury not requiring bed rest as a prerequisite of treatment. Group B includes cases in which it was not possible to use the early ambulatory method. The 18 cases in this group include basal skull fractures with drainage from the ears or nose and cases of head injury with concomitant injuries of the extremities or abdomen necessitating a longer period of bed rest than that required by the cerebral concussion. Other investigators pointed out that the incidence of post-traumatic intracranial hemorrhage is not increased by allowing the patient to be ambulatory soon after the return of consciousness. This observation is verified by their cases. The incidence of postconcussion symptoms appears to have been greatly reduced by early ambulation. The authors suggest that early ambulation may be the method of choice for treating such cases.

## Connecticut State Medical Journal, Hartford

7 677-736 (Oct.) 1943

- Clinical Epidemiology of Poliomyelitis H A Wenner—p 679  
Mental Manifestations in Cardiovascular Disease E Kohn—p 683  
Reduction of Fractures R M Yergason—p 686  
Relationship Between Referring Physician and Mental Hospital D J MacPherson—p 689  
Cord Tumor B B Whitcomb—p 693  
Management of Neurologic Syphilis in General Hospital by Malaria Inoculation T P Murdock and D J Cohen—p 697

## Gastroenterology, Baltimore

1 821-910 (Sept.) 1943

- Esophageal Pain H J Moersch and J R Miller—p 821  
Nutritional Standards for Men in Tropical Climates R E Johnson—p 832  
Problems in Gastric Diagnosis Gastroscopy as Supplementary Aid to X-Ray Examination A L Cohn and J Levitt—p 841  
Studies of Urobilinogen II Quantitative Urobilinogen Determinations in Differential Diagnosis of Jaundice F Steigmann and Josephine M Dyniewicz—p 855  
Studies in Old Age VII Intestinal Absorption in Old Age J Meyer Harriet Sorter J Oliver and H Necheles—p 876  
Gastric Excretion of Sulfonamide Drugs I H Einsel E N Nixon L Gitman and J M Rogoff—p 882

## Journal of Clinical Investigation, Boston

22 635-762 (Sept.) 1943

- Role of Extracellular Fluid in Maintenance of Normal Plasma Volume J V Warren A J Merrill and E A Stead Jr—p 635  
Concentration of Vitamin A in Blood Plasma During Pregnancy O Bodansky J M Lewis and M C C Lillienfeld—p 643  
\*Penicillin Its Antibacterial Effect in Whole Blood and Serum for Hemolytic Streptococcus and Staphylococcus Aureus C H Rammelkamp and C S Keefer—p 649  
Observations on Urinary Excretion of Sulfadiazine O L Peterson R A Goodwin Jr and M Inland—p 659  
Estimation and Control of Postoperative Dehydration with Aid of Hemoglobin and Plasma Protein Determinations B W Seaman and E Ponder—p 673  
Systemic and Renal Circulatory Changes Following Administration of Adrenin Ephedrine and Paredrinol to Normal Man H A Ranges and S E Bradley—p 687  
Chloride Metabolism and Plasma Amino Acid Levels in Primary Atypical Pneumonia K Emerson Jr E C Curnen G S Mirick and J E Ziegler Jr—p 695  
Effect of Atropine on Absorption of Vitamin A F J Ingelfinger R E Moss and J D Helm Jr—p 699  
Interrelations of Serum Lipids J P Peters and Evelyn B Man—p 707  
\*Arteriolar Lesions in Hypertension Study of 350 Consecutive Cases Treated Surgically Estimation of Prognostic Value of Muscle Biopsy P P Foa Naomi L Foa and M M Peet—p 727  
Studies in Cancer VII Enzyme Deficiency in Human and Experimental Cancer R C Roskelley Nelicia Mayer B N Horwitz and W T Salter—p 743  
Binding of Sulfonamide Drugs by Plasma Proteins Factor in Determining Distribution of Drugs in Body B D Davis—p 753

**Antistaphylococcic and Antistreptococcic Action of Penicillin**—The action of penicillin against Streptococcus hemolyticus and Staphylococcus aureus was studied by Rammelkamp and Keefer using whole defibrinated blood and serum. Whereas normal serum containing no penicillin presented no bactericidal action, whole blood had a slight antibacterial action, owing to the presence of phagocytic cells. Addition of 0.3 Florey unit of penicillin per cubic centimeter of whole blood resulted in a striking increase in the bactericidal action. This effect was not dependent on phagocytosis since a similar action was observed in the serum on addition of the same amount of penicillin. The blood and serum withdrawn from normal subjects injected with 20,000 Florey units of penicillin exhibited a definite bactericidal and bacteriostatic effect against staphylococci and streptococci. The degree of antibacterial action observed in whole blood after the administration of penicillin was directly related to its concentration in the serum. As the concentration increased there was a rapid rise in the bactericidal power of the blood. Maximal action against Streptococcus hemolyticus was produced by concentrations of 0.019 to 0.156 Florey units per cubic centimeter of serum. Against Staphylococcus aureus maximal bactericidal effect was exhibited by concentrations of at least 0.156 unit per cubic centimeter. The antistaphylococcic and antistreptococcic effect produced by adding or injecting sulfathiazole and sulfadiazine was compared

to that of penicillin. The observations showed that both in vitro and in vivo the antistreptococcic action of whole blood containing only 0.07 unit of penicillin per cubic centimeter of serum is much greater than that of whole blood containing 5.1 mg of sulfadiazine per hundred cubic centimeters of blood. Against Staphylococcus aureus sulfadiazine exhibited only a slight bacteriostatic effect at concentration of 5.1 mg per hundred cubic centimeters, while pronounced antibacterial effect was observed by penicillin at concentration of 0.039 unit per cubic centimeter of serum.

**Arteriolar Lesion in Hypertension**—In order to obtain data of prognostic value for the results of supradiaphragmatic splanchnicectomy in hypertensive patients, the Foa and Peet measured in biopsy material the ratio of the thickness of the wall to the diameter of the lumen (W/L) of the arterioles of skeletal muscles. Three hundred and fifty cases of arterial hypertension were studied. All patients were submitted to supradiaphragmatic splanchnicectomy and lower dorsal sympathetic ganglionectomy and followed from nine months to seven years after the operation. The degree of thickening of the arteriolar wall was statistically compared to the severity of other signs and symptoms and to the therapeutic results. A significant correlation was found between increase in W/L ratio and evidences of damage to the vascular system such as elevation of the blood pressure and vascular changes in the eyegrounds. As a rule patients with greater degree of arteriosclerosis also exhibited more severe cardiac and renal symptoms. There was also a definite correlation between the W/L ratio and the therapeutic results measured by reduction of blood pressure, improvements in vascular lesions of the eyegrounds, improvement in renal and cardiac functions and mortality rate. The percentage of patients improved was much higher among those with a low ratio and lower among those with a high ratio. The results are in agreement with the hypothesis that the surgical treatment of hypertension used gives better results when hypertension is due to a spasm of the arterioles or to a mild reversible degree of hypertrophy of the muscle fibers in the tunica media and not when severe, permanent anatomic lesions have transformed the majority of the arterioles into rigid and narrow tubes.

## Journal of Immunology, Baltimore

47 181-282 (Sept.) 1943 Partial Index

- Immunochemical Studies on Human Serum I Human Complement and Its Components E E Licker L Pillemer and S Seifter—p 181  
Detection of Virus of Mouse Encephalomyelitis in Intestines of Normal Kangaroo Rats J L Melnick—p 231  
Histamine Protein Complexes Synthesis and Immunologic Investigation I Histamine Azoprotein N Fell Gertrude Rodney and D E Marshall—p 237  
Isolation and Characterization of Influenza A Virus (PR8 Strain) A R Taylor D G Sharp Dorothy Beard J W Beard J H Dingle and A E Feller—p 261

## Journal of Lab and Clinical Medicine, St Louis

28 1415-1534 (Sept.) 1943

- Blood Pressure Fluctuations in Bronchial Asthma II Effect of Epinephrine and Aminophylline H Osgood and F E Chret—p 1415  
Poller Surveys in United States Critical Review P M Gottlieb and E Urbach—p 1426  
Relation of Length of Carbon Chain to Primary and Functional Toxicities of Alcohols H Welch and G G Slocum—p 1440  
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Treatment of Experimentally Induced Type I Pneumococcus Pneumonia in Albino Rats Comparative Study of Therapeutic Efficiency of Various Sulfonamides and Specific Rabbit Antipneumococcus Serum and Combinations of Two F H Loughlin R H Bennett Mary E. Flanagan and S H Spitz—p 1455  
Simultaneous Performance of Weltmann Serum Coagulation Test Certain Flocculation Test and Modified Takata Ara Reaction as Aid in Differential Diagnosis of Liver Disease M Wachstein—p 1462  
Preparation and Properties of Dry Powdered Mixture of Sulfanilamide and Hemostatic Globulin I A Parfentjev Mary A Coolidge and F L Clapp—p 1466



**Journal of the Mount Sinai Hospital, New York**

10 389-454 (Sept-Oct) 1943

- Bela Schick Lecture Choice of Time and Type of Operation in Surgery of Early Life W E Ladd—p 389
- Case of Neurofibromatosis in Child 5½ Years of Age Bela Schick—p 399
- Excision of Teratoma of Anterior Mediastinum H Neuhoof—p 402
- Cervicomedisternal Lymphangioma (Cystic Hygroma) Report of 2 Cases in Infants E L Arnheim—p 404
- Adenoma of Bronchus H Hemmell—p 411
- Servicothoracic Neurofibromatosis Case G J Guindes—p 414
- Huge Ganglioneuroma of Mediastinum C B Rabin—p 420
- Transitional Cell Carcinoma of Thymus in Child Follow Up Report A H Aufses—p 423
- Neuroblastoma of Mediastinum F Bridge—p 426
- Metastatic Carcinoma of Lung A L Florman—p 429

**Journal of Nat Cancer Inst, Washington, D C**

4 1-130 (Aug) 1943 Partial Index

- Adaptation of Transparent Chamber Technic to Mouse G H Algire—p 1
- Estimation of Growth Rates of Tumors H F Blum—p 21
- Morphology and Growth of Subcutaneous Tumors Induced with Carcinogenic Hydrocarbons in Strain C-H Male Mice M B Shumkin and W R Bryan—p 25
- Ultracentrifugal Studies of Some Complexes Obtained from Mouse Milk, Mammary Tumor and Other Tissues H Kahler and W R Bryan, with technical assistance of H M Sipe—p 37
- Method for Quantitative Morphologic Analysis of Tissues H W Chalkley—p 47
- Depolymerases for Yeast and for Thymus Nucleic Acids in Normal and Neoplastic Tissues J P Greenstein—p 55
- Colloid Osmotic Pressure of Serums of Rats Bearing Transplanted Jensen Sarcoma J P Greenstein and J W Thompson—p 63
- Serologic and Anaphylactic Reactions of Catepsins of Normal and Neoplastic Tissues Mary E Miver and M K Barrett—p 65
- Accuracy and Reproducibility in Induction of Tumors with Ultraviolet Radiation H F Blum—p 75
- Chemical Treatment of Tumors V Isolation of Hemorrhage Producing Fraction from *Serratia Marcescens* (Bacillus Prodigiosus) Culture Filtrate M J Shear and F C Turner, with technical assistance of A Perrault and Theresa Shovelton—p 81

**Journal of Nutrition, Philadelphia**

26 219-326 (Sept) 1943 Partial Index

- Effect of Cooking With and Without Sodium Bicarbonate on Thiamine, Riboflavin and Ascorbic Acid Content of Peas Cornelia H Johnston, Louise Schauer, S Rapaport and H J Deuel Jr—p 227
- \*B Vitamins in Honey G Kitzes, H A Schuette and C A Elvehjem—p 241
- Influence of Thiamine Intake of Pig on Thiamine Content of Pork with Observations on Riboflavin Content of Pork R C Miller, J W Pence, R A Dutcher, P T Ziegler and M A McCarty—p 261
- Dietary Requirements for Fertility and Lactation XXXI Further Studies on Role of P-Aminobenzoic Acid and Inositol in Lactation and Growth of Albino Rat B Sure—p 275
- Pantothenic Acid Requirement of Hens Fed a Hearted Diet M B Gillis, G F Heuser and L C Norris—p 285
- Inadequacy of Eight Synthetic B Vitamins for Nutrition of Puppies—Unknown Factor (Factors) in Yeast and Probably Liver J P Lambooy and E S Nasset—p 293
- Anticardiac Potency of Seed Oils D S Anthony, F W Quackenbush, A Ihde and H Steenbock—p 303
- Effect of Commercial Clarification of Vitamin Content of Honey M H Haydock, L S Palmer, M C Tanquary and A E Vivino—p 319

**B Vitamins in Honey**—Kitzes and his collaborators state that microchemical and microbiologic determinations showed the presence in honey of thiamine, riboflavin, nicotinic acid, pantothenic acid, pyridoxine, biotin and folic acid. The variation among samples was very large, owing perhaps to the source of the honey and the number of pollen grains present. Comparison of new and aged honeys revealed a decrease in the pantothenic acid content of the latter.

**Kentucky Medical Journal, Bowling Green**

41 329-364 (Oct) 1943

- Benign Tumors of Stomach S T Simmons and F D Coleman—p 338
- Some Obstetric and Gynecologic Observations T A Griffith—p 344
- Schizophrenic and Organic Reaction Type of Psychoses I Kimbell—p 346
- Report of Eighty Cases of Meningitis from Medical Service of Station Hospital Nashville Army Air Center, Nashville, Tennessee A C McCarty and G L Infield—p 348
- Hypernephroma with Metastases S E Johnson and V Stahle—p 351
- Tumor of Lower Lumbar Spine C Wood and E L Shifflett—p 352
- Termination of Pernicious Vomiting of Pregnancy by Dilatation of Cervix W P McKee and G E McMunn—p 354

**Michigan State Medical Society Journal, Lansing**

42 797-848 (Oct) 1943

- Skin in Endocrinology C J Marinus—p 797
- Place of Hormone Assays in Clinical Medicine G M Riley—p 803
- Hypersensitivity Neglected Phase of Allergy C F Brunk—p 808
- Intracapsular Cataract Extraction, with Modification of Dimitry's Suction Syringe J C Gemberoy—p 812
- Vaccine Therapy in Treatment of Uveitis H A Dunlap—p 815
- Significance and Management of Joint Pain C J Smyth and R H Freyberg—p 818
- Early Unfavorable Responses to Sulfonamide Derivatives on Second Administration L M Follers—p 823

**New York State Journal of Medicine, New York**

43 1567-1678 (Sept 1) 1943

- Physiology of Shock and of Blood Substitutes H Necheles—p 1601
- Laboratory Aspects of Preparation and Biologic Control of Plasma A Milzer—p 1606
- Principles and Methods of Desiccation of Plasma F Oppenheimer—p 1611
- Clinical Application of Plasma S O Levinson—p 1615
- Bilateral Blindness Due to Lesions in Both Occipital Lobes Report of 6 Cases, 4 with Necropsy H A Riley, J C Yaskin, M E Riggs and A S Torney—p 1619
- Significance of Increased Menstrual Bleeding in Women over Forty C L Randall—p 1635

43 1679-1790 (Sept 15) 1943

- Occupational Acne L Schwartz and S M Peck—p 1711
- Early Diagnosis of Carcinoma of Colon B B Crohn—p 1719
- Diagnostic and Therapeutic Value of X Rays in Carcinoma of Colon E C Koenig and G J Culver—p 1723
- Carcinoma of Large Bowel F F McGauley—p 1727
- Peritonitis Secondary to Perforation in Carcinoma of Colon P D Allen—p 1732
- Certain Aspects of Present Day Typhoid Epidemiology A D Rubenstein—p 1736
- Original Studies on Internal Dynamics of Intracapsular Cataract Extraction J Goldsmith—p 1739
- Resistance to Cure in Psychotherapy L R Wolberg—p 1751

**North Carolina Medical Journal, Winston-Salem**

4 365-422 (Sept) 1943

- One Stage Combined Abdominoperineal Resection Problems Concerned with Selecting Patients and Performing Operation C W Mayo—p 365
- Certain Harmful Effects of the Sulfonamide Drugs J P Hendrix—p 371
- Histoplasmosis Report of Case in North Carolina W C Thomas and R P Morehead—p 378
- Operative Treatment of Fracture of Patella L D Baker and H J Schaubel—p 382
- Therapy in Older Patients W M Johnson—p 385

**Oklahoma State Medical Assn Jour, Oklahoma City**

36 369-414 (Sept) 1943

- Naval Medicine L B Marshall—p 369
- Trichomonas Vaginalis K J Wilson—p 372
- Transmission of Diseases by Blood Transfusions A R Wiley—p 374
- Etiology of Malignant Neutropenia W H Gordon—p 376
- Verumontanitis Application of Sex Hormones R H Afari—p 381
- Review of Management of Late Syphilis C P Bondurant—p 382

**Pennsylvania Medical Journal, Harrisburg**

46 1249-1408 (Sept) 1943

- Carcinoma of Right and Left Colon, Including Rectum T A Shallow and B F Haskell—p 1263
- \*Infusions Via Bone Marrow in Children L M Tocantins, A H Price and J F O'Neill—p 1267
- Review of Superior Hypogastric Sympathectomies Over Period of Ten Years T K Reeves and G S Lipman—p 1274
- Minor Roentgen Therapy S J Hawley—p 1278
- Blood Gonadotropic Determinations in Relation to Toxemia of Pregnancy H M Cohen, D A Wilson and W F Brennan—p 1282
- Systemic Symptoms in Peptic Ulcer and Biliary Tract Disease M E Rehfuess—p 1286
- Wilms' Tumor W I Daw—p 1293
- Operative Treatment of Prolapse of Uterus, with End Results S A Chalfant and G R Wilson—p 1296

**Infusions Via Bone Marrow in Children**—Tocantins and his associates state that the upper third of the tibia and the lower third of the femur are the sites of choice for intramedullary infusions in infants. All infusions in their cases were made through these sites. Under no circumstances should the sternum be used in infants 3 years of age or less. The bony landmarks should be outlined before deciding on the site of the insertion of the needle. Little pressure is generally required to insert the needle into the bone of infants. The rate of injection should be slow. No material should be injected until marrow is

obtained by aspiration, but the quantity of marrow aspirated should be only about 0.1 cc or less. The ages of the children in whom the authors performed infusion via bone marrow varied between 2 days and 5 years. Forty of the group of 52 are still living. With one exception there have been no reactions following the infusion. The exception was the appearance of a superficial pustule at the point of entrance of the needle in an infant three days after an infusion through the lower portion of the femur. It was found that the dressing applied over the puncture wound had been kicked away and fecal matter smeared over the area. The pustule was incised, and it healed without complications. Roentgen ray examination of the underlying bone revealed no change. Although no complication such as osteomyelitis has been found, it is reasonable to expect that it may take place if aseptic precautions are not rigidly followed. Bleeding promptly ceased following the transfusion of blood through the marrow of the tibia in a hemophilic child. Physiologic or near physiologic solutions (citrate blood, plasma, isotonic solution of sodium chloride and 5 per cent dextrose solution) have been the only fluids used in this group. It seems desirable to avoid the use of hypertonic solutions by this route, in view of their possible sclerosing effect on adjacent marrow.

### Southwestern Medicine, Phoenix, Ariz

27 185-210 (Aug) 1943

- Penicillin Historically Considered C E Yount—p 189  
Early Treatment of Compound Fractures R G Packard—p 194  
Results of Thoracoplasty (Five and Ten Year Review) V S Randolph—p 199

### Surgery, Gynecology and Obstetrics, Chicago

77 337-448 (Oct) 1943

- \*Studies on Therapy of Hemorrhagic Shock I Effects of Iso Osmotic and of Concentrated Serum and Plasma in Normal Dogs H Necheles S O Levinson Martha Janota R E Weston and V Weissman—p 337  
New Operative Approach to Knee Joint K Coonse and J D Adams—p 344  
Study of Smaller Blood Vessels in Burned Dogs and Cats R G Abell and I H Page—p 348  
Atraumatic Amputation Through Lower Thigh Experiences with Its Use in Peripheral Vascular Disease F Pearl and M Misrack—p 354  
Fractures of Zygoma Report of 72 Consecutive Cases W A Coakley and M F White—p 360  
\*Sulfanilamide Ointment Treatment of Severe Burns E I Evans and M J Hoover—p 367  
Wound Healing—Experimental and Statistical Study IV Results S A Localio W Casale and J W Hinton—p 376  
Reasons Why Orthodox Is Better Than Kenny Treatment of Poliomyelitis J A Key—p 389  
\*Novocain Injection for Minor Injuries in Military Service F C Murphy and R W Postlethwait—p 397  
Effects of Rapid Compression Waves on Animals Submerged in Water S L Clark and J W Ward—p 403  
Osteogenic Sarcoma I Modified Nomenclature and Review of 118 Five Year Cures I MacDonald and J W Budd—p 413  
Gastrostomy for Retrograde Esophageal Dilatation Leak Proof Dressing and Method of Concealing String J J Pressman—p 421  
Arterial Blood Supply of Pancreas J M Pierson—p 426  
Effect of Estrogenic Substance on Uterine Motility During Labor Study of 42 Patients with Lórand Tocograph D P Murphy—p 433

**Iso-Osmotic and Concentrated Serum and Plasma in Hemorrhagic Shock**—Necheles and his collaborators demonstrate that iso osmotic plasma protein solutions are more effective in the treatment of posthemorrhagic shock in normal dogs than are concentrated solutions. The relative clinical improvement restoration of blood pressure and plasma volume, ability to tolerate further blood loss and survival times strikingly demonstrate the superiority of iso osmotic over concentrated material. The assumption underlying the use of four times concentrated plasma protein solutions in the treatment of shock has been that these solutions can increase the plasma volume as efficiently as larger amounts of iso osmotic plasma or serum by elevating the intravascular osmotic pressure and thereby withdrawing fluid from the extravascular tissue spaces. However when there has been considerable external hemorrhage the extravascular reserves are greatly depleted as fluid shifts into the circulation in the early physiologic compensations for the blood lost from the body. Consequently in many of the normally hydrated animals which received the four times concentrated material the plasma volume recovery was poor in comparison with that of the animals which received comparable

amounts of protein but additional fluid in the iso osmotic material. It is to be expected that the treatment of hemorrhagic shock with such concentrated solutions would be even less effective in animals which have been dehydrated by the withholding of water before the experimental hemorrhages.

**Sulfanilamide Ointment Treatment of Burns**—Evans and Hoover outline a method of local treatment of burns, which they employed in 126 cases. What they have to say regarding sulfonamide ointments in burns applies only to ointments with a fatty base, because in comparative studies on the relative absorption of sulfonamides from a fatty or water dispersible base they found that dangerously high blood levels of sulfonamides resulted when a water dispersible base was employed. The ointment used was made from equal parts of sterile hydrous wool fat and cold cream to which was added sterile sulfanilamide powder to a 6 per cent concentration by weight. Sulfanilamide, rather than sulfathiazole or sulfadiazine, has been used because sulfanilamide results in less severe unfavorable reaction than do the other two sulfonamides. When the burned areas are thoroughly cleansed and debrided, a liberal quantity of the oil base sulfanilamide ointment is applied to all burned areas. Almost as soon as the burned surface is covered with sulfanilamide ointment the patient is relatively free from pain. Other local anesthetic agents are unnecessary. Sterile surgical compresses are placed over the ointment. Next a pressure dressing is applied, but not too much pressure should be exerted lest nerve injury result. The patient is put to bed on sterile sheets and proper splinting of the extremities is carried out. If a burn is seen late or is infected, warm continuous saline compresses are placed at once on the burned areas, and these are used until the burned areas are surgically clean. If the infection is severe, sulfathiazole is given by mouth and sulfanilamide powder is used locally.

### Procaine Hydrochloride Injection for Minor Injuries

—Murphy and Postlethwait treated 100 cases of minor injuries by injecting procaine hydrochloride into the injured part as suggested by Leriche. The most tender points are identified with finger pressure and are marked with gentian violet, and the skin is prepared with tincture of mercuriolate or iodine. A wheal is raised with 1 per cent procaine hydrochloride at the points marked with gentian violet. If a hematoma can be found and injected, an excellent result may be expected. When no hematoma can be located, the area in general is infiltrated and is lightly massaged to aid in diffusion. Active motion of the part is insisted on. If the joint involved is a weight bearing joint, an adhesive strapping or tight bandage is applied to encourage absorption of edema fluid and to protect the joint from further injury. The most commonly treated injuries and also the most responsive to the therapy were sprains of the ankle. Rarely was more than the initial treatment necessary except in knee and back injuries. If favorable results are not obtained after two or three injections, further injection is not indicated. Procaine hydrochloride injection decreases the period of disability adds greatly to the comfort of the patient and permits an early return to normal activity.

### Western J Surg, Obst & Gynecology, Portland, Ore

51 349-388 (Sept) 1943

- \*Massive Breast Hypertrophy in Adolescence Notable Case G A Fisher G C Schaeffler C E Gurney and G H Bendshadler—p 349  
Twenty Nine Years Experience with Cesarean Section E M Lazard—p 356  
Present Status of Tetanus Prophylaxis P Campiche—p 359  
Postoperative Intestinal Distention H S Horton—p 368  
Recurrent Placenta Previa P H Fried—p 377

**Massive Breast Hypertrophy in Adolescence**—The subject of the report by Fisher and his collaborators was a girl aged 11 whose breasts within a period of seven months began and completed a development to a total of 35 pounds (16 kg). Each breast weighed 17½ pounds (8 kg). Notable factors in this case were (a) the speed with which the condition developed (b) the failure of endocrine therapy (c) the absence of irregularity in the development of other sex characters or in fact in any other department of normal growth and (d) the necessity for and the success of complete surgical removal of both breasts.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Radiology, London

16 255-286 (Sept) 1943

- "Stress" or "Fatigue" Fractures of Bone J B Hawley —p 255  
Physical Aspects of Intracavitary Radium Treatment of Carcinoma of Cervix Uteri G J Nery —p 263  
Kymography and Its Application to Esophageal Movement J W McLaren —p 270  
Simplified Method of Studying Volume Dose Distribution E M Ungar —p 274  
Subpubic Angle Radiologic Aspects E P Allen —p 279  
Radiographic Findings in Idiopathic Steatorrhea J F Brailsford —p 283

## Journal of Royal Naval Medical Service, London

29 83-152 (April) 1943

- Painful Foot J M J Jens —p 90  
Amnesia G V Stephenson —p 97  
Loss of Memory H Scott Forbes —p 100  
Late Complications of Abdominal Wounds F Stabler —p 103  
Skin Diseases on Ships I Whittington —p 108  
Prevention of Unnecessary Casualties in Wartime Medical Officer —p 110  
Gingivostomatitis, with Special Reference to Vincent's Gingivitis J Cuthbert and F R P Williams —p 115  
Use of Plaster of Paris in First Aid or Emergency Treatment A I L Mastrand —p 122  
Vaccination Critical Study of Intradermal Method E R Peirce and H Willoughby —p 125  
Electric Shock Therapy G A Betts —p 127

## Medical Journal of Australia, Sydney

2 121-140 (Aug 15) 1943

- Oxygen Lack and Carbon Monoxide D H LeMessurier —p 121  
Temperature Hazard and Protection R D Wright —p 122  
Muscle Balance and Its Importance in Selection of Air Crew T a'B Travers —p 123  
Prevention of Psychiatric Disorders in Flying Personnel D F Buckle —p 124  
Occupational Conditions of Ear and Nose in Airmen N E H Fox —p 126  
Problems of Acceleration W J Simmonds —p 127

2 141-160 (Aug 21) 1943

- Head Injuries K B Noad —p 141  
Radiography of Head Injuries E W Trecker —p 144  
Neurosurgical Sequelae of Head Injuries W L Reid —p 146  
Cerebral Concussion G Phillips —p 148

## Proceedings of Royal Society of Medicine, London

36 503-572 (Aug) 1943 Partial Index

- \*Scottish Diphtheria Immunization Campaign (1941 to 1942) A Russell —p 503  
Electromyography in Clinical Medicine G Weddell —p 513  
Phases of Maturation, Fertilization and Early Development in Man W J Hamilton, Gladys H Dodds and Josephine Barnes —p 525  
Some Recent Work on Investigation and Treatment of Meniere's Disease T E Cawthorne and C S Hallpike —p 533  
Chest Clinician's Viewpoint of Radiographs of Chest G S Todd —p 565

**Scottish Diphtheria Immunization Campaign (1941 to 1942)**—According to Russell, Scottish children were unprotected against diphtheria at the end of 1940, except for a small percentage and the country was experiencing a widespread epidemic. The immunization effort began only when the epidemic was approaching its peak. The immunization campaign has achieved a considerable degree of success, approximately 800,000 children having been inoculated. In Scotland diphtheria is at present much more an urban than a rural health problem. The gravis type of *Corynebacterium diphtheriae* is now the predominant type throughout a considerable part of the country. A definite increase in the incidence of diphtheria in the over 15 years group has taken place within the past three years. The diphtheria mortality figures for the past twelve months are much lower than any previously recorded in Scotland. A comparison of the diphtheria cases and deaths recorded in the nonimmunized and in the immunized groups of the population indicates that the chances of attack and death among the former are much higher than among the latter. On the average, with present diphtheria immunization methods a child is not so effectively protected against attack as against death.

## Prensa Médica, Argentina, Buenos Aires

30 1169-1214 (June 30) 1943 Partial Index

- \*Tumoral Form of Pulmonary Mycosis R Denis, A P Heudtlass and J A Martí —p 1189  
Infantile Paralysis D Vivoli —p 1199  
Surgery of Biliary Ducts A N Canonico —p 1201

**Neoplastic Form of Pulmonary Mycosis**—Denis and his collaborators report the clinical history of a patient who for seven years presented periodic hemoptysis as the only complaint. The x-ray examination of the lungs showed a round shadow with air in the upper part located in the infraclavicular area of the left lung. Bacteriologic examination of the sputum revealed the presence of *Aspergillus fumigatus*. The intradermic test with trichophytin was intensely positive. Relief of hemoptysis followed iodine treatment. As far as the authors know, this is the second case in the literature of the neoplastic form of pulmonary mycosis.

## Revista de la Asoc Méd Argentina, Buenos Aires

57 219-280 (May 15-30) 1943 Partial Index

- \*Arterial Hypertension in Pregnancy Magnesium Sulfate Therapy D E Nörling and O M Althabe —p 245  
Azosulfamide and Tannic Acid in Burns A Giuliano —p 254

**Arterial Hypertension in Pregnant Women**—Nörling and Althabe administered magnesium sulfate to 65 pregnant women with arterial hypertension. The drug was given once or twice a day intravenously in doses of from 1 to 3 cc of a 50 per cent solution in 10 or 20 cc of hypertonic dextrose solution, or intramuscularly in doses of from 5 to 10 cc of a 25 per cent solution. Physical and mental rest, sedatives and a proper diet were maintained at the same time. The results were favorable in 5 out of 8 patients with intercurrent eclampsia, in 17 out of 34 patients with preeclampsia, in 8 out of 13 instances of essential hypertension and in 5 out of 6 cases of vascular or renal disease. The blood pressure of these patients came down to normal or almost normal levels. In the remaining patients the results were either mediocre or nil. Diuresis increased in all of the patients, headache and edema diminished and the renal symptoms were improved. The treatment was given continuously up to the onset of labor. After its discontinuation for a short time a rise in the blood pressure took place and indicated resumption of the treatment. The drug is contraindicated in cardiac insufficiency of pregnant women. Otherwise it is harmless for the mother and for the fetus.

## Semana Médica, Buenos Aires

50 157-216 (July 22) 1943 Partial Index

- \*Roentgen Therapy of Leukemia A Lemos Ibañez —p 157  
Early Puberty Sara Schnitman and R Pesino —p 172  
Rational Treatment of Infected Wounds R Galbati —p 189

**Roentgen Therapy of Leukemia**—Lemos Ibañez employed roentgen therapy in 23 cases of chronic leukemia and in 2 cases of acute leukemia. The dose of irradiations for the spleen was 100 roentgens for adolescents and 200 roentgens for adults. A similar dose was used in irradiating the lymph nodes and the bones. Irradiations were given two or three times weekly until the leukocytes were lowered to 15,000 or 20,000. Irradiation courses were repeated every two or three months. The irradiations were discontinued at any time if acute symptoms such as high fever, hemorrhage, cardiac or renal insufficiency or infection appeared. A progressive diminution of the erythrocytes was regarded as an indication for a temporary discontinuation of roentgen irradiation and for repeated blood transfusions, arsenicals, liver, iron and vitamin therapy. Teleroentgenotherapy was practiced on patients whose blood became radio-resistant after a series of local treatments. The teleroentgen treatments were given twice weekly in doses of 10 or 15 roentgens for each treatment. The results were good in cases of chronic leukemia, either myeloid or lymphatic. An apparent clinical cure followed each series of roentgen treatments although the response on the part of the blood was slower and less complete as the disease progressed to its fatal issue. The average prolongation of life was three to four years. Roentgen therapy is contraindicated in acute leukemia. It is contraindicated also in myeloid metaplasia of the spleen compensating for aplasia of the bone marrow.

## Book Notices

**Life Is Too Short An Autobiography** By C Kay Scott (Frederick Creighton Wellman) Cloth Price \$3.50 Pp 348 Philadelphia & New York J B Lippincott Company 1943

**A Surgeon's World An Autobiography** By Max Thorek M D Cloth Price \$3.75 Pp 410 Philadelphia & New York J B Lippincott Company 1943

During the last few years there has been a veritable plethora of biographies and autobiographies of physicians, more it would seem than the reading public could easily absorb. Nevertheless the lives of some are so replete with unusual incident, so gregarious in their multiple associations with personalities of importance so extraordinary because of difficulties overcome, that they have the quality of romance.

C Kay-Scott, who feels that 'Life Is Too Short,' had a remarkable career as a medical missionary in Africa, a dean of two schools of tropical medicine, an auditor for the Singer Sewing Machine Company in Brazil, a mining engineer in the manganese mines, an entomologist, a novelist, a painter and a financier. He had also multiple marriages and no doubt innumerable other romantic interludes. His ability to tell the story is somewhat inhibited by a tendency to assume on the part of the reader an interest in erudite affairs of science similar to his own and by a failure frequently to interpret terminology which has interest only for the scientist. His book has however, much of journalistic value, he deals with times and men and places that are familiar to those of the medical world.

The amazing aspect of the career of Creighton Wellman is the remarkable success that he achieved in a variety of vocations. He made a living for himself and for his family as a physician, as a teacher, as a businessman, as an engineer, as a writer and as a painter—and in one occupation at a time. The success that he achieved was of a high order although obviously not of the highest order. Reference, however to his many pamphlets and literary contributions is to be found in many a scientific work. Under the name of Creighton Wellman as a scientist he appeared in volume 17 of 'Who's Who in America,' and under the name of Cyril Kay-Scott with the pseudonym of Frederic Creighton, he appeared as an artist in volume 17 of 'Who's Who in America.' Thus he achieved at least this modicum of fame in two different professions.

The versatility as shown by his innumerable careers and his philosophy of life as exemplified in the biographies make him a subject of considerable interest to all those who enjoy reading autobiography. His book has in it much that will interest even the casual reader and certainly much to attract the medical reader.

The career of Max Thorek as told in his autobiography has in it also somewhat of variety, beginning with 'Birth Abroad,' proceeding to Education in the United States (largely financed by the avocation of musician) next moving through the period of internship into a career as a surgeon and an avocation as a photographer in which he has risen to great fame. The very special character of the practice of Dr Thorek brought him into contact with people in the field of the theater, with Frederick Cook the explorer, with musicians and with the underprivileged. He has had special interest in writing so that several successful works in the field of surgery bear his name.

Outstanding in the life of Dr Thorek is his sense of drama and a flair for the unusual. His research is devoted largely to such problems as those of rejuvenation and reactivation in the field of male sexuality, to plastic surgery of the breast to electrical coagulation in the removal of the gallbladder. He traveled widely principally however as a means of further education in order that he might meet men who had done work in these fields abroad.

One is impressed most however in reading this autobiography with a feeling that the author is in a state of continuous wonderment at the success that has come to one who rose from the depths and who has had constantly to fight his way upward. Whether or not such conflict was the inevitable concomitant of

the nature of the author's career, so that the difficulties were somewhat his own in their origin, is a question that each reader will have to determine for himself.

Written obviously for the public rather than for the strictly medical reader, there is much in the book from a medical point of view that will be better understood by the physician than by the lay reader. In the course of his autobiography Dr Thorek philosophizes on the glands, euthanasia, whether to tell or not to tell the patient, the standards of medical education and of surgery in the United States and many similar subjects. The writing is florid. The author seldom uses the simple word when the larger one comes to his mind. The so-called oatmeal poultice of aluminum potassium nitrate as a means of treatment of osteomyelitis developed by La Porte had a brief day in medical literature and is now gone. The Steinach operation for reactivation and Voronoff's transplants have never achieved medical respectability. The general medical attitude toward cosmetic plastic surgery is still hesitant and the exact place occupied today by the International College of Surgeons is not yet clear. In any event, there still prevails an attitude of suspicion and doubt by the International Society of Surgery in relationship to the International College.

In 'Who's Who in America' appears also the biography of Dr Thorek with the bare skeleton of his life. His autobiography makes that skeleton come alive. It indicates success in surgery if recognition by medical organization here and abroad and successful authorship in surgery are a true measure of such accomplishment. The story is worth reading.

**Advances in Internal Medicine Volume I** Edited by J Murray Steele M D Welfare Hospital New York University Division Welfare Island N Y and others Cloth Price \$4.50 Pp 292 with illustrations New York Interscience Publishers Inc 1942

The subjects considered in this volume include the use of the Miller-Abbott tube in disorders of the gastrointestinal tract, the use of insulin and protamine zinc insulin in diabetes, several chapters on the sulfonamides, chapters on influenza, hypertension, nephrosis and riboflavin deficiency. The various chapters constitute essentially reviews of the currently available literature on the subject prepared in each instance by men whose names are familiar as leaders in the fields concerned. Thus Keefer is responsible for one of the chapters on the sulfonamides and Irvine Page for the chapter on hypertension. Research has been so active in these subjects that almost every chapter could stand a few additional paragraphs at this time. However for those who wish to bring themselves reasonably well up to date on the subjects concerned the book will be exceedingly useful.

**Primer of Allergy A Guidebook for Those Who Must Find Their Way Through the Mazes of This Strange and Tantalizing State** By Warren T Vaughan M D Second edition Cloth Price \$1.75 Pp 176 with illustrations by John P Tillery St Louis C V Mosby Company 1943

Dr Vaughan's contributions to the literature of allergy are widely circulated. This little handbook will be most useful to any patient who suffers more or less with the symptoms of sensitization to foods or other substances. The illustrations which include a number of excellent cartoons by Webster and the humor of the text make it among the most readable of all the available books in the field concerned. There are tables of questions and answers which are most useful in replying to the many problems that arise so frequently in the practice of doctors who care for these patients. Notwithstanding the effort of the articles to simplify these explanations the book will mean little to those who have not had a reasonably good general education.

**Shipboard Medical Practice A Handbook of Ship Sanitation and Emergency Medical Aid at Sea** By W L Wheeler Jr M D Medical Director Grace Line Inc Fairchild Price \$1.10 Pp 114 with 14 illustrations New York Cornell Maritime Press 1943

The author who is medical director of the Grace Line has had much experience in the medical problems arising at sea. The book is essentially a work on first aid but includes as well a good deal of drug therapy such as may be demanded under emergency conditions. There is a glossary and a list of supplies such as might be required on board ship also forms for reporting cases.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### DIFFERENTIATION OF VIRAL PNEUMONIAS

*To the Editor*—Is it possible to differentiate infallibly between the so-called virus pneumonia and an influenzal pneumonia? I realize that the influenza is also a virus infection.

Paul S. Ross, Captain, M. C., A. U. S.

**ANSWER**—The answer to this question depends on what the questioner means by using the term "influenzal pneumonia." Three forms of pneumonia have been so named: (1) the primary viral form caused by the filtrable viruses influenza A or influenza B, which is the only form properly called influenzal pneumonia, (2) the primary bacterial form caused by *Haemophilus influenzae*, or Pfeiffer's bacillus, and (3) various secondary bacterial pneumonias caused by pneumococci, hemolytic streptococci, staphylococci and others, either alone or in combination, occurring as a superinfection during true influenza.

1. True viral influenzal pneumonia as caused by viruses A or B is apparently uncommon and as far as is known has not been reported in man since the discovery of these viruses after 1933 or since the establishment in 1938 of "virus" pneumonia as a syndrome. Viral influenza pneumonia occurs commonly in experimentally infected animals. Cases of nonbacterial pneumonia were reported by Goodpasture in the epidemic of 1918-1919 presumably of influenza.

Clinically, viral influenza pneumonia cannot be differentiated from the current viral pneumonias. Differentiation could be made only by isolating the viruses of influenza or by the demonstration of their activity with the chicken erythrocyte agglutination test of Hirst or by the complement fixation reaction. Certain other forms of viral pneumonia can likewise be identified by the isolation of the respective causative viruses or by the complement fixation test (Reimann, H. A., Havens, W. P., and Price, A. H. *Etiology of Atypical ["Virus"] Pneumonias*, *Arch. Int. Med.* 70:513 [Oct] 1942).

2. *Haemophilus influenzae* pneumonia can be diagnosed by identifying the Pfeiffer bacillus in predominance in the sputum, in the blood or in the lung substance.

3. The secondary bacterial pneumonias may be recognized by the clinical characteristics of the specific forms or mixed forms as described in modern textbooks and by the isolation of the causative bacteria from the sputum, blood, lung or other exudates. Leukocytosis is one of the simplest, fairly reliable differential factors in these infections as compared with the viral pneumonias.

### PROGNOSIS IN CUSHING'S SYNDROME

*To the Editor*—In general what is the prognosis in so-called Cushing's syndrome with insulin resistant diabetes?

M. D., Massachusetts

**ANSWER**—The prognosis for a patient with Cushing's syndrome depends primarily on the underlying etiologic factors. Carcinoma and benign hyperplasia of the adrenal cortex and basophilic adenoma of the anterior pituitary are responsible for nearly every case. If the syndrome is the result of carcinoma of the adrenal cortex the prognosis is that of the carcinoma; it should be emphasized, however, that the virilizing adrenal carcinoma produces symptoms early in its development, often when it is still well localized and amenable to complete surgical extirpation. If the syndrome is associated with benign cortical hyperplasia or basophilic adenoma of the anterior pituitary, the prognosis is directly related to the severity and rate of progression of the symptoms, particularly hypertension and diabetes. Ordinarily a fully developed clinical picture is associated with a poor prognosis. In Cushing's series of 17 patients the average duration of life from onset of symptoms to death was five years. However, in some cases in which the symptoms are stationary, the life expectation is much longer. Little has been done therapeutically for the nonmalignant group; recent work by Albright, Parson and Bloomberg (*J. Clin. Endocrinol.* 1:375 [May] 1941) involving the use of testosterone promises to be of some help.

### CHILLS AND JAUNDICE IN PATIENT TAKING ACETYL-SALICYLIC ACID AND PHENOBARBITAL

*To the Editor*—I am anxious to know whether either acetylsalicylic acid or phenobarbital might be a causative agent in producing an acute hepatitis with jaundice. My patient has episodes of jaundice following chills. At these times the white cell count is around 20,000 and the icterus index is 33 per cent. There is no nausea or vomiting and only questionable tenderness of the liver. The liver edge is palpable and seems about normal or possibly a little firm. He has some pain occasionally under the left costal edge but not with these attacks. The spleen is not palpable or enlarged to percussion. Between attacks his white cell count is normal and he feels well. The attack subsides quickly and the fever (101 F) disappears within twenty-four hours. He is highly sensitive to the brucellergen skin test and has been treated for undulant fever for many years. There is no anemia (hemoglobin 82 per cent Sahli, red cell count 5,000,000), and the reticulocyte count following attacks is 0.5 per cent. The stools are always normal in color. He has been taking acetylsalicylic acid and phenobarbital both several times a day for several years.

George L. Walker, M.D., Griffin, Ga.

**ANSWER**—The fact that this patient has episodes of jaundice and chills and has been taking both acetylsalicylic acid and phenobarbital several times a day for several years would make it difficult to assume that the drugs are causative unless on the basis of cumulative action. Various drugs, toxins and chemicals that are ordinarily nontoxic in therapeutic use may become toxic for certain human subjects who have been rendered more vulnerable by the presence of infectious diseases. There is no evidence in the literature that acetylsalicylic acid causes jaundice with chills and fever. However, there is evidence that some of the barbiturates and specifically phenobarbital may cause the development of sharp febrile reactions with some patients developing pronounced jaundice (Solimann, Torald. *Textbook of Pharmacology*, ed. 6, 1942, p. 779) and occasionally an instance is reported in which death presumably resulted from large doses of phenobarbital with the liver showing definite fatty degeneration. It is known that experimental acute liver damage produced by carbon tetrachloride greatly increases the susceptibility of the rat to quickly acting barbiturates such as phenobarbital.

Conceivably the phenobarbital may serve as a hepatic toxic agent for this patient, but there is no evidence that acetylsalicylic acid could be causative of such liver damage. The obvious course to follow would be to have the patient stop this medication for a considerable period of time and then to resume it on a clinical experimental basis and observe whether it does produce chills, fever and jaundice.

### MICROSCOPIC WORMS OBSERVED IN URINE SPECIMENS

*To the Editor*—For the past few months in the routine examination of the urine of patients who gave no urinary symptoms I have found several live, eel-like microscopic worms, their length occupying about half the microscopic field under low power. These worms have been found in children as well as adults, male and female. The textbook description (Todd and Sanford's *Clinical Diagnosis by Laboratory Methods*) of this worm is *Anguillula aceti*. The books speak of it as contamination from the use of vinegar douches or from a bottle that contained vinegar. As a matter of fact these urines in which the worm was found were all freshly voided in a clean glass at my office. The questions are: Why haven't I seen a similar worm in the past thirty odd years of routine urine examination of every patient? What is the significance of its presence?

I. F. Fleiss, M.D., New York

**ANSWER**—The opinion is general among several directors of clinical laboratories that organisms such as those described are not observed in the urine if careful rules of cleanliness are followed. Probably these organisms are due to contamination of the glass in the office. It has been observed in one laboratory that urine collected in bottles that had been washed occasionally contained such organisms, but since the use of prepared paper containers they are never found. It is evident that glass may become contaminated, even though it appears to be clean on gross inspection.

### LECITHIN

*To the Editor*—In regard to the item in *Queries and Minor Notes* regarding lecithin which appeared in *The Journal*, September 25, I feel sure that it was not the intent of *The Journal* indirectly to promote a patent preparation such as the so-called "lecithin hydrate" (U. S. patent 2,090,537). The lecithin used in prepared foods such as bread, cake, confectionery, oleomargarine and shortening in concentrations ranging from 0.01 to 0.3 per cent is preponderantly soybean lecithin, substantially free from moisture comprising a carrier of about 30 per cent soybean oil associated with a phosphatide complex consisting of lecithin, cephalin and lipositol (inositol phosphatide). Lecithin is utilized commercially because of its colloidal and antioxidant properties. This is the same soybean lecithin which has been used successfully in the treatment of *paric* and hypercholesterolemia, where the quantities administered daily vary from 9 to 15 Gm.

A. Scharf, American Lecithin Company, Inc.



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## REPORT OF REEXAMINATION OF 4,994 MEN DISQUALIFIED FOR GENERAL MILITARY SERVICE

BECAUSE OF THE DIAGNOSIS OF CARDIO-  
VASCULAR DEFECTS

A COMBINED STUDY MADE BY SPECIAL MEDICAL  
ADVISORY BOARDS IN BOSTON, CHICAGO, NEW  
YORK, PHILADELPHIA AND SAN FRANCISCO

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Much has been written about the physical fitness of men for active military service, and in many countries criteria have been drawn up to guide examiners in the choice of suitable candidates. Borderline cases and the range of the normal have furnished abundant material for discussion, but in the cardiovascular field, in particular, there is still a great deal to be learned. Two aspects of the problem which might aid in its clarification have not been explored adequately, namely the reexamination, by expert cardiologists, of a relatively large group of registrants rejected for cardiovascular defects, and a long follow-up of the borderline cases. The present study will deal with the first of these, it should also provide material for the pursuit of the second, which we hope may form the basis of another report several years hence. The major questions presented have involved the significance of heart murmurs, the critical levels of blood pressure and heart rate, the importance of certain arrhythmias and the

A more detailed account of the individual city reexamination studies embodied in their reports will be published in a forthcoming issue of the American Heart Journal.

The work described in this paper was done under a contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development and the University of Pennsylvania and under the auspices of National Headquarters Selective Service System Washington D C.

Col Leonard G Rowntree, chief of the Medical Division, National Headquarters, Selective Service System, furnished aid in initiating and continuing this study. The medical directors of Selective Service in the localities in which the examinations were made rendered invaluable help without which the work could not have been carried forward successfully. This cooperation was extended by Lieut Col Victor D Washburn, medical officer for Massachusetts; Lieut Col E Mann Hartlett, medical officer for Illinois; Col Samuel J Kopetzky, chief of the Medical Division in New York City; Lieut Col Edgar S Everhart, medical officer for Pennsylvania; and Lieut Col Bert S Thomas, medical officer for California. The chairmen of the special medical advisory boards in Chicago and San Francisco, Drs G B Fenn and William J Kerr, respectively, submitted full reports of the contents of which form part of this combined study. All who participated in the project—physicians, secretaries, technicians and aides—gave generously of their time and services. Miss Dorothy Kurtz, supervisor of the Record Department, Presbyterian Hospital, New York City, assisted in the preparation of the combined statistical tables.

diagnosis of neurocirculatory asthenia. Chamberlain<sup>1</sup> in England and Markson and Gethner<sup>2</sup> in this country, who reported on the analysis of cases referred for cardiovascular opinion by recruitment medical boards, were confronted by similar difficulties.

Following a statistical survey made by the Selective Service System, it was estimated that 100,000 registrants of the first 2 million examined were unqualified for general military service because of cardiovascular diseases. Only for defects of the teeth and eyes were greater numbers rejected. One million of the first 2 million examined were rejected for all causes.<sup>3</sup>

The group disqualified for disorders of the heart and circulation thus accounted for approximately 10 per cent of all rejectees. This rate seemed excessive for men between the ages of 18 and 38 years. In order to discuss this problem a meeting of the Subcommittee on Cardiovascular Diseases of the National Research Council was held at the National Academy of Sciences Building in Washington, D C, on June 27, 1942. The following were present: Drs Paul D White, chairman, Edgar van Nuys Allen, Robert L Levy, William D Stroud and Irving S Wright, all of the subcommittee; Brig Gen C C Hillman, Col H J Morgan, Lieut Col J G Knauer and Capt L H Warren, representing the Army; Lieut Commander Ashton Graybiel, representing the Navy; Dr O F Hedley, representing the U S Public Health Service; Col L G Rowntree, Col R H Eanes, Major Robert Bier and Major O H Folk, representing the Selective Service System; Drs L H Weed, W C Davison, S V Larkey, T R Forbes, G A Carden and Commander E H Cushing, representing the National Research Council; Drs A N Richards and E C Andrus, representing the Committee on Medical Research, and Dr R A Wolford, representing the Veterans' Administration.

As a result of this conference a letter was sent to Major Gen Lewis B Hershey, Director of Selective Service, by Drs Levy, Stroud and White, proposing a project for the reexamination, by boards of cardiologists in each of five cities, of 1,000 registrants rejected for cardiovascular reasons. Through such a study it seemed possible, and indeed probable, that a number of men might be salvaged, to the advantage of both the Army and themselves, and that information might be gained which would prove useful in subsequent induction examinations. The proposal was promptly approved by General Hershey, and it was agreed that Selective Service would stand the expense of necessary laboratory examinations and the printing of record forms.

<sup>1</sup> Chamberlain E. N. The Recruit's Heart. Brit M J 1: 54 (March 8) 1941.

<sup>2</sup> Markson D E and Gethner M P. An Analysis of Cardiac Abnormalities in 460 Selectees. Illinois M J 82: 359 (Nov.) 1942.

<sup>3</sup> Rowntree L G. Rehabilitation and Prehabilitation. J A M A 119: 1171 (Nov 8) 1942.



The remaining cost was defrayed by a contract between the Office of Scientific Research and Development and the University of Pennsylvania recommended by the Committee on Medical Research with the advice of the National Research Council. Dr Stroud was appointed chairman of the study.

PLAN OF PROCEDURE

It was decided that the pilot tests should be made in each of five cities with a large university medical center where a sufficient number of cardiologists would be available. Boston, Chicago, New York, Philadelphia and San Francisco were designated for the study of 1 000 rejectees each. The state directors of

Pardee, Howard F Shattuck and Robert L Levy, chairman Assistant examiners, Drs John M Baldwin Jr, Adolph R Berger, Edwina Campbell, John L Caughey Jr, William M Hitzig, Donald D Parker and Grant Sanger Philadelphia Drs Samuel Bellet, George C Griffith, Thomas M McMillan, George Morris Piersol and William D Stroud, chairman

San Francisco Drs E L Bruck, F L Chamberlain, J K Lewis, J M Read, J J Sampson, Paul Ghebe, Mayo H Soley, Earl R Miller and William J Kerr, chairman Also resident staff and interns in medicine and roentgenology

A special record form was designed and was used in all the examinations. It proved satisfactory and is herewith reproduced (fig 1)

TABLE 1—Result of Reexamination by Special Boards

	Number of Cases						Percentage of Total Cases Examined					
	Total Five Cities	Boston	Chicago	New York	Philadelphia	San Francisco	Total Five Cities	Boston	Chicago	New York	Philadelphia	San Francisco
Total cases examined	4,991	1,000	1,000	1,000	1,035	960	100.0	100.0	100.0	100.0	100.0	100.0
Cases resubmitted	863	188	38	192	171	274	17.3	18.8	3.8	19.2	16.5	28.6
Cases finally rejected	4,128	812	962	808	864	685	82.7	81.2	96.2	80.8	83.5	71.4

TABLE 2—Result According to Original Rejection Diagnoses (By Local Board or Induction Station)

Original Diagnoses	Number of Cases															Percentage of Each Diagnosis Finally Resubmitted				
	Four Cities *			Boston			Chicago			New York			Philadelphia			Finally Resubmitted				
	Finally			Finally			Finally			Finally			Finally			Total Four Cities*				
	Total	Resubmitted	Rejected	Total	Resubmitted	Rejected	Total	Resubmitted	Rejected	Total	Resubmitted	Rejected	Total	Resubmitted	Rejected	Total Four Cities*	Boston	Chicago	New York	Philadelphia
Total cases examined	4 035	589	3,446	1,000	188	812	1 000	38	962	1 000	102	898	1,035	171	864	14.6	18.8	3.8	19.2	16.5
Rheumatic valvular heart disease	2,344	299	2,045	503	79	424	559	14	545	633	109	526	647	97	550	12.8	15.7	2.5	17.2	13.0
Hypertension	856	133	723	263	52	211	141	5	136	192	43	149	260	33	227	15.5	19.8	5.5	22.4	17.7
Tachycardia	275	51	224	31	2	29	99	8	91	96	27	69	49	11	38	18.5	6.5	8.1	28.1	28.6
Congenital heart disease	77	7	70	31	5	26	17	0	17	18	1	17	11	1	10	9.1	16.1	0.0	5.6	9.1
Cardiac hypertrophy	197	19	178	68	0	68	64	2	62	55	12	43	10	5	5	9.6	0.0	3.1	21.8	50.0
Rheumatic fever, recent	13	4	9	0	0	0	1	0	1	1	0	1	2	1	1	30.8	33.3	0.0	0.0	50.0
Heart disease, unspecified	380	71	309	96	27	69	159	12	147	87	20	67	38	12	26	18.7	28.1	7.5	23.0	31.6
Neurocirculatory asthenia	92	22	70	76	17	59	0	0	0	9	1	8	7	4	3	23.9	22.4	11.1	57.1	0.0
Cardiac arrhythmia	30	6	24	6	2	4	13	1	12	8	1	7	3	2	1	20.0	33.3	7.7	12.5	66.7
Cardiac neurosis	5	1	4	4	0	4	0	0	0	0	0	0	1	1	0	20.0	0.0	0.0	100.0	0.0
Syphilis of aorta	5	0	5	0	0	0	2	0	2	0	0	0	3	0	0	0.0	0.0	0.0	0.0	0.0
Aneurysm of aorta	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0.0	0.0	0.0	0.0	0.0
Aneurysm other than aorta	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0.0	0.0	0.0	0.0	0.0
Heart disease due to chest deformity	3	0	3	1	0	1	0	0	0	2	0	2	0	0	0	0.0	0.0	0.0	0.0	0.0
Coronary heart disease	5	1	4	3	1	2	1	0	1	1	0	1	0	0	0	20.0	33.3	0.0	0.0	0.0
Electrocardiographic abnormality only	5	0	5	0	0	0	5	0	5	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Peripheral vascular disease	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Pericarditis	4	0	4	1	0	1	3	0	3	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Nephritis (persistent albuminuria)	9	0	9	6	0	6	1	0	1	0	0	0	2	0	2	0.0	0.0	0.0	0.0	0.0
Hyperthyroidism	13	1	12	2	0	2	9	0	9	0	0	0	2	1	1	7.7	0.0	0.0	0.0	0.0

\* No figures available for San Francisco

Selective Service in New York, Pennsylvania, Massachusetts, Illinois and California appointed the following special medical advisory boards for this project

Boston Senior examiners, Drs Norman H Bover, Laurence Ellis, Burton E Hamilton, Samuel A Levine and Paul D White, chairman Assistant examiners, Drs Mandel E Cohen (also neuropsychiatrist), James Currens, Elwin Evans and Conger Williams

Chicago Drs Joseph A Capps, N C Gilbert, Max Gethner, Sidney Strauss, J Roscoe Miller, George H Coleman, Frank B Kelly, Lawrence E Hines, Stanley Gibson, Carl O Rinder, Howard Wakefield, G K Fenn, chairman, and James B Herrick, honorary chairman

New York Senior examiners, Drs Arthur C DeGraff, Clarence E de la Chapelle, B S Oppenheimer Harold E B

The results of the study are summarized in tables 1 to 9

COMMENT

1 General Plan of Reexamination—The reexamination of men rejected for military service on the basis of cardiovascular defects or neurocirculatory asthenia was undertaken with four purposes in mind. In the first place, a more detailed analysis of the problems in cardiovascular diagnosis and of the range of the normal heart was desired to point the way for further follow-up study and research. Secondly, it was important to know the possible amount of salvage of men for military service in this particular field. Thirdly, a comparison of the opinions of cardiovascular experts with those of

the examiners in the local boards and induction stations concerning large groups of men thought to have heart disease was desired as a pioneer research to determine the feasibility of such reexaminations in other special medical fields or in the same field in other parts of the country. And, finally, an additional though minor, point of interest was a brief inquiry as to the ability of the men whose rejections were confirmed to carry on in civilian life.

A sample of 5,000 men was considered adequate for this reexamination. The northeast part of the country (Boston, New York and Philadelphia), the middle west (Chicago) and the far west (San Francisco) were represented. It had been hoped to include one of the southern cities, but this did not prove to be feasible although it would be of interest some day to make such a survey in the South. An extension of the study to include the country more generally, that is by individual states, cities or districts, was thought of as a later

politan areas with the helpful cooperation of the local board examiners and of the central induction stations. The majority of the men (about two thirds) had been turned down by the induction stations in the year 1942. Several weeks, ranging from four to eight, were required for completion of the reexaminations in the different cities, and from 40 to 110 men were examined at the different sessions, averaging 60 to 70 at a time. The examinations were usually conducted in the evenings, two or three days a week, and on Saturday afternoons.

The actual examinations were carried on mainly in the recumbent position but often in the upright position too, for comparison, and by at least two examiners. If men were considered suitable for resubmission as 1A they were checked by at least two of the senior examiners and were routinely electrocardiographed and submitted to the x-ray department of the various hospitals for teleoroentgenograms (2 meter films) before

TABLE 3—Final Diagnoses in Cases Rejected by Special Boards

Diagnoses	Number of Cases					Percentage of Cases Finally Rejected						
	Total Five Cities	Boston	Chicago	New York	Phila- delphia	San Fran- cisco	Total Five Cities	Boston	Chicago	New York	Phila- delphia	San Fran- cisco
Total finally rejected	4 131	812	962	803	864	685	100 0	100 0	100 0	100 0	100 0	100 0
Rheumatic valvular heart disease	2 476	415	676	345	369	271	59.9	51.1	70.3	67.4	65.0	39.0
Hypertension	1 049	249	239	159	200	212	24.6	30.7	24.8	19.7	23.1	39.0
Tachycardia	189	32	70	48	8	26	4.6	3.9	7.8	5.9	0.9	1.8
Congenital heart disease	183	45	28	29	18	63	4.4	5.5	2.9	5.6	2.1	9.2
Syphilis of aorta	17	0	5	7	1	2	0.4	0.0	0.5	0.9	0.3	0.3
Aneurysm other than aorta	1	0	0	1	0	0	0.0	0.0	0.0	0.1	0.0	0.0
Cardiac enlargement only	70	12	9	20	9	26	1.8	1.5	0.9	2.5	1.0	3.8
Myocarditis chronic rheumatic	6	0	1	5	0	0	0.1	0.0	0.1	0.6	0.0	0.0
Coronary heart disease	6	1	0	2	0	3	0.1	0.1	0.0	0.2	0.0	0.4
Heart disease unspecified	113	14	28	1	0	70	2.7	1.7	2.9	0.1	0.0	10.2
Neurocirculatory asthenia	204	78	11	31	34	0	4.9	9.6	1.1	3.8	0.3	4.4
Auricular fibrillation paroxysmal	4	1	1	2	0	0	0.1	0.1	0.1	0.2	0.0	0.0
Auricular fibrillation permanent	59	15	11	11	9	4	1.2	1.8	1.1	1.4	1.0	0.6
Paroxysmal tachycardia	17	3	1	3	0	0	0.4	0.6	0.1	0.6	0.0	0.9
Cardiac arrhythmia only *	15	0	5	3	0	7	0.4	0.0	0.5	0.4	0.0	1.0
Cardiac neurosis	11	5	0	0	0	6	0.3	0.6	0.0	0.0	0.0	0.9
Recent rheumatic fever	13	6	4	0	0	3	0.3	0.7	0.4	0.0	0.0	0.4
Pericarditis	4	0	0	0	0	4	0.1	0.0	0.0	0.0	0.0	0.6
Heart disease due to chest deformity	10	2	0	0	0	3	0.2	0.2	0.0	0.6	0.0	0.4
Electrocardiographic abnormality only	32	0	0	0	3	13	0.8	0.7	0.0	0.6	0	1.9
Peripheral vascular disease	3	0	0	1	0	2	0.1	0.0	0.0	0.1	0.0	0.3
Nephritis (persistent albuminuria)	6	1	1	0	0	4	0.1	0.1	0.1	0.0	0.0	0.6
Hyperthyroidism	14	1	10	1	0	2	0.3	0.1	1.0	0.1	0.0	0.3

\* Exclusive of paroxysmal tachycardia

possibility dependent on the results of this preliminary study but was not definitely planned.

**2 Personnel, Technique and Arrangements for Reexamination.**—Following the criteria of admission to the Army outlined in Mobilization Regulations (MR) 1-9, paragraphs 60-67, and a directive sent out by the chairman of this particular research committee the technique of reexamination was essentially the same in the five cities. Examinations were carried out in large general hospitals where the facilities were adequate (Massachusetts General Hospital in Boston, St. Luke's Hospital in Chicago, Presbyterian Hospital in New York City, Pennsylvania Hospital in Philadelphia and University of California Hospital in San Francisco). It is evident from the list of special examiners given in the preceding section that cardiovascular experts of recognized ability and experience were available and volunteered their services in each of the five cities. To assist them the services of junior medical volunteers were obtained, along with adequate secretarial and technical help and volunteer aides.

There was a uniformity of arrangements in plans for examination in the various cities. The men to be examined were gathered from numerous local boards in and near the central part of these various metro-

politan areas with the helpful cooperation of the local board examiners and of the central induction stations. The majority of the men (about two thirds) had been turned down by the induction stations in the year 1942. Several weeks, ranging from four to eight, were required for completion of the reexaminations in the different cities, and from 40 to 110 men were examined at the different sessions, averaging 60 to 70 at a time. The examinations were usually conducted in the evenings, two or three days a week, and on Saturday afternoons.

TABLE 4—Disposition and Final Diagnoses of Borderline Cases

Diagnoses	Number of Cases					
	Total Five Cities	Boston	Chicago	New York	Phila- delphia	San Fran- cisco
Total borderline cases	217	114	2	10	5	0
Cases resubmitted	10*	0	2	10	0	0
Cases finally rejected	114	114	0	0	0	0
Rheumatic valvular heart disease	13	10	0	0	0	0
Hypertension nervous	109	70	0	0	0	31
Tachycardia nervous	57	27	0	0	0	10
Congenital heart disease	2	2	0	0	0	0
Cardiac enlargement only	45	10	2	0	0	0
Heart disease unspecified	1	1	0	0	0	0
Neurocirculatory asthenia	2	1	0	0	0	0
Recent rheumatic fever	1	0	0	1	0	0
Electrocardiographic abnor- mality only	2	0	0	0	0	0

and as will be discussed later. An example is the incidence of a positive rheumatic history among those with rheumatic heart disease.

One of the interesting and important developments in all the cities was the frequent consultation among the examiners concerning individual cases and moot points of diagnosis. The significance of certain findings such as the systolic click and the late systolic murmur was discussed at such sessions and a number of other matters were listed for follow-up when it was agreed that there was inadequate knowledge at the present time about

is, some few over the 1,000, were examined in order to make allowances for cases unsuitable for the study. In Boston 1,015 were so examined in order to obtain 1,000, in Chicago 1,082 were examined and 1,000 retained, in New York there were 1,014 in order to obtain the even 1,000 for the study, in Philadelphia there were 1,035 with 1,035 included in the statistical study, in San Francisco 983 were examined but 24

TABLE 5—Types of Rheumatic Valvular Heart Disease in Rejected Cases  
(Final Diagnoses by Special Boards)

Specific Types	Number of Cases						Percentage of Total Rheumatic Valvular Disease					
	Total Five Cities	Boston	Chicago	New York	Philadelphia	San Francisco	Total Five Cities	Boston	Chicago	New York	Philadelphia	San Francisco
Total rheumatic valvular disease	2,476	415	676	545	569	271	100.0	100.0	100.0	100.0	100.0	100.0
Mitral regurgitation alone *	750	71	155	100	303	26	30.3	17.1	22.9	34.9	54.1	9.6
Mitral stenosis alone *	750	101	295	157	131	66	30.3	24.3	43.6	28.8	23.0	24.4
Aortic regurgitation alone †	208	53	37	35	4	79	8.4	12.8	5.5	6.4	0.7	29.1
Aortic stenosis alone †	72	19	10	3	0	40	2.9	4.6	1.5	0.6	0.0	14.8
Combined mitral and aortic disease	678	161	127	160	126	54	25.4	38.8	18.8	29.3	22.2	19.9
Valve unspecified	68	10	52	0	0	6	2.7	2.4	7.7	0.0	0.0	2.2

\* Without aortic valve disease    † Without mitral valve disease

TABLE 6—History of Rheumatic Fever or Chorea in Rejected Cases with Rheumatic Valvular Heart Disease

History	Number of Cases					Percentage of Total Rheumatic Valvular Disease				
	Total Four Cities *	Boston	Chicago	New York	Philadelphia	Total Four Cities *	Boston	Chicago	New York	Philadelphia
Total rheumatic valvular disease	2,205	415	676	545	569	100.0	100.0	100.0	100.0	100.0
History of rheumatic fever	634	190	98	257	89	28.8	45.8	14.5	47.2	15.6
History of chorea	40	9	3	24	4	1.8	2.2	0.4	4.4	0.7
History of both rheumatic fever and chorea	13	0	0	13	0	0.6	0.0	0.0	2.4	0.0

\* No figures available for San Francisco

TABLE 7—Types of Congenital Heart Disease in Rejected Cases  
(Final Diagnoses by Special Boards)

Specific Types	Number of Cases						Percentage of Total Congenital Heart Disease					
	Total Five Cities	Boston	Chicago	New York	Philadelphia	San Francisco	Total Five Cities	Boston	Chicago	New York	Philadelphia	San Francisco
Total congenital heart disease	183	45	28	29	18	63	100.0	100.0	100.0	100.0	100.0	100.0
Patent ductus arteriosus	29	3†	6	7	4	9	15.8	6.7	21.4	24.1	22.2	14.3
Patent ductus and pulmonary stenosis	1	0	0	0	1	*	0.5	0.0	0.0	0.0	5.6	*
Patent ductus and interventricular septal defect	4	0	0	4	0	*	2.2	0.0	0.0	13.8	0.0	*
Defect of interventricular septum	73	21	9	12	5	26	39.9	46.6	32.1	41.4	27.8	41.3
Defect of interauricular septum	6	5	0	0	0	1	3.3	11.1	0.0	0.0	0.0	1.6
Subaortic stenosis	5	4	0	1	0	0	2.7	8.9	0.0	3.4	0.0	0.0
Tetralogy of Fallot	2	1	0	1	0	0	1.1	2.2	0.0	3.4	0.0	0.0
Coarctation of aorta	14	3	2	1	0	8	7.7	6.7	7.1	3.4	0.0	12.7
Pulmonic stenosis	13	3	0	0	9	1	7.1	6.7	0.0	0.0	50.0	1.6
Dextrocardia	2	0	1	1	0	0	1.1	0.0	3.6	3.4	0.0	0.0
Low aorta pulmonary artery communication	1	1	0	0	0	0	0.5	2.2	0.0	0.0	0.0	0.0
Prominent pulmonary artery	1	1	0	0	0	*	0.5	2.2	0.0	0.0	0.0	*
Unspecified type	34	3	11	3	0	17	18.6	6.7	39.3	10.3	0.0	27.0

\* No data compiled for these in San Francisco    † One case cured by ligation

them. It is hoped that these various teams or their successors may be able, in the course of the years to come, to study these various points further, with particular reference to the individuals examined during this study.

3 The Men Reexamined—The total number of rejectees examined in the five cities equaled 5,127 men. Of this number 133 were omitted for statistical purposes because they were rejectable for other than cardiovascular reasons, leaving 4,994 for the complete statistical study. In each city as a rule a surplus, that

were rejectable for other than cardiovascular reasons, leaving 959.

The great majority of the men were white but of a great variety of national stocks including English, Scotch, Irish, Dutch, French, Italian, German and Scandinavian. There were a good many Negroes (table 8), varying much in numbers in different cities. In Boston there were only 23 Negroes, in Chicago there were 66, in New York there were 90 Negroes, making up 9 per cent of the total, and in Philadelphia there were 207 Negroes, approximately 20 per cent of the

total. Thus, in these four cities the Negro percentage was just under 10 (9.6 per cent). There were a few Chinese (1 in Boston and 5 in New York). The relatively high percentage of rejection of Negroes and Chinese is of interest. The rejection of all the Chinese in Boston and New York in this series was confirmed and the rejection of the Negroes was confirmed in a higher percentage than in the case of the white persons in the three eastern cities. In Boston 22 of the 23 Negroes were rejected, compared with a proportion of

decade as compared with the fourth among the rejectees was almost exactly three to one, in contrast to the two to one total ratio of the two decades, while the ratio of the hypertensive rejectees was just reversed, being almost exactly one to three (in the third decade as compared to the fourth). There was a slight preponderance of cases of neurocirculatory asthenia in the third decade in Boston 44 to 17, as compared with the grand total of 648 to 352 men in the third and fourth decades.

TABLE 8—Distribution of Certain Final Diagnoses by Race

Diagnoses	Number of Cases																Percentage of Finally Rejected Cases Four Cities *			
	Four Cities *				Boston				Chicago				New York				Philadelphia			
	White	Negro	Chinese	Filipino	White	Negro	Chinese	Filipino	White	Negro	Chinese	Filipino	White	Negro	Chinese	Filipino	White	Negro	Chinese	Filipino
Total cases examined	3 639	386	6	4	976	23	1	0	930	66	0	4	906	90	5	0	828	207	0	0
Total cases resubmitted	543	46	0	0	187	1	0	0	38	0	0	0	180	12	0	0	133	3	0	0
Total cases rejected	3 096	340	6	4	789	22	1	0	892	66	0	4	725	78	5	0	690	174	0	0
Rheumatic valvular disease	1 979	217	5	4	407	7	1	0	670	62	0	4	494	47	4	0	458	111	0	0
Hypertension	716	131	0	0	237	12	0	0	192	47	0	0	141	18	0	0	146	54	0	0
Tachycardia	148	10	0	0	32	0	0	0	62	1	0	0	46	2	0	0	8	0	0	0
Neurocirculatory asthenia	171	7	0	0	77	1	0	0	11	0	0	0	31	0	0	0	52	2	0	0
Congenital heart disease	111	7	0	0	40	0	0	0	28	0	0	0	27	2	0	0	13	5	0	0
Syphilis of aorta	6	9	0	0	0	0	0	0	5	0	0	0	0	7	0	0	1	2	0	0
Coronary heart disease	3	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Permanent auricular fibrillation	46	0	0	0	15	0	0	0	11	0	0	0	11	0	0	0	9	0	0	0
Paroxysmal tachycardia	10	1	0	0	5	0	0	0	0	1	0	0	5	0	0	0	0	0	0	0

\* No figures available for San Francisco

TABLE 9—Miscellaneous Data

Classifications	Number of Cases						Percentage of Total Cases Finally Resubmitted or Rejected					
	Total † Four Cities	Boston	Chicago	New York	Phila delphia	San Francisco	Total † Four Cities	Boston	Chicago	New York	Phila delphia	San Francisco
Total cases finally resubmitted	589	188	78	192	171	274	100.0	100.0	100.0	100.0	100.0	100.0
Cases resubmitted with unexplained (non pathologic) apical systolic murmurs	176	48	8	99	91	*	29.9	25.5	21.1	51.6	12.3	*
Cases resubmitted with unexplained (non pathologic) aortic systolic murmurs	10	6	4	5	0	*	2.5	3.2	10.0	2.6	0.0	*
Total cases finally rejected	3 446	812	907	893	864	682	100.0	100.0	100.0	100.0	100.0	100.0
Cases in which the electrocardiogram was the deciding factor in final rejection diagnosis	48	46	5	14	3	17	1.4	3.2	0.5	1.7	0.0	2.3
Cases in which x-ray examination of the heart was the deciding factor in final rejection diagnosis	99	29	12	49	9	70	2.9	3.6	1.9	6.1	1.0	3.8
Cases in which original rejection diagnosis agreed with final rejection diagnosis	2 500	597	702	639	692	*	73.1	71.9	73.0	79.1	69.7	*
Cases in which there was disagreement between original and final rejection diagnoses	631	168	110	88	262	*	18.3	20.7	11.7	10.9	30.3	*
Cases in which incomplete original diagnosis made comparison impossible	280	52	14	81	0	*	8.1	6.4	15.3	10.0	0.0	*
Original rejection diagnoses with which the final diagnoses most frequently disagreed (1) valvular heart disease (2) hypertension (3) tachycardia, (4) neurocirculatory asthenia in order of frequency of disagreement		1	1	1	1	*						
		2	2	2	2							
		4										

† San Francisco excluded because data incomplete

\* No data compiled for these in San Francisco

about 7 out of 10 of the whites. In Chicago all 66 were rejected, in New York 78 of the 90, and in Philadelphia 174 of the 207. There were a few Filipinos also with a high percentage of rejection.

The majority of the men were in the age group of the third decade, amounting both in Boston and in New York for example, to 65 per cent. The remainder were mostly in the fourth decade, with a few just under 20. It is of interest in this connection that rheumatic heart disease was preponderant among the younger men that is, in the third decade in contrast to hypertension which was preponderant in the fourth decade. In Boston the ratio of rheumatic heart disease in the third

The majority of the men had been rejected by the induction stations but the figures varied widely. In Boston the ratio was about 2 to 1. In New York the proportion was 506 to 494. As was to be expected the rejections made by the induction stations were more often sustained than those which were made by the local boards.

In New York the greater number (60.4 per cent) of men resubmitted for service had been rejected by the local draft boards while the remainder (39.6 per cent) had been rejected by the induction station. Many local boards contributed to this study comprising fifty-four in Greater Boston including Cambridge, Somerville and

other adjacent cities and towns fifty-two in the city of Chicago one hundred and twenty-three local boards scattered through the boroughs of Manhattan and the Bronx in New York 33 in the central part of Philadelphia and many local boards in San Francisco,<sup>4</sup> Berkeley and Oakland

The great bulk of all these rejectees reexamined were city dwellers living in or close to the five metropolitan areas where the studies were carried on This was for the sake of convenience Rural draftees were therefore considerably in the minority in this study

4 Criteria for Reclassification as 1-A and 4-F—In general the criteria listed in Mobilization Regulations (MR 1-9) were followed quite literally in this reexam-

Mobilization Regulations  
No 1-9

War Department,  
Washington, October 15, 1942

STANDARDS OF PHYSICAL EXAMINATION  
DURING MOBILIZATION

Section XIV

Heart, Blood Vessels and Circulation

62 General service—a A heart will be considered normal when the apex impulse is within the left midclavicular line and not below the fifth interspace, when sounds are normal and there are no thrills or important murmurs, when there is no abnormal pulsation or dullness above the base of the heart, when pulse rate is normal and regular and there is no unusual thickening of the arteries or significant elevation of blood pressure

b A pulse rate of 100 or over which is not persistent and not due to paroxysmal tachycardia (A pulse rate of 100 or over may be temporary and due to excitement or to recent infection, such as pneumonia or local infections about the nose, mouth and throat or may be induced by drugs)

c A pulse rate of 50 or under which is proved to be the natural pulse rate of the individual or to be temporary or due to the use of drugs (If the bradycardia is physiological, the rate on exercise will rise to a higher level and then gradually return to the original slow rate, whereas when heart block is present the rate on exercise will either change slightly or not at all or sudden interruptions in the length of the heart cycle will be detected)

d Sinus arrhythmia (This consists in a quickening of the pulse rate during inspiration and a slowing during expiration and is best recognized with the individual recumbent and breathing deeply)

e Elevation of blood pressure from excitement, proved to be temporary

f Neurocirculatory asthenia, if very mild in degree

63 Limited service—There are no cardiovascular criteria to warrant initial selection for limited service

64 Nonacceptable—a Circulatory failure evidenced by definite symptoms such as undue breathlessness, pain or evidence of congestive failure (engorged neck veins, enlarged liver, edema, as well as dyspnea)

b Hypertrophy and/or dilatation of the heart evidenced by displacement of the apex impulse to the left of the midclavicular line or below the sixth rib, and of a heaving or diffuse character, or by x-ray evidence

c A persistent heart rate of 100 or over when this is proved to be persistent in the recumbent posture and on observation and reexamination over a sufficient period of time See also section XXI

d Paroxysmal tachycardia See also section XXI

e Heart block

f Any serious disturbance of rhythm such as auricular fibrillation

g Valvular disease

h Congenital heart disease

i Persistent blood pressure at rest above 150 mm systolic or above 90 diastolic, unless in the opinion of the medical examiner the increased blood pressure is due to psychic reaction and not secondary to renal or other systemic disease

j Thrombophlebitis of one or more extremities if there is a persistence of the thrombus or any evidence of circulatory obstruction in the involved vein or veins

k Other abnormalities of the peripheral vascular system, including large varicose veins, Raynaud's disease, Buerger's disease (thromboangitis obliterans), erythromelalgia and arteriosclerosis In doubtful cases special tests should be employed

l Aneurysm of any vessel

m Pericarditis

n Acute endocarditis

o Truncus arteriosus

p Coronary thrombosis

q Neurocirculatory asthenia (effort syndrome), unless very mild Usual symptoms of this condition are exhaustion, breath-

lessness heartache and palpitation These symptoms may fol-

SPECIAL EXAMINATION OF REJECTEES  
WITH CARDIOVASCULAR DEFECTS

(LOCAL BOARD DATA SHEET - WHITE COPY)

3 GENERAL (to be filled in by the local board clerk from the registrant's latest report of physical examination, Form 900 or 221)

1 Name \_\_\_\_\_ 2. Order No. \_\_\_\_\_

3. Address \_\_\_\_\_

4. Birth date \_\_\_\_\_ Race White ☐ Negro ☐ Other (specify) \_\_\_\_\_

5. Occupation \_\_\_\_\_

6. Rejected at Local board ☐ Induction station ☐ Date of rejection \_\_\_\_\_

7. Cause of rejection \_\_\_\_\_

11 CARDIOVASCULAR EXAMINATION RESULTS (to be filled in by the examining physician. All items must be filled in. Indicate none where applicable)

10. Symptoms \_\_\_\_\_

11. Past history of \_\_\_\_\_

(a) Rheumatic fever or heart disease \_\_\_\_\_

(b) Heart disease \_\_\_\_\_

(c) Paroxysmal tachycardia \_\_\_\_\_

12. Present findings \_\_\_\_\_

(a) Pulse rate: Recumbent \_\_\_\_\_ After 30 minutes rest \_\_\_\_\_

(b) Blood pressure: Recumbent \_\_\_\_\_ After 30 minutes rest \_\_\_\_\_

(c) Heart size: Normal ☐ Enlarged ☐ \_\_\_\_\_

(d) Heart rhythm: Normal ☐ Abnormal ☐ Extrasystoles ☐ Heart block ☐ Auricular fibrillation ☐ Other (specify) \_\_\_\_\_

(e) Heart sound: Normal ☐ Abnormal ☐ \_\_\_\_\_

(f) Murmurs: Apical Systolic ☐ Diastolic ☐ Presystolic ☐ Aortic Systolic ☐ Diastolic ☐ Other (specify) \_\_\_\_\_

(g) Cyanosis ☐ Clubbing ☐ Edema ☐ \_\_\_\_\_

(h) Weight (in, without shoes) \_\_\_\_\_

(i) Weight (lbs. without coat or shirt) \_\_\_\_\_

13. X-ray (2 meter film) \_\_\_\_\_

Fluoroscopy (optional) \_\_\_\_\_

14. Electrocardiogram \_\_\_\_\_

15. Other observations (only if indicated): (a) Blood \_\_\_\_\_ (b) Urine \_\_\_\_\_ (c) Exercise test \_\_\_\_\_

16. Final diagnosis \_\_\_\_\_

1. Recommendations \_\_\_\_\_

18. Date \_\_\_\_\_ 19. Physician's signature \_\_\_\_\_

20. Local board action \_\_\_\_\_

21. Registrar (wa - was n t) forwarded to the induction station after special examination If forwarded wa (accepted - rejected) (Strike words applicable)

22. Signature of member \_\_\_\_\_

(See instructions on reverse side)

Fig 1—Record form used in examinations The instructions on the reverse side were as follows

1 An original and three copies of this form will be prepared for each registrant called up for special examination by cardiologists

2 If the registrant is forwarded to the induction station, the original of this form will accompany Form 221 If the registrant is not sent to the induction station, the original of this form will be retained in the registrant's Cover Sheet (Form 53) or if the registrant is rejected at the induction station this original will be returned to the local board and placed in the registrant's Cover Sheet (Form 53)

3 The first and second carbon copies will be forwarded to the Director of Selective Service, Washington, D C, for all registrants examined, through the State Director of Selective Service

4 The third carbon copy will be retained in the local board for all registrants examined

nation and because many are unfamiliar with this document its passages pertinent to the heart and blood vessels are listed here As in the case of the majority of the local boards and induction stations there was some but not great latitude in the interpretation of murmurs heart rate, blood pressure electrocardiograms and x-ray films

4 To supplement the metropolitan area of San Francisco some men were drawn from Oakland and Berkeley

low exertion such as would not produce them in healthy individuals. These and other symptoms, such as dizziness or fainting, may arise without evidence of organic disease sufficient to account for the disability of the individual. Cases of effort syndrome may be divided into four groups. (In some cases more than one of these factors is present.)

- (1) As an accompaniment of organic heart disease.
- (2) Following infections.
- (3) In individuals with poor physique or insufficient training for the work required.
- (4) Orthostatic hypotension or tachycardia—The blood pressure and pulse rate will be taken with the individual in the recumbent position and after standing three minutes. An increase in a normal recumbent pulse rate to 120 beats per minute or more when the individual stands or a decrease of a normal blood pressure (when the individual is recumbent) to values less than 90 systolic and 60 diastolic when the individual stands may be considered evidence of a definite physiologic disturbance and in itself cause for rejection unless the condition is very temporary following an illness, operation, or exhausted state.

65 Electrocardiogram—The electrocardiogram is of great assistance in determining the nature of certain cardiac abnormalities, the most important of which are the various arrhythmias, defects in conduction and diseases of the coronary arteries. The electrocardiograph may be utilized in cases where such diagnostic aid is especially indicated but will not be employed as a routine measure.

66 X-ray—In doubtful cases fluoroscopy and teleoroentgenography is advised to determine the size and shape of heart and great vessels. Films taken for the study of the lungs will also be viewed for cardiovascular defects.

In MR 1-9 it is advised that any important murmurs are cause for rejection, but no attempt is made therein to define what are important and what unimportant murmurs, the reader is simply referred to the current literature such as the American and New York Heart Association's publication entitled "Nomenclature and Criteria for Diagnosis of Diseases of the Heart." However, a fair degree of unanimity was exercised in the five cities, although borderline cases were an occasional cause of concern, whether in time all murmurs can be perfectly evaluated remains a problem for the future. In general, it was agreed that very slight or even slight systolic murmurs at the cardiac apex in the absence of cardiac enlargement or of a clear rheumatic history, especially if they were late in time or dissipated or almost cleared by changes in body position or by forced respiration should be regarded as unimportant and not disqualifying for military service. Very slight systolic murmurs at the aortic valve area and at the left of the lower sternum were also acceptable in the absence of any evidence of heart disease. Pulmonary systolic murmurs, which are present in many normal persons in the recumbent position, were rarely a cause for rejection per se, only if they were loud and but little affected by respiration were they regarded as evidence of an organic lesion. All diastolic murmurs were cause for rejection but in occasional cases superficial scratchy to and fro sounds not indicative of cardiac or pericardial disease were recognized as entirely unimportant.

The heart rate acceptable for the Army is listed in MR 1-9 as below 100 and above 50, but as a rule rates of 100, and rarely of 110, were passed in this reexamination as normal if manifestly of nervous origin. Also, in the absence of evidence of heart block, rates in the forties were also considered normal.

The blood pressure levels of 150 systolic and 90 diastolic were accepted as the maximal readings for 1A classification except in rare cases when a slightly higher systolic reading (160) was attributed to nervousness.

Electrocardiograms were considered normal when there was no prolongation of PR interval or QRS waves beyond the generally recognized upper limits of 0.2 and 0.1 second respectively, when there was no high degree of right or left axis deviation when there was no flattening or inversion of the T waves in lead 1 or lead 4F and when there was no arrhythmia other than the occurrence of occasional premature beats. Lesser degrees of axis deviation (up to about  $-10$  degrees left and  $+100$  degrees right), prominent S waves in any or all leads, somewhat elevated ST segments (up to 1 mm in the limb leads or 2 mm in lead 4F) and slightly inverted T waves in lead 2 corrected by recumbency were acceptable if nothing otherwise was found wrong with the heart.

X-ray (teleoroentgenographic) heart shadows were accepted as normal if their transverse diameters did not exceed by more than 1 cm the expected measurements according to the individual's height, weight and age as calculated by the Hodges-Eyster tables (quickly determined by nomogram or slide rule).<sup>6</sup> This measurement was considered just as suitable as that of the area and much more easily made. However, the fact that these standards are by no means infallible and that they do not fit all body builds was duly recognized and allowances were made accordingly, as will be noted later. The shape of the heart shadow and the contour of the great vessels were also carefully scrutinized.

5 Borderline Cases (table 4)—At this point it is appropriate to discuss the disposition of the many borderline cases that were encountered in each city. In the great majority of cases the criteria as outlined in Mobilization Regulations 1-9 were followed to the letter to avoid misunderstandings, even though a certain amount of leeway is allowed by those regulations according to the discretion of the examiners. But a few cases were accepted with doubtful findings. In Chicago 2 men with an increase in heart size were labeled 1A, in New York there were 8 men with systolic blood pressures slightly above 150 mm but with diastolic pressures not over 90 mm and 6 men with heart rates between 100 and 120 who were considered perfectly normal and so graded 1A, in Philadelphia 36 men were passed as normal after careful study of the X-ray films by a roentgenologist although the transverse diameters of their heart shadows were slightly above the Hodges-Eyster upper limit as agreed on and in San Francisco 31 cases of hypertension ('nervous') and 19 cases of tachycardia ('nervous') were accepted as 1A. In Boston all borderline cases were lumped together for convenience of follow-up and although considered as probably normal and at first labeled "1A liberal" were finally rejected for immediate service because of possible confusion since they did not fit strictly the criteria as at present listed under

5 In Boston it was found convenient to use Levine's classification of loudness of murmur: 1 very slight, 2 slight, 3 moderate, 4 loud, 5 very loud (and 6 with murmur audible without applying stethoscope to the chest wall) (Freeman, A. R. and Levine, S. A. The Clinical Significance of the Systolic Murmur. A Study of 1,000 Consecutive Noncardiac Cases. *Ann. Int. Med.* 6: 1371 [May] 1919; Levine, S. A. The Systolic Murmur. *J. A. M. A.* 101: 436 [Aug. 5] 1933). A satisfactory agreement was quite quickly reached by the examiners in Boston as to the grade of intensity of a murmur after a little practice. A loudness of grade 1 and up to and including grade 2 murmur was acceptable in the case of the apical systolic murmur.

6 Hodges, F. J. and Eyster, J. A. E. Estimation of Transverse Cardiac Diameter in Man. *Arch. In. Med.* 77: 77 (May) 1926.



MR 1-9 Undoubtedly the large number in this Boston borderline group (114 in all) included grades and types of signs that sometimes were considered within the normal range and sometimes were regarded as a cause for rejection in the other cities. The distinction certainly in many cases was a very fine one.

It is this group of borderline cases rather than those 1A cases that are obviously normal and those 4F cases that are obviously abnormal that will probably prove to be the most important for follow-up to help in deciding whether the present criteria are proper or should be changed, more particularly toward a more liberal interpretation. As yet we have no sound basis for our decisions and each case must be decided on its own merits from all points of view. Perhaps this will always be so.

6 *The Results of the Reexamination*—For details of the reexamination the reader is referred to tables 1 to 9, but the more important findings deserve special comment.

(To be continued)

## THE PSYCHOSOMATIC MANIFESTATIONS OF FILARIASIS

LIEUTENANT HOWARD P. ROME (MC), USNR  
AND  
LIEUTENANT COMMANDER R. HARWOOD FOGEL  
(MC), USNR

Prosecution of the war in tropical climates has not only stimulated interest in parasitology and tropical medicine but also, coincidentally, ramified the field of psychosomatic medicine. Diseases which only a few years ago were labeled "rare and exotic" are beginning to rival the more familiar illnesses for preferential medical consideration.

Many observers have noticed the mood disturbance associated with the acute phases of tropical parasitic infestation. Particularly is this true of filariasis. As with all systemic infections, there are fatigue, irritability, mild depression and anxiety. However, in addition there is a pervading element of apprehension and concern in the case of white troops which is absent in the infested native population. The cause of this is obvious on inquiry into the setting and circumstances in which this disease has occurred in the members of the armed forces.

The great majority of troops stationed in the South Pacific islands are young unmarried men. This military duty in the tropics has been for most of them a first experience away from their immediate home surroundings. For the vast majority this is the first time they have been outside the continental United States. Therefore it is natural that the circumstances, since they are conducive to pronounced feelings of insecurity, constitute a maximal test of their adaptability.

The life soldiers lead in the tropical jungles of the Pacific Islands predisposes them to the disruption of the feeling of affiliation which is essential for their personal and social security. The omnipresent threat of attack is an added disturbance, and the contrast between the primitive setting and the terrifying techniques of warfare is all the more disturbing. This is the background

on which is elaborated the psychologic factors of the various tropical diseases to which they are susceptible. They have been prepared for some of these anxiety-laden situations by their military training and indoctrination courses as well as by the reassurance and support afforded by a strong group morale. Then too, new and vastly different experiences have the effect of absorbing tension and of expending anxiety by their novelty and intrigue. Moving pictures, mail, familiar recreational activities and newly formed friendships help to dilute a nostalgia which is natural and which must be considered appropriate. An individual's ultimate adjustment is the blend of these conducive and disrupting forces coloring his previous personality pattern.

There have been no clearer proofs of the validity of the psychosomatic concept than those observations which have been made on the nature and quality of adjustment in these carefully selected, physically perfect, young adults. The evidence for the contention that environmental agents are prepotent forces in the production of a reaction type is also striking. In substantiation of this, the following are the observations which have been made on the psychosomatic manifestations of a typical exotic disease—filariasis.

It has been widely appreciated in this war that with operations being conducted in African, Asiatic and Pacific theaters the problems incident to cultural and environmental contacts would play an important role. Fuller information concerning the peoples, customs and indigenous diseases of these areas is now generally appreciated more than ever before. Despite this, there are still many strange beliefs concerning them and their possible effect on the troops on duty with or near them. Bugaboos and superstitions still distort the thinking of many, exaggerating their fears and perverting their judgments. Particularly is this true of the beliefs concerning tropical disease and the responsibility of the native population for their dissemination. Not only is the public perplexed, but also, much too frequently, the medical profession is uninformed about their cause, nature, complications and sequelae. The result is that emotional symptoms are associated with these diseases and are little understood. The status of military operations in the South Pacific theater is such that the threat of widespread tropical disease is now being restrained by adequate sanitary and prophylactic measures of mosquito control. The psychologic overemphasis which is given to the sequelae of tropical disease can be minimized in a similar manner by equally intensive education of all troops on duty in endemic areas. Fortified by authentic information, infested individuals will be better able to cope with the problems which arise from the need to explain their disease.

Bancroftian filariasis caused by *Wuchereria bancrofti* is the most common and the most widely distributed of the six forms of filariasis. The parasite is endemic along the Mediterranean coast of Spain, on the north-east coastal areas of Australia and in parts of Argentina. The parasite is hyperendemic in South China, Indo-China, the Dutch Indies and Polynesia, especially in the Samoan group, the Fiji and the Wallis Islands. The prevalence of the disease in the latter areas is rivaled only by that found in central Africa. Throughout Central America, the Greater and Lesser Antilles and the northeastern section of South America, bancroftian filariasis is also common.

The adult filariae usually inhabit the lymphatic vessels and glands and discharge great numbers of actively

motile embryos or microfilariae into the lymphatics, from which they pass into the circulating blood. The microfilariae produced by *Wuchereria bancrofti* in the South Pacific islands do not occur with the nocturnal periodicity characteristic of the form present in Africa, India and the Western Hemisphere. Occasionally one can find the microfilariae in the peripheral blood by examining it with the thick smear technic. Of a large group of Samoan natives examined, only 13.6 per cent had microfilariae demonstrable in ordinary thick blood films,<sup>1</sup> and in none of the several hundreds of relatively acute cases occurring in the white troops seen by us were the microfilariae demonstrated. In this regard it is to be noted that these men were exposed while on duty in these areas for periods ranging from four months to two years before the development of clinical symptoms.

Mosquitoes serve as the intermediate host, and two species are predominantly responsible for the transmission. *Aedes scutellaris*, a dim light biting mosquito, is the principal vector, with *Culex fatigans*, a night feeder, of secondary importance.

The symptoms of the disease divide themselves into two stages. The early stage is characterized by a recurrent lymphangitis and lymphadenitis with the usual associated systemic symptoms. Unilateral scrotal lesions, consisting of funiculitis, epididymo-orchitis and edema of the scrotal skin, are the most common in occurrence. Unilateral upper extremity and bilateral scrotal involvement are second and third, respectively, in frequency of anatomic distribution. It has been the clinical urologic experience of one of us (R. H. F.) that 70 per cent of the cases in the male show some degree of genital pathologic change, even though superficially it is not apparent during the early course of the disease.

The later stage is characterized by the development of a varying degree of elephantiasis. The disappearance of the acute, recurring lymphangitis which usually follows rest does not occur so readily, and a reparative fibrosis slowly occludes lymph channels and is therefore responsible for the edema distal to the obstruction. The scrotum, lower extremities and, less frequently, the upper extremities, in that order, are the seats of predilection for its development. The deformity is proportional to the extent of mechanical obstruction of the lymphatics, and the adult filariae may be found in the lymph nodes during both stages and often undergo calcification, obstructing, to an even greater degree, the lymph drainage from the affected part.

Early the manifestations of an emotional overlay are seen in practically all patients infested. But, even more than most patients with similarly incapacitating illnesses, these persons are subjected to a psychologic assault of no small proportions. The involvement of their genitalia in the process personalizes, to a considerable degree, latent insecurities. Deformity, impotence, sterility and ostracism are a sufficiently foreboding quadrad to distort seriously the quality of the patient's present and future psychosocial adjustment. This is made the more real to them because they have had frequent opportunities to see the advanced stages of deforming elephantiasis in the native population.

One of the striking features about the natives of all the South Pacific islands, particularly the Samoan

Tongan and Wallis group, is the prevalence of mumu (Samoan for filariasis). As many as 85 per cent of some villages are visibly crippled. Accordingly, it is to be expected, particularly of young adults, that their initial reactions of curiosity and amazement are followed by revulsion and disgust, since the disfigurement is striking. Curiosity, which invariably leads to further inquiry, soon discovers the presence of numerous examples of adult males whose external genitalia are as large as coconuts, watermelons and, occasionally, beer kegs. Jest and semilewd remarks, which commonly follow lay contact with genitourinary disease, serve in a measure to intensify deep seated anxieties about disease. With this as an ever present example, it is not to be unexpected that the onset of the same disease in the white troops precipitates feelings of depression, apprehension and dread. Humor, which is almost universally incited by any group discussion of the subject, reverberates with grisly overtones, and a great number of the relatively uninformed develop moods of hopeless helplessness when they visualize what they fear will be their future.

It follows then, in the natural progression of the illness, that attention and concern are genitally focalized by pain, swelling, medical manipulation and attention directed questioning by examining physicians. Since thoughts of returning home are foremost in the minds of all military personnel on foreign duty, concern about the residua and sequelae is a prominent finding, particularly since it is common knowledge that their illness is officially recognized to be sufficiently incapacitating to warrant medical survey from the area. Depression and reluctant anticipation of home coming ensue at this point, for it is then that the question of the effect of this disease on subsequent domestic adjustment is almost automatically raised. There are many corollaries of this. Many patients, particularly the more sensitive, imaginative ones, conjure up difficulties connected with dress, frequently anticipating insuperable difficulties in being able to observe the usual conventional amenities required by civilized modesty. The question of explaining their incapacity arises, and it is anticipated by some that they will be tainted with the stigma of venery because they have evident genital disease.

The letters written by these patients, attempting to explain their hospitalization, are pathetically revelatory. Statements which say, in effect, "I have acquired a disease which is common out here and I'm afraid it is going to upset our plans for marriage" are typical of a number of cryptically uninformative decisions which create considerable anguish in fiancées and relatives as well as serve further to estrange and demoralize an already isolated and distressed individual. A common psychologic symptom is the resolution not to return home after discharge for fear of questioning, the need for explanation and the anticipated inability to adjust adequately in the marital situation. Tangentially there is another course often taken: the decision to make no mention of the illness but to experiment sexually to determine their capacity to perform satisfactorily. This, in most instances, is an unfortunate decision because, prompted by desperation, it is predestined to incur anxiety. Impotence often follows as a consequence of concern over the outcome of a test already heavily taxed by tension. With the dreaded result at this point a *fait accompli*, the usual mechanisms seen in entrenching neuroses operate. Symptom fixation is accelerated by

<sup>1</sup> Dickson, J. G., Huntington, R. W., and Eichold, Samuel. Filariasis in Defense Force Samoan Group. *U. S. Nav. M. Bull.* 61: 1240-1251 (Sept.) 1943.

the reinforcing of this traumatic experience by earlier psychosexual traumas. Of these, masturbatory guilt is prominent. The usual alternatives taken by the psychopathologic condition are those offered by a reactive depression with neurasthenic features and an anxiety neurosis with compulsive-obsessive phenomena.

The premonitory personality type is basically responsible for the neurotic pattern characteristic of later stages. It is interesting to note in this regard that the persistence of symptoms, both psychic and somatic, is not necessarily related to demonstrable pathologic changes. Total and partial impotence may persist for many months after a complete symptomatic remission. Loss of libido, with or without loss of potentia, often occurs as an isolated symptom.

The group grossly classified as reactive depression types are milder versions of the usual reactive depression. There is the typical personality contraction with guilt, depression, retardation and—almost constantly appearing features suggestive of neurasthenia—fatigability, organ preoccupation, hypersensitivity, work incapacity and worry.

On the other hand, another large group is composed of those patients who show predominating anxiety symptoms with related compulsive features. They, as a group, have not been as successful in completely channelizing their anxiety. Early sexual conflicts are intimately blended with their present complaints. Anxiety is sometimes precluded by resorting to compulsive sexual experimentation which is rarely gratifying. There seems to be a more concentrated psychosexual focalization of symptoms in this group than in the former. As a rule, they lack the diffusion of anxiety quality which manifests itself as weakness, backache, leg pains and anorexia.

In both categories the initial complex is often obscured by an accretion of secondary symptoms. These are often misleading, since the referents are purposefully vague. Irritability, at times frank belligerence, universal dissatisfaction and what is best described as "gold bricking" constitute the presenting symptom picture. The "face saving" protection offered by these complaints is a transparent mechanism.

Psychotherapy, after the development of frank psychologic symptoms, is difficult. There is then an almost unshakable reluctance to accept the formulation that impotence and lack of libido are psychogenic in their origin, particularly is this so when the patient's beliefs have been supported by his own uncritical observations and sometimes the instructions of uninformed physicians. The uncertain prognosis is an additional factor, it being fairly common knowledge that, to date, there is no satisfactory treatment. Credence in the usually held theory that removal to a cool climate accomplishes effective therapy often is shaken by personal familiarity with recrudescence of symptoms after return to the United States. There is a tendency for patients to overemphasize the significance of these relapses. The type of communal living to which military personnel are subjected is conducive to the sharing of confidences with companions similarly afflicted, and the adverse effects of suggestion increase the individual's susceptibility to symptoms.

The quality of "contagion" plays a large role in the dissemination of symptoms which lead to incapacity. Injudicious questions by well intentioned physicians frequently induce the phenomenon to which Hurst has

given the name "iatrogenic hysteria." Fear of ridicule and embarrassment dooms each successive attempt to failure and sets the stage for a firmly established neurosis.

In a large percentage of cases their antecedent instability requires no great threat to precipitate the symptom complex described. In retrospective analysis sexual performance appears to have assumed disproportionate significance in a sufficient number of these patients to warrant it being assumed to be the latent source of the future psychopathologic condition. This overevaluation appears more or less constantly in the majority of cases and therefore must be considered to have positive etiologic value.

In general, if psychotherapy is conducted on a group basis, coupled with the usual individual interviews, there is a greater likelihood of relieving symptoms in a higher percentage. Because of the tendency for present traumatic experiences to merge with earlier conflicts, it is advantageous to avoid as far as it is possible a too penetrating analysis of background factors. This, for the most part, unnecessarily protracts therapy and is notoriously unproductive of satisfactory results.

#### COMMENT

The value of prophylactic psychiatry in raising the threshold of vulnerability to psychologic disorders cannot be overestimated. The psychologic stability of soldiers is directly proportional to their factual knowledge of the situations in which they will serve. For the average individual the ravages of disease and war are exaggerated. Information of this sort is rarely limited to specific individuals. Since the hazard is a common one, it has the property of diffusion and the awareness of it rapidly becomes universal. It has been amply demonstrated that psychologic inoculation is the only effective preventive. Latent and imaginary dangers are naturally shocking on initial recognition, and attendant anxiety can be dispelled only when men are given an understanding of the irrationality and emptiness of most of their fears. A patient, simple, repeated presentation of facts will in most instances assuage doubts and "debunk" groundless anticipations.

The medical officer is in an ideal position to render this valuable service. He is known to the men, he has had the opportunity to demonstrate his technical competence and he is serving with them, sharing their hardships and experiences. In addition to group talks, individual discussions of particular problems with men who have contracted the disease will in a large degree obviate their "flight into nonorganic symptoms."

Group discussions on the role of the mosquito in the transmission of the disease establish a reasonable explanation for the directives on screening and mosquito control. Rules and regulations are appreciated as personally valuable, prophylactic directions, not as arbitrary commands. Simple, nontechnical explanations of the pathology, supplemented by illustrative charts and blackboard diagrams, can do much to allay fears of impotence, sterility or possible genital transmission. Sex hygiene talks on the causes of impotence will obviate the many false conclusions so often drawn. Furnished with authoritative information, the soldier is less likely to assume that the familiar picture of the chronically infested native with elephantiasis is a mirror prediction.

## PULMONARY EDEMA

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The vast increase in our industrial production since the outbreak of war has of necessity exposed a greatly increased number of workers, many of them inexperienced in the handling of industrial equipment to hazards from toxic fumes. This unfortunate effect has been particularly reflected in the rise in incidence of pulmonary edema following exposure to toxic gases. Indeed, so frequently has pulmonary edema been noted as a terminal event in these cases that it seems desirable to call attention to a simple method which has proved effective in the prevention as well as the treatment of these cases.

Briefly, the method consists in absolute bed rest and the immediate administration of oxygen under atmospheric pressure with a provision for expiration against calibrated resistance of from 1 to 6 cm of water pressure.

We begin at once the administration of 100 per cent oxygen under atmospheric pressure, setting the expiratory valve or the efferent tube leading into the water bottle so as to afford 1 cm of water pressure. This pressure is gradually, though fairly rapidly (five to ten minutes), raised to not more than 6 cm of water pressure. Oxygen administration under these conditions is continued for from one to three hours, depending on the appearance and state of the patient. Trial periods are made of breathing without the mask for five to fifteen minutes, and if any increase in respiratory rate, difficulty in breathing, cyanosis or coughing is observed the mask is reapplied and oxygen continued under the same conditions for a further period. With prompt and effective administration of oxygen in this way we have not had a single fatality from pulmonary edema in the past nine years.

In some instances considerable time may elapse between the patient's exposure and his delivery to the medical department. In most of these cases in which actual pulmonary edema is present we follow the recommendations Dr D W Richards Jr<sup>1</sup> made some time ago for the administration of 1 to 100 solution of epinephrine by the oral nebulizer method either prior to or during the administration of oxygen. This has proved to be a valuable adjunct in these advanced cases as well as in cases in which the irritant itself has produced bronchiolar spasm obstructing the intake of oxygen. (In these cases oxygen may be administered under 2 or 3 cm of water pressure during inspiration with the usual positive pressure used during expiration.)

The administration of the 1 to 100 epinephrine solution may be repeated at intervals or may be done continuously by applying the nebulizer to a side arm of the oxygen intake tube.

Without significant bronchiolar obstruction and before advanced pulmonary edema has appeared, inspiration of oxygen under atmospheric pressure with expiration against a calibrated resistance of 6 cm of water pressure has handled successfully all cases we have encountered.

While in general our approach as well as the actual management of most of our cases has been that of

prevention we are convinced from our own experience that the use of the 1 to 100 epinephrine solution combined with the administration of oxygen under positive pressure of 1 to 6 cm of water may be recommended for active treatment of the advanced stages of pulmonary edema caused by certain noxious gases. In our experience this has been a far more effective method of handling frank pulmonary edema than any of the procedures hitherto suggested. We find that on check of our records for the past year and a half, we have had 316 cases in which only this method of treatment has been employed. Case reports as well as an analysis of our data for the ten year period during which this method of treatment has been employed, will be published later. If one assumes that no more than 50 per cent of these were of a severity likely to result in advanced pulmonary edema, our experience in completely preventing the latter seems appreciable.

Through educational means directed in behalf of the prevention of pulmonary edema, we have secured the cooperation of all employees in coming to the Medical Department immediately after undergoing exposure to one of these noxious agents which are, in the main, oxides of nitrogen, phosphorus oxychloride, phosphorus pentachloride, phosphorus trichloride, methyl bromide, chlorine, cadmium, and dust from certain alkaloids. Thus we see the cases in all but very few instances at the beginning of the so-called "quiescent" or "latent" period.

We do not use and, as a matter of fact, advise against the use of oxygen-carbon dioxide mixtures.

In some few cases we have found the oxygen-helium mixture of significant benefit.

While tanks of 100 per cent oxygen are routine we use a special mixing valve which will allow for admixture of air in the tube leading to the face mask. However, air should not be added in excess of 25 per cent since the patient will cough in the face mask if at least a 75 per cent oxygen concentration is not maintained.

One or two swallows of milk seem to be the most nearly satisfactory means of controlling the chronic hacking cough which so frequently occurs after the oxygen pressure treatment of cases exposed to irritant gases, particularly phosphorus oxychloride.

We have learned from experience that it is a great mistake to allow for a delay in beginning this treatment which should be started as early as possible after exposure. If one waits for anoxic anoxia and until the patient is actually drowning in his own fluids, or the chest, by x-ray, shows a veritable "snow storm," then treatment has been unwisely delayed. However, even at this stage, oxygen and positive pressure are life-saving and morphine, venesection, mercurial diuretics or other such ill-advised or heroic measures are in my opinion, contraindicated and should be used only as control measures in experimental studies.

While the oxides of nitrogen are by no means the most toxic of irritant gases, they represent in many industries the most common cause of pulmonary edema. Unfortunately, this ominous reaction is frequently most insidious in its onset. For this reason every physician in industries in which this hazard exists should be on the alert for its early detection and take advantage of every means at his disposal to see that proper treatment is instituted as early as possible after exposure.

All cases which have been exposed to such irritant gases should be subjected to oxygen therapy with the apparatus so arranged that exhalation is carried out

<sup>1</sup> Richards, Dickinson W. Jr, Barach, Allan L. and Cromwell, Henry A. Use of Vaporized Bronchodilator Solutions in Asthma and Emphysema. A Continuous Inhalation Method for Severe Asthmatic States. *Am J Med Sci* 199: 225 (Feb) 1940.

against a calibrated resistance. This form of therapy conducted in the incipient stages of pulmonary edema will frequently prevent its advancement and will be effective in saving many more lives than will more heroic measures instituted when the condition has reached its more advanced stages.

## EFFECT OF CERTAIN SULFONAMIDES ON THE ELECTRICAL ACTIVITY OF THE CEREBRAL CORTEX

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The local application of sulfonamides to cranial injuries has become a widespread practice, particularly in military surgery. Recently reports by Watt and Alexander<sup>1</sup> in England and Pilcher and his co-workers<sup>2</sup> in this country have indicated that sulfathiazole in particular should not be allowed to come in contact with the cerebral cortex because of the danger of generalized convulsions. Sulfadiazine and sulfapyridine did not appear to possess this disadvantage. Because of the considerable practical importance of the problem at present, we have undertaken a series of experiments designed to determine the effect of local applications of various sulfonamides on the electrical activity of the cortex.

### METHOD

The experiments were all acute ones and were done on cats under light or moderate anesthesia induced with pentobarbital sodium. The electrical activity of the exposed cortex was recorded by a Grass ink-writing electroencephalograph such as is used for clinical electroencephalography. Unipolar electrodes were used. The stigmatic electrodes consisted of cotton wicks moistened with isotonic solution of sodium chloride and wound about chlorided silver wires with the free ends lightly touching the cortex. The cat's ears were grounded and served as the indifferent electrodes.

The drugs tested were sulfanilamide, sulfathiazole, sulfadiazine and sulfapyridine. Two preparations of each drug were used, the acid, a relatively insoluble sulfonamide compound, and the sodium salt of the compound. The relevant physical and chemical properties of the eight preparations are given in the accompanying table.

Experiments were done on 23 cats. Sodium sulfanilamide was tested eight times, sodium sulfathiazole sixteen times, sodium sulfadiazine twelve times and sodium sulfapyridine eleven times.<sup>3</sup> Sulfanilamide was tested five times, sulfathiazole eight times, sulfadiazine seven times and sulfapyridine twice.

Experiments were conducted with both soluble and insoluble preparations. The soluble preparations were applied to the cortex by moistening a small cotton pledget in a solution of the drug of the appropriate strength made with an isotonic solution of sodium chloride and placing it on the cortex for ten minutes. At the end of that time the pledget was removed, the cortex was washed with warm saline solution, the cotton wick electrode was reapplied and recording was resumed. The

insoluble preparations were simply dusted on an area of the cortex, and the wick electrode was then brought into contact with it. The powder was left on for a longer or a shorter time (thirty to one hundred and twenty minutes).

The soluble preparations form rather alkaline solutions, as shown in the table, and it was necessary to control for this factor. Solutions of sodium hydroxide of pH 10.3 were applied to the cortex for ten minute periods without any change in the electrical activity.

### RESULTS

We found that solutions of the sodium salts of sulfapyridine and sulfathiazole of 1.25 to 2.5 per cent or more when applied locally for ten minutes produced striking electrical changes. Solutions of sodium sulfadiazine produced similar changes when applied in slightly higher concentration—about 5 per cent or more. The electrical responses consisted in high voltage negative or diphasic spikes, appearing at irregular intervals. The spikes were similar to those seen after local application of strychnine to the cortex and are illustrated in figure 1. Solutions of sodium sulfanilamide varying in concentration from 2.5 to 20.0 per cent were applied to the cortex in the same way without producing any significant change in the electrical activity.

There were two characteristics of the response to solutions of sodium sulfathiazole which seem worth noting: the latent interval between the removal of the pledget and the first appearance of the characteristic spikes, and the relatively long duration of the response. In only two of nine trials was the characteristic response to sodium sulfathiazole present at the time the drug was removed from the cortex. In the other seven trials the response did not appear till five to fifteen minutes later. The average latent period for the nine trials was eight minutes. With sodium sulfapyridine and sodium sulfadiazine, on the other hand, the electrical response either was present immediately on the removal of the drug or else did not appear at all. The average duration of the response (either from the time of the removal of the drug from the cortex or from the time of the first appearance of the response) was thirty-four minutes for sodium sulfathiazole (range fourteen to fifty-one minutes), eleven minutes for sodium sulfapyridine (range four to fourteen minutes) and only seven minutes for sodium sulfadiazine (range three to fifteen minutes).

The following results were obtained by the application of the acid, relatively insoluble forms of the four drugs to the cortex. The application of sulfathiazole powder produced the same electrical response as did the soluble salt. In an experiment in which the powder was applied to the anterior sigmoid gyrus (motor area) the opposite foreleg twitched synchronously with each spike in the electrical record for twenty minutes, i.e., the cat had a mild focal seizure despite its anesthesia (fig. 2). The application of sulfapyridine powder was followed by the appearance of high voltage, four to seven second waves in the electrical record (fig. 2). We found no change in electrical activity following the application of either sulfadiazine or sulfanilamide.

### COMMENT

Direct application of sulfathiazole or of a solution of the sodium salts of sulfathiazole or sulfapyridine or of sulfadiazine to the cat's cortex gives rise to spontaneous electrical activity in the cortex which appears as high voltage spike discharges in the electroencephalographic record (figs. 1 and 2). These spike discharges are evidence of an irritant action of these drugs on

This work was aided by a grant from the John and Mary R. Markle Foundation.

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<sup>1</sup> Watt, A. C., and Alexander, G. L. *Epilepsy Following Application of Sulfathiazole Near Brain*, *Lancet* 1: 493-495 (April 25) 1942.

<sup>2</sup> Pilcher, Cobb, Angelucci, Ralph, and Meacham, W. F. *Convulsions Produced by Intracranial Implantation of Sulfathiazole*. Preliminary Report, *J. A. M. A.* 119: 927 (July 18) 1942.

<sup>3</sup> Sodium sulfanilamide, the only one of these compounds which is not commercially available, was furnished by Dr. K. K. Chen of Eli Lilly and Company. Dr. Chen also furnished the figures on the pH of this compound.



the cortex. In fact we feel that they are the electrical manifestation of a convulsive state of the cortex as shown by the focal seizure following the application of sulfathiazole in one animal (fig 2) in which each spike was synchronous with a convulsive twitch of the opposite forelimb. This view is supported by the known convulsant action of sulfathiazole,<sup>4</sup> by the similarity of the spike discharge to that produced by local application of strychnine to the cortex (fig 1) and by its similarity to the myoclonic spike discharge seen in epileptic human beings<sup>5</sup> and in monkeys during seizures induced by electrical stimulation of the cortex.<sup>6</sup>

The application of sulfapyridine to the cortex produced an increase in the electrical activity which is interpreted as evidence of an irritant effect of a lesser degree (fig 2).

The local application of sulfadiazine to the cortex produced no change in the electrical activity although, as noted in a foregoing paragraph, the application of a 5 per cent solution of its sodium salt caused the prompt appearance of spike discharges. It is suggested that the differences between the irritant effects of sulfapyridine and sulfadiazine and those of their sodium

#### Relevant Physical and Chemical Properties of Sulfonamide Compounds and Sodium Salts Used in Experiments

Drug	Solubility Gm per 100 Cc in Water at 37.5 C *	pH of 10 per Cent Solution at 37.5 C †
Sulfanilamide	15	
Sulfathiazole	0.094	
Sulfapyridine	0.050	
Sulfadiazine	0.012	
Sodium sulfanilamide	20.0	11.6
Sodium sulfathiazole	60.0	10.0
Sodium sulfapyridine	80.0	10.7
Sodium sulfadiazine	60.0	10.2

\* The figures are from W. G. Clark, E. A. Strakosch and N. I. Levitan (Solubility and pH Data of Some of Commonly Used Sulfonamides, J. Lab. & Clin. Med. 28: 188-189, 1942) and W. H. Feinstone, R. D. Williams, R. T. Wolf, E. Huntington and M. L. Crossley (Toxicity and Chemotherapeutic Activity of 2 Sulfanilamide Pyrimidine [Sulfadiazine] Bull. Johns Hopkins Hosp. 67: 427-456, 1940).

† These figures are from Chen, R. C. Ellingson (Sulfapyridine, Sulfapyrimidine and Sulfadiazine, J. Am. Chem. Soc. 63: 2524-2526, 1941) and Feinstone and his co-workers just cited.

salts may be largely dependent on their relative solubilities, as shown in the table. Sulfathiazole, which is more soluble than either of the two, had the same irritant effect on the electrical activity of the cortex as did the solutions of its sodium salt, although the effect took longer to become evident. Sulfadiazine, which is only one eighth as soluble as sulfathiazole, gave no evidence of irritant effect on the electrical activity of the cortex despite the fact that solutions of its sodium salt had such an effect in nearly as low concentrations as sodium sulfathiazole. Sulfapyridine, which is intermediate in solubility between the other two, had some irritant effect on the electrical activity, but this was less pronounced than that of sulfathiazole, though sodium salts of the two compounds were effective in about the same concentration.

In the case of sulfanilamide the situation is different. Neither the drug itself nor solutions of its sodium salt up to concentrations of 20 per cent showed any evidence of irritant effect on the electrical activity of the cortex. From this point of view therefore sulfanilamide appears to be the drug of choice for local application where there is a possibility of contact with the cerebral cortex.

One of the other three drugs tested (sulfathiazole, sulfapyridine and sulfadiazine) might seem preferable to sulfanilamide by reason of being a more efficient bacteriostatic agent or for other analogous reasons. In considering the advisability of using any of the three locally near the cerebral cortex, the results

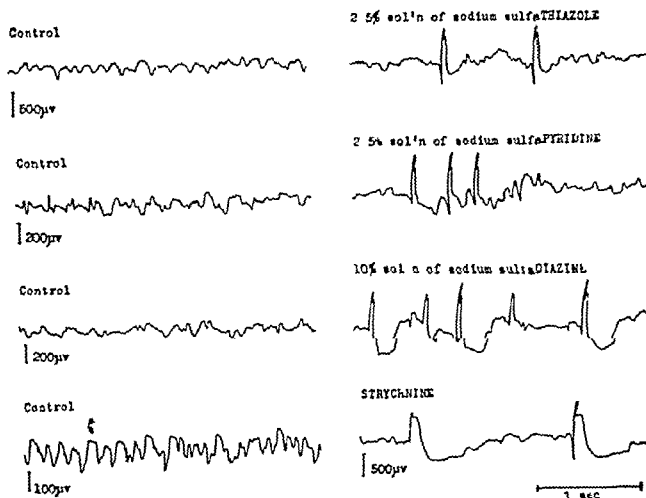


Fig 1—The change in electrical activity produced by the local application to the cat cortex of solutions of sodium sulfathiazole, sodium sulfapyridine and sodium sulfadiazine. The response to strychnine is included for comparison.

reported here appear to have some significance. From them we conclude that the convulsions reported in human beings following the intracranial implantation of sulfathiazole<sup>1</sup> might possibly occur following the use of sulfapyridine and sulfadiazine also. Since local concentration of the drug seems to be an important factor, the use of relatively insoluble forms would appear to minimize this possible danger.

#### SUMMARY AND CONCLUSIONS

Neither sulfanilamide nor its sodium salt in concentrations up to 20 per cent had any significant effect on the electrical activity of the cortex of lightly anesthetized cats.

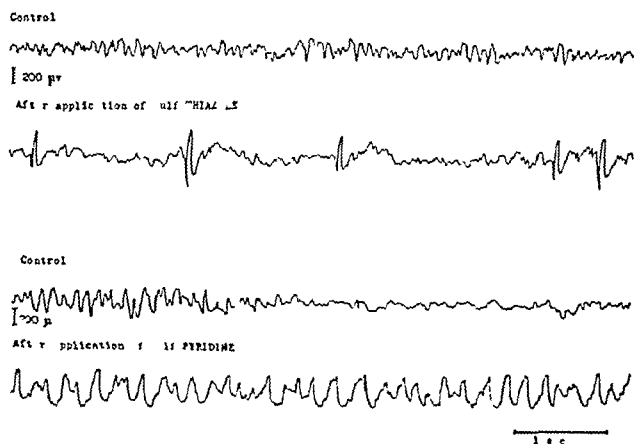


Fig 2—The change in electrical activity produced by the local application to the cat cortex of sulfathiazole powder and sulfapyridine powder. In the case of sulfathiazole the animal's foreleg of the opposite side gave a clonic jerk synchronously with each of the high voltage spikes.

Solutions of the sodium salts of sulfathiazole, sulfapyridine or sulfadiazine produced striking changes in the electrical records which are interpreted as evidence that these drugs have a convulsant action on the cerebral cortex of the cat. Sulfathiazole powder produced the same electrical changes and on one occasion was accom-

4. Watt and Alexander, P. L. P. Angelucci and Meacham, J. S. Atlas of Electroencephalography, McGraw-Hill, New York, 1941, p. 221.  
5. Rosenbluth, A. and Cannon, W. B. Cortical Responses to Electric Stimulation. Am. J. Physiol. 135: 690-741 (Feb.) 1942.



panied by a focal seizure Sulfapyridine powder produced increased electrical activity of a less striking kind Sulfadiazine powder produced no significant change in electrical activity The solutions of the sodium salts were applied in each instance for ten minutes, the acid powders for periods ranging from thirty minutes to two hours

It is concluded that as far as instant or possible convulsant action on the cortex is concerned sulfanilamide is the safest of these four drugs for local intracranial application where there is a possibility of contact with the cerebral cortex

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## THE TALCUM POWDER PROBLEM IN SURGERY AND ITS SOLUTION

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Our purpose in this report is to reemphasize the very serious surgical hazard incident to the use of talc as a dusting powder for rubber gloves and to recommend potassium bitartrate as a substitute powder

Even a cursory knowledge of the rapidly increasing surgical literature dealing with talc convinces one that this powder creates serious postoperative hazards After the technic of dry gloves was adopted, practically a quarter of century elapsed before surgeons recognized the evil agency of talc, and even now many are unaware of its harmful potentialities Equally noteworthy is the fact that, in the various reports devoted to this subject, efforts center almost exclusively on detailed descriptions of the surgical complications due to talc, with practically no stress laid on the possibility of substituting for it some satisfactory, innocuous powder As a result, at the very moment that this is being written, talcum powder is in almost universal use in preparing gloves aseptically

As evidence of the pressing need of replacing talcum powder, one has only to call attention to the numerous reports in the literature in which are recorded cases of postoperative intestinal obstructions due to talc The seriousness of this complication becomes all the more significant when one considers that in these cases of foreign body peritonitis with obstruction the obstruction recurs with menacing frequency, requiring multiple operations In our survey of the literature we found numerous histories of patients who were subjected to from two to four and even more operations for the relief of successive obstructions Such cases have been reported by Antopol,<sup>1</sup> Fienberg,<sup>2</sup> Owen,<sup>3</sup> Ramsey and

Douglass,<sup>4</sup> McCormick and Ramsey,<sup>5</sup> Byron and Welch,<sup>6</sup> Ramsey<sup>7</sup> and German<sup>8</sup>

Inevitably there comes to mind all the precautionary surgical procedures and technics that have been recommended during the past two decades as prophylactic measures against postoperative intraperitoneal adhesions, and this in the face of the fact that, all the while we have been seeding the operative field with talcum from the surface of gloves<sup>9</sup> and from accidental glove punctures or tears during operations Such accidents furnish a fertile source of contamination with talcum, because the fingertip of a carelessly prepared glove often contains as much as 100 mg of talc Studies by Weed and Groves<sup>10</sup> show that (a) in 74.4 per cent of all operations some gloves are torn and (b) 22.6 per cent of all gloves used show rents or punctures These data were obtained by Weed and Groves through a period of twenty months of operating, using a total number of 35,763 gloves Some months 32 per cent of the gloves showed rents or punctures The high incidence of perforation of rubber gloves during operation (22 per cent) was recently emphasized in an editorial in the *British Journal of Surgery*<sup>11</sup> German<sup>8</sup> found that in a series of 50 patients 40 showed intraperitoneal talc that had been deposited accidentally during a previous laparotomy German examined his microscopic preparations in polarized light, which renders the talc crystals much more readily visible We show in figures 1 and 2 the striking difference between talc as demonstrated in an intraperitoneal granuloma viewed by ordinary and by polarized light In 42 of German's patients (84 per cent) one previous laparotomy, in 7 patients (14 per cent) two previous laparotomies, and in 1 patient (2 per cent) five previous laparotomies had been performed Of course in such a study the talc may come from the surface of the gloves or through accidental perforations of them, or possibly from gauze sponges or pads contaminated with talcum powder

The noxious properties of talc are thrown into bolder relief when one learns that it is a trouble maker elsewhere than in the peritoneal cavity Granulomas resulting from talc implantation have been described in the rectum, vagina, cervix and brain and in healing wounds by Antopol and Robbins,<sup>12</sup> Erb,<sup>13</sup> Antopol,<sup>1</sup> Fienberg,<sup>2</sup> Ramsey and Douglass,<sup>4</sup> Grieco,<sup>14</sup> Cline<sup>15</sup> and others We have heard, by way of a personal report, of troublesome consequences following the accidental entrance of talcum powder into the conjunctival sacs of operating room nursing personnel On the basis

4 Ramsey, Thomas L., and Douglass, Fred M. Granulomatous Inflammation Produced by Foreign Body Irritants, *J Internat Coll Surgeons* 3 3 (Feb) 1940

5 McCormick, E J., and Ramsey, T L. Postoperative Peritoneal Granulomatous Inflammation Caused by Magnesium Silicate, *J A M A* 116 817 (March 1) 1941

6 Byron, F X., and Welch, C S. Complication from Use of Glove Powder (Talc Nodules in Surgical Scars) *Surgery* 10 766 (Nov) 1941

7 Ramsey, Thomas L. Magnesium Silicate Granuloma, *Am J Clin Path* 12 553 (Nov) 1942

8 German, William McKee. Dusting Powder Granulomas Following Surgery, *Surg, Gynec & Obst* 76 501 (April) 1943

9 It is by no means a universal practice for surgeons to wash the surface talc off the gloves before beginning to operate Moreover, this surface talc washes off only with the greatest difficulty and, even then not completely

10 Weed, Lyle A., and Groves, Jessie L. Surgical Gloves and Wound Infections *Surg, Gynec & Obst* 75 661 (Nov) 1942

11 Rubber Gloves in Surgery, editorial *Brit J Surg* 30 283 (Jan) 1943

12 Antopol, William, and Robbins, Charles. Lycopodium Granuloma Resulting from Use of Anal Suppositories *J A M A* 109 1192 (Oct 9) 1937

13 Erb, I H. Lycopodium Granuloma *Surg, Gynec & Obst* 60 40 (Jan) 1935

14 Grieco, Faust. Granuloma da lycopodium e da talco in seguito a laparotomia *Arch ital di chir* 42 641 1936

15 Cline, John W. Lycopodium Granuloma an Avoidable Surgical Complication *California & West Med* 18 189 (March) 1938

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Dr Christopher Carruthers, research associate Barnard Free Skin and Cancer Hospital, made helpful suggestions regarding the chemistry of the various powders used Dr Morris Moore, mycologist, extended courtesy and help with the bacteriologic phase of this study The Mallinckrodt Chemical Works, the Monsanto Chemical Company, the Corn Products Refining Company and the Corn Starch Division of Anheuser Busch, Inc., gave generous cooperation

1 Antopol, William. Lycopodium Granuloma, *Arch Path* 16 326 (Sept) 1933

2 Fienberg, Robert. Talcum Powder Granuloma, *Arch Path* 24 36 (July) 1937

3 Owen, M A. Peritoneal Response to Glove Powder Containing Talc, *Texas State J Med* 32 482 (Nov) 1936

of a study of the talcum hazard in the preparation of rubber gloves for sterilization made by the Illinois Division of Industrial Hygiene, Kronenberg<sup>16</sup> suggests it would be wise to institute measures to control and remove talc dust in order to avoid health risk to nurses



Fig 1—Intraperitoneal talc granuloma illuminated by ordinary light. Talc crystals seen with some uncertainty. Magnification 116 diameters.

#### HISTORICAL SUMMARY

The earliest reported clinical work on intra-abdominal complications arising from powder in the peritoneal cavity had to do not with talc but with lycopodium, which is a dusting powder made from the club mosses, to the spores of which the peritoneum reacts almost exactly as it does to talc. Hippolyte Martin<sup>17</sup> in 1881 and Muscatello<sup>18</sup> were the first to demonstrate experimentally the ill effects of lycopodium powder on the peritoneum. Independently, Carlo Bezzola<sup>19</sup> and von Podwyssozki<sup>20</sup> studied experimentally similar deleterious effects due to intraperitoneal instillation of diatomaceous earth (kieselguhr). In 1913 Lambert<sup>21</sup> showed that even in cell growth in vitro lycopodium spores evoked a foreign body response with outgrowth of connective tissue cells, wandering cells and giant cells. Marchand<sup>22</sup> of Leipzig in 1921 corroborated experimentally the severe irritant qualities of lycopodium powder when injected intraperitoneally in

animals. During the past ten years considerable experimental work has been reported emphasizing the irritant qualities of talc when injected intraperitoneally,<sup>23</sup> intrapleurally,<sup>24</sup> intrapericardially<sup>25</sup> or subcutaneously.<sup>26</sup> In fact in a certain type of heart disease talc has been recommended to produce pericardial adhesions in an attempt to promote better collateral circulation.

In 1923 Roth<sup>27</sup> published the first contribution to the clinical chapter of postoperative complications arising from dusting powders. In this instance the dusting powder was lycopodium spilled from a glove which tore during a laparotomy. The results of this accident were three subsequent laparotomies for adhesive intestinal obstructions supposedly due to tuberculosis (many milium nodules were found on the peritoneum) until pathologic examination disclosed that the milia represented foreign body reactions to spores of lycopodium. In 1933 Antopol<sup>1</sup> reported 6 cases of complications resulting from lycopodium spores in the urinary bladder, testicle, kidney, peritoneal cavity, neck and female breast. In the same paper Antopol recorded the first case of intraperitoneal granuloma due to talc. Antopol's description of the microscopic appearance of the lesions resulting from the contamination of the peritoneum with these dusting powders remains as accurate today as



Fig 2—Same section as shown in figure 1 illuminated by polarized light. Talc crystals scintillate. Magnification 116 diameters.

when it was written, ten years ago. In the instance of lycopodium the offending agents are the lycopodium spores whereas in the instance of talc they are the talc

16 Kronenberg M H. Dust Dangers Exposed (Dusting of Rubber Gloves with Talc). *Mod Hosp* 49:84 (Aug) 1937.

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crystals (predominantly magnesium silicate) The spore or the talc crystal forms the center of a tubercle-like structure made up of lymphocytes, epithelioid cells and giant cells (of both foreign body and tumor giant cell types) We might add, based on our experiments, that these tubercle-like structures rarely show any central necrosis, although central caseation necrosis may occur Neither the macroscopic nor the microscopic anatomy of these lesions is as important as are the end results of their formation, namely a fibrosis which produces intraperitoneal adhesions In our experimental animals we found all types of adhesions, ranging from a massive occlusion of almost the entire peritoneal cavity to less massive localized adhesions of stomach, spleen, liver and omentum or intestinal loops, or merely thin adhesive bands of fixed omental strands that not infrequently caused death from intestinal obstruction in our animals

Any attempt to find a substitute for talc must be based on two fundamental considerations 1 The substitute powder must possess such a degree of actual or potential solubility as to be disposed of rapidly and completely by some form of peritoneal or tissue absorption If this is not true, the powder collects in the peritoneal cavity as masses or plaques which induce foreign body granulomas, which in turn result in adhesions, or the powder sets up foreign body reaction in wounds or on mucous membranes 2 The powder must possess such a degree of insolubility as to withstand steam sterilization without losing that dusting property which serves to prevent the glove surfaces from adhering

Our search for a substitute for talc followed three distinct lines One of us (M G S) selected "prepared chalk" because it has been used for years as a face powder by women and because Miller and Sayers<sup>28</sup> have shown that when injected into the peritoneal cavities of experimental animals it is eventually absorbed without any consequent ill effects However, when we injected it into our animals we found that although it was absorbed eventually (five to six weeks) it nevertheless, during the early period following injection, induced granulomas and peritoneal adhesions In time these granulomas tended to disappear and the adhesions to thin out, but we could demonstrate some menacing intraperitoneal adhesions and strands eight weeks after injection

Another one of us (F H K) selected cornstarch as a promising substitute for talc because of its admirable dusting quality and its appealing smoothness Furthermore, there were rational reasons for assuming that it would be taken care of by the diastatic action of the peritoneal fluid and thus be rendered safely absorbable These assumptions were borne out by our animal experiments, which demonstrated that rats would dispose of an intraperitoneal dose of starch comparable to 1½ pounds (0.68 Kg) injected into a human being of average weight (150 pounds, or 68 Kg) The animals, within twelve to twenty-four hours after intraperitoneal injections of starch, showed complete absorption of 3 cc of a 10 per cent suspension without a vestige of any kind of local or general undesirable effect These findings are in contrast to the demonstrated

chemotactic effect of starch recorded by Chambers and Grand<sup>29</sup> and Kile<sup>30</sup> This discrepancy is probably due to the fact that in our experiments the starch was injected into the peritoneal cavity, whereas the other investigators made their injections into the subcutaneous tissue We encountered much difficulty however in the fact that, when we attempted to sterilize starch powdered rubber gloves by autoclaving, the starch gelatinized on the glove surfaces, causing them to adhere and the whole glove to stiffen and glaze There is reason to believe that it may be possible to develop a special starch powder that will not gelatinize during steam sterilization This is a consummation devoutly to be wished and for which at present the Research Department of the Corn Products Refining Company is working

One of us (D J V), with the foregoing considerations in mind but nevertheless on solely empirical grounds, selected potassium bitartrate as fulfilling the necessary requirements This powder is sufficiently insoluble (0.37 Gm per hundred cubic centimeters of water at 0 C and 6.1 Gm per hundred cubic centimeters at 100 C) to preserve its powdering effect after autoclaving Studies of the pharmacologic action of the tartrates in man and experimental animals by Underhill and his co-workers,<sup>31</sup> Salant and his co-workers<sup>32</sup> Post<sup>33</sup> and others reveal that only large doses are toxic It has been shown that the toxic dose in the experimental animal is 0.5 Gm per kilogram of body weight administered subcutaneously, or about 1¼ ounces (35 Gm) in a man weighing 150 pounds Our studies show that in a carelessly powdered glove as much as 100 mg of tartrate may collect in each fingertip Assume for the sake of argument that gloves have been carelessly prepared and that during an operation ten finger ends were torn, spilling 1,000 mg of potassium bitartrate in the peritoneal cavity, there then would have been scattered only one thirty-fifth of the toxic dose for animals One does not have to worry about the bitartrate powder on the surface of the gloves, because, unlike talc, it washes off easily and completely, before operation

#### MATERIALS, METHODS AND RESULTS

We studied twenty-four different powders calcium carbonate (precipitated), calcium gluconate, calcium citrate, calcium phosphate (dibasic), calcium phosphate (tribasic), calcium tartrate, calcium d-malate, magnesium bicarbonate, magnesium carbonate, magnesium phosphate (dibasic), magnesium-ammonium-phosphate, magnesium tartrate, potassium bicarbonate, sodium bicarbonate, sulfanilamide, talcum and potassium bitartrate Seven different forms of starches were also tried cornstarch, arrowroot starch, soluble starch, rice starch, Linit starch,<sup>34</sup> special starch<sup>34</sup> and amylocellulose<sup>35</sup> These studies were directed toward determining primarily whether or not the various powders possessed such dusting properties as to permit the gloves to come

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30 Kile R L Treatment of Lupus Vulgaris by Injections of Starch *Arch Dermat & Syph* 39 471 (March) 1939

31 Underhill F P Leonard C S, Gross E G, and Jaleski T C Studies on the Metabolism of Tartrates, *J Pharmacol & Exper Therap* 43 351 (Oct) 1931

32 Salant W and Swanson A M The Influence of Diet on the Toxicity of Sodium Tartrate *J Pharmacol & Exper Therap* 11 27 (Feb) 1918

33 Post Wilber E The Effect of Tartrates on the Human Kidney *J A M A* 62 592 (Feb 21) 1914

34 Courtesy of the Corn Products Refining Company

35 Courtesy of the Corn Starch Division of Anheuser Busch Inc

28 Miller, John W, and Sayers, R R The Physiological Response of the Peritoneal Tissue to Dusts Introduced as Foreign Bodies *Pub Health Rep* 49 80 (Jan 19) 1934, Microscopic Appearance of Experimentally Produced Dust Nodules in the Peritoneum, *ibid* 50 1619 (Nov 15) 1935, The Physiological Response of Peritoneal Tissue to Certain Industrial and Pure Mineral Dusts, *ibid* 51 1677 (Dec 4) 1936

out of the process of steam (autoclave) sterilization in adequate condition. Many of the powders we tried met this test successfully because most of them are sufficiently insoluble. With the starches however, we were baffled by the gelatinization which resulted from sterilization and rendered the gloves unusable.

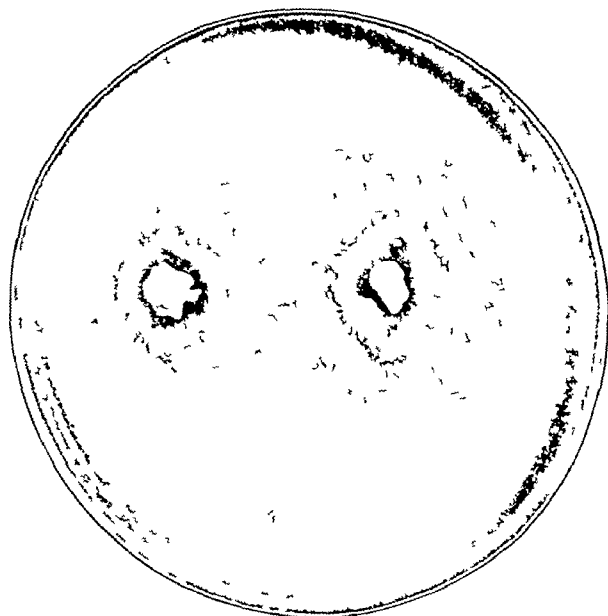


Fig 3—Agar plate culture of *Staphylococcus aureus* showing clear bacteria free zone around potassium bitartrate focus

The second step consisted in testing the physically satisfactory powders on white rats (150 to 350 Gm in weight) by injecting sterile watery suspensions of varying concentrations (usually 2 cc of 5 per cent solution) into the peritoneal cavities. We made in all 194 experiments on 194 individual rats. At intervals varying from five minutes to twenty-four weeks after injection the rats were killed, autopsies performed and gross and microscopic studies made of pathologic lesions.

The results of the experiments may be summarized very briefly by saying that, with one exception, every powder that successfully met the test of steam sterilization produced pathologic lesions of one type or another in the peritoneal cavities of the test animals, i. e. powder plaques, granulomas, adhesions or peritoneal serous exudates. The one exception was potassium bitartrate, which, whether it was strewn on the abdominal viscera through a laparotomy wound or injected into the peritoneal cavity as a watery suspension in varying strength was rapidly disposed of without causing even the slightest untoward toxic or physical effects local or general, in any of our experimental animals. Since there is no certain information as to how potassium bitartrate is disposed of after its entrance into the peritoneal cavity, we are making a special but so far inconclusive study of this point. However, we are assured by our work both of its rapid absorption and of the absence of any symptoms of toxicity with appropriate dosage.

It is a notable fact that potassium bitartrate of a mesh of from 210 to 270 seems to powder gloves better than does the finer mesh powder. We therefore recommend the coarser mesh (210 to 270), which in reality is the commercial product (cream of tartar) even though it feels a trifling bit more gritty to the hands of the surgeon. We are told by the Mallinckrodt

Chemical Works that the price ranges around 60 cents a pound, depending on the size of the package.

As a practical test we have placed the bitartrate powder in the operating rooms of the Washington University School of Medicine (Barnes Hospital), the Jewish Hospital, De Paul Hospital and our own Barnard Free Skin and Cancer Hospital. When the standard technic for rubber glove sterilization was followed (subjecting the powder, either in gauze sachets or in metal or glass shakers and subjecting likewise the powdered gloves to 15 pounds of steam pressure for fifteen minutes) we got unanimously favorable reports. We find that when properly sterilized we can repeat the sterilization of the same batch of bitartrate more than half a dozen times without causing any deterioration of the powder. On the other hand, either too much heat or too long an exposure to the proper degree of heat ruins both the gloves and the dusting effect of the powder, discoloring and caking it. In this connection it is important to remember that in contrast to talc with its heavy bacterial and spore content the bitartrate is actually bacteriostatic and relatively innocuous, from the point of infectivity, even before sterilization.

In attempting to determine the effect of potassium bitartrate on pyogenic bacteria, agar plates were seeded by pouring an evenly dispersed broth suspension of staphylococci (*Staphylococcus aureus*) and *Escherichia coli* over the plate surface. A loopful of potassium bitartrate was transferred to one or several evenly distributed points on the seeded agar surface. Within twenty-four hours the staphylococci and *E. coli* had grown sufficiently to make it possible to evaluate the results of the experiments. The organisms studded the agar surface except in those small areas where the potassium bitartrate was planted. A clear zone 1.5 cm



Fig 4—Agar plate culture of colon bacillus showing clear bacteria free zone around potassium bitartrate focus

in diameter free of all growth surrounded the potassium bitartrate. The ability of the potassium bitartrate to inhibit the growth of the bacteria, namely, bacteriostasis, is apparently accomplished by raising the hydrogen ion concentration (lowering the  $pH$ ) of the agar at the bitartrate site. No surgeon will fail to grasp and appreciate the undoubted clinical value of the phenomenon of bacteriostasis. Figures 3 and 4 demon-

strate the bacteriostatic property of potassium bitartrate on staphylococci and *E coli* cultures

On the other hand, talcum had no such effect on the growth of staphylococci or *E coli* as evidenced by the fact that the bacteria grew unhampered with no evidence of the slightest antibacterial action

#### CONCLUSIONS

1 Talcum powder is, under any circumstance, a grave menace in surgery. Once having gained entrance into the animal organism, this powder sets up a reactionary, productive inflammation (fig 5) that is permanent and progressive and that may be provocative of almost insuperable complications. Furthermore postoperative residual talcum has been demonstrated by one investigator in various intra-abdominal viscera in 80 per cent of patients he examined.<sup>6</sup>

2 It is certain that even meticulous care in washing off the surface of rubber gloves before operating does not guarantee against contamination of the operative field with talc.

3 The difficulty in substituting for talc lies in the fact that an insoluble powder like talc (hydrous magnesium silicate) sets up a granulomatous foreign body reaction, whereas a soluble dusting powder dissolves during the process of sterilization of the gloves, rendering them adherent and thus difficult or impossible to put on. Dry sterilization of the gloves might be regarded as a solution of this difficulty, but it does not meet the rigid requirements of aseptic surgery and is

Since, therefore, there are no demonstrable risks attendant on its use, it may be recommended as a substitute for talc in powdering rubber gloves. We have received no complaints regarding undesirable skin effects.



Fig 6—Peritoneal cavity of rat entirely free from adhesions ten days after injection of watery suspension of potassium bitartrate (2 cc, 5 per cent). See figure 5 for contrast.



Fig 5—Intraperitoneal adhesions (Y) and granulomas (X) ten days after injection of watery suspension of talc (2 cc, 5 per cent) into peritoneal cavity of a rat. See figure 6 for contrast.

highly destructive to the life of the gloves. Boiled gloves are sloppy and generally undesirable.

4 Potassium bitartrate meets the physical requirements imposed by steam sterilization. It is readily and harmlessly disposed of by the body tissues and fluids. It causes no consequent peritoneal adhesions (fig 6).

5 Potassium bitartrate possesses a certain degree of bacteriostasis for the colon bacillus and *Staphylococcus aureus*.

6 It is important that in the process of sterilization the potassium bitartrate should be subjected only to the now standard and accepted technic for sterilizing rubber gloves, namely fifteen minutes of autoclaving under 15 pounds of steam pressure.

NOTE—Since this paper was submitted for publication, we have received reports indicating that potassium bitartrate tends to shorten the life of rubber gloves. On making tests we found that tartrated gloves would stand from seven to ten separate sterilizations whereas talcum powdering permitted from twelve to twenty sterilizations (pure rubber gloves). We feel that this comparatively insignificant economic factor should not be permitted to weigh against the grave disadvantages attributable to the use of talcum, which raises both postoperative morbidity and mortality rates.

**Beginning of Ophthalmology**—Ophthalmology began with the ancient Greek, Roman and Arabian surgeons who operated on cataracts. Their operation, called 'couching' or 'inclining' a cataract, consisted merely of perforating the eye with a needle and pushing the clouded lens backward into the posterior chamber of the eye out of the line of vision. It was a hazardous procedure for sight was lost entirely in two out of every five eyes thus treated. In the fourteenth century blind King John of Bohemia had an eye surgeon thrown into the Oder River when he failed to cure his blindness by couching—Haagensen C D and Lloyd Windham E B. A Hundred Years of Medicine, New York: Sheridan House Inc., 1943.

# CLAWING OF THE GREAT TOE FOLLOWING IMPROPER APPLI- CATION OF PLASTER

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Hundreds of patients have been referred to the Physical Therapy Department by the orthopedists of Stark General Hospital during the past eighteen months. They were sent, for the most part, for rehabilitation of muscles and joints of the lower extremities following severe injuries and infections that were, of necessity immobilized over long periods of time. In the restoration of function and mobility to these injured extremities, 8 cases of clawing of the great toe not present at the time of injury, were observed by one of us (A. M. P.). In this group of 8 cases the deformity appeared in the presence of chronic infection prolonged healing following surgery of the foot, and with osteomyelitis resulting from gunshot wounds or compound fractures where prolonged immobilization is imperative.

The only author to have recognized a similar entity is James Mennell in Sir Robert Jones's book "Orthopedic Surgery of Injuries,"<sup>1</sup> who mentions a hallux rigidus deformity of the great toe in connection with gunshot wounds of the lower extremity.

Fig. 1—Clawing of the great toe medial aspect

Mercer,<sup>2</sup> quoting Todd, describes clawing of the toes as "a dropping of the metatarsal heads below the normal level, alteration of their line of action which leads to pulling up of the proximal interphalangeal joint of the toes, with a secondary important effect of shortening the course of weakened extensor muscles so that they then adaptively contract (and may, in this way, mask their original weakness)." This condition is seen in children following poliomyelitis, infections of the sole of the foot, peroneal muscle atrophy, as part of the little understood picture of Friedreich's ataxia, and in other similar nervous system degenerations or failures of development.

The accepted technic for the immobilization of the leg and foot in a plaster cast made with a "reverse or reinforcement," applied to the posterior aspect of the leg, is to carry the edge of the cast beyond the toes on the sole of the foot (in order to protect them from the weight of the bedclothes) and to the base of the toes on the dorsum of the foot. The longitudinal arch is

routinely molded, and the metatarsophalangeal joint of the great toe is usually immobilized in extension. In the application of this standard type of cast, force is exerted to maintain the foot at right angles to the leg, in a neutral position. By incorrectly placing traction on the projecting end of the "reverse" to dorsiflex

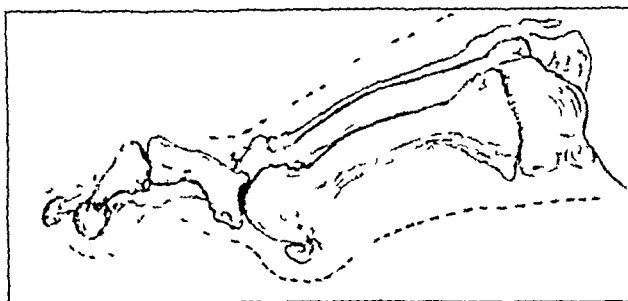


Fig. 2—Schematic view

the foot, the projecting plantar toe piece is rounded off in such a manner as to produce further extension of the metatarsophalangeal joint and a depression of the metatarsal head. A bed in the soft plaster is often unintentionally molded, in which the great toe is held with the interphalangeal joint in flexion, and, since the extremity is kept immobile while the cast dries, a well defined ridge under the interphalangeal joint is formed—thus the clawing of the great toe. The fixed extension of the metatarsophalangeal joint in itself may cause the clawing, since the interphalangeal joint then tends to flex in order to maintain equilibrium and muscle balance.

Of the 8 cases observed, 1 was treated here from the beginning, the deformity developing under our own eyes. The remaining 7 patients were transferred from other hospitals, and this deformity was observed only after the removal of the plaster. When the deformity is recognized, it is relatively fixed and extremely resistant to treatment. The most intensive and prolonged physical therapy proved of little value, the osteomyelitis subsided, the fracture healed, but the clawing of the great toe persisted, resulting in metatarsalgia and a poor walking gait. It prevented running and remained a site of local irritation, provoking corns and callus formation.



Fig. 3—Hyperextension of the metatarsophalangeal joint of the great toe and flexion in the interphalangeal joint

From a military standpoint this is a very grave matter, for it prevents the soldier from returning to full field duty. Correction has been a difficult problem. To date, surgical intervention has not been resorted to primarily because most of the patients under observa-

Read in abstract before the Congress of Physical Therapy, Eastern Section, New York, April 10, 1943.

From the Physical Therapy Section (Lieutenant Pruce) and the Orthopedic Section (Major Hagen), Stark General Hospital.

The photographs are by Capt. Alfred J. Suraci, M. C., Surgical Service, S. G. H.; the drawings by Private Eugene M. Massin, S. G. H.

<sup>1</sup> Jones, Sir Robert. Orthopedic Surgery of Injuries, vol. 2. Oxford Medical Publications, 1921.

<sup>2</sup> Todd in Mercer, Walter. Textbook of Orthopedic Surgery, ed. 2. Baltimore: William Wood & Co., 1938, p. 747.



tion were again transferred to other hospitals. Several men have recovered enough to make surgery unnecessary.

Prevention of this condition is the most important aspect of this report. More care must be exercised in the application of foot plaster splints. If a "reverse"

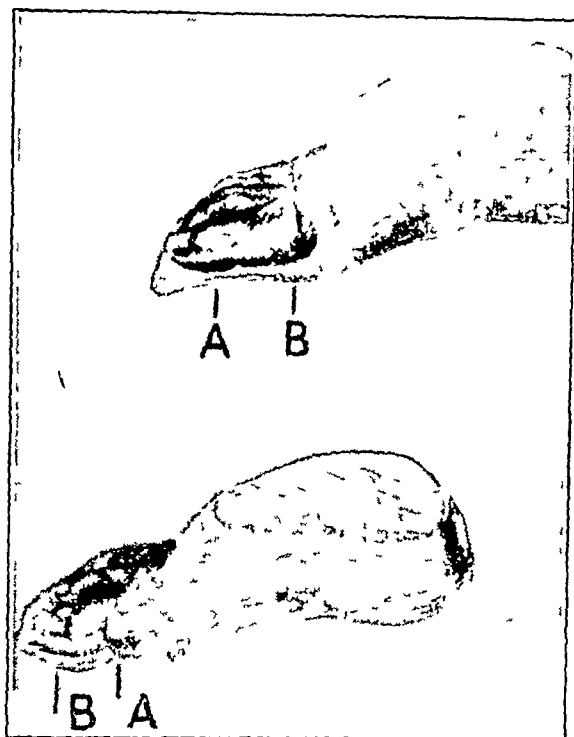


Fig 4—Above, cast properly applied. A, toe piece in straight line, B, metatarsophalangeal joint of great toe free. Below, cast improperly applied. A, bed of plaster under great toe, B, ridge under interphalangeal joint.

or "reinforcement" is used, the sole of the foot should be held so that the plantar toe part of the cast is carried in a straight plane to the tips of the toes and not used as a means of obtaining dorsiflexion of the foot. After several rolls of plaster are applied, both metatarsal and longitudinal arches are preserved by molding the plantar surface of the cast with the heel of the hand. Finally

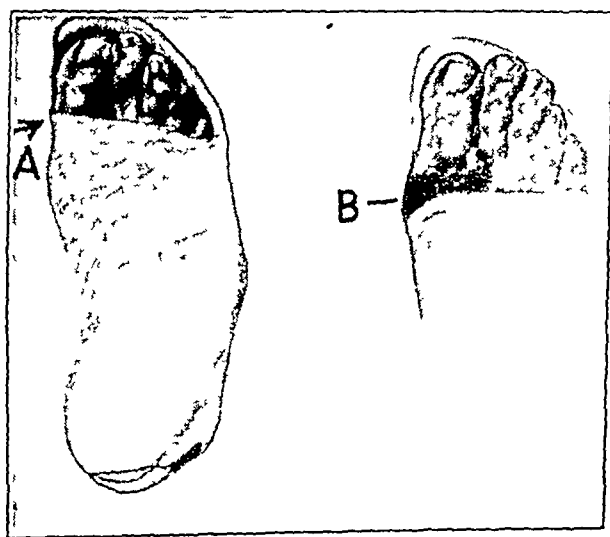


Fig 5—A, immobilization of metatarsophalangeal joint by dorsal edge of cast. B, joint free.

the dorsal edge of the foot cast is carried to the interdigital folds of the toes, except for the great toe, and here the metatarsophalangeal joint is left free. Early exercise will prevent or combat edema in this area, and, with the first changing of the cast, the distal third of the dorsum of the foot may be left free to permit exercise of the forefoot in all planes of motion.

By simple adjustment of customary methods of the application of plaster in the treatment of lower leg injuries, this distressing disability can be anticipated and thus prevented.

#### SUMMARY AND CONCLUSIONS

1 A new and previously not described factor in the causation and prevention of the clawing of the great toe has been observed in a series of 8 cases treated in the Physical Therapy and Orthopedic sections of Stark General Hospital.

2 The cause of the clawing is believed to be due to improper applications of plaster foot splints.

3 A method of prevention by proper splinting has been devised.

4 The development of this deformity can seriously retard full recovery and may prevent the return of otherwise healthy soldiers to full military duty.

### Clinical Notes, Suggestions and New Instruments

#### STAPHYLOCOCCUS AUREUS SEPTICEMIA TREATED WITH PENICILLIN

WITH REPORT OF DRUG SIDE EFFECTS

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The following report describes a case of *Staphylococcus aureus* septicemia successfully treated with penicillin, including the presentation of some side reactions resulting from the use of this material intravenously.

#### REPORT OF CASE

**History**—P. K., a white man aged 36, hoist engineer and former sailor by occupation, was admitted to the First Medical Service of City Hospital, Welfare Island, N. Y., on Dec 29, 1942 with chief complaints of chest pains, fever and malaise of forty-eight hours' duration. He had apparently enjoyed good health prior to the onset of the present illness and gave no history of recent contact with a sick person, bone injury or superficial wounds. For two days prior to admission he complained of repeated chilly sensations without frank chills, fever, malaise, vague bilateral chest pains, mild cough productive of small amounts of whitish sputum, headache, weakness, anorexia and constipation, for which he treated himself at home with "Bromo-Quinine" and "phenolphthalein."

The patient sailed the seas from 1932 until 1940, and, although he was often in the Mediterranean Sea area and in South America, he never had malaria or any other illnesses so prevalent in these localities. In 1935 and again in 1938 he suffered with pneumonia, while in 1937 he contracted gonorrhea, which was treated with sulfanilamide. For a short time in 1939 the patient had furunculosis of the neck, arms and forearms which subsided spontaneously without specific treatment.

**Physical Examination**—On entry the patient appeared asthenic, pale, fairly well nourished and not acutely ill. The pupils were round, regular, and equal in size and reacted well to light and in accommodation. The nasal septum was intact and deflected to the left with the presence of moderate mucopurulent nasal discharge. Oral hygiene was good and the pharynx was moderately injected with some postnasal drip. Vesicular and crusted herpetic lesions were present on the upper and lower lips. The neck was supple and no nodes were palpable. The heart was apparently not enlarged, rhythm was

From the First Medical Service City Hospital.  
This study was conducted under the supervision and coordinating auspices of the Committee on Chemotherapeutic and Other Agents of the National Research Council, acting for the Committee on Medical Research of the Office of Scientific Research and Development. The penicillin used was provided by the OSRD under the terms of a contract with the Massachusetts Memorial Hospitals.

regular and tones were of good quality with no audible murmurs. The blood pressure was 116 systolic, 70 diastolic. Chest expansion was symmetrical and the lungs were normal. The abdomen was soft with no palpable viscera and no apparent costovertebral angle tenderness to fist percussion. Reflexes were present and active and there was no sign of articular pathologic change. Over the torso and extremities were numerous variable sized nonhemorrhagic erythematous macular lesions which were flat and nonpruritic and did not fade on pressure. The temperature was 102 F, pulse rate 114 and respiratory rate 28.

**Clinical Course**—The patient was put to bed and treated with supportive measures for the first fourteen hospital days. The admission urinalysis was negative, as were numerous repeat examinations. The red blood cell count was 4,200,000 with 85 per cent hemoglobin (Sahl) and the white blood cell count was 9,600 with 74 per cent polymorphonuclears, 3 per cent band forms, 1 per cent eosinophils and 22 per cent lymphocytes. The blood Wassermann test was negative, nonprotein nitrogen 30, blood sugar 84 and icterus index 4.

The initial throat culture showed proteus-like organisms, the urine culture a mixed *Staphylococcus albus* and streptococcus infection, while the blood culture, initially reported as negative, showed a delayed growth of *Staphylococcus aureus*. The sputum was negative for tubercle bacilli and pneumococci, the sedimentation rate was slightly accelerated. A chest roentgenogram showed no evidence of pulmonary consolidation.

On the first hospital day, after a short period of well-being with drop in fever, the patient suddenly complained of chilly sensations followed by mild shaking rigors with rise in temperature to 103.8 F, pulse rate to 100 and respiratory rate to 24. He complained of vague pains in his left chest, mild articular pains in the lower extremities, and the only new physical finding of note was the appearance of a new crop of erythematous macular lesions, similar to those on entry. The patient did not look particularly ill. The febrile reaction subsided in about twelve hours and the accompanying signs and symptoms rapidly cleared up. A blood culture taken at this time was positive for *Staphylococcus aureus*.

Similar febrile episodes preceded by frank chills and accompanied by similar skin eruptions plus some papular lesions occurred on the fifth, ninth and eleventh hospital days, while febrile reactions, not preceded by rigors, occurred on the thirteenth, fifteenth and seventeenth hospital days. The temperature curve was septic in type with spikes up to 103-105 F, usually lasting eight to twelve hours. Repeated white blood cell counts ranged from 14,700 to 22,080 cells with 71 to 81 per cent polymorphonuclears. Sedimentation rates were slightly accelerated. A blood culture taken in the ninth hospital day showed a delayed growth of type II meningococci, confirmed by the Department of Health Laboratory, but a meningococcus agglutination test by the Department of Health Laboratory was negative.

Multiple blood cultures were taken during the period of the febrile episodes. One drawn on the morning of the eleventh hospital day showed no growth, while another one taken later the same day at the time of a chill showed a few diphtheroid organisms. However, the blood culture on the fifteenth hospital day was reported as positive for *Staphylococcus aureus*.

Agglutination tests for typhoid, paratyphoid dysentery, brucella and tularemia organisms were negative. Repeated peripheral blood smears during various portions of these malaria-like febrile cycles failed to disclose any of the parasites, and a study of the sternal bone marrow was noncontributory. Feces cultures were negative for dysentery, typhoid and paratyphoid organisms, and the heterophile antibody reaction was negative. A second throat culture showed some staphylococci, and another urine culture again showed *Staphylococcus albus* and streptococcus organisms. Roentgenograms of the mastoids, paranasal sinuses and ribs failed to disclose evidence of focal infection. Cystoscopy and retrograde pyelography revealed a normal genitourinary tract, but culture from the right kidney urine revealed *Staphylococcus albus*. The prostatic smear was negative for gonorrhea but did show some gram positive cocci. An electrocardiogram was normal.

Despite the failure to find malarial parasites in the blood stream and because of the inability to obtain repeated positive blood cultures due to delayed growth of the organisms, coupled with the malarial type of temperature course, it was decided to use quinine as a therapeutic test, but a three day trial produced no effect whatever. On the seventeenth hospital day the patient was started on sulfathiazole in adequate dosage (4 Gm initially and 15 Gm every four hours night and day) in view of the positive *Staphylococcus aureus* blood culture of the fifteenth hospital day. During the succeeding four days he continued to have a septic temperature ranging from 98.6 to 103.8 F with chilly sensations, vague aches and pains but no rash. A blood culture taken on the seventeenth hospital day was again positive for *Staphylococcus aureus*, while another one on the twenty-first day showed a delayed growth of staphylococci not differentiated as to type. The intradermal test with staphylococcus antitoxin was strongly positive and this agent was not used.

The patient received a series of blood transfusions for supportive effects, despite lack of anemia. On the twenty-first hospital day the temperature came down to normal and stayed so for two additional days. At this period the sulfathiazole dosage was reduced to 1 Gm every fourth hour. On the evening of the twenty-fourth hospital day the patient had a chill, the temperature rose to 101 F and then continued to rise in step-ladder fashion through the twenty-seventh hospital day to 104.6 F. With this rise in temperature there was a return of his previous symptoms of vague joint, chest and abdominal pains. There was pronounced intoxication, the sedimentation rate became very rapid, the white blood cell count was 16,250 with 63 per cent polymorphonuclears and 10 band forms, and the patient's status became critical, almost moribund. The sulfathiazole blood level was 70 mg per hundred cubic centimeters. An erythematous, tender, nodular eruption appeared on the face, neck and extremities differing from the previous eruptions in its nodularity and tenderness, but the color of the two types was the same. These findings might have been due to drug intoxication fever and reaction, but at the time we were convinced that it was a recrudescence of the blood stream infection.

The sulfathiazole was discontinued on the morning of the twenty-seventh hospital day and at 1 p.m. the administration of penicillin sodium was started by the intravenous route. There was a rise in temperature at 4 p.m. to 104.6 F followed by a rapid and continuous drop to 99 F by 4 p.m. of the twenty-eighth hospital day. Thereafter the temperature continued to be normal, reaching 100 F only on two or three occasions, and the white blood cell counts and sedimentation rates came back to normal. A blood culture taken on the thirty-second hospital day, five days after the institution of penicillin, showed rare colonies of nonhemolytic *Staphylococcus albus*, while one on the forty-fifth day contained only some diphtheroid organisms.

The patient was discharged on his fifty-seventh hospital day (February 24), but blood cultures drawn on the forty-eighth and fifty-seventh hospital days initially reported as negative showed delayed growths of *Staphylococcus albus* and staphylococci slightly aureus, respectively. Following discharge from the hospital he has remained well and asymptomatic to date (May 16) and has resumed work in a shipyard. A blood culture taken on the sixteenth day after discharge showed less than one very attenuated *Staphylococcus albus* colony per 5 cc of blood, while another on the thirtieth day showed only one hemolytic staphylococcus colony on the entire plate. Repeated blood cultures since that time have been negative to date and blood counts and sedimentation rates normal. A repeat meningococcus complement fixation test was negative while the staphylococcus agglutination tests showed complete agglutination through 1:6400 dilution for both *Staphylococcus aureus* and *albus* (Department of Health Laboratory).

#### COMMENT

**Penicillin Dosage and Reactions**—The patient received daily 60,000 Oxford units of penicillin sodium for three days, 30,000 units for ten days and 20,000 units for three days, all in divided doses intravenously. On the second day of penicillin therapy

each injection was accompanied by a moderately severe frontal type of headache lasting on the average about forty minutes after completion of the injection, and there were no accompanying photophobia, vertigo, tinnitus, blood pressure, fundi or neurologic changes. These reactions persisted over a two day period. During the sixth day of the penicillin routine the patient began to complain of severe cramplike pains in the calf muscles of the legs, starting five to six minutes after the injection was finished, lasting forty-five to sixty minutes and being followed by dull aching pains in these areas for variable periods of time. There were no associated local tenderness or reflex changes, and these reactions lasted only two days. The study of serial blood smears after the starting of penicillin revealed the presence of a definite lymphocytosis with decrease in the number of polymorphonuclear cells, but after the drug was discontinued the differential white blood cell count returned to normal.

Twelve blood cultures were taken during the period of hospital observation.<sup>1</sup> Eight proved positive for staphylococci, four aureus, three albus and one unidentified. The early staphylococcus cultures were aureus, the later ones, taken after the first month, both aureus and albus. The lag periods of growth usually varied from four to six days, although one culture became positive only on the seventeenth day. The later cultures showed a diminishing number of colonies, sometimes only one colony in 2 to 5 cc of blood. The meningococcus type II was isolated from the culture taken on the ninth day. The agglutination tests performed by Miss S. A. Scudder, bacteriologist, with blood serum obtained on the day of discharge revealed a titer of 1:6,400 with *Staphylococcus aureus* isolated on the fifteenth day and *Staphylococcus albus* isolated on the fifty-seventh day, and a titer of 1:800 with *Staphylococcus albus* isolated on the forty-eighth day. The agglutination tests against meningococcus, performed by Mrs. Falk of the New York City Board of Health, were negative. Three blood cultures were taken when the patient returned for a follow-up. The first, thirty days after discharge from the hospital, showed rare *Staphylococcus aureus*, two subsequent cultures taken on the thirty-seventh and fifty-sixth days after discharge remained sterile.

#### CONCLUSION

We recognize the possibility but doubt the probability that the patient would have recovered without the use of penicillin. The improvement in the general condition and well-being of the patient within twelve hours after the institution of penicillin was dramatic and recovery thereafter was uneventful. However, it should be noted that, despite the use of sufficient sulfathiazole and more than the usually advocated amount of penicillin, the blood cultures only slowly became negative.

#### THE USE OF THE STETHOSCOPE IN THE PREVENTION OF "BOILER MAKERS' LARYNGITIS"

L. R. KRASNO, PH.D., R. J. DE MOTTE, M.D., AND A. C. ILLI, PH.D., M.D., CHICAGO

In many industries the existence of noise renders it necessary to shout and strain the voice in order to be heard. This condition gives rise to many cases of laryngitis which can be prevented by the use of a simple communication system.

The stethoscope is an ideal instrument for this purpose. It does not involve intricate electrical appliances and can be carried about free from line wires. The speaker talks through the bell of the stethoscope. This is best accomplished by cupping the hand about the bell and making contact between the mouth and the hand. The receiver listens through the ear pieces. A very clear communication is thus effected with the use of the voice at conversational levels amidst loud noises.

303 East Chicago Avenue

<sup>1</sup> Summary of bacteriologic studies by Dr. James R. Lisa, pathologist, City Hospital.  
From the Medical Department, Pullman Standard Car Manufacturing Company, and the Department of Physiology, Northwestern University.

#### DERMATITIS WITH UNUSUAL DISTRIBUTION FOLLOWING THE USE OF SULFATHIAZOLE

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The many cutaneous manifestations of acquired sensitivity to the sulfonamide compounds have become well known with the widespread use of these drugs.<sup>1</sup> The present case is reported because of the singular distribution of a dermatitis which broke out on two occasions following the use of sulfathiazole. In both instances it developed on areas of skin exposed to the sun and was limited to these. The case is also reported as an example of a severe reaction following administration of sulfathiazole by mouth ten days after it had been used topically in an ointment.

#### REPORT OF CASE

J. F., a technical sergeant aged 25, was admitted to an evacuation hospital June 24, 1942 because of a severe dermatitis on his hands, face and neck. Two and a half weeks before admission a few pustules appeared on the chin. A diagnosis of impetigo contagiosa was made, and sulfathiazole ointment was applied daily for four days. Because the lesions did not heal, gentian violet therapy was substituted for the sulfathiazole ointment. After ten days of treatment the pustular eruption had practically disappeared and the patient was allowed to shave. He was given sulfathiazole to take by mouth. He took the first and only dose (1 Gm.) at 7 p. m. By 7:30 his face and hands felt hot and by 8 o'clock a vesicular rash had broken out on his face. He took no more sulfathiazole, reported for sick call the next morning and was sent directly to the hospital.

The patient was on active duty in the South Pacific. He had never taken any of the sulfonamide compounds before the present illness. On admission his face, ears, scalp and neck and the backs of both hands were covered with a severe dermatitis. The eruption also involved the small triangular area of the neck exposed by an open collar and was sharply limited here to the exposed skin. There was vesiculation with weeping and crusting, severe erythema of the involved skin and edema with induration of the subcutaneous tissue. The striking feature was that only those areas of the skin exposed to the sun were involved. The ocular and palpebral conjunctivae were red and injected. The postauricular and cervical lymph nodes were enlarged and tender. Otherwise the results of the examination were negative.

The blood count revealed 5,200,000 red blood cells per cubic millimeter and 16,600 white blood cells. The hemoglobin reading was 100 per cent. The differential count showed neutrophils 58 per cent, lymphocytes 12 per cent, eosinophils 20 per cent, basophils 6 per cent and monocytes 4 per cent. Urinalysis gave normal results.

The vesicles enlarged, and many became confluent during the next few days. The eruption did not spread, but existing lesions showed no evidence of healing. The patient was treated symptomatically with sedatives and fluids. On the sixth day after admission he complained of feeling "groggy and warm." The skin of his hands and face was more flushed than before. During the night his temperature rose to 102 F. By morning the fluid in all the vesicles and bullae had become purulent, and the patient was extremely ill. The loose epidermis was cleared away and a 1 per cent solution of gentian violet was applied to the denuded areas. Fluids were forced and sulfadiazine medication was started, 4 Gm. initially and 1 Gm. every four hours thereafter being given. A blood culture was taken but no growth resulted. Twenty-four hours after the sulfadiazine therapy had been started a scarlatiniform rash was noted on his shoulders, chest and abdomen. The sulfadiazine was stopped and the rash disappeared within forty-eight hours. There was no apparent change in the character of the eruption on the face, neck and hands after sulfadiazine had been given. The patient recovered promptly from the acute systemic phase.

From the Fifty Second Evacuation Hospital.  
1 Long, P. H., Haviland, J. W., Edwards, L. B. and Bliss, Eleanor A. The Toxic Manifestations of Sulfanilamide and Its Derivatives with Reference to Their Importance in the Course of Therapy. *J. A. M. A.* 115: 364 (Aug. 3) 1940. *Chemotherapy in Infectious Diseases and Other Infections*. Circular Letter No. 17, issued Feb. 23, 1942 by the Office of the Surgeon General, U. S. A., Washington, D. C. Brooks, Clyde. The Toxic Effects of Sulfanilamide and Sulfapyridine. *New Orleans M. & S. J.* 92: 115 (Sept.) 1939. Janeway, Charles A. The Sulfonamides. I. Their Mode of Action and Pharmacology. *New England J. Med.* 227: 989 (Dec. 24) 1942.

of the infection and his temperature dropped to normal within three days. The lesions on his skin healed slowly, however.

Because the patient was going into a combat zone, it was thought important to establish his sensitivity to sulfathiazole. Accordingly, six weeks later 5 per cent sulfathiazole ointment was applied to the back of one hand and a similar amount of 5 per cent boric acid ointment to the back of the other as a control. A few small vesicles appeared under the sulfathiazole ointment within twenty-four hours. The next day the patient was given sulfathiazole by mouth, 0.5 Gm for three doses. During the night his face became flushed, and by morning the cutaneous areas of his face, ears and neck were red, weeping and crusted, exactly as they had been on admission. These tests left little doubt that the condition of the patient's skin was the result of sensitivity to sulfathiazole.

Ten weeks after admission he was sent back to his unit. The first morning after his return, his face, ears and neck were again covered by a red vesicular eruption with oozing and crusting. His hands were not involved this time. The explanation for this flare-up was obscure, though it seemed probable that some sulfathiazole ointment had got onto his blankets at the time it was first applied to his face for impetigo and that contact with the ointment on these blankets had caused this latest flare-up. On final discharge he was issued new blankets. When seen one month later he had suffered no recurrences. Because he reacted so violently to sulfathiazole, a notice was attached to his identification tags stating that he was extremely sensitive to this drug.

#### COMMENT

The distribution of the cutaneous lesions in this case was so definitely limited to the areas exposed to the sun that it was thought there must have been a relationship between the reaction of these portions of the skin to sulfathiazole and the effect of sunlight on the same areas. Photosensitivity of the skin and eyes after the taking of sulfathiazole has been mentioned in the literature.<sup>2</sup> In this case the dermatitis was not precipitated by exposure to sunlight but by the sulfathiazole itself. The first sulfathiazole given to the patient was in an ointment applied to the skin. The patient was ambulatory at this time and thus exposed to strong sunlight most of every day. The dermatitis appeared ten days later shortly after the administration of the drug by mouth. Therefore it seems probable that sunlight conditioned the skin to a sensitivity to sulfathiazole but did not itself cause the reaction.

Sensitivity in this case was undoubtedly induced by the application of sulfathiazole ointment when the patient was first treated for impetigo contagiosa. He had never taken the drug before. Livingood and Pillsbury,<sup>3</sup> Cohen, Thomas and Kahsch,<sup>4</sup> and Weiner<sup>5</sup> have recently reported similar cases in which sensitivity to sulfathiazole was produced by topical application of that drug. These illustrate the danger of using sulfathiazole ointments without due regard for the onset of reactions.

This man was tested inadvertently for sensitivity to one other sulfonamide compound. He was given sulfadiazine at the time his cutaneous lesions became purulent. Shortly after he took the drug, a rash developed on his trunk and shoulders. The rash was quite different in character from the one due to sulfathiazole. It disappeared after the sulfadiazine was stopped, leaving little doubt that it was due to that drug. It is possible that this reaction to sulfadiazine was related to the sensitivity to sulfathiazole. Instances of one sulfonamide compound sensitizing a person to others have been reported.<sup>6</sup> Unfortunately there was not time to test this man further with other sulfonamide compounds.

#### SUMMARY

A soldier developed a severe dermatitis resulting from acquired sensitivity to sulfathiazole. The dermatitis was limited to areas of skin exposed to sunlight. Sensitivity was induced by topical application of sulfathiazole ointment. Measures were taken to prevent this soldier from receiving sulfathiazole if injured.

<sup>2</sup> Long, H. and Edwards and Blise.<sup>1</sup> Brooks.<sup>1</sup>

<sup>3</sup> Livingood, C. S. and Pillsbury, D. M. Sulfathiazole in Eczematous Pyoderma: Sensitization Reaction to Successive Local and Oral Therapy. Report of Twelve Cases. *J. A. M. A.* 121: 406 (Feb. 6) 1943.

<sup>4</sup> Cohen, M. H., Thomas, H. B., and Kahsch, A. C. Hypersensitivity Produced by the Topical Application of Sulfathiazole. *J. A. M. A.* 121: 408 (Feb. 6) 1943.

<sup>5</sup> Weiner, A. L. Cutaneous Hypersensitivity to Topical Application of Sulfathiazole. *J. A. M. A.* 121: 411 (Feb. 6) 1943.

<sup>6</sup> Nelson, Jack. Acquired Sensitivity to Sulfonamide Drugs. *J. A. M. A.* 119: 560 (June 13) 1942.

## Special Article

### AMERICAN HEALTH RESORTS

#### THE IMPORTANCE OF TRACE ELEMENTS IN BIOLOGIC ACTIVITY

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*These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.*

Research on the effects of natural mineral waters for alleviating human ills is becoming more and more recognized in this country. In this paper I discuss that branch of biochemistry which describes the elements usually present in the body only in small amounts. Their physiologic effects recall those of vitamins and enzymes. The brilliant advances in organic biochemistry during recent years have proved the metabolic effects of organic substances present only in infinitesimal amounts. It is not yet well known that these organic substances are usually linked with metallic ions or mineral elements. The study of mineral elements or mineral metabolism of human beings leads to nutritional problems and discussion of dietary habits and their scientific justification, which are questions of importance for the practitioner. It leads further to discussions of the therapeutic value of natural mineral waters. There is no more urgent time than the present to make all efforts to elucidate the healing value of natural mineral springs to the physicians of this country. It is the duty of the medical profession to use spas and watering places for the health and well-being of the nation. The prospect of scientific development of balneology never seemed to be more favorable than now, because, with the new conception of the biochemical properties of mineral elements, research on natural mineral waters is an important part of research on nutrition. Mineral elements which are essential for our well-being may not always be present in sufficient amount in our food. In natural mineral waters, however, these trace elements are enriched. Therefore during a drinking or bathing "cure" a transmineralization takes place in our body. The vital elements like Fe, Cu, Mn, Zn and Co, if deficient, are compensated, while other trace elements like Hg, Cr and Mo react as true pharmacologic or therapeutic agents.

In 1927 with Davidson I<sup>1</sup> made the first attempt to interest physicians in natural mineral water from a purely theoretical point of view. In the first section of this paper, entitled "The Significance of Trace Elements in Biologic Processes" it was stated:

We are confronted with the fact that the active substances of a curative water may be present in extremely small amounts and that often only slight traces of a substance suffice to bring about profound biologic changes in animals and man. Every thinking physician who would keep abreast of modern science

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1. Baudisch, Oskar and Davidson, David. Natural Mineral Water in the Light of Modern Research. The Catalytic Action of the Saratoga Springs. *Arch. Int. Med.* 40: 496-520 (Oct.) 1927.

must be conversant with the idea that amounts of substances which are hardly weighable and perhaps only spectroscopically detectable are capable, under certain circumstances, of exerting great biologic effects and are therefore of therapeutic significance. In this respect, modern research in vitamins has brought us much that is astonishing.

During the short time of sixteen years since this was written a remarkable development has taken place in this field, which fifteen to twenty years ago was virgin. It was quite incomprehensible that metallic ions in dilutions of say 1/1,000,000 could be of any value in nutrition or generally in the metabolism of the human body.

The importance of inorganic elements or metallic ions which occur in our body in small amounts or traces has only begun to be appreciated by the medical profession. During the last few years a remarkably rapid development has taken place. New or improved tools like quantitative spectrum analysis and organic chemical reagents have done much to give us more knowledge about the presence and amounts of "trace," "rare" or "minor" elements in different organs of the body and in blood.

The use of natural and radioactive isotopes, the so-called tracer or spy atoms, is of great importance in revealing the fate of trace elements in the living body during metabolism. The use of absorption spectrum methods has also broadened our knowledge concerning the binding of metallic ions in the organic framework and the appearance of metallic complex compounds in the living cell. Hemin, for example, has been found by the spectroscope both in the plant and in the animal kingdom. The similarity between the pigments of plants (chlorophyll) and blood (heme compounds) has been definitely established.<sup>2</sup>

With the spectroscope it has been found that many enzyme systems contain metallic ions as, for example, catalase or polyphenolic oxidase. Since enzymes seem to hold a key position in the chemistry of life, the linkage or binding of inorganic elements with organic systems containing proteins is of paramount importance. About the nature of such bonding I shall have more to say later on in the paper.

Concerning the expressions "trace," "minor" or "rare" elements some corrections are needed. From a biologic point of view there is no difference between main and minor elements, between much and little or between abundancy and traces. Such a distinction holds well in the mineral kingdom. The living cell, however, selects the elements needed for life regardless of the amount present in its surrounding. For example, sea water contains only 50 micrograms per liter of iodine and 1,400 micrograms per liter of fluorine.<sup>3</sup> Iodine probably needed for the life of kelp is concentrated more than a hundred thousand times in the algae while fluorine remains untouched. The same holds for many other elements. The most striking example is iron, which is present in sea water in the very small amount of 2 micrograms per liter. The concentration of iron in the blood of sea animals is astounding. There are only 0.41 Gm per kilogram of calcium in sea water, but the oyster, for example, builds up its heavy shell of this element, and corals

ultimately build up whole islands. It is an unsolved problem how sea plants or animals capture and concentrate the elements absolutely necessary for life. The present paper contributes to this problem.

Elements present in our body in small quantities were considered, only about twenty years ago, as "negligible impurities." The first great active interest in trace metals was shown by the University of Wisconsin and the Agriculture Department in Washington, especially after it was found that certain severe blood diseases in animals were due to deficiency of trace metals such as copper, cobalt, nickel, zinc, manganese or others. Some soil in the United States simply did not contain enough of one or several of these vital elements, and mineral nutrition deficiency diseases were the result.<sup>4</sup>

Most of the information on mineral deficiency has been obtained through observation and experiments with animals, and only in recent years has medical science become intensively interested in deficiency diseases in animals and in men. In connection with our natural mineral water investigations it is a pleasure to note that recently the medical profession in general has become more interested in nutritional questions. Not only have the vitamins penetrated into the daily work of the practitioner but even the public has become conscious of them. Now what about mineral elements? We must not be astonished that but little is yet known about them and the role they play in the metabolism of the human body. Especially the so-called trace or minor nutritional elements are not even recognized or estimated by the physicians in spite of the great array of scientific publications in this field. It has always been taken for granted that the so-called impurities or minute traces of a great number of elements are always present in our food in sufficient amount, so why should one be excited about them if no one knows anything definite concerning their importance to our well-being?

Let us not forget that the vitamins are present in our body only in minute amounts, like ergosterol on our skin, and they bring about miraculous biochemical actions.

The practitioner of today is conscious of the source of, say, vitamin C, which he prescribes for his patient's diet and knows that not all canned or even fresh fruits contain a sufficient amount of this important vitamin. He knows that fresh potato juice under certain circumstances may contain much more vitamin C than orange juice which has been standing in the open air for several hours. The same practitioner, however, will not be concerned with the question of whether the vegetable he prescribes for his patient was grown on "healthy" soil which contains sufficient amounts of iron, copper and cobalt. This correlation between soil and vegetable or soil, grass, grazing animal and food or diet which he prescribes for his patient is still foreign to his thinking. It will take only a short time before nutritional mineral elements will be treated like vitamins and the practitioner will become familiar with them. Mineral elements are "inorganic vitamins," a now occasionally used term which I introduced seventeen years ago.<sup>5</sup>

2 Fischer, Hans and von Seemann, Carl. Die Konstitution des Spirographis Hamus. XXXVII. Zur Konstitution der Porphyrine. Ztschr f physiol Chem. 242: 133, 1936.

3 One microgram or 1 gamma equals one millionth of a gram.

4 Maynard L. A. Relation of Soil and Plant Deficiencies and of Toxic Constituents in Soils to Animal Nutrition, in Luck, J. M. and Smith, J. H. Annual Review of Biochemistry, Stanford University Calif., Annual Reviews Inc. 1941, vol 10 p 449.

5 Baudisch, Oskar, and Welo, Lars A. Chemische und physikalische Studien zum Mineral insbesondere zum Eisenstoffwechsel. Naturwissenschaften 13: 749, 1925.

Perhaps it would be still impossible to speak so boldly about minor nutritional elements and their paramount importance in life processes if the results from the Australian research on cobalt were not known<sup>6</sup>. That the minor nutritional elements have to be taken seriously was excellently demonstrated in this classic research which I like to call "the story of cobalt". Since the research on cobalt has stimulated research on trace elements enormously, I want to relate the story in more detail.

As far back as 1807 it was known that grazing animals especially sheep in the southern part of Scotland, suffered a disease referred to as "pinning". A recognized cure was to shift the sheep to a more succulent herbage or pasture grown on limed soils. A similar disease was observed in New Zealand which was called "bush sickness" or Tauranga disease. The loss of animals through this sickness became so serious that as late as 1895 the Australian government started scientific research to find the cause of the disorder. In 1900 Gilruth<sup>7</sup> stated that in localities where the disease occurred there were "healthy" and "unhealthy" lands and that vegetation grew as luxuriously on one as on the other. It was further observed that the symptoms of the disease were similar to symptoms generally found in nutritional anemia. This finding naturally pointed to a possible deficiency of iron, but experiments did not satisfy the investigators. Anyhow it was found that massive doses of iron were often helpful but not always. It seemed that some unknown substance was present in some of the limonite used as manure and not in the other. The Australian government started shipping iron ores from different parts of the world and used it on different acres of the "unhealthy" land. It thus was possible to select the iron mineral or limonite which gives the best results in preventing "bush sickness". The iron mineral which was found to be the most helpful in preventing the disease was now subjected to an analytical fractionation on a large scale, which one could compare with the fractionation of uranium ores or pitchblende by the Curies, in order to concentrate radium. The costly and tedious work finally led to the assumption that cobalt was the lacking element. The iron minerals or limonites which did not remedy the "bush disease" were extremely low in cobalt, while the limonite which prevented the trouble contained comparatively larger amounts of this metal. It was further found that the soils in bush sick areas contained only a trace of cobalt as compared with the healthful areas. Finally, in 1937 Kidson,<sup>8</sup> in a paper entitled "Cobalt Status of New Zealand Soils," reported that "soil affected with 'bush sickness' and allied stock ailments has comparatively low cobalt content, often less than 2 parts per million of cobalt". The unhealthy soil can be corrected by adding sufficient amounts of cobalt.

Sheep and cattle which are deficient in cobalt show symptoms of anemia, cachexia, loss in appetite and changes in muscles, liver and spleen. They recover if minimal amounts of cobalt are added to the forage (0.03 to 0.1 mg. with the sheep and 1.3 to 1 mg.

with the cattle daily)<sup>9</sup>. The liver which is free of cobalt in the sick animal stores cobalt in the animal receiving daily doses of this element<sup>10</sup>. It is amazing how infinitesimally small are the amounts of cobalt needed in comparison to iron, manganese, copper and zinc, where at least a hundred times this amount is demanded. According to Askew,<sup>10</sup> the sheep needs 0.04 mg. of cobalt daily. It is of special importance to know that the amount of cobalt necessary for mammals is so low that even spectrographic methods were not sensitive enough to detect amounts of cobalt in grass or fodder that are sufficient to heal the "bush sickness". Sufficient cobalt could be found in the "healthy" soil and in the liver and spleen of the healthy sheep but not in the grass which the animal must eat in order to get the necessary cobalt. Our methods for the determination and concentration of cobalt with organic reagents have been so improved that cobalt can be detected in grass. We have a similar example in sea water. Despite the fact that cobalt has not yet been found in sea water, it exists in certain sea animals (*Pleurobranchus plumula*—Webb<sup>11</sup>) in relatively large amounts. Thus cobalt must have been enriched by life processes. From these examples we can realize the vital importance of elements which are present only in infinitesimal amounts and cannot be detected by spectroscopic methods, which were always considered the most sensitive ones. Organic reagents like *o*-nitrosophenol<sup>12</sup> possess a chemical grouping which has a powerful selecting force to link cobalt in a ring structure and hold it. Thus the metal can be enriched and extracted in sufficient amount to be determined either by spectroscopic or by colorimetric methods.<sup>13</sup>

#### WHAT IS THE ACTUAL MECHANISM OF THE BIOLOGIC FUNCTION OF TRACE METALS?

The question "What is the actual mechanism of the biologic function of the trace metals?" is a bold one indeed and difficult to approach. We always fail wherever a real explanation of molecular mechanism is wanted. We know much about the biologic functions of vitamins. An adequate explanation of the actual mechanism in life processes however is unknown. Vitamins and trace metals like cobalt are functionally similar in certain respects as both must be present in the right amount in order to be beneficial. A soil with an excess of cobalt becomes again an unhealthy soil. Just a small excess of cobalt above the normal in blood in rats causes polycythemia, a severe blood disease<sup>14</sup>. What must we really investigate in order to find out about the magic force and functions of trace elements and how can we approach this difficult problem? It seems to me that the metal proteids are the keys with which we can enter this obscure realm of science and learn about the mysterious forces which are hidden in the metals or elements. Since the portal of the

9 Neal W. M. and Ahman C. F. The Essentiality of Cobalt in Bovine Nutrition. *J. Dairy Sci.* **20**, 406, 1937.

10 A. Lew, N. O. and others. Literature from 1933 to 1938. *New Zealand J. Sc. & Technol.* vols. 15 to 20.

11 Webb D. A. Studies on the Ultimate Composition of Biological Material. *Sci. Roy. Dublin Soc.* **21**, 487, 1937.

12 Baudisch Oskar. A New Chemical Reaction with the Nitrosyl Radical. *NOH Science* **92**, 336 (Oct. 11) 1940. Preparation of *o*-Nitrosophenol from Benzene and Other Aromatic Hydrocarbons at Room Temperature. *J. Am. Chem. Soc.* **63**, 622, 1941.

13 Baudisch Oskar and Heggen George. Quantitative Colorimetric Determination of Iron in Biological Material. *Arch. Biochem.* **1**, 239 (Dec.) 1942. Cronheim G. Ortho-nitrosophenol as a New Reagent in Colorimetric Analysis. *Indust. & Engin. Chem.* **14**, 445, 1942.

14 Myers A. C., Beard H. H. and Barnes B. O. Studies in the Nutritional Anemia of the Rat. IV. The Production of Hemoglobinemia and Polycythemia in Normal Animals by Means of Inorganic Element. *J. Biol. Chem.* **99**, 465, 1931.

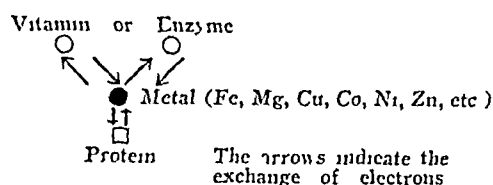
6 Beeson Kenneth C. Literature on Cobalt in Soil and Its Connection with Deficiency Diseases in Animals. Miscellaneous Publication 369. United States Department of Agriculture, 1941.

7 Gilruth T. A. Bush or Tauranga Diseases in Cattle and Sheep. Annual Report no. 8. New Zealand Department of Agriculture, p. 18, 1900.

8 Kidson F. B. Cobalt Status of New Zealand Soils. *New Zealand J. Sc. Technol.* **18**, 694, 1937.



atom was opened by Rutherford and Bohr, we now can more and more explain chemical or biologic reactions by subatomic forces, i. e. the electrons which build up the atoms. Roughly speaking, the metal exchanges electrons with an added protein molecule of a specific nature and with an added vitamin or enzyme. The following scheme explains the idea.



None of the schemes of chemical reactions provide a reasonable explanation of why these trace elements or ions in vivo can do much more than ordinary ions in the test tube.

For instance, an ordinary iron ion decomposes only two molecules of hydrogen peroxide into water and oxygen, whereas under the same circumstances the same amount of iron also in its ionic form, but inserted in a peculiar four nitrogen framework, as present in the enzyme catalase, decomposes millions of hydrogen peroxide molecules. Hardly a more striking example could be given to demonstrate that nature has it in its power to link metallic ions chemically in such a way that they receive tremendously greater power than the iron ion in catalase.<sup>15</sup> It seems to be the type of bonding of the metal with its addenda (vitamins, enzymes, proteins) which determines the function of these combinations in life processes. Catalase, hemoglobin, chlorophyll and certain enzymes must serve us as models for further investigation in this line, because we have definite knowledge as to the constitution of their active derivatives. It is known that reactions between inorganic and organic substances in animals and plants take place with great velocity. The cause of the great velocity of reaction in living cells is found in the great variety of specifically acting catalysers, the so-called enzymes present in the cell. Without enzymes there can be no life. As soon as conditions become unfavorable for enzymatic activity, the vital processes are either greatly inhibited or stopped altogether. Enzymes in living cells represent an exceptionally complete and, one may say, "rational apparatus" for the acceleration of chemical interaction between organic substances.

Under certain circumstances the plain metallic ion itself can react as a prosthetic group. Kubowitz<sup>16</sup> has purified an enzyme which oxidizes polyphenols (polyphenoloxidases) to quinones. Phenol oxidases are of greatest importance in the living cell. Epinephrine action, tyrosinase, as well as ascorbino-oxyhydrase (vitamin C) belong in this category of enzymes.

Kubowitz has shown that these special enzymes are copper proteids. He furthermore showed by ingenious arrangement that copper is the prosthetic group of this enzyme. The copper enzyme was dialyzed against a dilute solution of cyanide which trapped the copper; the enzyme inactivated by this procedure was immediately reactivated by small amounts of copper ions.

The heavy metals presumably act in most metal-enzyme reactions as electron transfer systems, alternating between cuprous and cupric or ferrous and ferric states, but there are still other qualities developed in the combination of metals with organic substances which are of significance in life processes.

Let us mention some other metals which form a part of a combination of organic substances with enzyme-like action.

Manganese is a constituent of the enzyme arginase, which splits arginine into ornithin plus urea.<sup>17</sup>

Zinc is a part of the enzyme carboanhydrase which accelerates the velocity of the reversible reaction  $\text{HCO}_3 \rightleftharpoons \text{CO}_2 + \text{OH}$  more than a million times.<sup>18</sup> Carboanhydrase plays a most important part in the lungs and in other organs.

Aluminum is a constituent of the complex succinoxidase system which plays an important part in sugar metabolism. In this enzyme chromium and aluminum are interchangeable.<sup>19</sup>

Magnesium is a constituent of the enzyme phosphatase, which plays an important part in phosphate metabolism.<sup>20</sup> Carboxylase, an enzyme which splits keto acids, contains magnesium. It is composed of a co-enzyme (thiamine pyrophosphate, vitamin B<sub>1</sub> pyrophosphate) and magnesium.<sup>21</sup> Magnesium possesses some specific and unique character in the animal organism. The living organism undergoes fundamental changes if deprived of this vital element.

Iron is in the enzyme cytochromoxidase (respiration ferment of Warburg<sup>22</sup>), which is composed of a specific protein plus a specific hem compound, plus ferric iron atom.

The examples demonstrate clearly that metallic ions are directly associated with most vital life processes where vitamins or enzymes come into play. Not only are the metals an essential part of the structure of enzymes and vitamins but they seem to form the center of the whole enzyme structure similar to the center metal atoms or ions in the so-called Werner complexes.<sup>23</sup>

If we look back to the cobalt of which we had so much to say in the beginning, we should remember that Werner with a great number of co-workers synthesized hundreds of cobalt compounds in order to study the bonding of addenda to cobalt. In this study and in the fruits of the Werner theory in general lies the basis for the real explanation of the molecular mechanism of the trace metals in life processes. This is not the place to penetrate deeper into this difficult theoretical matter.

#### PHYSIOLOGICALLY IMPORTANT ELEMENTS AND THEIR PLACE IN THE PERIODIC SYSTEM

The periodic system built up on the fundamental basis of electron configuration must be considered the greatest triumph of all science. Not only our planet and all its inhabitants but the whole universe is built up of the ninety-odd elements presented in the periodic table. The chemical elements in our body are among those most common on our planet. We must assume that, before life could be created, masses of simple organic compounds had to be synthesized from the inorganic material which gradually was built up to more compli-

17 Richard M. M. and Hellerman L. Activation of Enzymes IV Purified Liver Arginase Reversible in Activation and Reactivation J Biol Chem 134 237, 1940

18 Booth V. H. and Roughton F. T. Catalytic Effect of Buffers on the Reaction  $\text{CO}_2 + \text{H}_2\text{O} \rightleftharpoons \text{H}_2\text{CO}_3$  J Physiol 92 36 1935

19 Potter V. R. and Schneider W. C. Studies on the Mechanism of Hydrogen Transport in Animal Tissues. Dilution Effect of the Succinoxidase System, J Biol Chem 142 543 1942

20 Lohmann K. Ueber die Pyrophosphat Iritation im Muskel Naturwissenschaften 17 624 1929

21 Ostern P. Baranowski T. and Terszakowec F. Phosphorylation of Adenosin by Yeast and This Process in Alcohol Fermentation J Physiol Chem 251 258 1938

22 Warburg Otto and Christian Walter Pyridin der Wasserstoff übertragende Bestandteil von Gährungsfermenten (Pyridinnukleide) Biochem Ztschr 287 298 1936

23 Werner, A. New Ideas in Inorganic Chemistry New York Interscience Green & Co 1911

15 Sumner, T. B., Dounce, A. L., and Frampton, V. L. Catalase III, J Biol Chem 136 343 1940

16 Kubowitz, F. Ueber die chemische Zusammensetzung der Karboferritin Oxydase Biochem Ztschr 292 221, 1937

cated organic structures. The parent material must have been first of all water, carbon and nitrogen. The few elements which build up organic matter are

$\frac{H}{1}$	$\frac{C}{6}$	$\frac{N}{7}$	$\frac{O}{8}$	$\frac{P}{15}$	$\frac{S}{16}$
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(The numerals are the number of electrons or units of negative electricity.)

These few elements also form the lipoids by means of which the body or cell is separated from the outer world. The lipoids in combination with proteins form the "inner surface." It cannot be doubted that part of the secret of life is the immense internal surface of the cell.

small amounts in natural mineral waters of different origin. It cannot be doubted any more that natural healing waters which have a number of elements in solution extracted them from material which in geologic time went through life processes, either through plants or animal life or both. Elements usually found in traces in natural mineral waters are

$\frac{As}{33}$	$\frac{Sb}{51}$	$\frac{Bi}{83}$	$\frac{Se}{34}$	$\frac{Sn}{50}$	and	$\frac{Pb}{82}$
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It is, however, questionable if these elements are vital for the healthy living cell of the human body. Some of them stimulate life processes in a remarkable way, and from the standpoint of mineral water research

## NUMBER OF ELECTRONS IN SHELL

		THE REPRESENTATIVE ELEMENTS (Differentiating Electron in Outermost Shell)								THE RELATED METALS (Differentiating Electron in Second from Outermost Shell)										THE RARE EARTHS (Differentiating Electron in Third from Outermost Shell)					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21-30	31	32	
SHELL		1	2							(III B)	(IV B)	(V B)	(VI B)	(VII B)	VIII			(I B)	(II B)						
K		H	He																						
		1008 K 1	4002 K 2																						
L		3	4	5	6	7	8	9	10																
		Li	Be	B	C	N	O	F	Ne																
		6.94 K L 2.1	9.02 K L 2.2	10.82 K L 2.3	12.00 K L 2.4	14.008 K L 2.5	15.000 K L 2.6	19.00 K L 2.7	20.183 K L 2.8																
	M	11	12	13	14	15	16	17	18	21	22	23	24	25	26	27	28	29	30						
		Na	Mg	Al	Si	P	S	Cl	A	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn						
		22.997 K L M 2.8 1	24.32 K L M 2.8 2	26.97 K L M 2.8 3	28.06 K L M 2.8 4	31.02 K L M 2.8 5	32.06 K L M 2.8 6	35.497 K L M 2.8 7	39.994 K L M 2.8 8	45.10 L M N 8.9 2	47.90 L M N 8.10 2	50.95 L M N 8.11 2	52.01 L M N 8.13 1	54.95 L M N 8.13 2	55.84 L M N 8.14 2	58.94 L M N 8.15 2	58.69 L M N 8.16 2	63.57 L M N 8.16 1	65.38 L M N 8.16 2						
	N	19	20	31	32	33	34	35	36	39	40	41	42	43	44	45	46	47	48	58	59	60-69	70	71	
		K	Ca	Ga	Ge	As	Se	Br	Kr	Yt	Zr	Cb	Mo	Ma	Ru	Rh	Pd	Ag	Cd	Ce	Pr		Yb	Lu	
		39.096 L M N 8.9 1	40.08 L M N 8.9 2	69.72 L M N 8.18 3	72.60 L M N 8.18 4	74.91 L M N 8.18 5	78.96 L M N 8.18 6	79.916 L M N 8.18 7	83.7 L M N 8.18 8	88.92 M N O 18.9 2	91.22 M N O 18.10 2	93.3 M N O 18.12 1	96.0 M N O 18.13 1	99 M N O 18.13 2	101.7 M N O 18.15 1	102.91 M N O 18.15 2	106.7 M N O 18.16 1	107.88 M N O 18.16 2	112.41 M N O 18.18 1	140.13 M N O 19.9 2	140.92 M N O 20.9 2		173.04 M N O 31.9 2	175 M N O 32.9 2	
	O	37	38	49	50	51	52	53	54	57	72	73	74	75	76	77	78	79	80						
		Rb	Sr	In	Sn	Sb	Te	I	Xe	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg						
		85.47 M N O 18.9 1	87.63 M N O 18.9 2	114.76 M N O 18.9 3	118.70 M N O 18.18 4	121.76 M N O 18.18 5	127.61 M N O 18.18 6	126.92 M N O 18.18 7	131.3 M N O 18.18 8	138.92 M N O 18.9 2	178.6 M N O 32.10 2	181.4 M N O 32.11 2	184.0 M N O 32.12 2	186.31 M N O 32.13 2	191.5 M N O 32.14 2	193.1 M N O 32.15 2	195.23 M N O 32.16 2	197.2 M N O 32.16 1	200.61 M N O 32.16 2						
	P	55	56	81	82	83	84	85	86	89	90	91	92												
		Cs	Ba	Tl	Pb	Bi	Po	?	Rn	Ac	Th	Ux	U												
		132.91 N O P 18.9 1	137.36 N O P 18.9 2	204.39 N O P 32.18 3	207.22 N O P 32.18 4	209.0 N O P 32.18 5	210 N O P 32.18 6	222 N O P 32.18 7	222 N O P 32.18 8	227 O P Q 18.9 2	232.12 O P Q 18.10 2	235 O P Q 18.11 2	238.14 O P Q 18.12 2												
	Q	87	88																						
		?	Ra																						
		226.97 O P Q 18.8 1	226.97 O P Q 18.8 2																						

An improved periodic table by W. F. Luder, J. Chem. Educ. 16, 393 (Aug.) 19 9

Essential for any system of the cell is that it be an energy system.

The elements which govern the water balance in the body are

$\frac{Na}{11}$	$\frac{Mg}{12}$	$\frac{K}{19}$	and	$\frac{Ca}{20}$
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In close partnership with them are the elements

$\frac{Li}{3}$	$\frac{Be}{4}$	$\frac{Rb}{37}$	$\frac{Sr}{38}$	$\frac{Cs}{55}$	and perhaps	$\frac{Ba}{56}$
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In what degree these elements are connected with water absorption and water excretion is not known. It is to be assumed that these highly hydrated metals remain in ionic salt form in the tissue fluid.

There are a number of other elements which seem to be important in life processes. All of them are found in

arsenic<sup>24</sup> has always been a therapeutic agent. There are 63.8 micrograms of arsenic per hundred cubic centimeters in the human blood, which increases in pregnancy during the fifth and sixth month to 222 micrograms. Lead is a normal constituent of sea water and is always present in crustacea and mollusks. Tin has been found in the tongue. Also the following elements are necessary for life either in plants or in animals:

$\frac{B}{5}$	$\frac{F}{9}$	$\frac{Al}{13}$	$\frac{Si}{14}$	$\frac{Cl}{17}$	$\frac{Br}{35}$	$\frac{I}{53}$	$\frac{Ga}{31}$	$\frac{Ge}{32}$
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Gallium and germanium are constant companions of aluminum and silica. Boron is of great importance in

<sup>24</sup> Bertrand, G. Sur l'existence de l'arsenic dans l'organisme. Compt. rend. Soc. de biol. 131, 1434, 1902. Schwarz, L. and Deckert, W. Studien zur Beartteilung von Arsenbefunden in A. Leiden und Hautanhangen. Arch. f. Hyg. 106, 346, 1911.

plant life, especially in tobacco and buckwheat. There is but little known about its role in the human body. It is certain that boron plays a part in the calcium metabolism. Spiro,<sup>25</sup> for example, has shown that the boric acid ( $\text{HBO}_2$ ) occurring in the mineral water of Baden (Switzerland) is easily absorbed. Because it is itself lipid soluble and readily forms complexes, the physiologic behavior deserves special attention. The scientific studies of boron compounds in Saratoga water will doubtless improve the understanding of its therapeutic value and application. The presence of boron in human blood and milk has been demonstrated.<sup>26</sup>

The therapeutic importance of silica,  $\text{SiO}_2$  or  $\text{H}_2\text{SiO}_3$ , in Saratoga mineral waters is not to be underestimated. One of the Saratoga springs, Red Spring, has been esteemed for many decades by the populace as an eye-wash and as a skin beautifier. The cosmetic effect of this spring can be attributed to monosilicic acid, forming a film of colloidal  $\text{H}_2\text{SiO}_3$  on the skin. The fact that the aqueous humor of the human eye contains silicon is perhaps more than just an interesting correlation. It is very notable that  $\text{SiO}_2$  is absorbed by the mucous membrane of the respiratory passages during inhalation.<sup>27</sup> That the skin needs silica is an established fact. Fluorine<sup>28</sup> causes a general cachexia and mottled teeth. Not more than 1.5 parts per million is generally considered safe. The difference between 0.0 and 1.0 part per million of fluorine in the domestic water supply has been shown to be highly significant from the standpoint of the amount of dental decay in a community. While small amounts of fluorine prevent decay, larger amounts produce mottled teeth.

The vital importance of bromine, similar to iodine, in human life, and in the metabolism of mammals in general, is today an established fact. It is a normal constituent of the pituitary gland. There is about as much bromine in the pituitary gland as there is iodine in the thyroid gland. According to Moruzzi<sup>29</sup> and to Zondek and Bier,<sup>30</sup> bromine is enriched in the pituitary gland and plays here an important part in correlation with iodine in the thyroid. The human pituitary gland contains an average of 0.701 mg of bromine per hundred cubic centimeters in fresh organs. Zondek and Bier found that the blood bromine is lowered to half its normal figure in cases of "depressive mania" psychosis. Bathing cures at the thermes of Bourbonne-les-bains, which contain rather large amounts of bromine but practically no iodine, bring about a calming and soothing effect. The patient falls into a state of euphoria, pain disappears and a deep sleep follows.

Iodine<sup>31</sup> is the classic trace element of whose value even the public has been conscious for many years. It is known that iodine deficiency is usually the cause of thyroid hyperplasia. The incidence of goiter has received a great deal of attention in the United States. Many investigations have been made of the iodine content of foods grown in goitrous regions and in goiter-free regions. Goiter is quite prevalent in New Zealand.

It has been found that New Zealand cow's milk from the goiter-free regions contained three times as much iodine as did that from affected regions.<sup>32</sup> Saratoga water contains relatively large amounts of iodine, and drinking an 8 ounce glass of this water a day would be enough to prevent goiter. Drinking of natural mineral waters containing iodine, such as the waters of Bad Tolz or Salsomaggiore, increase the excretion of uric acid considerably.<sup>33</sup> Iodine in natural mineral waters is present solely in the form of iodide ions, which easily penetrate not only mucous membranes but also the skin. Most of the iodine waters also contain sodium chloride, like Saratoga Springs waters, which in addition to chlorine contain bicarbonate and bromine ions.

There exists today a wide knowledge concerning the biologic action of copper which I shall not describe in detail in this publication. From our point of view, however, it is important to state the fact that this metal has the greatest distribution as a constituent of natural mineral waters. It is present in small amounts in Saratoga mineral water, from 1 to 10 micrograms per liter. From the point of view of balneotherapy it is interesting to note that copper, like divalent iron, is absorbed by the skin. It has been proved experimentally that copper, like manganese, is stored in the liver. Boyden, Potter and Elvehjem<sup>34</sup> proved that rats which receive large quantities of copper in their food store a great deal of that copper in the liver. The value for liver copper rose to three hundred times the normal values, while values for the blood and spleen rose only to two to five times the normal. Lundegardh and Bergstrand,<sup>35</sup> who made extensive investigations concerning copper in the liver of man, found it difficult to make statements about the normal value in the liver. Gerlach,<sup>36</sup> who examined 7 healthy persons who died suddenly and ought, therefore, to have exhibited normal values, found figures which vary between 3 and 13 micrograms per gram of fresh weight with a mean figure of 7.5 micrograms, i. e. 7.5 mg per kilogram.

Gerlach's as well as Lundegardh's and Bergstrand's investigations proved the strange circumstance that the mean copper values were increased in tuberculosis.

The values in secondary anemias have naturally been of great interest since Hart, Steenbock, Elvehjem, Waddell and others showed that copper is a necessary supplement to iron to render possible the utilization of hemoglobin. It might be imagined that under such conditions the copper in liver is influenced, in one direction or another, in secondary anemia. According to Lesne and Briskas<sup>37</sup> the copper content stands in inverse relation to the iron content, so that low iron values are accompanied by high copper values. Lundegardh and Bergstrand<sup>35</sup> find remarkably high values among 5 cases of viridans sepsis, in that 2 cases show values of 87 mg per kilogram and 1 the enormous value of 135.5 mg per kilogram, which is about twenty-five times the normal mean value. According to Lundegardh, Bergstrand and others, the fetal liver is on the whole richer in copper than that of adults. From the point of view of balneology it is of especial interest

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26 Orent Keiles, Elsa. Role of Boron in the Diet of the Rat, *Proc. Soc. Exper. Biol. & Med.* 44: 199, 1940.

27 Kraut, H. Ueber den Kieselsäuregehalt des menschlichen Blutes und seine Veränderung durch Kieselsäure Zufuhr, *Ztschr. f. physiol. Chem.* 194: 81, 1931.

28 McClure, F. T. A. A Review of Fluorine and Its Physiological Effects, *Physiol. Rev.* 13: 277, 1933.

29 Moruzzi, Giovanni. Contributo allo studio del bromo negli organi, *Ber. d. ges. Physiol.* 107: 183, 1938.

30 Zondek, Hermann, and Bier, Artur. Hypophyse und Schlaf, *Klin. Wchnschr.* 1: 760, 1932.

31 Shohl, Alfred T. Mineral Metabolism, New York: Reinhold Publishing Corporation, 1939, p. 233.

32 Hercus, Charles E. Endemic Goiter in New Zealand and Its Relation to the Soil Iodine, *J. Hyg.* 24: 321, 1925.

33 Cardin, A. Arch. ital. sc. farmacol. 7: 242, 1938.

34 Elvehjem, C. A. The Biological Significance of Copper and Its Relation to Iron Metabolism, *Physiol. Rev.* 15: 471, 1935.

35 Lundegardh, Henrik, and Bergstrand, Hilding. Spectral Analytical Investigation into the Content of Mineral Substances in Liver, *Nova acta regine Soc. sc. Uppsala* 12, No. 3, 1940.

36 Gerlach, W. Untersuchungen über den Kupfergehalt menschlicher Organe, *Virchows Arch. f. path. Anat.* 294: 171, 1934.

37 Lesne, E., and Briskas, S. Contribution à l'étude du métabolisme du cuivre chez le nourrisson, *Acta pædiat.* 22: 123, 1942.

that copper influences the endocrine system. For instance, the antagonism between copper and the thyroid hormones is very noticeable. Thyroxine becomes inactive or detoxified by forming a stable complex compound with this metal<sup>38</sup>. The amount of copper in blood after thyroidectomy is lowered. It rises on addition of thyroxine<sup>39</sup>. In infectious rheumatism of the joints, the copper content of the blood is doubled. Heilmeyer<sup>40</sup> explains this as due to a mobilization of copper in order to neutralize the bacterial toxins. The proposed drinking "cures" by copper-containing springs in cases of infectious rheumatic diseases thus receive a remarkable motivation.

Many more of the "related metals" (see periodic table) are found in the human body. We find quite an array in Saratoga mineral water. The list of related metals found in biologic matter is given in the accompanying table.

Zinc is an element necessary for life. Experiments on rats have shown that zinc is necessary for normal growth. Its deficiency brings about disturbances of genital functions, nitrogen assimilation and normal hair growth. Falling out of hair and hair changes seem to be directly connected with the presence or absence of this element<sup>41</sup>. The daily amount of zinc necessary for man is larger than that of iron, copper or manganese. According to Howe, Elvehjem and Hart,<sup>42</sup> the daily requirement of zinc is 0.25 mg per kilogram.

It is possible that zinc deficiency is quite frequent. Since many natural mineral waters, including Saratoga spring waters, contain small amounts of zinc, the drinking of such water might be of value and beneficial for certain diseases. Zinc has an antidiabetic reaction<sup>43</sup>. Sea water is remarkably rich in zinc, but its amount seems to fluctuate according to location and depth. In the Atlantic Ocean between 0.002 and 0.008 mg per kilogram has been found. Some sea animals enrich zinc more than a thousand times in their bodies<sup>44</sup>. It is of significance that in the human liver there is 32 mg of zinc but only 2 mg of manganese and 5 mg of copper<sup>45</sup>. Milk, which contains only the smallest traces of iron, copper and manganese, has as much zinc as 0.5 mg per kilogram<sup>46</sup>. The relation of zinc to the genital spheres has often been demonstrated<sup>41</sup>. Zinc activates the hypoglycemic action of insulin<sup>46</sup>. It also activates the ferment carboxylase<sup>47</sup>. It is of great significance and in direct accordance with our discussion concerning bond type and physiologic action of mineral elements that in insulin zinc is in organic binding. Because of

similar behavior of zinc toward amino acids it is assumed that the zinc in insulin is linked in a ring structure. The valences which link the zinc originate partly from carboxyl groupings and partly from amino groupings. Such a linkage is typical for so-called inner complex compounds (chelate binding), which play an important part in biochemistry. The saturation of insulin with zinc lies between 2.7 and 3.5 per cent.

Manganese is one of the first trace elements which has been found to be of value in plant life<sup>48</sup>. In recent years various investigators have demonstrated that manganese is essential for the health and well-being of the human and animal organism. It is obvious that the manganese originates from the soil, goes into the growing plant and from here enters the animal organism if the plants are nutrients. If the soil is deficient in manganese, the plants grown in such soil will suffer a manganese deficiency and the animals eating the plants may develop a deficiency disease. However, little is known about such diseases and about the specific biologic function of manganese in the human body. Orent and McCollum<sup>49</sup> found that manganese aids lactation and prevents degeneration and atrophy of the testes in the rat. In the chick it is effective in preventing the development of the bone condition known as perosis<sup>50</sup>. Manganese has

Related Metals Found in Biologic Matter

Tl	V	Cr	Mn	Fe	Co	Ni	Cu	Zn
22	23	24	25	26	27	28	29	30
	Mo						Ag	Cd
	42						47	48
	W							
	74							Hg
	U							
	92							80

been found to serve as an activator of certain enzymes, notably arginase, phosphoglucomutase and certain peptidases<sup>50</sup>.

Manganese, like other metals, is stored up in the liver, which is the organ most abundant in manganese. According to Reiman and Minot<sup>51</sup> the human liver contains from 1.2 to 3.51 mg manganese per kilogram of fresh weight. The manganese values in the liver do not vary so much as those for iron and copper. However, remarkably low values are noted in cases of pneumonia<sup>52</sup>. The disease group in which the value appears to be raised is pulmonary tuberculosis. In contrast to copper and iron, manganese does not appear to be especially abundant in the newborn child, and the values lie considerably below those found for adults. The stored manganese rises in a very striking manner between the ages of 20 and 30 years and is very stable on a level which is about 50 per cent above that of the period of adolescence (19.8 mg per kilogram). Children need about 0.2 to 0.3 mg of

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41 Gabriel, Bertrand, and Vladoescu, R. Sur les causes de variation de la teneur en zinc des animaux vertébrés. *Compt. rend. Acad. d. Sc. Paris* 172, 768, 1921. 173, 176, 1921.

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50 Edlbacher, S., and Pinosch, H. Ueber die Natur der Arginase. *J. Physiol. Chem.* 250, 241, 1937. Edlbacher, S., and Baur, H. Zur Kenntnis der Natur der Hefe- und Leberarginase. *Naturwissenschaften* 26, 267, 1938.

51 Reiman, C. K., and Minot, A. S. A Method for Manganese Quantitation in Biological Material Together with Data on the Manganese Content of Human Blood and Tissue. *J. Biol. Chem.* 42, 329, 1920.

manganese per kilogram<sup>52</sup> Recent experiments carried out by Greenberg and Campbell<sup>52</sup> with the radioactive isotope of manganese Mn<sup>55</sup> (labeled manganese) have added much to our knowledge concerning the fate of manganese in the animal body. The experiments were carried out on rats on a normal control diet. Most of the manganese is excreted in the feces whether it is administered orally or by injection. This agrees with the finding of Skinner, Peterson and Steenbock,<sup>53</sup> who have reported that 80 to 99 per cent of orally fed manganese was excreted in the feces, depending on the amount ingested. When manganese was administered orally, 28 per cent of retained manganese was found in the liver, bone, muscle and blood, the liver showing the largest uptake. Little, if any, of the absorbed manganese is excreted in the urine. When the manganese was administered by injection, the retained manganese was found in the skin, bone, liver, muscle, small intestine and stomach, the skin and bone showing rather large amounts. Other tissues showed no significant amount. Muscle and skin, apparently, are important sites for the storage of manganese that is absorbed, especially as the tissues represent a large portion of the mass of the animal. Bone and liver also seem to be important in the storage of manganese. The manganese found in the liver may be an indication of its excretion into the bile, or it may be connected in some manner with the activation of certain enzymes found in the liver. Manganese is supposed to be the co-enzyme of a proteid which is important in synthesis. Rudra<sup>54</sup> has shown that manganese probably plays a part in the synthesis of ascorbic acid in the liver.

Concerning the effect of manganese on polycythemic animals, it has been found that manganese has some stabilizing influence on the increased hemoglobin, erythrocyte, cell volume and blood volume values characteristic of cobalt polycythemia<sup>14</sup> and acts in some way to alleviate the toxic condition resulting from the long-continued administration of small quantities of cobalt.

#### SUBSURFACE AND SEA WATER IN THERAPY

On account of the analytical composition of Saratoga Spa water and sea water, similar except for sulfates and phosphates, we are able to apply the results and experiences obtained from sea water drinking cures to drinking of natural mineral water, especially Saratoga waters. From earliest times ocean water as well as natural mineral waters similar to Saratoga water have been given by mouth with results that proved both beneficial and lasting. Both types of water are of true medicinal value and bring about a transmineralization of the living cells of the body. The mineral elements in our body, even in the bones of adults or in teeth of growing children, are constantly replaced by other or new ones. Our food and drinking water supply these minerals. It is one of the remarkable chapters in physiology that not long ago the so-called "ash" part of our body was considered more or less negligible. Today we know not only that each single mineral element plays its important part in life, but that the antagonism and synergism of the elements make life possible. The most obvious instance of

biologic antagonism can be seen in the mutual relation of calcium and potassium (heart beat) and of calcium and magnesium (muscle activity). Calcium and iron stand in mutual relationship (anemia) and many more such cases could be demonstrated. The calcium necessary for heart beat and the bones is formed in a special Werner complex in combination with phosphorus and carbon dioxide.

Our whole skeleton is rebuilt continuously, and calcium is one of the important building materials which we have to furnish in sufficient amount. Calcium assimilation is only one small part of the whole complicated problem of transmineralization of the body by the internal use of mineral water.

In this connection it is a logical question, and one of the most far reaching in relation to our whole problem, to ask "What really happens if we transmineralize or change our natural salt solutions in the blood serum and in the cells?" In order to answer this question and all of its implications completely, it would be necessary to study analytically all the changes of all the different organ functions by variation of salt mixtures and concentrations, and we would have to tabulate up the results and study the new functions of all the different organs. In this way we could ultimately reach our goal of introducing a sound theory of mineral water therapy and of drinking "cures." We are far from this goal, but we know our problem and how to approach it.

In order to tackle this problem from its basis, we must know how single cells behave toward surrounding salt solutions and then extend our knowledge in order to be able to apply it to the cells of higher animals and of man.

In our special problem concerning trace elements, we must confess that we are still far behind in being able to make concrete statements. We are not yet certain in the contention that the healing action of the waters should be ascribed mainly to the elements present only in minute amounts, but we do know that these elements are certainly of additional therapeutic value. The problem is most complex. We must ask the question as to how these substances act on the human body in sickness and in health, and what part they play in the vital processes. We must consider that the substances in mineral waters which act on the patient are almost all constituents of the human body and are replaced continuously. Our knowledge concerning deficiency of certain elements in the human body is today mainly focused on iron and iodine. Natural mineral waters of the Saratoga type are certainly healing waters in cases where these elements are deficient in the body. From all I have said here we see there can be no doubt that all the small amounts of numerous elements present in sea water or in the soil must have entered the life process genetically and become essential parts of living substances. Such knowledge alone should be helpful in making natural mineral waters at least interesting to the physicians and the biologists and rouse their attention in a scientific manner. If nature puts so much stress in her inventive power on linking metal ions into the organic structure of living matter, they certainly must be of paramount importance for life in general. The metal proteids in vitamin and enzyme systems are only one small group which proves this statement. The study of trace elements has already raised natural mineral water therapeutics to a high level of importance. It has made research on natural mineral waters rank equal with that on vitamins and enzymes, and shown the necessity of integrating the two fields.

<sup>52</sup> Greenberg, David, and Campbell, W. Wesley. *Studies in Mineral Metabolism with the Aid of Induced Radioactive Isotopes*. IV. Manganese. *Proc. Nat. Acad. Sci.* **26**: 448, 1940.

<sup>53</sup> Skinner, J. T., Peterson, W. H. and Steenbock, Harry. Ueber die Wirkung von Mangan und Pflanzen Asche auf das Wachstum und die Hämoglobin Synthese. *Biochem. Ztschr.* **250**: 392, 1932.

<sup>54</sup> Rudra, M. N. Manganese in the Biological Synthesis of Ascorbic Acid. The Synthesis of Indophenol Reducing Substances by Guinea Pig Liver in Vitro and in Vivo. *J. Indian Chem. Soc.* **17**: 705, 1940.



## Council on Foods and Nutrition

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING  
REPORT  
GEORGE K. ANDERSON M.D. Secretary

### MINERAL OIL (LIQUID PETROLATUM) IN FOODS

Ever since the reports of Dutcher and his collaborators<sup>1</sup> and of Burrows and Farr<sup>2</sup> in 1927 it has been known that liquid petrolatum (mineral oil) interferes with the absorption of carotene. Several years ago the Council, as a result of considerations of a salad dressing containing mineral oil, which was designed for convenience in the formulation of therapeutic diets low in fat, called attention to the evidence then available about this possible deleterious effect and concluded that salad dressings containing mineral oil should be used only under the direction of a competent physician.<sup>3</sup> Since that time the situation has changed. The use of mineral oil in foods has increased, and much of the mineral oil so used is being taken without proper medical advice and often no doubt without the knowledge of the person consuming the food. The evidence obtained from newer studies of the effects of the ingestion of mineral oil shows conclusively that the harmful potentialities of mineral oil are far greater than had been supposed. Because of these developments the Council decided to prepare the present brief account of the evidence now available, with the view to reaching a decision about the acceptability of food products containing mineral oil and to informing physicians and others of its views.

As long ago as 1914 the Council on Pharmacy and Chemistry<sup>4</sup> published a report on liquid petrolatum in which it was mentioned that the introduction of this laxative on a fairly extensive scale in medical practice occurred in the period around 1905 to 1910. Today self medication with mineral oil and other laxative drugs regrettably is common. Although constipation usually is a symptom of little significance, Logan<sup>5</sup> has pointed out that it caused more than half the patients with gastric cancer to seek advice at the Roosevelt Hospital in New York.

Mineral oil has been recommended for the cooking of foods. Potato chips prepared in mineral oil have been placed on the market and the use of mineral oil in the frying of doughnuts has been suggested.

From reports that have come to the attention of the Council it is evident that the use of mineral oil in foods has increased considerably, especially in the form of imitation mayonnaise or salad dressing in which mineral oil replaces the usual food oils that one would expect to find in such preparations. Even when these products are labeled to declare the presence of mineral oil it is obvious that the consumer has no opportunity to read the labels when they are affixed on gallon size containers and sold to restaurants and institutions. Federal and state authorities having jurisdiction over foods can take suitable action against food products introduced into commerce without proper labeling. However even labeling showing the presence of mineral oil in salad dressings does not afford adequate protection to the consumer who has no opportunity to read the label or who is possessed of insufficient information to comprehend the significance of statements required by regulations.

There are a number of reasons why there has been an increased use of mineral oil as an ingredient of certain foods. Physically these products can be made so that they cannot be differentiated, except in a laboratory from ordinary products containing true fats or oils. The mineral oil products do not become rancid and they may be kept for long periods of time without refrigeration. Mineral oil provides no food value, and products containing it are sometimes referred to especially on restaurant menus as nonfattening or slenderizing. They usually can be produced much more cheaply than foods contain-

ing animal or vegetable oils and, unlike ordinary food oils and fats, mineral oil is plentiful and requires no ration points. Is it any wonder that the use of mineral oil in foods has tended to increase alarmingly?

#### THE ALIMENTARY BEHAVIOR OF MINERAL OIL

**Absorption**—In 1884 Randolph<sup>6</sup> studied the absorption of a preparation of petrolatum and showed that, within the limits of analytical error, it could be recovered quantitatively in the feces. Other workers later showed that liquid petrolatum is relatively nonabsorbable from the alimentary tract, whether the oil is of the paraffin hydrocarbon type obtained from Pennsylvania crude oils or is of the squalene and naphthene type produced from Russian or California crude oils. It was not until 1932 that it was reported by Channon and Collinson<sup>7</sup> that small traces of mineral oil could be absorbed by animals and deposited in the liver. Stryker<sup>8</sup> in 1941 made a thorough microscopic and chemical study of the absorption of liquid petrolatum by rabbits, white rats and guinea pigs. The amounts of mineral oil administered daily were large, for example, 20 or 30 cc to rabbits for several months. Gross examination of the bodies of the experimental animals after they had been killed showed white nodules in the intestine of the rabbits, involvement of the mesenteric lymph nodes of the rats with yellow flecks in the liver and no demonstrable lesions in the guinea pigs. Microscopic examinations revealed the presence of oleophages in certain cells, usually in the superficial lamina propria near the tips of the villi, but occasionally deeper in the cells and, in all three species of animals, both intracellular and extracellular vacuoles in the mesenteric lymph nodes. Animals fed mineral oil for a considerable length of time showed pathologic changes in the liver consisting of vacuolated cells and extracellular vacuoles. Examinations of the mesenteric lymph nodes of selected human autopsy material revealed the same type of vacuoles, which did not reduce osmic acid and stained yellow by the Carminati method. From the mesenteric lymph nodes of both human beings and experimental animals an unsaponifiable oil could be obtained which did not absorb hydrogen and which had an index of refraction and specific gravity of liquid petrolatum. Frazer, Stewart and Schulman<sup>9</sup> in 1942 reported that considerable absorption of liquid petrolatum from the intestine can occur if the oil is emulsified. When the droplets of oil were approximately 0.5 micron in diameter they could be observed in the cells of the intestinal wall of the rat. By means of the chylomicrographic method it was possible to demonstrate oily particles in the blood. Absorption was as high as 60 per cent, which these authors point out compares favorably with the absorption of olive oil when similarly tested.

The evidence thus is conclusive that liquid petrolatum can be absorbed in small amounts from the intestine. Further study is needed of the extent and significance of lesions of the liver and other organs that may be produced by long continued ingestion of mineral oil. It appears, however, that there is no real basis for any belief that mineral oil has any carcinogenic effect.

**Effect on Carotene and Vitamin A**—As a result of a great deal of investigation, especially by Curtis and his collaborators<sup>10</sup> there now has been obtained a quantitative appreciation of the influence of mineral oil on the absorption of carotene. Curtis<sup>11</sup> has calculated that each ounce of mineral oil at body temperature is able to dissolve 140,000 international units of carotene and, at room temperature, 120,000 international units. The magnitude of these figures explains the profound effect exerted by mineral oil, and the difference in the solubility at

6 Randolph N A. On the Behavior of Petrolatum in the Digestive Tract. *Proc Acad Nat Sc* p 281 (Nov Dec) 1884 published in 1885.

7 Channon H J and Collinson G A. The Unsaponifiable Fraction of Liver Oils. V. The Absorption of Liquid Paraffin from the Alimentary Tract in the Rat and the Pig. *Biochem J* 23: 676 (No 4) 1929.

8 Stryker W A. Absorption of Liquid Petrolatum (Mineral Oil) from the Intestine. A Histologic and Chemical Study. *Arch Path* 31: 670 (June) 1941.

9 Frazer A C, Stewart H C and Schulman J H. Emulsification and Absorption of Fats and Paraffins in the Intestine. *Nature* 140: 167 (Feb 7) 1942.

10 Curtis A C and Kline E M. Influence of Liquid Petrolatum on the Blood Content of Carotene in Human Beings. *Arch Int Med* 63: 54 (Jan) 1939. Curtis A C and Ballner R S. The Prevention of Carotene Absorption by Liquid Petrolatum. *J A M A* 113: 1725 (Nov 11) 1939. Curtis A C and Horton Friscella B. The Utilization of Vitamin A Added to Mineral Oil. *Am J M Sc* 200: 102 (July) 1940.

11 Curtis A C. The Mineral Oil Vitamin A Problem. *Vitamins* 1: 69 (May) 1942.

1 Dutcher R A, Ely J O and Honeywell H E. Vitamin Studies. VI. Assimilation of Vitamins A and D in Presence of Mineral Oil. *Proc Soc Exper Biol & Med* 24: 953 (June) 1927.

2 Burrows M T and Farr Wanda K. The Action of Mineral Oil per Os on the Organism. *Proc Soc Exper Biol & Med* 24: 719 (April) 1927.

3 Mineral Oil in Foods: a report of the Council on Foods. *J A M A* 100: 1814 (Nov 27) 1937.

4 Liquid Petrolatum or Russian Mineral Oil: a report of the Council on Pharmacy and Chemistry. *J A M A* 62: 1740 (May 30) 1914.

5 Logan V W. Mineral Oil as a Laxative. *Hygeia* 20: 20 (Jan) 1942.



body and room temperatures explains the experimental observation that mineral oil continues to exert its deleterious effect even when it has been saturated at room temperature with carotene. The diet ordinarily provides each day from 5,000 to 10,000 international units of vitamin A and, with the normal choice of foods in the United States, about two thirds of the total is contributed by the carotene of plant foods. Animal food sources of vitamin A are relatively few, being restricted to milk and other dairy products containing butterfat, egg yolk, beef fat, liver and fish liver oils. Helen S. Mitchell<sup>12</sup> reported about ten years ago that rats need from ten to twelve times more spinach to supply their vitamin A requirement when the spinach is fed with 0.5 cc of mineral oil, and eight times as much when the mineral oil and the food are fed six hours apart. Observations such as these emphasize the undesirability of incorporating mineral oil in foods.<sup>13</sup>

Although liquid petrolatum has a profound adverse effect on the absorption of carotene, its effect on vitamin A itself is much less because vitamin A has a lower solubility in mineral oil than carotene. For this reason Curtis<sup>14</sup> has suggested that, whenever mineral oil is the cathartic of choice and is to be used for any period of time longer than a month, there should be administered with it 1 or 2 teaspoons of cod liver oil or its equivalent of other fish liver oil. "This is like borrowing from Peter to pay Paul," he has written, "but nevertheless it answers the problem of carotene loss to mineral oil." But vitamin A is not the only dietary essential whose assimilation may be adversely affected by the ingestion of mineral oil, and taking cod liver oil with mineral oil or saturating mineral oil with some form of vitamin A may actually lead to a false sense of security.

Constipation frequently occurs in pregnant women and in persons on restricted diets, and these are the very people who, because of the difficulty of meeting their dietary requirements with foods, should use mineral oil as a laxative understandingly or not at all. Hirst and Shoemaker<sup>14</sup> concluded as a result of their observations on 328 pregnant women under good antepartum dietetic management that "dietetic insufficiency in pregnancy should be assumed, and artificial vitamin A supplement offered in all cases." Some indication of the frequency with which mineral oil is used in conjunction with therapeutic diets is provided in the reports of cooperative investigations of the American Dietetic Association. Thus Johnson<sup>15</sup> has written that mineral oil was used in five of fifteen of the 1,500 calory diets reported, in eleven of twenty-six of the 1,200 calory diets and in six of twenty-one and six of thirty-eight of the 800 calory and the low fat diets, respectively. These reports of diets were obtained from thirty-six hospitals in widely separated sections of the United States. While the vitamin A values for all these diets were considered satisfactory, if mineral oil was not consumed, it was emphasized that nearly all of the vitamin A was due to carotene, and the actual vitamin A content of the diets was extremely low unless 3 ounces or more of liver was included in the diets at least once a week.

**Vitamin D, Calcium and Phosphorus**—In 1940 Smith and Spector<sup>16</sup> reported their studies on the effect of the ingestion of mineral oil on the utilization of vitamin D. Even though the vitamin D was fed separately as cod liver oil, it was found that three times as much was needed to heal rickets in rats

when the basal diet contained 5 per cent mineral oil. When the basal ration contained 10 per cent of mineral oil from five to ten times more cod liver oil was needed to heal rickets. These investigators also demonstrated with growing puppies that the ingestion of mineral oil interferes with the retention of calcium and phosphorus. It was found also that puppies reared on a diet which contained 10 per cent of mineral oil with adequate amounts of calcium and phosphorus did not show normal calcification of the bones even when the amount of cod liver oil administered was increased as much as fivefold.

**Vitamin K**—The effect of mineral oil on vitamin K was studied by Elliott, Isaacs and Ivy.<sup>17</sup> A large number of rats were fed on a stock ration to which had been added 20 per cent of mineral oil by weight. Prothrombin deficiency, as measured by the Quick prothrombin time method, developed in the blood, and the condition was cured by the subcutaneous administration of a vitamin K preparation. It was the opinion of these investigators that the mineral oil interfered with the absorption of vitamin K. Hepatic injury was not ruled out but was considered to be unlikely.

The foregoing observations of Ivy and his collaborators received support and elaboration from the studies of Javert and Macri.<sup>18</sup> While investigating the prothrombin concentration during normal pregnancy they found in one woman a lowering of the prothrombin values below normal, and this condition was not improved by the administration orally of a vitamin K preparation. Intramuscular injections were effective. It was learned that this woman had been taking mineral oil during the course of her pregnancy. When the mineral oil was discontinued while the administration of vitamin K was continued, the prothrombin values increased to normal. However, at parturition the prothrombin of the cord blood was only one-third normal despite the administration of large amounts of vitamin K to the mother. Detailed studies then were made of 9 women who were found to be taking mineral oil intermittently during pregnancy. Of these women 3 had low prothrombin values. Of 10 other pregnant women taking mineral oil daily, 7 were found to have hypoprothrombinemia. The authors believed that the mineral oil produced its effect either through adsorption or the prevention of absorption of the vitamin K, or possibly through interference with bacterial synthesis. Their observation that the oral administration of vitamin K may be of little or no value if mineral oil also is being given is worthy of emphasis and serious thought.

#### MEDICAL OPINION REGARDING MINERAL OIL

Conflicting views are recorded regarding the effect of mineral oil per se on the alimentary tract. Many physicians consider mineral oil preparations the laxative of choice. It is probable that under medical supervision mineral oil can be properly used, but the ease of obtaining the preparations as well as other laxative drugs readily leads to abuse. Proctologists have experienced difficulty in visualizing the wall of the rectum because of an adhering film of oil in persons who take liquid petrolatum. The seepage of mineral oil is well known to be one of the discomforts that may attend the use of this substance. Morgan<sup>19</sup> has written forcefully about the need of caution in the use of liquid petrolatum. He has mentioned a syndrome to which he has ascribed the term "mineral oil poisoning" which may result from the continual oral administration of liquid petrolatum and which is relieved by discontinuance of the oil together with supportive measures to overcome the weakness which accompanies this syndrome. The most frequent signs and symptoms are anorexia, indigestion, flatulence, fatigue, nervousness, dyschesia and anal leakage, accompanied in many cases by considerable loss of weight. On the basis of reports such as these there can be no justification for the incorporation of liquid petrolatum in foods.

#### CONCLUSIONS

It has been shown that the ingestion of liquid petrolatum is capable of interfering seriously with the absorption of carotene, vitamin D, calcium and phosphorus and vitamin K. The effects

12 Mitchell, Helen S. Influence of Mineral Oil on Assimilation of Vitamin A from Spinach, *Proc Soc Exper Biol & Med* 31: 231 (Nov) 1933.

13 Rowntree, Jennie I. The Effect of the Use of Mineral Oil on the Absorption of Vitamin A, *J Nutrition* 3: 345 (Jan) 1931. Jackson, R. W. The Effect of Mineral Oil Administration on the Nutritional Economy of Fat Soluble Vitamins. II. Studies with the Vitamin A Factor of Yellow Corn, *ibid* 4: 171 (July) 1931. Dutcher, R. A. Harris, P. L., Hartzler, Eva R., and Guerrent, N. B. Vitamin Studies. XIX. The Assimilation of Carotene and Vitamin A in the Presence of Mineral Oil, *ibid* 8: 269 (Sept) 1934. With, T. K. Om Paraffinolein-haemmende Virkning paa Vitamin A Aktive Substansen Udnnyttning Nord med 3: 2468 (Aug 12) 1939. Andersen, Oluf, Untersuchungen über die Wirkung von Paraffinoleingabe auf die Resorption des A Vitamins bei Menschen, *Klin Wchnschr* 18: 499 (April 8) 1939. With, T. K. On the Inhibitory Effect of Liquid Petrolatum on the Utilization of Vitamin A Active Substances, *Ztschr f Vitaminforsch* 10: 1 (1940).

14 Hirst, J. C., and Shoemaker, R. E. Vitamin A in Pregnancy. II. Comparison of Dark Adaptation and Serum Tests, *Am J Obst & Gynec* 42: 404 (Sept) 1941.

15 Johnson, Doris. Vitamin A versus Carotene Content of Low Fat Diets in Obesity, Cholecystitis and Liver Disease, *J Am Dietet A* 18: 725 (Nov) 1942.

16 Smith, Margaret C., and Spector, Harry. Calcium and Phosphorus Metabolism in Rats and Dogs as Influenced by the Ingestion of Mineral Oil, *J Nutrition* 20: 19 (July) 1940.

17 Elliott, Margaret C., Isaacs, Bertha and Ivy, A. C. Production of "Prothrombin Deficiency" and Response to Vitamins A, D and K, *Proc Soc Exper Biol & Med* 43: 240 (Feb) 1940.

18 Javert, C. T. and Macri, Cesira. Prothrombin Concentration and Mineral Oil, *Am J Obst & Gynec* 42: 409 (Sept) 1941.

19 Morgan, J. W. Harmful Effects of Mineral Oil (Liquid Petrolatum) Purgative, *J A M A* 117: 1315 (Oct 18) 1941.

of its prolonged use have not been thoroughly investigated, but there is sufficient evidence of possible harmful effects to justify the conclusion that its indiscriminate use in foods or in cooking is not in the interests of good nutrition, and any such use should be under careful supervision of a physician.

The Council previously has accepted, with a special requirement that the products be promoted for use only under the direction of a physician, salad dressing or imitation mayonnaise containing mineral oil, for use in therapeutic diets. In view of the abuses which have developed through the production and sale of food products containing mineral oil to the public, the impracticability of providing suitable and adequate warning of the possible harmfulness of such preparations, and the fact that physicians wishing patients to use such products readily can supply directions for their preparation on a small scale from liquid petrolatum and other ingredients, the Council has voted, on the basis of the evidence reviewed in the present report, to withdraw its acceptance of these products.

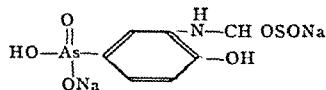
## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

**ALDARSONE**—Aldarsone consists chiefly of the sodium salt of the pentavalent arsenical compound 3-N-methanalsulfoxylic acid-amino-4-hydroxy phenylarsonic acid, admixed with minor amounts of sodium chloride and sodium bicarbonate incidental to its manufacture. It contains from 17.0 to 18.5 per cent of arsenic. The probable structural formula of the arsenical compound may be indicated as follows:



**Actions and Uses**—Aldarsone, a pentavalent arsenical, may be used in the treatment of *Trichomonas vaginalis* vaginitis and central nervous system syphilis. While this agent probably possesses comparatively low toxic properties, because of its arsenical nature the physician should be on guard against untoward reactions. Such reactions include dermal and hemopoietic changes, nitritoid reactions. Since aldarsone is a pentavalent arsenic compound, every care should be exercised and visual and color field examinations made prior to drug therapy so that contraction of visual field or symptoms of blurring may be observed.

**Dosage**—For the treatment of central nervous system syphilis, 1 Gm of aldarsone dissolved in 10 cc of sterile distilled water, administered intravenously once a week. The injections may be given continuously for periods of forty to fifty weeks. Concurrent bismuth therapy may be employed during a portion of the course of aldarsone injection. Aldarsone may be given as a supplement to fever therapy in the treatment of various forms of central nervous system syphilis.

For the treatment of *Trichomonas vaginalis*, aldarsone may be administered by insufflation of the powder (with kaolin) and in the form of a suppository. For insufflation the vaginal tract and external os of the cervix are thoroughly cleansed and dried; then the contents of a 3 Gm vial of aldarsone with kaolin are introduced by an insufflator. A cautionary statement is issued on the use of positive pressure in the pregnant female when insufflation is employed. The escape of air from the vagina should be permitted during compressions in case the patient is pregnant. The patient is treated for three consecutive days. Then additional treatments are given at three day intervals. No douche should be taken during the treatment.

Aldarsone suppositories may be used in conjunction with insufflation. They offer a way of providing aldarsone between insufflation treatments. Suppository treatment is started no sooner than twenty-four hours after the last powder treatment. One is inserted every second or third night until the patient reports for the next insufflation treatment. They may also be used alone by insertion of one suppository every third or fourth night for not more than three weeks. The patient should be warned against prolonged use of this treatment without the advice of a physician since an arsenical is being employed.

Suppositories alone should not be expected to produce permanent results merely to lessen the discharge and diminish symptoms.

### Tests and Standards—

Aldarsone occurs as a white, odorless, amorphous powder. It is soluble in water, dilute acids, alkalis and alkali carbonates, slightly soluble in methyl alcohol and insoluble in ether and ethyl alcohol. The pH of a 5 per cent solution is from 7.0 to 7.4.

Add 0.2 Gm of sodium hydrosulfite to about 0.1 Gm of aldarsone dissolved in 5 cc of water and warm at 50–60°C for five minutes; a yellow solution is produced. Add normal hydrochloric acid dropwise to the solution; a lemon yellow, gelatinous precipitate forms, soluble in excess hydrochloric acid. Add 1 cc of iodine solution and 2 cc of chloroform to 10 cc of a 1 per cent solution of aldarsone; shake the test tube and contents and then allow the liquids to separate; no color appears in either of the liquid layers. Repeat the test first adding 0.25 Gm of sodium bicarbonate; no color appears in the chloroform layer, but the aqueous layer is colored light brown. Add 2 cc of diluted nitric acid and 1 cc of silver nitrate solution to 5 cc of a 1 per cent solution of aldarsone; a black precipitate forms. Heat to boiling and cool; the mixture rapidly changes to a yellow-brown solution containing a white precipitate. Decant the solution; the precipitate is soluble in excess ammonia. Add 3 drops of alkaline potassium mercuric iodide solution to 5 cc of a 1 per cent solution of aldarsone; a gray to black precipitate of metallic mercury is formed (distinction from *acetarsone*, *tryparsamide* and other pentavalent arsenicals).

Dissolve 0.1 Gm of aldarsone in 5 cc of water, add 0.5 cc of 10 per cent sodium nitrite solution, cool in ice water and add 0.1 cc of 10 per cent hydrochloric acid followed by 0.1 cc of a solution containing 5 per cent betanaphthol and 10 per cent sodium hydroxide; no red color is produced on standing (absence of 3-amino-4-hydroxyphenylarsonic acid).

Dissolve 0.5 Gm of aldarsone in 10 cc of water, add 1 cc of diluted ammonia water and 1 cc of magnesia mixture; no precipitate forms (absence of inorganic arsenate). Heat the solution to boiling; a white precipitate forms slowly.

Dry an accurately weighed 1 Gm portion of aldarsone contained in a weighing bottle not less than 20 mm diameter over fresh phosphorus pentoxide for twenty-four hours in a vacuum of at least 5 mm of mercury; the loss in weight is not more than 3.0 per cent. Transfer about 0.5 Gm of aldarsone accurately weighed to a tared porcelain dish, add 0.5 cc of sulfuric acid and gently ignite. Cool, treat the ash with 5 drops of sulfuric acid and 5 drops of hydrochloric acid. Evaporate the acids over a low flame and then ignite, cool and weigh; the weight of the sulfated residue is equivalent to a sodium content of not less than 15.2 per cent nor more than 16.2 per cent. The residue responds to tests for sodium.

Dissolve about 0.5 Gm of aldarsone accurately weighed in 25 cc of water, add 10 cc of silver nitrate solution and 10 cc of nitric acid. Warm on a steam bath for fifteen minutes and finally add 100 cc of water. Continue the digestion on the steam bath for thirty minutes, cool, allow to stand thirty minutes and collect the precipitated silver chloride on a suitable tared sintered glass filter (or Gooch crucible). Wash the precipitate and dry at 100°C for one hour; the weight of silver chloride found is equivalent to a chlorine content of not less than 6.5 per cent nor more than 7.5 per cent.

Dissolve about 0.5 Gm of aldarsone in 10 cc of water contained in a 400 cc beaker and add a solution made by dissolving carefully 5 Gm of sodium peroxide in 25 cc of water. Cover the beaker with a watch glass and heat on a steam bath for one hour. Cool, add hydrochloric acid down the side of the beaker with stirring until the solution is colorless and then add 1 cc in excess. Add 25 cc of water and boil the solution gently, covering the beaker with a watch glass until the volume is reduced by one half. Dilute to approximately 300 cc with water, boil and add 15 cc of barium chloride solution dropwise at first until a precipitate forms. Digest the mixture for one hour on the steam bath and filter while hot, collecting the precipitated barium sulfate on a suitable tared previously ignited Gooch crucible. Wash the precipitate with hot water until chlorides are absent from the washings. Dry the crucible and contents at 100°C for fifteen minutes and finally ignite at 650°C for fifteen minutes; the weight of barium sulfate formed is equivalent to a sulfur content of not less than 6.5 per cent nor more than 7.5 per cent.

Transfer about 0.5 Gm of aldarsone accurately weighed to a 250 cc wide mouthed Erlenmeyer flask, add 10 cc of water to dissolve the sample taken and then add 15 cc of 30 per cent hydrogen peroxide. Mix and add 10 cc of sulfuric acid slowly down the side of the flask, shaking the mixture after each addition. Place a short stemmed funnel in the top of the flask and heat at medium temperature until the reaction subsides. Remove the funnel and heat for twenty minutes at a temperature such as to produce sulfur trioxide fumes freely (if at the end of five minutes the solution is not colorless, cool and add from 2 to 5 cc of 30 per cent hydrogen peroxide, then continue to heat as before). Cool and add through a long stemmed funnel 0.2 Gm of hydrazine sulfate (chlorine free) (Care should be taken to prevent adherence of hydrazine sulfate to the wall of the flask). Heat the acid solution to dissolve any crystals of hydrazine sulfate and then maintain heat sufficient to produce fumes of sulfur trioxide which show a partial condensation point about 2 inches from the top of the flask for twenty minutes. Cool, dilute (carefully) with 20 cc of distilled water, add from 3 to 5 drops of a methyl orange solution (3 cc of methyl orange test solution diluted to 100 cc with water) and titrate while hot with tenth normal potassium bromate solution until the solution becomes colorless. Near the end point the potassium bromate solution should be added dropwise. Each 1 cc of tenth normal potassium bromate is equivalent to 0.003746 Gm of arsenic; the amount of arsenic found is not less than 17.0 per cent nor more than 18.5 per cent.

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# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 11, 1943

## GEOGRAPHY AND THE ETIOLOGY OF CANCER

Geographic differences in the total incidence and in the types of cancer are gradually becoming more and more apparent. The factors which cause cancer can be divided into those that are hereditary and those that are environmental. Research would be simplified if one group could be ignored and all efforts concentrated on the other, or if they could be separated. In a previous editorial<sup>1</sup> the point was made that while a hereditary factor is accepted as etiologically important in a few uncommon types of tumors its role, if any, is not known in the major, common types of cancer in man.

Studies on the geographic distribution of the total incidence and of the types of cancer can under certain conditions separate the hereditary from environmental factors and help decide their relative importance. The role of hereditary factors can be determined by the study of races, especially pure races, by comparing them with one another and also by studying a relatively pure race under different environments. The environmental factors can be evaluated by studies of a race under different environmental conditions. These include dietary and social customs, climate, sunshine, temperature, altitude and other factors.

The relationships of geography and race to cancer are especially intriguing. If real geographic differences in cancer are found to exist, they must be due to either hereditary or environmental factors. If, in the same environment, different races show different incidences and types of cancer, then hereditary influences are probably operating. If further geographic comparisons reveal that the same racial group living in different environments has different amounts and kinds of cancer, then the etiologic factors must be environmental. If the tumor incidence of races after migration remains

the same as that in the homeland, despite changes in the environment, then hereditary explanation must be sought.

The incidence of cancer in all parts of the world should be studied. In each locality the incidence should be determined separately for each racial group. The incidence of tumors in members of races which have migrated into dissimilar environments could then be compared with one another and with that of the mother country. The tumor incidence of races that have migrated but retained their traditional dietary and other customs could be compared with other emigrants of the same race who have adopted new customs.

Thus it is important to know the tumor incidence of Europeans, Asiatics, Africans, Americans and peoples of the islands not only in their normal localities but also after migration to other parts of the world. How does cancer in Chinese living in China compare with that of Chinese living in San Francisco and Singapore? Do Germans in Brazil have the same amount and types of cancer as Germans in Germany or Milwaukee? What happens to the incidence of cancer when the African Negro migrates to the West Indies, New Orleans and Harlem?

Fortunately a source of information exists which, up to now, has been almost untapped. Scattered over the world are first class medical schools. Each of them has a department of pathology which through its members supplies expert pathologic services to affiliated teaching hospitals. Since these are hospitals giving general instruction to medical students they usually accommodate all types of disease. Thus they tend to represent a fairly accurate cross section of the diseases in that locality. The accuracy of diagnosis of the common types of tumors at necropsy is approximately the same in these various medical centers. The principal differences in their necropsy populations are in their racial origins and in some environmental factors. Other differences exist, such as average age, sex ratio, social background and selective concentrations of certain diseases due to the special interests of the clinical staffs, but these can be recognized and subjected to correction factors. Here then lies a great wealth of data already accumulated but unreported or easily obtainable.

Other sources of data which could be used for the solution of the same problems are the necropsy records of nonteaching hospitals with large pathologic services, departments of surgical pathology and the vital statistics. Probably none of these have the same degree of uniformity and reliability over the world as is possessed by the former. For the solution of some problems, however, they are adequate and even superior.

Scientists over the world should report their data. When this is done, all peculiarities of the hospital and

<sup>1</sup> Heredity of Cancer in Man, editorial, J A M A 122: 677 (July 3) 1943

necropsy population should be stated. The total cancer mortality should be given as well as the relative proportions of the different kinds of cancer. The social background, age, sex, racial origins and other factors should be included. A statement should be made as to how well the necropsy population represents the composition of the population as a whole. If successful treatment has reduced the necropsy incidence of some types of tumors materially, this should be stated. These and other data should be given so that they can be compared with those from other parts of the world.

From the vantage of one set of data and one locality, little of an etiologic nature may be apparent. Studied together these data may form an important picture and yield valuable knowledge to help conquer human cancer. From the funds available for the study of cancer, such a project as is here suggested may be easily financed. There is required only the leadership and organization. The international attitudes of the postwar world will no doubt make such studies most desirable.

#### ABSORPTION AND EXCRETION OF RADIOACTIVE ZINC AND IRON

Among the contributions to our knowledge of metabolism resulting from studies of radioactive chemical elements, few are of greater clinical interest than determination of the method of elimination of zinc and of the gastrointestinal absorption of iron reported by Montgomery and his colleagues<sup>1</sup> of the University of California and by Hahn and his co-workers<sup>2</sup> of the University of Rochester.

In 1927 Drinker<sup>3</sup> found that in cats long continued ingestion of zinc leads to fibrotic changes in the acinar portions of the pancreas, the islet tissues remaining unchanged. This suggested that the acinar portion of the pancreas is concerned in the metabolism of zinc. The increased use of protamine zinc insulin gave special interest to this observation. Montgomery studied the fate of intravenously injected radiozinc ( $\text{Zn}^{66}$ ) in dogs with biliary, duodenal and pancreatic fistulas. The injected dose was usually 1 microgram per kilogram of body weight, an amount which did not materially increase the previously existing zinc concentration in the animal.

Assays of the labeled zinc in the tissues and excretions of these animals showed that the tissues in which the highest concentration of radiozinc appeared were the liver and the pancreas. The maximum deposition was observed eight hours after intravenous injection, at which time the liver contained approximately 0.34 per cent of the injected dose per gram of tissue and

the pancreas 0.28 per cent. The pancreas as a whole then contained 3.1 per cent of the intravenously injected radiozinc, decreasing to 0.7 per cent by the end of seven days. Assays of the bile, duodenal secretions and pancreatic juice revealed that hardly any zinc is excreted in the bile. Relatively large amounts of zinc, however, were detected in the pancreatic juice, as much as 11 per cent of the intravenously injected dose being recovered from this juice by the end of fourteen days. Zinc was also found in large amounts in the secretions obtained from the isolated duodenal loop.

From these and other data the California physiologists concluded that there is presumably a protein, enzyme or other specific receptor in the acinar cells of the pancreas (and in the duodenal mucosa) which brings about the elective localization of zinc in this organ and its subsequent release into the pancreatic juice (and duodenal secretions).

In their earlier studies of radioactive iron ( $\text{Fe}^{59}$ ) Shelme and his co-workers<sup>4</sup> found hardly any absorption of radioiron through the normal canine gastrointestinal mucosa. Abundant absorption of iron, however, was noted in certain anemic dogs. From this he concluded that the gastrointestinal mucosa has a dual function: (a) protecting the body against absorption of excessive iron, which might prove toxic, and (b) making possible adequate iron absorption in case of physiologic needs.

To determine the mechanism of this regulated absorption, from 1 to 10 mg per kilogram of body weight of radioiron was fed to normal and to anemic dogs and the absorption determined by radioanalysis of the whole blood. In one series of dogs the normal control animals absorbed about 1 per cent of the ingested dose of labeled iron. In dogs rendered acutely anemic by massive bleeding (plus plasma returned) the absorption was not materially increased during the first twenty-four hours. Two weeks later, however, after much blood regeneration had occurred, the normal rate of absorption was increased tenfold. Acute anemia per se is apparently not the determining factor that increases normal absorption. Increased absorption presumably is the response to the later depletion of the reserve iron in fixed tissue cells.

Ordinary iron given to chronic anemic dogs by the intravenous route from one to six hours before the test dose of radioiron is administered does not appreciably decrease the anticipated excessive intake of ingested radioiron. Ordinary iron given by mouth, however, reduces the subsequent absorption of ingested labeled iron. Iron absorption through the gastrointestinal mucosa is therefore presumably "blocked" as a result of the preliminary dose of natural iron, blockade of the more distant liver, spleen or bone marrow cells being

<sup>1</sup> Montgomery, M. L., Shelme, G. E. and Chaikoff, I. L. *J. Exper. Med.* **78**, 151 (Sept.) 1943.

<sup>2</sup> Hahn, P. E., Bale, W. F., Ross, J. F., Balfour, W. M. and Whipple, G. H. *J. Exper. Med.* **78**, 169 (Sept.) 1943.

<sup>3</sup> Drinker, K. R., Thompson, Phebe K. and Marsh, M. *Am. J. Physiol.* **80**, 31 (March) 1927.

<sup>4</sup> Shelme, G. E., Chaikoff, I. L., Jones, H. B. and Montgomery, M. L. *J. Biol. Chem.* **147**, 409 (Feb.) **149**, 139 (July) 1943.

ineffective Local "mucosa block" was also demonstrated in isolated gastric, duodenal and jejunal pouches

To account for this blockade, Hahn postulates the existence of an enzyme or protein in the gastrointestinal mucosa capable of combining lightly and reversibly with iron Fully saturated, this specific iron "acceptor" would refuse to absorb additional iron Partially depleted, the ferroacceptor would take up additional iron from the gastrointestinal contents Hahn believes that this hypothetical iron "acceptor" is similar to the splenic "ferritin" or "apoferritin" discovered in 1937 by Laufberger<sup>5</sup> of Czechoslovakia Over 20 per cent of the dry weight of splenic ferritin is iron It can be readily changed in the test tube to iron free apoferritin without demonstrable alteration of its crystalline properties Iron is presumably loosely held in the interstices of the ferritin molecule, from which it can be removed without altering the surface structure of the molecule Granick<sup>6</sup> found that there is a 90 per cent decrease in the amount of splenic ferritin in chronic anemic horses, though the anticipated anemic increase in splenic apoferritin was not demonstrated

The suggested theory of zinc excretion and iron absorption is of biologic interest The side chain or specific receptor theory assumed a basic role in the development of nutritional and immunologic theory, this served a useful purpose Determination of the function and properties of the hypothetical specific zinc receptor of the pancreas and the presumptive specific iron "acceptor" in the gastrointestinal mucosa may well cause a renaissance of this theory

### SUBARACHNOID HEMORRHAGE

Most forms of cerebral hemorrhage occur in the later years of life or in persons whose cerebral blood vessels have been damaged by sclerosis, tumors or intercurrent infection The condition commonly called spontaneous subarachnoid hemorrhage, however, appears frequently in youth and in early middle age and is usually difficult to associate with any precipitating influence In this condition massive extravasation of blood into the subarachnoid space follows spontaneous rupture of a blood vessel Hemorrhages into the same space resulting from extension of intracerebral bleeding, minor bleeding in the course of systemic infections, blood diseases or hemorrhages occurring during agonal episodes are excluded The underlying causes of this condition are uncertain Strauss and his co-workers<sup>1</sup> state that the common anatomic changes are arteriosclerosis of the cerebral blood vessels with or without frank aneurysmal defects Inflammatory lesions of the blood vessels, they say,

may also cause formation of aneurysms with ultimate rupture and hemorrhage According to Glynn<sup>2</sup> the greater frequency with which aneurysms occur in the circle of Willis rather than in other muscular arteries is probably due to differences in their elastic tissue Fetterman and Moran<sup>3</sup> found that arterial circles of the type usually described as "normal" were present in less than half of their series of over 200 brains About a fourth showed interruptive anomalies involving the posterior communicating branches alone

The available information on 150 cases of subarachnoid hemorrhage, almost all in the armed services, has been recently reviewed by Magee<sup>4</sup> Because of the source, the cases are presumably confined to men and to comparatively early age groups Magee could not find any reliable premonitory sign of aneurysm or its rupture Headache of migrainous type, however, in young persons in whom a relevant family history cannot be obtained should arouse suspicion, a concurrent ocular palsy would be of further value and should lead to roentgenologic examination In most cases the symptoms appear suddenly and the victim becomes stricken without premonitory warning In the majority of cases violent headache is the most important presenting symptom This usually is accompanied by moderate pyrexia, vomiting and rigidity of the neck, which in many instances results in the false suspicion of meningitis Vascular hypertension was rarely found in Magee's series, positive serologic reactions for syphilis were not obtained in any cases

The primary object of these investigations was to determine the relation, if any, of physical strain to subarachnoid bleeding and to rupture of aneurysms of the circle of Willis Strain has sometimes been advanced to explain the departure from the ordinary age and physical condition of those sustaining this type of cerebral hemorrhage The analysis did not reveal any evidence, however, that physical effort or strain acts as an etiologic factor

The gravity of subarachnoid hemorrhage is well known, in Magee's series the mortality rate was 56 per cent In his series of 150 patients 105 either died or were seriously crippled by paralytic sequels, incapacitating headache or vertigo A second hemorrhage occurred in 50 of the 150 patients, and this represents an even more grave prognosis when it is realized that 52 of the 150 died in the primary attack The 50 recurrences therefore occurred among the 98 survivors of the first attack The prospects of good recovery diminished with advancing years, few of those examined subsequently to an attack were entirely free from symptoms Necropsy in 58 of the 84 fatal cases

<sup>2</sup> Glynn, L. E. Medial Defects in the Circle of Willis and Their Relation to Aneurysm Formation *J. Path. & Bact.* 51: 213 (Sept) 1940

<sup>3</sup> Fetterman, G. H. and Moran, T. H. Anomalies of the Circle of Willis in Relation to Cerebral Softening *Arch. Path.* 32: 251 (Aug) 1941

<sup>4</sup> Magee, C. G. Spontaneous Subarachnoid Hemorrhage *Lancet* 2: 497 (Oct 23) 1943

<sup>5</sup> Laufberger, Vilem *Bull. Soc. chim. biol.* 19: 1575, 1937

<sup>6</sup> Granick, S., and Michaelis, L. *Science* 95: 439 (April 24) 1942

<sup>1</sup> Strauss, Israel, Globus, J. H., and Ginsburg, S. W. Spontaneous Subarachnoid Hemorrhage, *Arch. Neurol. & Psychiat.* 27: 1080 (May) 1932

disclosed 43 ruptured aneurysms, these were more common in the anterior half of the circle and on the right side than on the left. The latter observation is the reverse of that commonly found in intracerebral hemorrhage of other varieties but its explanation is obscure.

The fundamental cause of subarachnoid hemorrhage according to present knowledge appears to lie in a congenital defect—perhaps minor—involving an anatomic area with lower margin of safety than most portions of the human body. If correct, this explanation might be substantiated in part from embryologic investigations which do not yet seem to have been applied to this problem in a decisive manner.

## Current Comment

### MINERAL OIL IN FOODS

Elsewhere in this issue (page 967) of THE JOURNAL appears a statement prepared by the Council on Foods and Nutrition relative to mineral oil (liquid petrolatum) in foods. Basically, salad dressings made with mineral oil cannot be differentiated, except in a laboratory, from ordinary products containing true fats or oils like olive oil. Such products are frequently bought in large amounts by hotels and restaurants. The person who receives a salad on which such a dressing has been placed has no idea as to the nature of the material that is being used. Mineral oil is plentiful, it can be purchased without ration points and can be sold much more cheaply than can olive oil or other vegetable oils. As will be observed from the report of the Council on Foods and Nutrition, however, there are also many other reasons why mineral oil should not be taken without a clear understanding of the nature of the substance. The ingestion of liquid petrolatum is capable of interfering seriously with the absorption of carotene, the precursor of vitamin A, with vitamin A itself, and also with vitamin D, calcium, phosphorus and vitamin K. The prolonged use of mineral oil may be associated with disturbances related to deficiencies of such vitamins. Proctologists report difficulty in visualizing the walls of the bowel because of a dark film of oil. Occasionally seepage occurs. Indeed, one writer has described a series of symptoms definitely related to continuous use of liquid petrolatum. Sometimes such products are sold in one to five gallon containers purchased largely by hotels and restaurants, since householders do not use such quantities. There are, for instance, a product called Thallon-Naise made in New York, a mayonnaise packed for H. L. Barker Inc., New York, a mineral oil dressing made by J. H. Gilbert Inc., Baltimore, a product called Slenderit manufactured by Marquis Products Company of Portland, Ore., and Beck's Pure U. S. P. Mineral Oil furnished by Beck's Mayonnaise Products of Davenport, Iowa, as well as others. Mineral oil is used in

the baking industry in the place of animal and vegetable oils. Certainly the consumer should have the right to know the nature of the substance that he is using and the possible harmful effects associated with the substitution of liquid petrolatum for what he considers to be a food.

### THE EXPERIMENTAL PRODUCTION OF PERIARTERITIS NODOSA

Recent research indicates that certain etiologically obscure diseases may be dependent on an increased reactivity of tissue to foreign substances. This is notably and definitely so in the case of periarteritis nodosa, which has been ascribed to a great variety of possible causes. Diverse clinical observations pointing to a relationship between serum disease and periarteritis nodosa led Rich<sup>1</sup> to make experiments in the course of which typical lesions of periarteritis nodosa were produced in rabbits. Relatively large quantities of sterile horse serum were injected and after twelve days or so skin tests revealed hypersensitiveness to the serum. The intravenous introduction of 1 cc of horse serum a few days later was followed by the development of characteristic widely spread lesions of periarteritis nodosa, which in this case might be spoken of as a serum disease of the arteries or as a manifestation of a special arterial hypersensitiveness to horse serum. Probably other antigenic substances than those in horse serum may have similar effects on sensitized tissues, human or animal. Here lies a promising field for further experimentation. Rich and Gregory<sup>2</sup> mention interesting results with compounds of proteins with sulfonamides. For the present periarteritis may perhaps be regarded as a pattern of arterial reaction to antigenic substances rather than as a disease due to a single cause. The histories of patients with periarteritis nodosa should be studied thoroughly with respect to possible specific sensitizations, infectious or otherwise. In some of the rabbits in the experiments, acute glomerulonephritis was present. This naturally raises the question whether human glomerulonephritis, as well as other forms of acute nephritis, like the interstitial, may not be of the nature of reactions of hypersensitiveness—also a problem for experimental study. In reporting a remarkable instance of progressive, disseminated lupus erythematosus, fatal in four months, the first symptoms of which appeared one week after a prophylactic dose of antitetanic serum in a girl 17 years old, Fox<sup>3</sup> discusses at length the question whether this case may not have been a protracted form of serum disease. Fox stresses the need of clinical and experimental study of the relations of specific antigens to disseminated lupus erythematosus and of the effects of actinic rays on sensitized tissues.

1 Rich, A. R. The Role of Hypersensitivity in Periarteritis Nodosa. Bull. Johns Hopkins Hosp. 71: 123 (Sept.) 1942.

2 Rich, A. R. and Gregory, J. E. Experimental Demonstration that Periarteritis Nodosa is Manifestation of Hypersensitivity. Bull. Johns Hopkins Hosp. 72: 65 (Feb.) 1943.

3 Fox, R. A. Disseminated Lupus Erythematosus—An Allergic Disease. Arch. Path. 36: 311 (Sept.) 1942.



# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## ARMY

### SURGEON GENERAL KIRK ISSUES STATEMENT ON PENICILLIN

Because of numerous requests received by the army for penicillin, Surg Gen Norman T Kirk of the Army Medical Department explained on November 23 that the War Department "at no time has either controlled penicillin or received the entire output" The army's position with regard to penicillin supply is exactly the same as that of the Navy, U S Public Health Service and the Office of Scientific Research and Development, each of which receives a monthly allocation of penicillin from the War Production Board General Kirk also explained that the penicillin allocated to the Army Medical Department is intended for the treatment of military personnel and "none of it can be reallocated or released to civilians" This month, according to the War Production Board, the Army will receive 56 per cent of the total supply, the Navy 18 per cent, the U S Public Health Service (for the treatment of Coast Guard and Merchant Marine personnel) 2 per cent, the Office of Scientific Research (for civilians) approximately 15 per cent, and the scientific staffs of drug companies the remainder for their own research Though production of the drug is steadily increasing, at present none of the agencies, including the military, receive as much as they need Its distribution among military and naval personnel is determined by the army, navy and the public health service Distribution of the part allocated to civilians is for clinical research and its assignment is determined by a committee headed by Dr Chester S Keefer, Evans Memorial Hospital, Boston Since the amount of penicillin requested by civilians greatly exceeds the available supply, it has been determined by the Office of Scientific Research and Development that requests by civilians must be made through their doctors, who should communicate with Dr Keefer by telephone, telegram or personal letter, giving complete details of the case so that he may have an adequate basis for his decision

### SPECIAL BOARD OF OFFICERS TO STUDY CLINICAL TREATMENT OF MALARIA

Major Gen Norman T Kirk, Surgeon General of the Army, has appointed a special board of officers to study the clinical treatment of malaria Two hundred beds were ordered set aside for the purpose of the study in each of the following general hospitals Bushnell (Brigham, Utah), Harmon (Longview, Texas), Kennedy (Memphis, Tenn) and Percy L Jones (Battle Creek, Mich) Major Gen Shelley U Marietta is the senior officer of the new board, and other members are Col George R Callender, Lieut Col Thomas T MacKie, Lieut Col Francis R Dieuaide and Major O R McCoy, all medical corps officers

### LIEUT PHILIP G CREESE AWARDED SOLDIER'S MEDAL

The War Department announced on December 4 an award of the Soldier's Medal to Lieut Philip G Creese for "heroism displayed in rescuing an enlisted man from drowning While he was participating in landing exercises on a beach in England a landing craft was swamped and a number of men were thrown into the surf One man was carried offshore by the swell and in a few minutes was in a drowning condition Lieutenant

Creese, without hesitation, plunged into the surf and brought the drowning soldier far enough toward shore for others to assist in the rescue" Dr Creese graduated from Harvard Medical School in 1942 and entered the service in March 1943

### THE FOSTER GENERAL HOSPITAL

The Foster General Hospital, which was formally dedicated on September 18, is located in Jackson, Miss The hospital is modern in every respect and is furnished with the finest medical and surgical equipment available It has a semipermanent brick construction with a total bed capacity of 1,768 It maintains its own fire station, ambulance corps, engineering division, warehouses for medical supplies and hospital equipment and is set off into wards for treatment of enlisted personnel with a number of small rooms for officers Operating rooms and dental clinics occupy a section of the hospital In addition to the facilities for patients there are several large mess halls, an officers' club and quarters for officers, nurses, and enlisted men At the present time this hospital has not been designated for any special medical work but is receiving routine general hospital cases from overseas theaters

The Foster General Hospital was named for the late Col Charles L Foster, Mississippi army physician for many years

Col Sam F Parker is commanding officer of the Foster General Hospital The remaining personnel which staffs the hospital are

Lieut Col Edward J Doyle, executive officer	Capt Edward W Nelson, surgical service
Lieut Col Marshall E Hyde, chief, medical service	Capt Fred L Norton, surgical service
Lieut Col Edmund Horgan, chief, surgical service	Capt Edward B Weinman, surgical service
Major Reubin R Pliskin, assistant chief, medical service	Capt Samuel Soifer, chief, genitourinary clinic
Major John M Cotton, chief, neuropsychiatry section	Capt Harry J Keys, post surgeon
Major George M Knowles, medical service	Capt Leo G Glickman, assistant chief, x ray service
Major James M Kinsman, medical service	1st Lieut Fay B Murphy, medical service
Major Samuel M Salley, medical service	1st Lieut John G Egger, medical service
Major Armand J Mauzey, surgical service	1st Lieut Alexander A Kreuger, medical service
Major Clair S Linton, chief, eye, ear, nose and throat clinic	1st Lieut Horace T Greene, medical service
Major Saul Ritchie, chief, orthopedic section	1st Lieut Dale F Johnson, medical service
Major Joseph E Noll, chief, x ray service	1st Lieut Salo Vogel, medical service
Major Michael Brylawski, chief, laboratory service	1st Lieut Marvin W Latham, medical service
Capt Clarence L Miller, medical service	1st Lieut Thomas J Ellis, surgical service
Capt George H Butler, medical service	1st Lieut Ivey E Lamberth, anesthesiologist
Capt Otto Hirschmann, medical service	1st Lieut Clifford W Josh Jr, surgical service
Capt Joseph G Cole, medical service	1st Lieut Harry J Mitchell Jr, surgical service
Capt Emanuel Sigoloff, medical service	1st Lieut Herbert P Schwartz, medical service
Capt Arthur J Shapiro, medical service	1st Lieut Dionisius V Caciopolo, surgical service
Capt Conrad G Collins, assistant chief, surgical service	1st Lieut George T Wohl, assistant post surgeon
Capt Ernest W Atkins, surgical service	1st Lieut Stanley I Boc, laboratory service
Capt Gerold H Friedman, surgical service	1st Lieut Devitt F Mullins Jr, laboratory service

## GENERAL LULL DEDICATES WAR BOND BANNER

Major Gen George F Lull Deputy Surgeon General, dedicated the "Minute Man Banner" awarded to civilian War Department employees of the Surgeon General's Liaison Office on duty at the headquarters of the American Medical Association Chicago November 9.

In making the award of the banner, which was authorized by the chief of finance, United States Army, General Lull commended the employees on their full participation and large subscriptions of war saving bonds. He said the record estab-

lished at the Surgeon General's Liaison Office exceeded that of some Washington offices, including the Office of the Surgeon General. All civilian employees on duty at the Liaison Office have authorized payroll deductions for war saving bonds amounting to 12 per cent of their gross earnings. Present at the dedication were Col Don G Hildrup, chief, Medical Branch, Sixth Service Command, Dr Adolph Rumreich, senior surgeon, United States Public Health Service, liaison officer to the Sixth Service Command U S Army, Dr Edwin P Jordan, assistant editor of THE JOURNAL, and Lieut Col Harold C Lueth, M C, liaison officer.

## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

### HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan 1, 1944

(Continuation of list in THE JOURNAL December 4 p 912)

#### COLORADO

Childrens Hospital Denver Capacity 215 admissions 5 238 Mr DeMoss Taliferro Director (resident—pediatrics)  
National Jewish Hospital Denver Capacity 257 admissions 205 Dr Charles J Kaufman Medical Director (2 assistant residents—tuberculosis)

#### CONNECTICUT

Danbury Hospital Danbury Capacity 235 admissions 3 541 Miss Anna M Griffin R N Superintendent (2 interns)

#### GEORGIA

University Hospital Augusta Capacity 345 admissions 10 892 Dr William H Goodrich Medical Superintendent (4 interns)

#### ILLINOIS

American Hospital Chicago Capacity 194 admissions 4 365 Dr Solomon Greenspahn Medical Director (3 interns 2 residents)  
Chicago Memorial Hospital Chicago Capacity 108 admissions 2 713 Miss Josephine O Blalock Superintendent (1 intern)  
Englewood Hospital Chicago Capacity 157 admissions 6 232 Mr A R Zeiter Superintendent (3 interns)  
Manteno State Hospital Manteno Capacity 6 576 admissions 1 576 Mr Rodney H Brandon Superintendent (resident—psychiatry)  
St Francis Hospital Peoria Capacity 510 admissions 13 436 Sister M Aneilla R N Superintendent (1 intern)  
Rockford Municipal Tuberculosis Sanatorium Rockford Capacity 124 admissions 162 Dr William J Bryan Medical Director and Superintendent (resident—tuberculosis)

#### KENTUCKY

Kosair Crippled Children Hospital Louisville Capacity 125 admissions 1 310 Miss Anna B Quinn Superintendent (resident—orthopedics)

#### MAINE

Maine General Hospital Portland Capacity 329 admissions 7 079 Dr Stephen S Brown Medical Director (3 interns)

#### MASSACHUSETTS

Grafton State Hospital North Grafton Capacity 1 750 admissions 254 Dr Harlan L Paine Medical Superintendent (resident—psychiatry)  
Shriners Hospital for Crippled Children Springfield Capacity 60 admissions 301 Miss Dorothy Forsythe R N Superintendent (resident—orthopedics)

#### MICHIGAN

Leila A Post Montgomery Hospital Battle Creek Capacity 175 admissions 4 923 Sister M Constance Superintendent (resident—mixed)  
St Joseph's Mercy Hospital Detroit Capacity 285 admissions 9 742 Sister Mary Camilla R N Superintendent (2 interns)  
Blodgett Memorial Hospital Grand Rapids Capacity 206 admissions 4 553 Mr William W Colton Director (resident—surgery)  
St Lawrence Hospital Lansing Capacity 230 admissions 11 041 Sister Mary Assisium Superintendent (3 interns)

#### MINNESOTA

Larview Hospital Minneapolis Capacity 192 admissions 5 255 Mr E M Hauge Superintendent (assistant resident—mixed)  
Nopenung Sanatorium Nopenung Capacity 200 admissions 2 79 Dr C A Hedberg Medical Superintendent (resident—tuberculosis)

#### NEBRASKA

Douglas County Hospital Omaha Capacity 408 admissions 2 781 Dr F J Wearne Medical Director (2 residents—mixed)

#### NEW HAMPSHIRE

Elliot Hospital Manchester Capacity 154 admissions 2 567 Mrs Elizabeth M Welch R N Superintendent (resident—mixed)

#### NEW JERSEY

West Jersey Homeopathic Hospital Camden Capacity 320 admissions 5 775 Mr F B Gail Manager (3 interns)  
East Orange General Hospital East Orange Capacity 150 admissions 4 266 Mr Charles Lee Superintendent (3 interns)  
St Elizabeth Hospital Elizabeth Capacity 266 admissions 4 757 Sister Alice Regina Superintendent (3 interns)  
Christ Hospital Jersey City Capacity 206 admissions 5 710 Mr Ernese F Schultz Superintendent (3 interns)  
St Mary's Hospital Passaic Capacity 237 admissions 5 363 Sister Martha Eucharis R N Superintendent (2 interns)

#### NEW YORK

Greenpoint Hospital Brooklyn Capacity 300 admissions 6 352 Dr Rudolf Raff Medical Superintendent (1 intern)  
Nassau County Sanatorium Farmingdale Capacity 412 admissions 314 Dr J C Walsh Medical Superintendent (resident—tuberculosis)  
Mary Immaculata Hospital Jamaica Capacity 316 admissions 8 692 Sister M Eugenia R N Superintendent (3 interns)  
New York State Psychiatric Institute and Hospital New York Capacity 152 admissions 309 Dr Nolan C Lewis Medical Director (resident—psychiatry)  
United Hospital Port Chester Capacity 218 admissions 5 089 Mr Carl P Wright Jr Superintendent (2 interns)  
Richmond Memorial Hospital Staten Island Capacity 118 admissions 1 902 Mr John H Olsen Managing Director (2 residents—mixed)

#### OKLAHOMA

Bone & Joint Hospital Oklahoma City Capacity 41 admissions 669 Mr C E Babcock Superintendent (resident—orthopedics)

#### PENNSYLVANIA

St Vincent's Hospital Erie Capacity 334 admissions 10 478 Sister M Elizabeth Superintendent (1 intern)  
Montgomery Hospital Norristown Capacity 160 admissions 4 451 Mrs Helen T Stabler R N Superintendent (2 interns)  
Women's Homeopathic Hospital Philadelphia Capacity 200 admissions 2 810 Mrs Edna J Griffin R N Superintendent (intern assistant resident—mixed)  
Allegheny General Hospital Pittsburgh Capacity 608 admissions 10 501 Dr George L Wessels Medical Superintendent (assistant resident—pathology)  
Montefiore Hospital Pittsburgh Capacity 257 admissions 7 492 Mr Sidney M Bergman Director (1 intern)  
Presbyterian & Woman's Hospitals Pittsburgh Capacity 352 admissions 5 540 Miss Mary Miller R N Superintendent (2 interns assistant resident)

#### SOUTH CAROLINA

Columbia Hospital Columbia Capacity 305 admissions 7 905 Mr J B K de Loach Superintendent (resident)

#### TEXAS

St Joseph's Infirmary Houston Capacity 448 admissions 15 398 Sr Mary Baptista R N Superintendent (resident—mixed)

#### WEST VIRGINIA

Ohio Valley General Hospital Wheeling Capacity 328 admissions 8 275 Mr J S Turk Superintendent (2 interns)

#### WISCONSIN

St Elizabeth Hospital Appleton Capacity 150 admissions 4 741 Sister Mary Venantia Superintendent (1 intern)  
St Michael Hospital Milwaukee Capacity 175 admissions 2 11 Sister M Alpheie Superintendent (intern)

## MISCELLANEOUS

## REHABILITATION OF RUSSIAN TERRITORY FORMERLY OCCUPIED BY NAZIS

[NOTE—From Moscow, via press wireless, the Soviet Scientists Antifascist Committee has sent this article under the title *Humane Mission of Medical Science* by Academician Nikolai Burdenko, Hero Socialist-Labor and Chairman Scientific Medical Council of the Peoples Commissariat of Health—ED]

The great patriotic war has reached its zenith. Fierce battles are in progress along the Dnieper. The routed Hitlerite armies are retreating. Thanks to brilliant victories of Soviet arms, an enormous amount of territory has been cleared of the enemy and tens of millions of inhabitants have been liberated from the yoke of the barbarians.

The meeting between the population and the Red army's men was a never to be forgotten spectacle. People rushed forth to meet their liberators with outstretched arms. They expressed in every way their happiness at being freed from fascist prison, from unbearable moral and physical torture, from hunger, cold, mockery, beatings and slavery.

The extent of the material losses and destruction caused by the savage occupationists defies estimation. In order to get some idea of the enormous tasks facing us in the liberated territories it is necessary for people who have gone through the ordeal of the German occupation to speak or to read their depositions. They have suffered inhuman murders, public executions before crowds forced to witness them, beatings, violation of women in front of their children, the ravishing of young girls—all this has left permanent scars on them both mentally and physically. Here the work of builders is insufficient, here one cannot confine oneself to the restoration of material objectives. The health of sufferers must be restored, and this places tremendous responsibility on medical workers.

The guiding principle of medical workers remains the same—Everything for War! At the same time medical workers are giving more and more attention to the medical service for liberated territory. This is basic in the new plan of action of both the workers' public health commissariat and the scientific medical council directing research in Russia. One of the most vital and urgent tasks is to stamp out epidemics in liberated cities and villages where typhus, dysentery, diphtheria and other diseases are rampant.

The problem of diphtheria, which affected great masses of children under the Germans, demands new and deeper study. Venereal diseases, syphilis and gonorrhea, are another serious and pernicious result of the German occupation. In their debauchery and crimes the Hitlerites sowed contagion. The number of cases of these diseases among German units was so great that the German staff doctors issued special daily bulletins on the subject. During the latter half of 1942 active syphilis and mass scale gonorrhea broke out in Smolensk among German soldiers and the population.

Equally vital is the problem of tuberculosis. The use of the term epidemic tuberculosis applied to this disease by the Peoples' Commissariat of Health is nowhere more justified than in the German occupied territories. Under the Germans tuberculosis became a mass disease with fatal results among thousands of persons forced by the Germans to do compulsory labor.

At the same time the invaders destroyed the entire network of antituberculosis institutions and deprived the sufferers of medical treatment. Children in particular have suffered from this disease. Clinics have been opened in Orel, Kursk and Smolensk. They record an increase in cases of children with colds in whom manifestations of lymphadenitis have been observed.

The hunger rations on which Germans had kept the population over a long period of time brought the usual results: swelling due to lack of albumin, anemia, hypoproteinemia, scurvy and a number of trophic disorders connected with avitaminosis, for instance amenorrheas.

In order to cure these diseases, sources of new foods must be found on a countrywide scale. There should be mass production of vitamins, standard preparations and synthetic substitutes. Endocrinologists are faced with new tasks in con-

nection with glandular therapy for cases of premature aging and debility.

In the sphere of nutrition, children were the center of attention. Millions of infants have been deprived of normal breast feeding as the result of hypogalactia. Lacking mother's milk they did not receive necessary nourishment in the form of protein, fats and carbohydrates. The children are our future. It is the duty of doctors and scientists to put them on their feet and to see that their defective nourishment is compensated and thus to eliminate the results of the crimes of the fascist brutes.

The neuropsychiatric condition of the population of the liberated areas also needs attention. How much mental torture these people have lived through! How many people were left with shattered nerves who require aid of an understanding doctor and special treatment! I myself conducted a questionnaire as to the kind of work intellectual persons—engineers, technicians, teachers—did under the Germans. They presented a terrible picture of humiliation and persecution. Teachers were particularly abused. Elderly men and women were made to do heavy physical labor. When asked whether they could return to their old posts, they replied "We have not the strength to do so, we need a little time for rest."

There were innumerable cases of violation of women and girls.

It is necessary to open psychoneurologic and psychotherapeutic clinics and sanatoriums in order to help restore the morale of those who suffered at the hands of the Germans.

All this demands restoration of the entire communal system of public health and hygiene. Entire cities, among them Mtsensk, Liny, Orel and Smolensk, have been practically razed to the ground by the Hitlerite bandits.

Thousands of the Soviet people were shot by Germans in the streets of cities and outlying villages. The executioners hastily threw the bodies in holes. The soil is polluted and requires strict sanitary control by doctors to prevent possible pernicious consequences.

The scientific medical council and the peoples' commissariat of health of the Union of Soviet Socialist Republics are concentrating attention on all these problems. They are making profound study of the needs of the liberated areas, assigning corresponding tasks to scientific research institutions and outlining their activities. The councils are convening plenum scientific councils of the union and fraternal republics for detailed discussion of the problems to be solved and the tasks to be fulfilled.

PSYCHIATRIST OF BRITISH ARMY  
PRAISES U S MENTAL TESTS

Brig J R Rees, chief of the neuropsychiatric service of the British army, recently told of the technique of American doctors enabling the return to active duty of 60 per cent of a group of soldiers who in the last war would have been known as shell shock cases. The American system, he said, was "far ahead of anything we have in England." Brigadier Rees further stated that England has looked to the United States as "the home of progress in psychiatry." He said that America had done "magnificent work" in the last war in psychologic testing of prospective soldiers and that not only England but Germany also has borrowed largely from American procedure.

## U S CADET NURSE CORPS

In a recent announcement by Miss Lucile Petry, director Division of Nurse Education U S Public Health Service, Federal Security Agency it is stated that the Bolton act funds have been allocated to thirty-two colleges and universities for all expense scholarships in postgraduate programs in nursing education including public health nursing. Additional applications are still under consideration. The announcement pointed out that these scholarships are available to graduate nurses who show an aptitude for teaching and for public health nursing, and to those nurses now on staffs who are in line for advancement or who feel the need of additional courses.

## PUBLIC HEALTH UNDER HITLER

According to DKD of August 25, German medical science is working without respite to banish the dangers threatening the health of the soldiers in the extensive front zones of the war. The new German news-reel shows pictures of the research and the experiments on combating malaria carried out at the Institute for Tropical Medicine of the Academy for Military Medicine in Berlin. We are shown the practical application of the remedies developed there in the marshy areas of the Kuban front, where special powders are sprayed from aircraft over wide areas to destroy the breeding places of the midges which are the carriers of malarial infection.

*No ac Lema* of July 28 states that, by urgent order of the competent authorities, doctors in private practice are reminded that it will be at their own risk and peril if, when giving medical certificates to persons employed in the German armed forces, they fail to exercise the most rigorous, unbiased professional accuracy within the meaning of the regulations defining the form, content and manner of issue of medical certificates.

According to the *Hamburger Fremdenblatt* of August 24 the inoculations against typhus, which are free of charge, will continue during the next week for all Volksgenossen who have not yet found time to have it done. Every one who wishes to protect himself against typhus by being inoculated in advance is therefore given another opportunity to do so. On principle the inoculations take place only at the ARP first aid posts and in individual large concerns but not in the surgeries of doctors.

*Dns* of July 1 states that, owing to the shortage of doctors, medical students after a five years course will have their one year of training not in the university hospital but as employees of the chief public health directorate in villages.

According to Radio Paris of September 20 the relief train visited by Petain and Laval on September 19 in Vichy includes a hospital car of 30 beds, a surgery car with x-ray and blood transfusion apparatus, a dressing ward, a maternity car (birth room and rest room), kitchens, reserves of clothes and utensils for air raid victims.

# ORGANIZATION SECTION

## THE WAGNER-MURRAY-DINGELL BILL

### Open Letter of Massachusetts Medical Society to its Representatives in Congress

[This open letter has been sent to the Massachusetts representatives in Congress. It is expressive of the point of view of the Massachusetts Medical Society, a point of view which is shared with the Medical Societies of Maine, New Hampshire, Vermont, Rhode Island and Connecticut with regard to Senate bill 1161 and House bill 2861, the so called Wagner-Murray-Dingell bills.]

Dear Sir

The Massachusetts Medical Society, in conjunction with the Medical Societies of Maine, New Hampshire, Vermont, Rhode Island and Connecticut, has studied Senate Bill 1161 and House Bill 2861 now before the Congress of the United States and respectfully submits its views on this proposed legislation.

We approve of the broad medical objective of the act that we interpret to be an attempt to improve the health of our people. As a basis of our approval we cite the progressive leadership which the physicians of New England have always shown in the development of public health enterprises. For more than fifty years we have consistently supported the plea for the establishment of a National Department of Health with a secretary in the President's cabinet, under whom would be coordinated many important public health programs, exclusive of the Army and Navy. These are now scattered through various departments and bureaus of the federal government and already play a large role in the provision of medical care for the people of this country.

We approve of the use of the insurance principle on a voluntary basis as a means to aid the individual to budget against the cost of medical care. We maintain that, when insurance programs are not directly under the supervision of the medical profession by whom medical care is to be rendered, they should provide for cash benefits to be paid to the individual, for we firmly believe that the citizens of New England are capable of using cash benefits to pay the cost of medical care.

We believe that S 1161 and H 2861 do not provide for the sound development of a national health program. It is implied by the act that the distribution of compulsory savings managed by federal authorities will guarantee better health for all of the people. We sincerely doubt that such an objective can be realized in this way. In the New England states, judged by any standards with which we are familiar, there is no need to revolutionize the habits of the people in their methods of obtaining medical care.

Private enterprises in the field of voluntary prepaid medical and hospital insurance are increasing rapidly. These facilities

should be utilized by the states, if necessary through federal grants-in-aid, so that each state can purchase medical care for those who cannot purchase it for themselves. This we believe to be a development that would be acceptable to the New England people, for thereby medical care could be provided even for the indigent, who are public charges, a provision most desirable in those communities that have been unable or unwilling to meet this obvious responsibility.

We shall be glad to work out plans with representatives of the federal and state governments to improve the health of all the people, but we should expect that any plans that might be devised would take full advantage of existing agencies and be developed within the social patterns that are well understood by our people.

Very truly yours,

MICHAEL A. TIGHE, M.D.  
Secretary

ROGER I. LEE, M.D.  
President

## NATIONAL PHYSICIANS' COMMITTEE ADOPTS PROGRAM

At the annual meeting of the National Physicians' Committee Board of Trustees at Chicago, November 20-21 a greatly expanded program of educational efforts was formulated and officially confirmed. With unanimous approval the following resolution was adopted:

WHEREAS The preservation of the principles fundamental to maintaining the quality of American medicine requires the development and encouragement of plans for meeting the cost of unusual or prolonged illness and

WHEREAS A survey of methods already available for prepayment costs indicates that facilities are in existence to provide for at least the most pressing demands therefore be it

Resolved That the Management Committee is authorized and the Administrator is authorized and instructed to proceed with efforts designed to

(a) Encourage the medical profession to active participation in the development of plans and the more general use of existing facilities to provide for easy payment of insurance against unusual or prolonged illness

(b) Educate the people to the importance, nature and value of prepayment facilities within the framework of principles approved by the medical profession now available for meeting the costs of unusual illness

(c) Investigate conditions relating to and inform industry concerning the principles underlying sound participation with employees in prepayment plans for meeting the cost of unusual or prolonged illness and hospitalization

(d) Inform private insurance underwriters of the opportunity that is being offered through cooperation in nationwide efforts to provide group insurance policies for those needing or desiring insurance against the hazards of unusual illness

(e) Encourage contributors and friends to a greater degree of participation in the efforts of the National Physicians' Committee in this constructive program

## MEDICAL LEGISLATION

## DISTRICT OF COLUMBIA

*Bill Introduced*—S 1546, introduced by Senator O'Daniel, Texas, for Senator McCarran, Nevada, proposes to amend an act relating to the incorporation of Providence Hospital in the District of Columbia to (1) change the name of the corporation to the "Providence Hospital" and (2) authorize the corporation to conduct not only a hospital, clinic and all the departments, staffs and services usually connected therewith, but also a school for the education and training of nurses and interns with full power to examine said nurses and interns and to issue suitable certificates evidencing the completion of their courses of training

## MEDICAL BILLS IN CONGRESS

*Change in Status*—H R 3598, the First Supplemental National Defense Appropriation Act, 1944, has been reported to the Senate with amendments. It does not include any appropriation to enable the Public Health Service to provide medical care for communities critically in need of such care. Senator Russell, Georgia, however, has given notice that he will offer from the floor of the Senate an amendment to provide \$345,000 to enable the Surgeon General of the Public Health Service, on application of a city, county or other local subdivision of government duly approved by the state health department having jurisdiction over the city, county or other local subdivision of the government, to enter into agreements with private practicing physicians and dentists under which, in consideration of the payment to them of a relocation allowance of not to exceed \$250 per month for three months and actual cost of travel and transportation of the physician or dentist and his family and household effects to the new location, such physician or dentist will agree to move to and engage in the practice of his profession in such area for a period of not less than one year. This amendment will provide that no such contract may be

entered into with any physician or dentist unless such physician or dentist shall be admitted to practice by the state authority having jurisdiction of the new location. Each applicant subdivision, moreover, will be required to contribute \$100 to the total cost of such relocation allowance, travel and transportation costs of each such physician or dentist and his family obtained by said applicant.

*Bills Introduced*—S 1566, introduced by Senator Wiley, Wisconsin, proposes to consolidate and coordinate government activities affecting the reestablishment and rehabilitation of veterans in the Veterans' Administration. H R 3717, introduced by Representative Rolph, California, proposes to amend a joint resolution approved April 29, 1943 making an appropriation to assist in providing a supply and distribution of farm labor for the calendar year 1943, so as to authorize the use of the funds in furnishing, by loan or otherwise, of health and medical services to migrant workers engaged in agricultural work, and to members of the families of such workers, to which adequate health and medical services are not otherwise available in the area where they are employed, whether or not such workers have been recruited and transported pursuant to the joint resolution. S 1943, introduced by Senator Johnson, California, is a companion bill in the Senate. H R 3718, introduced by Representative Sparkman, Alabama, proposes to grant military rank to certain members of the army nurse corps. H R 3733, introduced by Representative Barry, New York, provides for college education for qualified postwar veterans. H R 3761, introduced by Representative Bolton, Ohio, provides for full military rank for members of the army nurse corps, dietitians and physical therapy aides. H R 3779, introduced by Representative Rogers, Massachusetts, proposes to insure training and rehabilitation for men and women in the armed services.

## WOMAN'S AUXILIARY

## Kansas

The Shawnee County Medical Auxiliary held a meeting October 11, at the home of Mrs E H Decker, Topeka. The guest speakers were the WAC's recruiting officer in Topeka and Lieut Maude Meyers, chief nurse of the Topeka Army Air Base.

## Missouri

The Missouri auxiliary held the fall board meeting in September in Jefferson City, with forty-two members and visitors present, at which time the following resolution was adopted:

*Resolved*, that we, the Woman's Auxiliary to the Missouri State Medical Society, do heartily endorse the movement to control cancer through education and pledge our friendly cooperation and moral support of the Missouri Women's Field Army Unit of the American Society for the Control of Cancer.

For the twelfth year the Missouri auxiliary will sponsor a health essay contest for the high school students in the state. The subject for the contest is "Civilian Health in Wartime," and cash prizes amounting to \$60 will be made.

The *Quarterly Bulletin* of the Missouri auxiliary has completed its tenth year. Mrs A J Crider of Dixon is the editor.

## New Jersey

The Middlesex County auxiliary held its first meeting this year at Highland Park, October 20.

## North Carolina

Mrs Joseph A Elliot, state program chairman of the Woman's Auxiliary to the North Carolina Medical Association, published in the October issue of the *North Carolina Medical*

*Journal* the program of the auxiliary to the American Medical Association as sent out by Mrs Oscar W Friske, national program chairman, added to which were notes to aid in the state's special projects.

In the same issue of the *North Carolina Medical Journal* Mrs John C Reece, North Carolina Hygeia chairman, published the following memorandum: "Hygeia, remember me? I am published by the American Medical Association and I interpret scientific medical information to the lay public. I also help to support your bed fund for tuberculous patients from your subscription. Do not overlook me this year or leave me out of your reading. I will not only keep you informed but will help your auxiliary. Plan now to send in your subscription for me."

## South Dakota

A meeting of the advisory board of the Woman's Auxiliary to the South Dakota State Medical Association was held on October 27 at the home of Mrs D S Baughman, Madison. The members who were present were Mrs John C Hagin, Miller, state president, Mrs D S Baughman, Madison, state president-elect, Mrs C E Sherwood, Madison, state program chairman, Mrs J R Westaby, Madison, chairman Benevolent Fund Committee, Mrs E T Sout, Pierre, corresponding secretary and treasurer, Mrs G E Burman, Carthage, state chairman, public relations and publicity, and Mrs R A Buchman, Huron.

At this meeting plans were formulated for work to be done by the district auxiliaries during the coming year. A delightful luncheon was served.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Changes in Faculty at Southern California**—Included among recent changes at the University of Southern California School of Medicine, Los Angeles, are the following appointments:

Dr. Justin R. Dorgeleh to assistant professor of pathology  
Walter L. Ward Ph.D. to assistant professor of bacteriology  
Dr. Homer C. Lawson to assistant professor of pharmacology  
Dr. Ernest D. Gardner to assistant professor of anatomy  
Richard J. Wenzler Ph.D. assistant professor of biochemistry

**Osler Meeting**—Dr. Esther Rosencrantz, associate professor emerita of medicine, University of California Medical School, San Francisco, gave an address entitled 'Sir William Osler' before the Los Angeles County Medical Association and the Barlow Society for the History of Medicine on November 18. A feature of the meeting was an Osler exhibit. Dr. George Dock Pasadena, who was one of Osler's colleagues during the Pennsylvania period, discussed a journey made with Osler in search of rare books. Dr. Rosencrantz was a member of one of the last classes taught at Johns Hopkins University School of Medicine, Baltimore, by Osler.

### DISTRICT OF COLUMBIA

**Health Program for Government Employees**—An employee health program for the Commerce Department, Maritime Commission and Office of the Coordinator of Inter-American Affairs was reported in the *New York Times*, November 17. The plan is designed to keep employees of the three agencies well and their work efficient by diagnosing and treating their illnesses and injuries and obtaining the services of outside physicians when necessary.

### GEORGIA

**Dr. Kelly Joins A. M. A. as Secretary of Public Relations**—Dr. George Lombard Kelly, since 1935 dean of the University of Georgia School of Medicine Augusta, has been given a leave of absence to accept an appointment as Secretary of the Council on Medical Service and Public Relations of the American Medical Association Chicago effective January 1. Dr. Edgar R. Pund professor of pathology at the medical school will serve as acting dean. Dr. Kelly a member of the Georgia staff since 1918 graduated there in 1924.

### IDAHO

**Personal**—Dr. David A. McClusky, Buhl, on October 15 was named medical superintendent of the State Hospital South, Blackfoot. Dr. McClusky succeeds Dr. George Ritter Smith who has been assigned to the state department of public health.

**Society News**—Dr. Harold E. Dedman Boise was chosen president of the Southwestern Idaho District Medical Society at its meeting in Boise October 21. Other officers include Dr. Ralph E. Davis Boise, vice president and Joseph M. Thomas Meridian secretary treasurer. Capt. Norman L. Murray M.C., A.U.S., discussed Office Management of the Diabetic. Dr. William C. Smail Jerome addressed a recent meeting of the South Side Medical Society in Jerome on "Dyspareunia."

### ILLINOIS

**Personal**—Dr. Josiah J. Moore Chicago has been appointed a member of the professional committee for medicine of the state department of registration and education succeeding the late Dr. Arthur H. Geiger who died May 12. Dr. Edward J. McNulty on November 1 was named health officer of LeRoy.

**Outbreak of Influenza**—A total of 2600 persons were reported ill with influenza in Waukegan and North Chicago December 2. Newspapers reported that the outbreak was mild and that schools and factories had not been ordered closed. Persons feeling the symptoms of grip or influenza were urged to remain in bed. At *Loyola Academy* Chicago 100 of 600 students were absent December 2 because of the illness. Seven of twenty-five faculty members were also ill. The school was to stay closed for a number of days.

### Chicago

**Course in Hospital Administration at Northwestern**—The Johnson and Johnson Research Foundation, New Brunswick N.J., recently made a grant to Northwestern University Medical School to assist in making possible a special course in hospital administration. Students enrolled in the course represent nineteen different hospitals. Of eight students not connected with a hospital, two are employed on hospital magazines, two are physicians, one is director of a hospital council and one is employed by the American College of Surgeons.

**Research Fellowships**—Applications for research fellowships in medicine, dentistry and pharmacy in the University of Illinois are now being considered for the year beginning Sept. 1, 1944. Appointments to these fellowships will be announced on January 1. Candidates for these fellowships must have completed a training of not less than eight years beyond high school graduation. The fellowship carries a stipend of \$1,200 per calendar year with one month's vacation. Application blanks and further information may be secured from William H. Welker Ph.D. secretary of the committee on graduate work in medicine, dentistry and pharmacy, 1853 West Polk Street, Chicago 12.

**Changes in the Faculty at Illinois**—The University of Illinois College of Medicine announces the following recent appointments to the faculty:

Dr. Hugh Thompson Carmichael to associate professor of psychiatry  
Dr. Dean A. Collins to associate professor of physiology  
Dr. Harry S. Grable to professor of ophthalmology, also director of the Illinois Eye and Ear Infirmary  
Dr. Richard L. Jenkins to assistant professor of criminology, social hygiene and medical jurisprudence  
Dr. Peter C. Kronfeld to associate professor of ophthalmology, also director of education (eye) in the Illinois Eye and Ear Infirmary  
Lawrence J. Linck M.S. lecturer in public administration in the department of criminology, social hygiene and medical jurisprudence, also director of the division of services for crippled children  
Dr. Ladislav J. Meduna to associate professor of psychiatry  
Howard J. Shaugnessy Ph.D. to associate professor of bacteriology and public health  
Beatrice D. Wade O.T.R. associate professor and director of occupational therapy

**Governor's Conference on Exceptional Children**—The second annual Governor's Conference on Exceptional Children will be held at the La Salle Hotel, December 13 under the auspices of the Commission for Handicapped Children. Gov. Dwight H. Green will address the session on "The Handicapped—A Challenge to Us All." Among the speakers on the program will be:

Mrs. Walter M. Rennie president Illinois Federation of Women's Clubs Legislation for Handicapped Children  
Charles Scott Berry Ph.D. director of special and adult education Ohio State University Columbus The Gifted Child—An Undeveloped State Resource  
Mr. Alden B. Mills vice president Illinois Association of School Boards Where Do We Go From Here?

Group meetings will feature sessions the first day on "The Development and Utilization of the Potentialities of Handicapped Children Through Education Health Employment and Welfare." Other speakers will include Dr. Roland R. Cross, Springfield, state director of public health, Rodney H. Brandon Springfield, state director of public welfare, Dr. Meyer A. Perlstein member of the attending staff of Cook County Hospital and Dr. Raymond B. Allen dean University of Illinois College of Medicine.

**Dr. Aldrich to Direct New Pediatric Project at Mayo Clinic**—Dr. Charles Anderson Aldrich physician-in-chief at the Children's Memorial Hospital and professor of pediatrics at Northwestern University Medical School has been named to organize and direct a long term research program in preventive medicine in childhood at the University of Minnesota Graduate School Minneapolis-Rochester. The project will be financed by the Mayo Clinic and will be carried out in cooperation with Dr. Henry F. Helmholtz Rochester Minn. in charge of the department of pediatrics at the clinic. It is planned to begin the preventive medicine program with antepartum and newborn care the children in older age groups to be reached as the project expands. Initially the plan will be confined to the city of Rochester. Dr. Stanley Gibson professor of pediatrics at Northwestern and a member of the staff of Children's Memorial Hospital for twenty-two years will succeed Dr. Aldrich as physician in chief at Children's Memorial Hospital and Dr. John A. Bigler will become assistant physician-in-chief and medical director. All changes will be effective January 1. Dr. Aldrich graduated at Northwestern in 1915. Secretary of the American Board of Pediatrics he has been associated with Children's Memorial Hospital since 1921 and with Northwestern since 1934.



## LOUISIANA

**University News**—On December 20 Dr Reginald Fitz, assistant to the dean, Harvard Medical School, Boston, will deliver the commencement address at the Louisiana State University School of Medicine New Orleans. The exercises will close the March-December 1943 school year, at which 77 seniors will receive the degree of doctor of medicine. Of these, 38 are affiliated with the army specialized training unit number 3876 and 20 with the navy specialized training unit. Nineteen are civilians. The new school year will open on January 3.

## MARYLAND

**Dr Davis Named Director of Communicable Diseases**—Dr Joseph W Davis, Fauquier, W Va, for six years health officer of Marion County, W Va, has been appointed director of the bureau of communicable diseases in the Baltimore City Department of Health, effective December 1, filling the vacancy left when Dr David H Andrew, Baltimore, resigned to enter private practice.

**Institute on the Exceptional Child**—"Psychotherapy for the Exceptional Child" was the theme of the tenth Institute on the Exceptional Child at the Belvedere Hotel, Baltimore, November 9. Among the speakers were:

- Dr John C Whitcomb, Baltimore, chairman
- Dr George H Preston, Baltimore, Common Factors in Mental Health
- Dr Alice C Rockwell, Baltimore, Therapy for Mothers Runs Parallel with Treatment of Children
- Dr Jacob H Conn, Baltimore, Play Therapy—The Method of the Play Interview
- Harry F Latshaw, Baltimore, School Aspects of Psychotherapy
- Drs Leo Kanner and Trude Tietze, Baltimore, Psychotherapy for the Parents of Retarded Children
- Dr Leslie B Holman, Baltimore, Some Further Aspects of the Parental Problem

**Vesalius Anniversary Celebration**—The Johns Hopkins Medical History Club commemorated the four hundredth anniversary of the publication of Andreas Vesalius's *De Humani Corporis Fabrica Libri Septem* on November 1 in the lecture hall of the Institute of the History of Medicine, Baltimore. The following program was presented:

- Dr George W Corner, Baltimore, Andreas Vesalius in the History of Anatomy
- Dr Gregory Zilboorg, New York, Psychological Sidelights on Andreas Vesalius
- Ludwig Edelstein, Ph D, Baltimore, Andreas Vesalius the Humanist
- Dr Orsei Tenkin and William L Straus Jr, Ph D, Baltimore, Some Aspects of the Anatomical Material of Vesalius
- Dr Henry E Sigerist, Baltimore, Albanus Torinus and the German Edition of the Epitome

## MICHIGAN

**Sanatorium Named for Physician**—The board of supervisors on October 22 officially changed the name of the Calhoun County Public Hospital, Battle Creek, to the Arthur S Kimball Sanatorium, in honor of the late Dr Kimball, who was instrumental in establishing the institution in 1921 for the treatment of tuberculous patients. Dr Kimball died in 1921 at the age of 42.

**Acting Director Chosen for New County Health Department**—Dr Joseph G Molner, deputy superintendent of the Detroit Department of Health, has been selected as the acting director of the newly organized Wayne County Department of Health on a part time basis (*THE JOURNAL*, May 29, p 322, and June 12, p 455). Newspapers report that the county board has sought unsuccessfully for several months to obtain a full time health officer.

**Public Health Officers**—John M Hepler, CE, director of the bureau of engineering of the state department of health, Lansing, was inducted into the presidency of the Michigan Public Health Association at its annual meeting in Grand Rapids, November 4. Nathan Sinai, DPH, Ann Arbor, is the new president-elect. Dr Hugh B Robins, Marshall, director of the Calhoun County health department, is vice president and Miss Marjorie Delavan, Lansing, secretary-treasurer, reelected.

**Site Chosen for Medical Center**—The board of education of Detroit on November 23 approved a site for the Wayne University Medical Science Center. The first unit, the Wayne University County Hospital, will occupy three blocks between Farnsworth and Theodore and running from Beaubien to Hastings streets together with one bounded by Frederick, St Antoine, Farnsworth and Beaubien. In addition to these three blocks to be acquired immediately, the board recommended that the district bounded by Warren, Brush, Hastings and Ferry, with a gross area of 53 acres, be earmarked for the future development of the center. The utilization of this site will place the medical center's activities close enough to other university facilities to allow a functional integration as well as

permitting the advantage of proximity to the hospitals on the east side of Woodward Avenue. Children's, Woman's, Harper and Grace hospitals, now affiliated with the Wayne University College of Medicine, are within walking distance of the planned site. When completed, the fifty million dollar project will include five main buildings as well as a number of service units. In addition to a university hospital, the construction of which is first on the list, the main buildings include the Hall of Medical Sciences, the Institute of Industrial and Public Health, the Center for Continuation Study and the Medical Science Library. The county hospital is to cost two million dollars and the Hall of Medical Sciences five million. Smith, Hinchman & Grylls have been chosen architects for the project.

## MINNESOTA

**Changes in Hospital Superintendents**—Dr Stanley B Lindley, assistant superintendent of the Fergus Falls State Hospital, Fergus Falls, has been appointed superintendent of the Willmar State Hospital, Willmar. The latter position has been vacant since the transfer of Dr Magnus C Petersen to Rochester. Dr Walter P Gardner has resigned as superintendent of the Anoka State Hospital, Anoka, to return to private practice. Dr Edmund W Miller, assistant superintendent of the St Peter State Hospital, St Peter, has been named acting superintendent at Anoka.

**Dr Harrington to Retire as Health Commissioner**—Dr Francis E Harrington will retire as commissioner of health of the city of Minneapolis on June 19, 1944, when he reaches the legal retirement age in the city. Dr Harrington is also acting superintendent of the Minneapolis General Hospital, including the Parkview Sanatorium and the Elizabeth Kenny Institute. Wallace D Hunt, senior surgeon, U S Public Health Service Reserve, has been detailed by the surgeon general to assist the city of Minneapolis in the administration of public health. It is expected that he will remain in this status until July 1, 1944.

## NEW YORK

**Central Adirondacks Practically Free of Hay Fever**—The state department of health on December 5 announced that the central Adirondacks section of the state was practically free this year from ragweed and its pollen. During August and September pollen count survey stations were conducted in four places on the rim of the so-called ragweed free area in the counties of Herkimer, Hamilton and Franklin. The counts were so low that it is now generally believed that the free area has grown considerably, probably as the result of a long term program of weed elimination carried on by local counties and organizations interested in creating havens in the region for hay fever sufferers. The village of Old Forge, Herkimer County, was found to have a pollen index of zero, the first place to have this count in the six years the surveys have been made. In Speculator and Indian Lake, Hamilton County, there was no time during the fifty-one day survey that the pollen concentration was sufficiently high to cause hay fever symptoms. Loon Lake, Franklin County, had only five days which might be considered "hay fever days."

## New York City

**Harvey Lecture**—John Howard Mueller, Ph D, professor of bacteriology and immunology, Harvard Medical School, Boston, will deliver the third Harvey Society Lecture of the current series at the New York Academy of Medicine, December 16. His subject will be "Nutrition of the Single Cell, Its Applications in Medical Bacteriology."

**Friday Afternoon Lectures**—The New York Academy of Medicine opened its 1943-1944 Friday afternoon lecture series on November 5 with a talk by Dr Stuart W Harrington, Rochester, Minn, on "Diaphragmatic Hernia." Included in the series are the following:

- Dr Leonard Greenburg, Health Hazards in War Industry, November 12
- Dr Harold M Marvin, New Haven Conn, The Treatment of Paroxysmal Tachycardia, November 19
- Dr Ephraim Short, Endocrine Treatment of Menstrual Disorders, December 3
- Dr Harold Thomas Hyman, New York, John F Mahoney, Staten Island, Senior Surgeon U S Public Health Service, Recent Advances in the Treatment of Syphilis, Including the Use of Penicillin, December 10
- Dr Maxwell Finland, Boston, A Review of Atypical Infections of the Respiratory Tract and Their Management, December 17
- Dr David F Barr, Recent Advances in Drug Therapy, January 7
- Dr Homer F Swift, Rheumatic Fever, January 14
- Dr Philip D Wilson, The Modern Conception of the Surgery of Amputation, January 21
- Dr George T Pack, L Duncan, Public Lecture, Cancer of the Stomach, January 28
- Dr Donovan J McCune, Dermatitis, February 4

Dr Joseph H Globus Cerebrovascular Accident February 18  
Dr Alexander Randall Philadelphia Recent Advances in Knowledge  
Relating to the Formation Recognition and Treatment of Kidney  
Calculi February 25  
Dr William P Thompson Hemorrhagic Diseases March 3  
Dr Franklin M Hanger Jr Present Day Views of Functional Liver  
Tests March 10  
Dr Abram I Barrach Physiologically Directed Therapy in Intractable  
Asthma March 17  
Dr Norman H Jolliffe Avitaminoses—Diagnosis and Principles of  
Treatment March 24  
Dr Howard C Taylor Jr Diagnosis and Treatment of Malignancy  
of Pelvic Organs March 31  
Dr Milton Benjamin Rosenbluth Practical Management of Hyperten-  
sion April 7  
The Most Recent Methods in the Treatment of War Wounds and Sur-  
gical Shock April 14 speaker to be announced

## OHIO

**New Bureau of Maternal and Child Health**—The Toledo Board of Health on November 2 created a city bureau of maternal and child health. Dr Louis L. Payne Jr, pediatrician on the board's tuberculosis control program, will in addition to his regular work serve as head of the new unit.

**Twenty-Five Years as Head of Department of Physiology**—On November 18 associates and students of Dr Carl J. Wiggers gave a dinner to honor him on his completion of twenty-five years as professor and head of the department of physiology at Western Reserve University School of Medicine, Cleveland. Dr Torold Sollmann, dean of the medical school, presided. Dr Wiggers, who graduated at the University of Michigan Medical School, Ann Arbor, in 1906, joined the physiology department at Western Reserve in 1913, serving as assistant professor of physiology. In 1918 he was named to his present position.

**Advisory Committee to Coordinate Tuberculosis Programs**—Dr Joseph B. Stocklen, controller of tuberculosis for Cuyahoga County, Cleveland, has been named chairman of the recently appointed advisory committee on coordination of tuberculosis programs (THE JOURNAL, February 6, p. 447). The executive committee of the Ohio Public Health Association provided for the creation of the committee at its May meeting, but Dr Charles A. Doan, Columbus, president of the association, only recently named its members. In addition to Dr Stocklen, remaining members of the committee include Dr Myron D. Miller, Columbus; Dr William D. Hickerson, Cincinnati; Dr Lorin E. Kerr Jr, Oberlin; Dr Earl E. Kleinschmidt, Toledo; Dr Clarence L. Hyde, Akron; Dr Harold H. Brueckner, Lima; Dr Lynne E. Baker, Dayton; and Delmar R. Serafin, Canton. W. K. Curfman, Cincinnati, and Charron G. Payne, Columbus. The first meeting of the committee was held in Columbus on December 2.

## PENNSYLVANIA

**Society Adopts Medical Bureau for Business Activities**—The Dauphin County Medical Society recently decided to let the Medical Bureau of Harrisburg serve as the central business office of the society. Secretarial and clerical activities will be carried on under the direction of the society's secretary. The decision will provide a permanent headquarters providing better opportunities for desirable public relations. The Medical Bureau of Harrisburg, of which John A. McGhee is executive director, hopes the new program will be adopted by other medical societies.

**Regional Health Institutes**—On November 10 the state department of health held a regional health institute at Erie in cooperation with the city bureau of health and collaborating health agencies, the first in a series of twelve planned throughout the state. Dr Alexander H. Stewart, Harrisburg, state secretary of health, addressed the first session. Included among the other speakers were:

Dr John Moore, Harrisburg, Responsibilities of Health Departments in Cities and Smaller Communities to Meet the Problems of a Nation at War  
Ralph C. Williams, New York, senior surgeon, U. S. Public Health Service, The Relationship of Federal, State, Local Health Agencies in an Integrated Program  
Dr Nels A. Nelson, Baltimore, The Development of Venereal Disease Control Programs in an Industrial Area  
Col. Crawford I. Sims, M. C. U. S. Army, War and the Migration of Tropical Diseases  
Dr Charles Howard Marx, Pittsburgh, How May We Hold the Gains and Secure Further Advances Toward the Control of Tuberculosis?  
Dr John R. Conover, Pittsburgh, Industrial Diseases and the War Effort  
Dr Herbert T. Kelly, Philadelphia, Improving the Nutrition of All the People  
Dr Stanley P. Reimann, Philadelphia, The Challenge to the School and College in the Health Field  
Mr Austin J. White, Erie, The Press Looks at Public Health  
The second institute was conducted in Washington, Novem-

**Scott Award to Veterinary Surgeon**—Otto Stader, VMD, veterinary surgeon, Ardmore, has been given the John Scott Award and prize of \$1,000 by the board of directors of City Trusts of Philadelphia for the invention of the reduction and fixation bone splint. Dr Stader at one time served as instructor in veterinary science at the University of Wisconsin-Madison and in 1941-1942 was president of the American Animal Hospital Association. Recently he has been conducting demonstrations at various naval stations showing the application of his invention.

## Philadelphia

**Special Lectures**—Dr Cyrus C. Sturgis, Ann Arbor, Mich., will address the Philadelphia County Medical Society and the College of Physicians of Philadelphia at a combined meeting, January 12, on "A Study of the Incidence of the Commoner Types of Anemia: Their Cause and Treatment." On February 2 Dr John A. Toomey, Cleveland, will deliver the Nathan Lewis Hatfield Lecture of the College of Physicians on "Observations on the Treatment of Infantile Paralysis in the Acute Stage."—Dr John P. Peters, John Slade Ely professor of medicine, Yale University School of Medicine, New Haven, presented the annual Alpha Omega Alpha Honor Lecture at the Hospital of the University of Pennsylvania, November 19. His subject was "A New Frame for Metabolism."

## RHODE ISLAND

**Personal**—Dr Lucius C. Kingman, formerly president of the Rhode Island Medical Society, has been named a member of the board of hospital commissioners of Providence to fill the unexpired term of Dr John M. Peters, resigned.—Dr Peter F. Harrington, director of tuberculosis for the Providence Health Department, was recently elected chairman of the health division of the Providence Council of Social Agencies.—Dr Joseph Marks, Central Falls, has been appointed school medical inspector to succeed Dr Adolph R. V. Fenwick, resigned.

## VERMONT

**State Medical Election**—Dr Frank J. Hurley, Bennington, was named president-elect of the Vermont State Medical Society at its meeting, October 25, and Dr Charles H. Swift, Rutland, was installed as president. Dr Benjamin F. Cook, Rutland, is the secretary.

**University News**—Dr William J. Bruckner, New Haven, Conn., addressed the student body of the University of Vermont College of Medicine, Burlington, November 26, on "Medical Experiences in the South Pacific." Dr Henry N. Harkins, Baltimore, discussed Therapy of Burns before the Osler Clinical Society, November 26.

## VIRGINIA

**Personal**—Dr David L. Harrell Jr., superintendent of the Petersburg State Colony, Petersburg, has been appointed superintendent of the Western State Hospital at Staunton. He succeeds Dr Joseph S. deJarnette, who has spent fifty-four years in the service of the state hospital system.

**University News**—A. W. Hurd, former dean of Hamline University, St. Paul, has become a director of the bureau of educational research at the Medical College of Virginia, Richmond, under a grant from the general education board. *Southern Medicine and Surgery* reports that Dr Hurd's first work will be to direct an experimental study of the curriculum of the school of nursing, beginning with an analysis of the science subjects nurses use in practice. Dr Randolph H. Hoge, assistant professor of gynecology, has been appointed professor of gynecology at the medical school.—Dr Walter Ansell Derrick, Charlottesville, has resigned as associate professor of pathology at the University of Virginia Department of Medicine, Charlottesville, to become director of the Kingston City Laboratory, Kingston, N. Y.

**Course in Ophthalmology and Otolaryngology**—The Gill Memorial Eye, Ear and Throat Hospital, Roanoke, announces that it will hold its eighteenth annual spring graduate course in ophthalmology and otolaryngology beginning Monday, April 3. Among the participants will be Drs Paul H. Holinger, Chicago; Anderson C. Hilding, Duluth, Minn.; Major Isador Jerome Hauser, U. S. Forces, H. Lunn, Boston; Beverly Douglas, Nashville, Tenn.; Rear Admiral Ross T. McIntire, surgeon general, U. S. Navy; Thomas Parran, surgeon general of the U. S. Public Health Service; Albert D. Rudemann, Cleveland; Harold F. Falls, Ann Arbor, Mich.; Raymond G. Ingalls, Berlin, N. H.; Milton L. Perlner, New York; David G. Cogan, Boston; Paul A. Chandler, Boston; Eugene M. Blake, New Haven, Conn.; and James S. Shipman, Camden, N. J.

## GENERAL

**Reduction in Rabies Deaths**—There were 36 deaths from rabies reported for the entire United States in 1942, according to figures released by the Bureau of Census on November 16. The largest number of deaths from rabies in the last ten years was 80 in 1934.

**Pediatric Board Reopens Group I**—The American Board of Pediatrics, at its recent annual meeting, decided to reopen Group I, which requires that an applicant shall have been specializing in pediatrics for ten years or more. Group I will be kept open until July 1, 1944. When the organization of the board was completed in January 1934, Group I of the three authorized groups was to be kept open until September 1936, after which date examination was required.

**Dr. Cumming Receives Gorgas Award**—On October 22 the Gorgas Award of the Association of Military Surgeons of the United States was presented to Hugh S. Cumming, surgeon general, U. S. Public Health Service, retired, and at present director of the Pan American Sanitary Bureau. The award was founded in 1942 by John Wyeth and Company of Philadelphia and consists of a medal and scroll and \$500. It is given each year to some member of the association who has made notable contribution to medical science of value to the military service.

**Inter-American Conference for Professional Education in Public Health**—The Inter-American Conference for Professional Education in Public Health has been permanently organized. The first meeting was in the form of a conference of representatives of the schools of public health in the South, Central and North American countries at the University of Michigan School of Public Health, Ann Arbor, November 8-11 (THE JOURNAL, November 6, p. 646). The next meeting of the conference will be held in São Paulo, Brazil, in 1945. There are no officers designated, the sponsors of the conference being the Pan American Sanitary Bureau.

**Mead Johnson Prizes**—At the meeting of the American Academy of Pediatrics in Chicago, November 6, the 1943 recipients of the Mead Johnson awards were announced. First prize of \$500 went to Dr. Hattie E. Alexander, New York, for her work on "The Treatment of the H. Influenzae Infections," and second prize of \$300 to Dr. Philip Levine, Newark, N. J., for his work on "Erythroblastosis Foetalis and the Rh Factor." At the meeting Dr. Joseph S. Wall, Washington, D. C., was named as president-elect of the academy and Dr. Franklin P. Gengenbach, Denver, was installed as president. Dr. Clifford G. Grulee, Evanston, Ill., was reelected secretary-treasurer.

**Dr. L. N. Upjohn Relinquishes Presidency of Company**—Dr. Lawrence N. Upjohn, since 1930 president of the Upjohn Company, Kalamazoo, Mich., will on January 1 become chairman of the board of directors, relinquishing the presidency of the company. Donald S. Gilmore, vice president and general manager of the company, will become president. Dr. Everett Gifford Upjohn, who has been with the company since 1931 and is now medical director, will continue in the latter position in the new post of vice president. Harold S. Adams, Ph.D., who joined the company in 1926 and has been general superintendent, is vice president and director of production. Dr. Lawrence Upjohn has been with the company since 1904 and was for twenty-five years in charge of the New York office.

**New Journal on Allergy**—The *Annals of Allergy*, published by the American College of Allergists, recently made its appearance. Dr. French K. Hansel, St. Louis, is editor-in-chief. The editorial board includes a staff of corresponding editors from fifteen foreign countries and the United States possessions and is composed of specialists who have made some personal contributions to the field as related to their own particular specialty, internists, otolaryngologists and ophthalmologists, pediatricians, dermatologists, gastroenterologists, immunologists, bacteriologists (mycologists), pharmacologists, biochemists, botanists, plant pathologists and others. The college was incorporated in November 1942, and its objectives are to supplement the work of existing allergy groups as well as to "emphasize and consider numerous phases of the subject heretofore overlooked." Dr. Frederick W. Wittich, Minneapolis, is secretary of the college.

**Pharmaceutical Manufacturers' Award Goes to Work on Penicillin**—On December 13 the American Pharmaceutical Manufacturers' Association, at its meeting at the Waldorf-Astoria, New York, will present its annual scientific award in absentia to Dr. Alexander Fleming, professor of bacteriology, University of London, for his discovery of penicillin and to Dr. Howard Walter Florey, professor of pathology, Oxford University, for his study of penicillin. The presentation of the

award will mark the opening of a two day session of the American Pharmaceutical Manufacturers' Association. Speakers will include:

Norman T. Kirk, surgeon general of the U. S. Army, Army War Medicine  
Warren T. Draper, assistant surgeon general, U. S. Public Health Service, Civilian War Medicine  
Dr. Chester S. Keefer, Boston, Research in War Medicine  
Dr. Oliver H. Perry Pepper, Philadelphia, Medicine in War and After  
Charles Thom, Ph.D., Washington, D. C., Mold Research in War Medicine  
Dr. George A. Harrop, New Brunswick, N. J., Pharmaceutical Development of War Medicine  
Lieut. Col. Howard F. Currie, M. C., U. S. Army, Army Medical Purchasing Office  
Lieut. Col. Ralph R. Patch, U. S. Army, War Manpower  
Major E. P. Platt, U. S. Army, Surplus Government Drug Stocks  
Wendell Berge, S. J. D., Washington, D. C., Significance of Anti-trust Law in Postwar Period  
Dr. Thomas A. McGoldrick, Brooklyn, N. Y., Problem of Essential Medical Care  
Mr. A. C. Nielsen, Chicago, War Impact on Drug Distribution  
Mr. Charles W. Dunn, New York, general counsel of the association, Postwar Observation

**Frequency of Stillbirths**—For over 100 babies born alive, 3 are stillbirths, according to the *Statistical Bulletin* of the Metropolitan Life Insurance Company, official records showing that there are about 75,000 stillbirths in a year in the United States, a much larger number than deaths from tuberculosis in the general population. The bulletin points out that in reality the number of stillbirths exceeds the official total because many are not reported. The report states that the frequency of stillbirths is least in the age period 20-29, in which childbearing is heavily concentrated, a fortunate circumstance because practically three fifths of all mothers are within these ten years of life, it was stated. Among women who are having their first baby at the age of 45 or over there are more than 13 stillbirths for every hundred live births. On the other hand the frequency of stillbirths is also high among women who have already had a large number of children. In discussing the situation the *Statistical Bulletin* points out that an adequate program of antepartum care for pregnant women in industry would be a valuable aid in saving lives, commenting that a number of industrial plants have already taken steps in this direction. The ratio of stillbirths to live births has been reduced by nearly a fifth in the past decade, but in the need for improvement it is pointed out that many stillbirths could be prevented by the adequate treatment of syphilitic mothers early in pregnancy, the estimate being that at least three fifths of these pregnancies end in stillbirth. The bulletin states that "while a number of stillbirths result from biological factors, such as the aging of the mother, there is no doubt that many arise out of causes amenable to control, and it should be possible to reduce the frequency of stillbirths by expanding and coordinating prenatal services. Many stillbirths in which the child's life is destroyed during labor could have been prevented by better obstetrical care."

## LATIN AMERICA

**Health Activities in Latin America**—As the result of a conference of interested health and other officials in June, the organization of a project in Brazil to care for the health of migratory workers in the Amazon region is under way. Hospitals will be maintained at Belem and Manaus, as the camps at other localities in the district would be too small to justify the establishment of medical posts. Not all the localities to which laborers are to be sent have been determined, but they are being chosen for their value from an agricultural point of view. The migrant camp at Coroata was discontinued during July and another camp established at Carias because of greater transportation facilities available in the latter city. Medical districts were opened during June at Abaete, Orumina, Labrea, Vila Seabra and Sena Madureira.

**Exchange Fellowships**—Under a two way exchange fellowship program sponsored by the Institute of Inter-American Affairs in Washington, more than 30 United States doctors have received special training in tropical medicine at Central American hospitals, with 40 more to train before this phase of the program is completed. The program is providing 120 doctors from Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Panama, Paraguay, Peru and Venezuela with the opportunity to complete specialized studies in the United States. Many have finished their training, others are now studying and more are to begin their work. The group is particularly interested in studying advanced techniques in cancer, tuberculosis, venereal disease, nutrition, blood banks, heart disease, public health nursing and sanitary engineering. The Inter-American health and sanitation program resulted from recommendations made at the Conference of American Foreign Ministers in Rio de Janeiro in January 1942.

**Quinine**—The Brazilian government is planting cinchona trees experimentally in the state of São Paulo and other mountainous areas in southern Brazil to develop an American supply of quinine. If the experiment is successful, large scale plantations will be carried out so that the Americans will never again have to depend on quinine from sources that might be cut off.

**Personal**—Dr. Roberto Souza Coelho Coello, director of the Pasteur Institute of Rio de Janeiro, is in the United States to spend a month of study at the Rockefeller Institute for Medical Research, New York, after which he will pursue work in Washington and Montgomery, Ala. where studies on hydrophobia are being made.—Dr. Charles E. Shepard has been named chief of the personnel training and health education section a new division of the Health and Sanitation Division brought about by combining health education activities in the special activities section with those of the personnel training section.—Dr. Guillermo C. Paterson, Buenos Aires first president of the Hujun Branch of the Sociedad Argentina de Patología Regional, recently completed fifty years in the practice of medicine all of which have been spent in Argentina.—Dr. George Brecher, formerly of Olomouc, Czechoslovakia, and recently a fellow in pathology at the Mayo Clinic, Rochester, Minn., will engage in public health service in Haiti with residence in Port-au-Prince, under the joint auspices of the Haitian and United States governments.

**Yaws**—A new health program has been undertaken in Haiti designed for the control and elimination of yaws. The project includes a new clinic at Jacmel, where as many as 1,700 patients have been treated in a single day. Some of the patients walked 20 miles to obtain attention from the 12 Haitian physicians and nurses who staff the clinic. Dr. James H. Dwindelle, specialist in skin diseases, has been assigned by the Health and Sanitation Division to cooperate with Haitian authorities in combating the disease. It is hoped to control yaws in the areas around Gressier and Jacmel before starting similar programs in such zones as Marigot, Saltrou and Grand-Gosier.

**Malaria**—The first permanent malaria control project in Honduras was started on April 15, 1942 in Choluteca, this city being chosen because of its important location on the Pan American Highway. In addition a number of temporary control projects have been instituted in Tegucigalpa, Amapala and Trujillo.

**New Construction**—In Honduras new construction includes health centers in Tegucigalpa and Choluteca serving respectively populations of 50,000 and 5,000.—A new cancer clinic was opened in Guadalajara, Mexico during the first Mexican Cancer Congress, held there recently. A recommendation for the organization of a National Institute of Cancer was made at the congress as was the announcement that a nationwide drive against the disease would be started.

**Nursing**—A general program has been instituted throughout Latin America including the building up of service, the provision of fellowships and nursing education. In Brazil a new school of nursing will be established in São Paulo to work in connection with the faculty of medicine and the new 1,200 bed hospital De Clinicas, under the supervision of the São Paulo state government. Nurses' residences, classrooms and laboratories will be constructed. Equipment and installation for the buildings will be provided by the public health department of the state of São Paulo and the Rockefeller Foundation has undertaken supervision of the curriculum and course of studies. Thirty-seven students have been enrolled for the first class the majority of whom are normal school graduates. The recruitment of students is being undertaken in other parts of Brazil to fill the first class to its capacity of ninety students. Thirty scholarships have been provided. A new national school of nursing has been established in Bogota, Colombia, by presidential decree to be an entity within the Ministry of Labor, Hygiene and Social Welfare. It is expected that this project will be completed in 1945. A remodeled ministry building to be available in 1944 will temporarily house the fifty first year students. A national school for nurses was set up in Quito, Ecuador in 1942 and the development of an existing school in San Salvador, El Salvador is under way.

**Society News**—The second Mexican Congress of Pediatrics will be held in Mexico, D. F. March 26-April 1, 1944. Officers are Drs. Mario Torrella, Federico Gomez S. and Hermilo L. Castañeda who are respectively president, vice president and secretary of the committee of organization. Topics to be discussed will include colitis in children, Mexican eutrophic children, hygiene and medicosocial care for rural children and the normal appearance of the thorax of Mexican children.—The first Peruvian Congress of Protection to Childhood took place in Lima during July.—The fifth Argentine Congress on Obstetrics and Gynecology was held in Buenos Aires, October 3-8. Among the speakers were Drs. Manuel Aviles

Chile, Emilio Argonz, Rosario, Maria M. Fabiao, Rio de Janeiro, Alberto Peralta Ramos, Buenos Aires, Juan Pou Orfila, Montevideo, Humberto Dionisi of Cordoba, Claudio Goulard de Andrade, Rio de Janeiro and Juan A. Salaber, Buenos Aires.—The seventh Argentine Congress of Medicine met at La Plata City, November 12-21. The session was divided into sections on neurology and psychiatry, legal medicine and toxicology, ophthalmology and general pathology and pathologic anatomy.

## FOREIGN

**Dr. Max Neuburger Observes Seventy-Fifth Birthday**—Dr. Max Neuburger, formerly professor of the history of medicine at the University of Vienna and since 1939 associated with the Wellcome Historical Medical Museum in London, observed his seventy-fifth birthday, December 8. Frequently referred to as dean of medical history, Dr. Neuburger was the founder of the Institute for Medical History and Museum at the University of Vienna.

**Personal**—Dr. Harry Guy Dain, Birmingham, on September 23 was unanimously elected chairman of the Council of the British Medical Association, succeeding Dr. Henry S. Souttar, London (THE JOURNAL, February 13, p. 533).—Mr. H. H. Gerrans has been appointed secretary of the Royal Institute of Public Health and Hygiene, London. Mr. Gerrans is a fellow of the Chartered Institute of Secretaries.—Dr. Charles Singer, who recently retired, has been made professor emeritus of the history of medicine in the University of London.

**Grant Enables Maltese Physicians to Study in England**—The Nuffield Foundation, London, has awarded grants to enable six Maltese physicians to take specialized training in Great Britain in tribute to the courage of the people of Malta. The physicians chosen will be trained for the positions of orthopedic or assistant orthopedic surgeon, radiologist, tuberculosis officer, medical officer for the civil prison and reformatory and two infant welfare officers. Grants will be tenable for a maximum period of two years and will amount to \$1,600 a year for single and \$2,400 for married physicians, plus traveling allowances. Recipients must return to the island at the end of their training.

## Government Services

### Portrait of Carl Voegtlin

At a recent meeting of the National Advisory Cancer Council a portrait of himself was presented to Carl Voegtlin, Ph.D., who recently resigned as director of the National Cancer Institute of the U. S. Public Health Service (THE JOURNAL, June 26, p. 631).

### Public Health Service Reorganized

Thomas Parran, surgeon general of the U. S. Public Health Service, has announced the names of five persons to head the new bureaus and divisions set up through the reorganization of the U. S. Public Health Service by Congress November 11. The reorganization was authorized in the enactment of a bill (S. 400). Dr. Lewis R. Thompson, medical director serving in the surgeon general's office, has been named assistant surgeon general in charge of the new Bureau of States Services. Dr. Ralph C. Williams, formerly district director with headquarters in New York, has been named assistant surgeon general in charge of the new Bureau of Medical Services. Dr. Rolla E. Dyer, director of the National Institute of Health, Bethesda, Md., will in addition serve as assistant surgeon general in charge of the new Bureau of Scientific Research. John K. Hoskins, senior sanitary engineer under the new setup, will become chief of the division of sanitary engineering and William T. Wright, Jr., D.D.S., chief of dental work in the Marine Hospital Division of the public health service, will become chief of the division of dentistry. All five will hold ranks comparable to an army brigadier general. It was announced they have been in a grade comparable to a full colonel in the army. Mr. Hoskins is said to be the only non-doctor or dentist to hold a rank in the public health service comparable to brigadier general. S. 400 provides that the surgeon general of the public health service under the supervision and direction of the Federal Security Administrator is authorized and directed to assign to the Office of the Surgeon General to the National Institute of Health and to the Bureau of Medical Services and the Bureau of States Services the functions of the public health service and to establish within the office of the surgeon general and the other groups named such divisions, sections and other units as may be required to perform their function.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct 30, 1943

#### The Decline of Population

Prof A V Hill, physiologist, has published a curve in the *London Times* showing an imminent decline in the population of England and Wales. For simplicity, statistics on women between the ages of 20 and 40 years are used, this provides a good index of the total number available for child bearing. The curve shows a maximum population of about 6¼ million such women now and a gradual fall to less than 5 million in 1970. Up to 1931 the actual numbers for the census years 1901 to 1931 are used. After that, estimates supplied by the Population Investigation Committee are taken. All the women shown in the projected curve up to 1963 have actually been born, and their numbers can be affected only by drastic alterations in death rate, emigration or immigration. Even for 1970, two thirds of them are already born. Therefore no change in the rate of reproduction which can reasonably be expected in the next seven years can affect the curve much up to 1970.

Professor Hill thinks that there is no evidence that physiologic fertility has altered significantly in the present century. A downward trend, increasingly apparent since 1900, is almost certainly due to a variety of other causes. The immediate cause, he thinks, may have been a general realization of the possibilities of birth control acting and reacting with a number of other factors such as social custom, economic and industrial conditions, housing and education. Some experts regard the downward trend as a passing phase and think that after 1965 it will be reversed. But, according to Professor Hill, they do not realize the momentum of these changes. The present slight rise in the birth rate is used to justify complacency, but it is mainly due to abnormal causes such as younger marriages anticipating future births, the emotional influence of the war and others of a similar nature.

For the maintenance of our population, Professor Hill prescribes three things: (1) a keener and more generous recognition of motherhood as an honorable duty and occupation, (2) adequate children's allowances and (3) the deliberate introduction in all impending social, industrial, housing and educational programs of a definite bias in favor of happier, healthier and more efficient mothers and more and better children. Thus, he believes, though we cannot prevent the fall in population indicated in the curve to 1965, we may make the curve turn upward after that.

#### The Efficiency of the Army Medical Service

The war correspondent of the *Daily Telegraph*, Douglas Williams, assures relatives of men serving in the Mediterranean area that nothing has been left undone in the care of the sick and wounded and that no expeditionary force has ever had such good medical protection. The contrast with the last war is remarkable. Of 400 operations performed recently in a battle zone after a beach assault, less than 1 per cent proved fatal. At base hospitals the mortality has fallen as low as 1 or 2 per thousand, compared with 5 to 10 per cent in the last war. Malaria is prevalent, especially in Sicily and Italy at this time of year, and has caused much sickness, but atabrine has reduced the mortality in some areas by as much as 70 per cent. Apart from this inevitable incidence of malaria, no field force has ever been healthier. Inoculation has produced immunity to tetanus, typhoid and typhus. Increasing use is being made of penicillin, which is giving astonishing results in the treatment of wounds and septicemia. A recent example was a

badly wounded, delirious soldier who arrived in Algiers by air from Italy. The penicillin team was immediately summoned by air from 300 miles away, and the man was about again in a fortnight.

Directing the medical service is Major Gen E M Cowell, with Brig Gen Fred Blesse of the United States Army. In the combined and perfectly coordinated Anglo-American hospital organization no distinction is made as to nationality of patients. So well are the medical services organized close to the fighting line that almost as soon as a man has fallen medical care of some kind is available. In beach landings, tents staffed with surgeons arise like magic literally at the cannon's mouth. Blood transfusion is now brought up to the front line. In recent fighting many lives were saved by trained teams crawling forward to wounded men isolated in the battle area and administering transfusion on the spot. Supplemented by immediate surgery and rapid evacuation by air back to base hospitals, such methods have achieved wonders in forward areas.

So far this year nearly 50,000 sick and wounded have been evacuated from the battle zones over an average distance of 300 miles. From one air field alone 5,000 cases have been flown across the sea. Both the British and the United States armies maintain air evacuation units comprising doctors and nurses who accompany the men during the flight. Such aircraft are fitted as miniature hospitals, affording facilities for administering morphine, changing dressings and feeding patients. Entire field ambulance units equivalent to mobile field hospitals are also air borne, some even carrying jeeps fitted with stretchers. Parachute attacks are accompanied by surgeons and anesthetists who have passed special parachute courses. Mobile surgical teams composed of tough young specialists operate in advanced areas as far forward as possible. The supply of surgeons is much better than in the last war. There is one surgical team for every 2,000 fighting men. Side by side with the doctors, British and American nursing officers are doing magnificent work. In the Oran assault American nurses went ashore under fire and were splendid examples of courage.

#### The British Journal of Industrial Medicine

The *British Medical Journal* announces the publication commencing next January of an addition to the specialist journals published by the British Medical Association—the *British Journal of Industrial Medicine*. The project has often been discussed in recent years, and the final stimulus to action came in the shape of a formal request to the British Medical Association from the Association of Industrial Medical Officers. An editorial board was formed, and it was intended that Sir Henry Bashford, chief medical officer of the post office, would be editor in chief, but his recent appointment as medical adviser to the treasury prevents this. It is anticipated that Dr Donald Hunter of the London Hospital will take his place. The other editors will be Dr A J Amor, Dr M W Goldblatt, Dr D C Norris, Dr Donald Stewart and Mr R W Watson-Jones, a surgeon. The *British Medical Journal* says that since 1939 the country has been overwhelmingly conscious of the extent to which it owes its safety to the health of the worker in industry. Industrial medicine is not just industrial toxicology, in fact, this is but a small part of it. A whole range of problems faces the worker, the management and the doctor—the effect on the worker and his work of temperature and humidity, of the intensity and direction of illumination, of posture and change of posture, of rest pauses and recreation, of washing facilities of canteens and of an efficient accident service. There are also the important psychologic problems of monotony, relations between foreman and worker, selection of work and so on. From industrial medicine a steady flow of observation and research is hoped for, and much of this should find an outlet in the *British Journal of Industrial Medicine*.



## BUENOS AIRES

(From Our Regular Correspondent)

Oct 15 1943

## Maternal Mortality

Dr Carlos Roust recently reported the results of his studies on maternal mortality for the period 1901-1940 in the maternity ward of the Elisco Canton clinic. There were 821 deaths out of the whole group of 61,684 deliveries. In 642 cases (78.19 per cent) death was due to obstetric causes. In 179 cases (21.8 per cent) it was the result of intercurrent diseases. Maternal mortality due to obstetric causes diminished from 22.16 per thousand in the decade 1901-1910 to 5.6 per thousand in the decade 1931-1940. The mortality from various causes in the first and fourth decades of the period were as follows: from infection following abortion and peritonitis following cesarean section, 6.17 per thousand in the first decade and 2.82 per thousand in the fourth; from puerperal infection, 2.53 in the first and 1.14 per thousand in the fourth decade. The main causal factor was toxemia in 85.71 per cent of all the cases. Hemorrhage, obstetric trauma and infection followed toxemia in order of importance. Nationality, living conditions and occupation had no relation to maternal mortality. Factors found to be important were the health and cultural level of the mother, incomplete pelvic presentation and infection from premature rupture of the membranes. About half the deaths occurred in primiparas, especially older primiparas. In the group of mothers who died, pregnancy was pathologic in 40.94 per cent of the cases and normal in 16 per cent of the cases.

The number of deaths among women with breech presentation diminished over the period. Artificial rupture of the membranes did not cause infection. There was a definite relationship between dystocia and surgical interventions and maternal mortality. Prolonged parturition was found to be dangerous for the mother. The safest delivery for mothers, it was found, is that of normal duration. In cases of death from obstetric causes after delivery and during the puerperium septicemia was observed in 46.55 per cent of the cases, toxemia in 19.18 per cent, trauma or shock in 19.18 per cent and obstetric anemia in 14.52 per cent. Death occurred during the puerperium in 90.03 per cent of the cases, during pregnancy in 4.36 per cent and during delivery in 5.6 per cent. Hemorrhage, shock or acute trauma during the first twenty-four hours following delivery were the most frequent causes of death after delivery or during the puerperium. Death from toxemia occurred, as a rule, within the first three days after delivery. Both maternal mortality and mortinatal mortality diminished during the four decades. The intercurrent diseases which caused death during pregnancy and puerperium were, in order of importance, acute pulmonary diseases, heart diseases, tuberculosis, diseases of the kidneys, acute peritonitis due to appendicitis, cancer and diseases of the liver.

## Brief Items

Scientific exchange courses between the United States and Argentina are being continued. Dr Oscar Ivanisevich, head of the surgical clinic of the Faculty of Medicine of Buenos Aires, will give his course in the surgical clinic at Stanford University in California, and Dr Leon Eloesser, head of the Stanford clinic, will give his in the Buenos Aires clinic and in the Instituto de Clinica Quirurgical del Hospital de Clinicas.

Two complete units of plastic surgery and anesthesia equipment were presented to the Institute of Clinical Surgery of the Faculty of Medicine of Buenos Aires by the British Council of London as a result of a suggestion from Sir Harold Gillies who visited Buenos Aires in 1941.

The first Inter-American Congress was recently held in Buenos Aires. Dr Jose J. Merlo was the president. The following topics were discussed: Roentgenologic Diagnosis of Diseases of the Spine, Therapy and Result of Cancer of Breast, Roentgenologic Diagnosis of Intestinal Diseases and Teaching Roentgenology in the United States.

## AUSTRALIA

(From Our Regular Correspondent)

Aug 2, 1943 (delayed)

## Quinine Sensitivity

Troops serving in malarious areas are given quinine as a routine suppressive measure, the dose being from 5 to 10 grains (0.32 to 0.65 Gm.) of quinine bisulfate, depending on the malarial incidence in the area of service. Captain W. M. Rose (A. A. M. C.) describes 2 cases of quinine sensitivity which is apparently rare. Each subject showed a local sensitization characterized by painful micturition, swelling of the penis and scrotum, and an erythematous eruption which was confined to the trunk and proximal portions of the extremities. The symptoms disappeared when the ingestion of quinine was discontinued. Neither patient had been in the tropics previously nor could either recall having taken quinine orally, but each man gave a history of a well defined local reaction following the use of contraceptive pessaries by his wife. On his coming into contact with the drug again the penis was the first part to be affected.

## Compulsory Chest Radiography to be Universal

It is probable that after the war compulsory radiographic examinations will be carried out on every Australian. This is one of the objectives under the social service health scheme now being prepared by the federal government for introduction later this year. Universal tests on the population are impossible during the war because of the shortage of radiologists and equipment. The government plans, however, to take over the radiographic equipment now being used by the army as soon as there is no further need for it for military purposes. The federal health minister (Mr. Holloway) hoped to make a start with school children, because medical experts considered that tuberculosis could be gradually eradicated if caught early. The health scheme should also include a separate pensions plan to maintain families of tuberculous bread winners so that family worries would not retard recovery.

## Relief for Civilian Medical Men

Wartime exigencies have placed a heavy strain on the civilian medical profession and many doctors have found it impossible to take a badly needed rest because of the difficulty of obtaining a substitute. A welcome announcement in this connection was made recently by the air minister, Mr. Drakeford, to the effect that where they could conveniently be spared from the service Royal Australian Air Force officers would act as substitutes for civilian practitioners for periods up to fourteen days, or longer in special cases. The medical officers detailed for such duties would be selected according to the type of practice requiring relief and allocations would be made from the most conveniently situated units to reduce traveling to a minimum. It seems likely that the scheme could be applied to a number of units of the fighting forces when doctors have to be on the strength of the units to meet active service conditions but could be spared for limited periods to render valuable assistance by relieving men in civilian practice.

## Marriages

ARTHUR LANKFORD JR. Rochester N. Y. to Miss Harriet Campbell Whitehurst of Washington D. C. November 16

GEORGE B. SHARBAUGH, Statesville N. C. to Miss Marie Field of Allentown, N. J. in Trenton N. J., October 16

THOMAS SPARROW LONG Washington N. C. to Miss Betty Martin Knox at Camp Bowie, Texas August 14

WILLIAM CLINTON MARFETT JR. Seneca S. C. to Miss Dorothy Henrietta Macaulay of Columbia recently

RODERICK C. WILSON Jackson Tenn. to Miss Martha B. Irco of Booneville Miss. May 29



## Deaths

**Walter Wooten Council**, Juneau, Alaska, University of Virginia Department of Medicine, Charlottesville, 1905, commissioner of health, Alaska Territorial Department of Health since 1933, secretary-treasurer of the Alaska Board of Medical Examiners, member of the Territorial Medical Association and past president, member of the American Child Health Association and the American committee, International Congress of Industrial Accidents and Diseases, formerly vice president of the Conference of State and Provincial Health Authorities of North America, surgeon for the Copper River Railway and the Kennicott Copper Corporation, Cordova, Alaska, from 1911 to 1927, assistant surgeon, U. S. Public Health Service, from 1916 to 1927, formerly mayor of Cordova, at one time superintendent of the Cordova General Hospital, formerly president of the chamber of commerce, died November 13, aged 61.

**John Hahn Pratt** ♂ Manchester, N. Y., Bellevue Hospital Medical College, New York, 1890, past president of the Ontario County Medical Society and the Seventh District Medical Society, recently a member of the Selective Service Board, examining physician for the eastern half of Ontario County during World War I, for many years a member of the board of education, vice president of the Frederick Ferris Thompson Hospital, Canandaigua, where he was a member of the attending staff, for many years a member and chairman of the board of directors of the Ontario County Trust Company and physician and surgeon for the Lehigh Valley Railroad, a director of the State Bank of Shortsville, died September 21, aged 78, of cardiovascular disease.

**William Robert Whiteis** ♂ Iowa City, State University of Iowa College of Medicine, Iowa City, 1895, formerly assistant professor of histology, professor of histology and embryology, and clinical assistant to the chair of otology, rhinology and laryngology, professor of histology and embryology and assistant professor of gynecology, professor of obstetrics, professor of obstetrics and gynecology and head of the department and professor emeritus at his alma mater, at one time director of the University Hospital and past president of the staff, on the staff of the Mercy Hospital, member of the Rotary Club, died September 3, aged 74, of coronary occlusion.

**Andrew Raymond Amos**, Beverly Hills, Calif., Rush Medical College, Chicago, 1882, member of the Iowa State Medical Society, died September 17, aged 85.

**Herbert Taylor Aydtlett**, Greensboro, N. C., University of Virginia Department of Medicine, Charlottesville, 1894, member of the Medical Society of the State of North Carolina, died recently, aged 75.

**Marvin Oliver Brice**, Okemah, Okla. (licensed in Oklahoma under the Act of 1908), member of the Oklahoma State Medical Association, formerly a druggist in Castle, died in the Wesley Hospital, Oklahoma City, September 7, aged 68.

**Amy Reams Davis**, Georgetown, Ill., Bennett Medical College, Chicago, 1915, died in the Lake View Hospital, Danville, September 28, aged 61, of chronic toxemia and chronic bronchitis.

**George Kendal Dazey**, Los Angeles, George Washington University School of Medicine, Washington, D. C., 1920, served on the staff of the Santa Monica Hospital, died in the Good Samaritan Hospital September 30, aged 48, of carcinoma of the left lung.

**Henry Charles Mitchell De Wolfe**, Bramtree, Mass., Dalhousie University Faculty of Medicine, Halifax, N. S., Canada, 1924, formerly associated with the U. S. Public Health Service, died in Boston September 1, aged 43.

**Thomas Embelton Hays** ♂ Burlington, Vt., University of Vermont College of Medicine, Burlington, 1911, served on the staff of the Green Mountain Sanatorium, died in Boston recently, aged 65.

**Alfred Baker Hender**, Davenport, Iowa, State University of Iowa College of Medicine, Iowa City, 1901, veteran of the Spanish American War, dean of the Palmer School of Chiropractic, died September 26, aged 69, of influenza complicated by bulbar paralysis.

**Roy Elwin Hunt**, Littlefield, Texas, University of Texas School of Medicine, Galveston, 1934, member of the State Medical Association of Texas, on the staff of the Littlefield Hospital and Clinic, was shot October 26, aged 36.

**Henry M. Katz** ♂ Cedarburg, Wis., Wisconsin College of Physicians and Surgeons, Milwaukee, 1908, died in St. Mary's

Hospital, Milwaukee, September 21, aged 59, of cachexia and carcinoma of the esophagus with perforation into the trachea.

**Edward Kellner**, New York, Medizinische Fakultät der Universität Wien, Austria, 1899, died in August, aged 69.

**Edward Rush King**, Ashdown, Ark., University of Tennessee College of Medicine, Memphis, 1915, member of the Arkansas Medical Society, served during World War I, died September 24, aged 51, of cerebral hemorrhage due to hypertension.

**Lawrence Victor Lee** ♂ Lattimore, N. C., Atlanta (Ga.) Medical College, 1894, member of the school board, died in the Shelby Hospital October 9, aged 72, of carcinoma of the stomach.

**Harrison Arthur Longdon**, Moberly, Mo., Meharry Medical College, Nashville, Tenn., 1908, city physician, died September 23, aged 61, of tuberculosis.

**Allen Walker Martin**, Bogalusa, La., University of Louisville (Ky.) Medical Department, 1907, member and formerly vice president of the Louisiana State Medical Society, secretary of the Washington Parish Medical Society, health officer of Bogalusa, coroner of Washington Parish for four years, on the staff of the Elizabeth Sullivan Memorial Hospital, where he died October 6, aged 61, of hypertension and cerebral hemorrhage.

**Wayland Hogeboom Mason Jr.**, Norwich, N. Y., University and Bellevue Hospital Medical College, New York, 1931, member of the Medical Society of the State of New York, died September 7, aged 41, of tuberculosis of the lungs.

**William Ezra McCollom** ♂ Brooklyn, Columbia University College of Physicians and Surgeons, New York, 1903, chief attending physician and past president of the medical board, St. Mary's Hospital, attending physician, Cumberland Hospital, died October 13, aged 63, of coronary thrombosis.

**Howard Stephen Miller** ♂ Taunton, Mass., Middlesex College of Medicine and Surgery, Cambridge, 1922, died in Hollis, N. H., September 6, aged 55.

**Robert Copeland Mooney** ♂ Washington, D. C., Albany (N. Y.) Medical College, 1908, member of the Medical Society of the State of New York, fellow of the American College of Physicians, heart and lung examiner in the medical corps of the U. S. Army during World War I, for many years served in the U. S. Public Health Service and Veterans Administration, medical consultant on the board of veterans' appeals, died in Worcester, N. Y., October 4, aged 60.

**John Benjamin Morgan** ♂ Cleveland, St. Louis University School of Medicine, 1910, member of the American Urological Association, vice chief of staff and director of urology, St. John's Hospital, died September 7, aged 55, of coronary thrombosis.

**Saxton J. Morgan**, Albany, Wis., the Hahnemann Medical College and Hospital, Chicago, 1892, served as a member of the school board and board of health, president of the Bank of Albany, died September 13, aged 78, of cerebral hemorrhage.

**Daniel Coleman Moseley**, Faunsdale, Ala., Medical College of Alabama, Mobile, 1888, member of the Medical Association of the State of Alabama, past president of the Marengo County Medical Society, formerly mayor of Faunsdale, died October 4, aged 76.

**Dale Oliver Nugent**, Centralia, Wash., University of Tennessee College of Medicine, Memphis, 1912, member of the Washington State Medical Association, president of the Lewis County Medical Society, formerly mayor of Centralia and state senator, died in St. Vincent's Hospital, Portland, Ore., September 9, aged 59, of heart disease.

**John D'Arcy O'Brien**, Buffalo, University of Buffalo School of Medicine, 1904, member of the Medical Society of the State of New York, member of the child hygiene bureau, city department of health, on the staffs of Our Lady of Victory Hospital, Lackawanna, N. Y., and the Mercy Hospital, died September 16, aged 64, of coronary embolism.

**William Monteith O'Bryan**, Greelyville, S. C., Medical College of the State of South Carolina, Charleston, 1911, died in the Kelley Memorial Hospital, Kingstree, September 30, aged 57, of acute nephritis.

**Anton F. Ottrock**, Detroit, Detroit College of Medicine and Surgery, 1932, member of the Michigan State Medical Society, member of the staffs of St. Francis Hospital, Hamtramck and St. Joseph's Mercy Hospital, died September 11, aged 36, of injuries received when he was struck by an automobile near New Baltimore, Mich.

**Edwin H. Paff**, Allentown, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1890, died September 16, aged 78, of aneurysm of the aorta.

**Emory Madison Paine** \* Grand Lodge, Mich., Michigan College of Medicine and Surgery, Detroit, 1896 on the staff of St Lawrence Hospital, where he died October 6 aged 77, of carcinoma of the stomach

**Joseph Oscar Paul**, New Castle, Ind. Medical College of Indiana, Indianapolis, 1905, died September 30 aged 62 of injuries received in an automobile accident

**Edward Robert Pelikan** \* Senior Surgeon, U S Public Health Service, Portland Maine, University of Nebraska College of Medicine, Omaha, 1925 served during World War I, medical officer in charge of the U S Marine Hospital, where he died October 2 aged 48, of myocardial infarction due to coronary thrombosis

**Frederick Leander Peterson** \* Chewelah Wash., Northwestern University Medical School, Chicago, 1911, president of the Stevens County Medical Association for many years treasurer of the Utah State Medical Association a captain in the medical corps of the U S Army during World War I, formerly on the staffs of the Dr W H Groves Latter Day Saints Hospital and the Holy Cross Hospital, Salt Lake City on the staff of St Joseph's Hospital died September 15 aged 64, of coronary embolism

**Frank Pike**, Hoboken, N J Southwest School of Medicine and Hospital, Kansas City Mo 1910, veteran of the Spanish-American War and World War I formerly senior ships surgeon for the Holland-American Line, died September 29, aged 67, of heart disease

**Andrew Jackson Plumer**, Hysham, Mont., Missouri Medical College, St Louis 1884, University of Pennsylvania Department of Medicine, Philadelphia, 1885, formerly a member of the house of representatives and state senate died in Council Bluffs, Iowa, September 16, aged 80, of carcinoma of the stomach

**Thomas Austin Poole** \* Washington, D C, Baltimore University School of Medicine 1898 on the staff of the Episcopal Eye Ear and Throat Hospital, died in the Central Dispensary and Emergency Hospital October 5 aged 69

**Wiley V Powell**, Ridgecrest N C University of Virginia Department of Medicine, Charlottesville, 1895, died in Morganton September 7, aged 75, of pneumonia

**Francis John Pursell** \* Los Angeles, Long Island College Hospital, Brooklyn, 1899, veteran of the Spanish-American War, died September 16, aged 74, of lymphadenoma

**Alvah Ramsey**, Norfolk, Va., University College of Medicine, Richmond 1899 for many years surgeon for the Norfolk and Western Railway, died in the Veterans Administration Facility, Kecoughtan, September 4, aged 66, of cirrhosis of the liver and heart disease

**Samuel Abram Riddick**, Norfolk, Va., University College of Medicine Richmond, 1899, member of the Medical Society of Virginia, attending army surgeon at the port of embarkation, Newport News, from 1917 to 1919, on the staff of St Vincent's Hospital, died September 9, aged 66, of tumor of the pancreas

**George Alexander Ritchie**, Appleton, Wis., Rush Medical College Chicago, 1886, member of the State Medical Society of Wisconsin, on the executive staff of St Elizabeth Hospital, where he died September 17, aged 85, of myocarditis

**Henry B Robbins** \* Jersey City, N J, University of Maryland School of Medicine, Baltimore 1906, died September 7, aged 72, of carcinoma of the liver

**John Pierce Roberts**, Punxsutawney Pa., College of Physicians and Surgeons, Baltimore 1893 on the staff of the Locust Mountain State Hospital Shenandoah, surgeon for the Susquehanna Coal Company examiner for the New York Life Insurance Company and the Prudential Insurance Company, vice president of the First National Bank died September 27, aged 75, of embolism and coronary thrombosis

**Benjamin O Robinson** \* Parkersburg, W Va., College of Physicians and Surgeons Baltimore 1904 past president of the West Virginia Public Health Council fellow of the American College of Surgeons for many years coroner of Wood County on the staffs of the Camden-Clark Memorial and St Joseph's hospitals, died October 4, aged 64, of coronary thrombosis

**Reuben Artman Robinson**, Columbus Ohio State University of Iowa College of Medicine Iowa City 1903 veteran of the Spanish-American War, died September 19, aged 75, of coronary thrombosis

**Ned R Rodes**, Mexico, Mo., Missouri Medical College, St Louis 1893 member of the Missouri State Medical Association, physician and surgeon for the Missouri Military Academy,

company physician for the Chicago and Alton Railroad and the Chicago, Burlington and Quincy Railroad, on the staff of the Audrain Hospital, where he died September 18, aged 75, of cerebral thrombosis

**Harry Elmer Rowland**, Johnstown, Ohio, Ohio Medical University, Columbus, 1901, member of the Ohio State Medical Association, died September 14, aged 72, of angina pectoris

**David Abram Rupert**, Detroit, Medical Department of the Western University of Pennsylvania, Pittsburgh, 1907, died in October, aged 58

**Harold Melvin Sachs**, Brooklyn, Temple University School of Medicine, Philadelphia, 1927, Long Island College Hospital, Brooklyn, 1929, member of the Medical Society of the State of New York, commissioned a captain in the medical corps, Army of the United States, June 26, 1942 and honorably discharged Aug 27, 1943, died October 7, aged 42, of coronary thrombosis

**Thomas Morton Sankey**, Wilksburg, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1902, member of the Medical Society of the State of Pennsylvania, died September 13, aged 66, of cerebral arteriosclerosis

**Ernst Gustav Sasse** \* Lidgerwood, N D, Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1899, county physician and city health officer, a member of the Lions Club and junior chamber of commerce died September 15, aged 73, of cardiovascular disease

**Harvey Wesley Saylor**, Bruning, Neb., Kansas City (Mo.) Medical College, 1897, member of the Nebraska State Medical Association, past president of the Thayer County Medical Society, member of the village board of trustees, formerly member of the county board of health, died in St Joseph Hospital Omaha, September 22, aged 71, of self-inflicted razor blade wounds

**Arthur Twing Schoonmaker**, Westfield, Mass., Hahnemann Medical College and Hospital of Philadelphia, 1894, served as a member of the local board of health, died August 30 aged 83

**Robert E Sevier**, Liberty, Mo., University Medical College of Kansas City, 1890, member of the Missouri State Medical Association, formerly county coroner, county physician and health officer, died September 5, aged 83, of coronary occlusion

**De Witt Clinton Shaff**, Clinton, Ind., Rush Medical College, Chicago, 1907 member of the board of education for twenty-two years, died October 7, aged 74, of heart disease

**James Riddle Sharp**, New York, University of Pennsylvania Department of Medicine, Philadelphia, 1890, member of the Medical Society of the State of New York, formerly visiting physician, outpatient departments Presbyterian and Manhattan Eye and Ear hospitals died in St Luke's Hospital September 10, aged 76

**Cullom Sidwell**, Celina, Tenn. University of Tennessee College of Medicine, Nashville, 1908, examiner for the Selective Service Board and county health physician, chief of emergency medical service, Clay County Defense Council died in St Thomas Hospital, Nashville, September 29, aged 69, of heart disease

**Otis Franklin Simonds** \* Cleveland, Medical School of Maine Portland, 1909 member of the American Academy of Ophthalmology and Otolaryngology on the staffs of the Lutheran and St Luke's hospitals died in the Lakewood (Ohio) Hospital September 26, aged 61, of coronary thrombosis

**C A Smith**, Strafford Vt., University of Vermont College of Medicine, Burlington 1895, died September 21, aged 78

**Jay LaVigne Smith**, Norcatur, Kan. University Medical College of Kansas City Mo 1913, on the staff of the Norton Hospital, died September 25, aged 53, of coronary thrombosis

**William Cullen Squier**, Richmond Ind., Eclectic Medical Institute Cincinnati 1907, served during the Spanish American War and World War I major, medical reserve corps U S Army not on active duty, died September 1, aged 67 of myocarditis arteriosclerosis and nephritis

**David Merner Staebler** \* Hackensack N J University of Toronto Faculty of Medicine, Toronto Ont Canada 1885 member of the Medical Society of the State of New York formerly on the staffs of the Long Island College and Brooklyn hospitals Brooklyn died September 11, aged 86, of coronary occlusion and coronary sclerosis

**George Kellogg Stephens** \* Newport Ark. Washington University School of Medicine St Louis 1902 served on the city council and school board died October 5 aged 64 of angina pectoris

**Olen Clarence Stephens** ♂ Evansville, Ind., University of Louisville (Ky.) Medical Department, 1915, served during World War I, formerly city physician, on the staffs of the Protestant Deaconess and St. Mary's hospitals, died September 13, aged 57, of coronary thrombosis.

**Franklin Augustus Stevens** ♂ Belmond, Iowa, University of Buffalo School of Medicine, 1890, anesthetist on the staff of the Belmond Hospital since 1918, died September 17, aged 79, of carcinoma of the colon.

**Robert Cole Stickney**, Beverly, Mass., Columbia University College of Physicians and Surgeons, New York, 1919, member of the New England Pediatric Society, for many years chairman of the board of health of Beverly, member of the staffs of the North Shore Babies' Hospital, Salem, and the Beverly Hospital, died September 7, aged 48, of ventricular fibrillation.

**Frank George Strayer**, Oshkosh, Wis., Marion-Sims College of Medicine, St. Louis, 1894, died September 15, aged 73.

**Edwin Francis Sullivan**, Gloucester, Mass., Kentucky School of Medicine, Louisville, 1905, died in Boston, August 22, aged 63.

**William Gordon Sutton**, Sevensprings, N. C., Jefferson Medical College of Philadelphia, 1889, member of the Medical Society of the State of North Carolina, past president of the Wayne County Medical Society, a member of the local school committee, died September 17, aged 82, of heart disease.

**James Thomas Taylor**, Greensboro, N. C., University of Maryland School of Medicine, Baltimore, 1908, member of the Medical Society of the State of North Carolina, past president of the Guilford County Medical Society and the Eighth District Medical Society, formerly on the staff of St. Leo's Hospital, died September 27, aged 58, of carcinoma of the larynx.

**William Haynes Teeter**, Bristol, Va., St. Louis College of Physicians and Surgeons, 1899, member of the Medical Society of Virginia, on the staff of King's Mountain Memorial Hospital, died October 1, aged 72, of nephritis.

**Nathan Pulsifer Thayer**, Brooklyn, Harvard Medical School, Boston, 1905, at one time medical superintendent of the Long Island Almshouse and Hospital, Boston, died in the Doctors Hospital, New York, September 18, aged 64.

**Charles L. Thompson**, York, Ohio, Ohio Medical University, Columbus, 1896, for many years president of the Mount Victory State Bank and the school board, instantly killed October 4, aged 72, when the automobile in which he was driving was struck by a train.

**Clarence Victor Thompson**, Burlingame, Calif., Cooper Medical College, San Francisco, 1903, member of the California Medical Association, for many years chairman of the county board of supervisors, served as county health officer, on the staff of the Mills Memorial Hospital, San Mateo, where he died September 13, aged 62, of arteriosclerosis and coronary thrombosis.

**Charles R. Truitt**, Salisbury, Md., University of Maryland School of Medicine, Baltimore, 1891, for many years jail physician and health officer of Wicomico County, died September 7, aged 75, of chronic myocarditis and chronic diffuse nephritis.

**John Layton Tuttle**, Clinton, Mich., Jefferson Medical College of Philadelphia, 1899, died in Lansing, September 3, aged 67.

**Edward Everett Twombly** ♂ Colebrook, N. H., Eclectic Medical College of Maine, Lewiston, Maine, 1885, died August 21, aged 83, of carcinoma of the stomach.

**Earle Henry Tyson**, Kansas City, Mo., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900, died in St. Joseph's Hospital September 1, aged 69, of heart disease.

**Hassow Otto von Wedel** ♂ Ardsley, N. Y., New York University College of Medicine, 1939, died October 10, aged 56, of a self-inflicted bullet wound.

**David Frederick Waide**, New Orleans, Louisville (Ky.) and Hospital Medical College, 1908, member of the Louisiana

State Medical Society, secretary-treasurer of the Second District Medical Society, died in the Southern Baptist Hospital September 14, aged 60, of generalized peritonitis, acute dilatation of the heart, perforation of sigmoid and intestinal obstruction.

**Aubrey Bradford Webster** ♂ Philadelphia, Boston University School of Medicine, 1902, clinical professor of surgery at the Hahnemann Medical College and Hospital of Philadelphia, member of the founders group of the American Board of Surgery, fellow of the American College of Surgeons, chief surgeon at the Broad Street Hospital, on the staffs of St. Luke's and Hahnemann hospitals, died in Wynnewood, Pa., October 9, aged 67, of cerebral thrombosis.

**William E. Weeks**, New Orleans, Flint Medical College of New Orleans University, 1897, died in the Flint Goodridge Hospital of Dillard University September 5, aged 71.

**Edwin B. Wells**, North Lawrence, N. Y., Albany Medical College, 1888, member of the Medical Society of the State of New York, died in the Potsdam Hospital October 4, aged 81, of coronary thrombosis.

**Reinhardt Charles Wende** ♂ Buffalo, University of Buffalo School of Medicine, 1924, diplomate of the National Board of Medical Examiners, served during World War I on the staffs of the State Institute for Malignant Diseases and the Millard Fillmore Hospital, died October 15, aged 47, of acute pancreatitis.

**Charles R. Wharton**, Ruffin, N. C., Medical College of Virginia, Richmond, 1897, for many years coroner of Rockingham County, chairman of the Ruffin township board of education, formerly county health officer, served as surgeon for the Southern Railway, died in the Memorial Hospital, Reidsville, September 19, aged 69, of injuries received in an automobile accident.

**Herndon White**, Baltimore, College of Physicians and Surgeons, Boston, 1907, served during World War I, died in the Johns Hopkins Hospital, Baltimore, September 8, aged 68.

**Charles Forest Whiteshield** ♂ Trout Creek, Mich., Michigan College of Medicine and Surgery, Detroit, 1906, president of the Ontonagon County Medical Society, served during World War I, died in the Grand View Hospital, Ironwood, September 26, aged 80, of intestinal carcinoma.

**Walter Burns Williams** ♂ Argyle, Wis., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897, village health officer, died September 4, aged 71, of angina pectoris.

**Elza Levi Williamson**, Calhoun, Ill., Denver College of Medicine, 1900, past president of the Richland County Medical Society, for many years president of the village board, formerly a member of the board of education, died in Olney, September 12, aged 65, of myocarditis.

**William A. Young**, Springfield, Ill., Washington University School of Medicine, St. Louis, 1892, member of the Illinois State Medical Society, on the staff of the Springfield Hospital, now known as the Memorial Hospital, where he was a member of the consulting staff, for many years surgeon for the Baltimore and Ohio, Illinois Central and Alton railroads, presented with the medal of the Illinois State Medical Society for fifty years practice, died October 6, aged 73, of heart disease.

#### KILLED IN ACTION

**James Douglas Blackwood Jr.** ♂ Medical Inspector, Commander, U. S. Navy, Drexel Hill, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1903, entered the U. S. Navy in December 1920, senior medical officer of the U. S. S. *Vincennes*, Blackwood Drive on the reservation of the new U. S. Naval Hospital, Dublin, Ga., named in his honor by the Bureau of Medicine and Surgery, a new navy vessel will also be named for him, was killed in action in the Solomon Islands Aug. 9, 1942, aged 60.



COMDR. JAMES D. BLACKWOOD JR.  
U. S. Navy, 1881-1942

## Correspondence

### ADOPTION OF THE METRIC SYSTEM

*To the Editor*—In the December 4 issue of THE JOURNAL was an article by the Council on Pharmacy and Chemistry on the use of the metric system. This is a most interesting article and I hope that it receives the attention it deserves. The metric system represents a standard which can be used and understood in every civilized country by every profession. It is one of the few scientific things that practically all professions can have in common.

As a civil engineer I am in favor of the adoption in this country of the metric system in the engineering field. Experience in this and other systems in this country and in Central and South America has convinced me that a country as great as ours cannot cling much longer to 'horse and buggy' standards, especially now that we are rapidly assuming a leading place in international affairs. China is undoubtedly severely handicapped in this respect by the language of its ancestors and in the same way our engineers and scientists have been handicapped by our traditional standards of mensuration, perhaps without realizing this fact.

On his first assignment to work in a foreign country an engineer not trained in the metric system is usually somewhat appalled at the prospect of having to work and think in unfamiliar units. It was my experience that this difficulty was completely overcome within one month, and thereafter it became as natural to speak of 6 meter subway platforms, 30 centimeter beams, and the like, as if it were my natural habit of thought. Others who have had the same experience will testify to the ease of using only the metric system.

The main advantage of the decimal metric system for calculation and construction layout purposes is its simplicity. This results in saving of time, reduction of sources of error, ease of checking and a presentation which can be universally read and understood.

In the drafting room plans must be made and dimensioned in units suited to the degree of accuracy required. Structural steel details customarily, except for bridge work, show dimensions to  $\frac{1}{16}$  inch, as this tolerance is large enough to permit easy fabrication and small enough to insure accurate fit in the field. In metric work all structural steel is dimensioned in whole millimeters. Reinforced concrete details are customarily in this country dimensioned to the nearest  $\frac{1}{4}$  inch, as this tolerance represents a practical degree of accuracy for form construction. In metric work all reinforced concrete is dimensioned in whole centimeters. If a drawing bears a note to the effect that all dimensions are in millimeters (or centimeters, as the case may be) no further designation of units is required and all dimensions appear as whole numbers. Lines of dimensions can be added by machine or by inspection in far less time than would be required for foot and fractional inch designations, and with a greatly reduced chance for error. Calculations of diagonals or hip and valley dimensioning are effected by the use of standard tables of logarithms, or even longhand, without recourse to special tables of logs and squares of foot and inch quantities. The chance of error through misreading of poorly written figures is reduced as foot and inch marks are not used, and fractions are eliminated entirely. Drawing scales are greatly simplified. Those in most common use are 1 to 100, 1 to 50 and 1 to 20, the scale indicating directly the proportion of the representation on the drawing to the full size object.

Estimating of quantities is materially facilitated, as conversion constants are generally powers of 10 and the necessity for recourse to handbooks thus greatly minimized.

In structural calculations involving weights of materials the fact that a cubic decimeter of water weighs 1 kilogram and a cubic meter of water weighs 1 metric ton yields directly the unit weights of all materials, specific gravities known. Hydraulic calculations are a pleasure after one has wrestled with conversions of Imperial (or U S) gallons to cubic feet or vice versa.

In the field, surveyors and carpenters use the same units of measure for lines, grades and local measurements instead of constantly converting from feet and hundredths to inches and fractions, and back again. As a matter of fact, I have seen American engineers laying out complicated railroad work entirely in metric units without the slightest difficulty after a few days of adjustment to an entirely unfamiliar regimen.

Opposition to the adoption of the metric system on a universally compulsory basis has been vigorously presented by a small but effective minority ever since 1866, when the system was legalized in this country as an optional or permissive standard. A study of the nature of the testimony presented by the spokesmen for this vociferous group at hearings on the Britten bill in 1926 reveals, among other things, a tender solicitude [sic] on their part for the poor engineers, doctors and scientists who would be forced to recast their standards and modes of thought to the detriment of their professional efficiency. A study of the makeup of the opposition group, as far as identification of individuals has been possible, reveals a heavy proportion of business men, manufacturers and trade associations. Their arguments are not compatible with the common observation that engineers when forced to work in the metric system become such ardent partisans that it is difficult for them to give up its use.

In the next few years, opportunities for engineers to use only the metric system will increase. It is hoped that the question of compulsory metric standardization will again be brought to the fore. The engineering profession stands to gain as much as the medical profession from the general adoption of the metric system.

RICHARD JENNEY, C.E.,  
1401 Arch Street,  
Philadelphia

### USE OF FUADIN IN CREEPING ERUPTION

*To the Editor*—In the November 13 issue of THE JOURNAL, page 694, Dr. D. C. Smith reported on the "Treatment of Creeping Eruption with Fuadin." He stated that in the 1 case which he treated the lesions had disappeared by the time the fifth injection (of 2 cc each at daily intervals) had been given.

At the Station Hospital, Camp Livingston, Louisiana we have an officer under treatment who was admitted on the 11th of October complaining of severely pruritic linear lesions (about 50 in number) on his trunk and extremities which had been present about ten days. He gave the history of having worked in the black soil under his home in Florida a short time before. A biopsy of one of the lesions revealed on serial section a cross section of one of the parasites, probably the dog and cat hookworm larva (*Ancylostoma braziliense*). On the 16th of October he began to receive injections of sodium antimony hexastibol (furdin) intramuscularly. They were given three times a week, 5 cc each time. A total of ten injections were given. It was

thought at first that the pruritus was decreased, but it later became evident that the injections were not preventing the further spread of the lesions. With a luer lock syringe several cubic centimeters of the solution was injected intracutaneously, producing a huge wheal at the advancing edge of several of the lesions. This too was without value.

Other treatments which were used and also found to be of doubtful value were intracutaneous injection of 1:5,000 mercury bichloride in procaine solution, local application of 10 per cent ammoniated mercury, intravenous injections of mapharsen 0.04 Gm three times a week and occlusive dressings of ethyl acetate.

The best results were achieved by freezing a large area of skin surrounding the advancing edge of each lesion with ethyl chloride spray. However, this had to be repeated several times, and over the thick skin of the back the lesions were sprayed for as long as one minute forty-five seconds at a time.

It is hoped that this report of what is probably the second case of creeping eruption treated with fuadin will prevent any undue optimism in treating this stubborn disease.

HARVEY BLANK, First Lieutenant, M. C.,  
Dermatology Section, Station Hospital,  
Camp Livingston, Louisiana

#### ULCERATION OF THE FEET FOLLOWING SINGLE APPLICATION OF CAMPHOR- PHENOL MIXTURE

*To the Editor*—This is a report of another case of severe dermatitis of the feet with ulceration following the application of camphor-phenol mixture. This remedy, so ably popularized by Paul de Kruif, is still being used by the public on an "over the counter" basis with unfortunate results, as is illustrated by the following case.

A woman aged 30 was told that she had "ringworm of the feet" by her family physician. The eruption did not respond satisfactorily to the therapy prescribed by him on the first



Edema and ulceration of feet one week after single application of camphor-phenol mixture

visit. On the advice of a "friend" she obtained "Phenolene," a camphor-phenol mixture prepared and sold "over the counter" at her local drug store.

She applied this preparation, which bore the usual warning signs "Poison" and "Do not apply to moist surfaces," to the interdigital areas of both feet. By the following day the feet

were swollen and painful. At the time of admission to the University Hospitals of Cleveland one week later there were bilateral edema and numerous deep ulcerations between all of the toes. These responded slowly to emollient local applications and rest in bed. The patient was in the hospital for thirteen days and totally disabled for twenty-seven or twenty-eight days.



Closeup of ulcerations

Many work hours may be lost following ill advised applications of potent substances in the treatment of ordinary superficial mycosis of the feet.

WINTHROPE R. HUBLER, M.D., Cleveland  
From the service of Drs. Cole and Driver

#### EARLY USE OF PENICILLIN (?)

*To the Editor*—Undoubtedly most of us think of the use of penicillin in the treatment of infections as a very new thing, but perhaps the appended quotation may indicate that penicillin was used in the treatment of wounds three centuries or more ago, although the physicians of the period naturally did not distinguish one fungous growth from another.

For the last four generations there has been passed along in our family Theatrum Botanicum by John Parkinson, Apothecary of London and King's Herbarist. This very voluminous work was published in London in 1640. In the fourteenth tribe of plants in which are included "marsh, water and sea plants with mosses and mushrooms" we find the following among the descriptions of the various tree mosses:

"Muscus ex cranio humano

"The Mosse upon dead mens Sculles. Let me here also adjoyne, this kind of mosse somewhat like unto the mosse of trees, and groweth upon the bare sculpes of men and women that have lyen long, and are kept in Charnell houses in divers Countries, which hath not onely bene in former times much accounted of, because it is rare and hardly gotten, but in our times much more set by, to make the Unguentum Sympatheticum, which cureth wounds without local application of salves, the composition whereof is put as a principall ingredient, but as Crollius hath it, it should be taken from the skulls of those that have bene hanged or executed for offences."

May it not well be that the alleged value of this moss as a wound dressing was due to the fact that in some instances the "moss" was a growth of penicillium notatum?

A. G. CRANCH, M.D.,  
Union Carbide and Carbon Corporation,  
New York

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Dec 4 page 94

#### BOARDS OF MEDICAL EXAMINERS

- ALABAMA Montgomery, June 20 22 Sec Dr B T Austin 519  
Dexter Ave Montgomery  
ARIZONA Phoenix Jan 4 5 Sec Dr J H Patterson 826  
Security Bldg Phoenix  
COLORADO Denver Jan 5 7 Sec Dr J B Davis 831 Republic  
Bldg Denver  
DELAWARE Written Dover Jan 11 13 Endorsement Dover Jan  
10 Sec Medical Council of Delaware Dr Joseph S McDaniel 229  
S State St Dover  
GEORGIA Atlanta Dec 21 22 Sec State Examining Boards Mr  
R C Coleman 111 State Capitol Atlanta  
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Lea D Painter 355 State Capitol Bldg Boise  
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Registration and Education Mr Philip Harman Springfield  
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and Examination Dr W C Moore 301 State House Indianapolis  
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Registration Mr H W Grefe Capitol Bldg Des Moines  
KANSAS Kansas City, Feb 2 3 Sec Board of Medical Registration  
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1215 Cathedral St Baltimore Homeopathic Baltimore Dec 14 15  
Sec Dr J A Evans 612 W 40th St Baltimore  
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Medicine Dr J E McIntyre 100 W Allegan St Lansing  
MINNESOTA Minneapolis Dec 20 22 and Jan 18 20 Sec Dr J F  
DuBois 230 Lowry Medical Arts Bldg St Paul  
MONTANA Helena April 3 5 Sec Dr O G Klein First National  
Bank Bldg Helena  
NEBRASKA Omaha Dec 21 23 Dir Bureau of Examining Boards  
Mr Oscar F Humble 1009 State Capitol Bldg Lincoln  
NEVADA Endorsement Carson City Feb 7 Sec Dr G H Ross  
215 N Carson St Carson City  
NEW HAMPSHIRE Concord March 9 10 Sec Board of Registration  
in Medicine Dr D G Smith State House Concord  
NEW JERSEY Feb 15 16 Sec Dr E S Hallinger 28 W State  
St Trenton  
NEW MEXICO Santa Fe April 10 11 Sec Dr LeGrand Ward  
141 Palace Ave Santa Fe  
NEW YORK Albany New York Buffalo and Syracuse Jan 24 27  
Sec Dr R R Hannon Education Bldg Albany  
NORTH CAROLINA December Sec Dr W D James Hamlet  
NORTH DAKOTA Grand Forks Jan 4 7 Sec Dr G M Williamson  
4 1/2 S Third St, Grand Forks  
OHIO Written Columbus Dec 13 15 Sec Dr H M Platter 21  
W Broad St Columbus  
OKLAHOMA Oklahoma City Dec 27 29 Sec Dr J D Osborn Jr  
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PENNSYLVANIA Philadelphia and Pittsburgh Jan 4 6 Bedside Jan  
6 8 Act Sec Bureau of Professional Licensing Department of Public  
Instruction Mrs Marguerite G Steiner 358 Education Bldg Harrisburg  
SOUTH CAROLINA Charleston Dec 20 22 Sec Dr N B Heyward  
1329 Blanding St Columbia  
SOUTH DAKOTA Pierre Jan 18 19 Dir Medical Licensure State  
Board of Health Dr Gilbert Cottam Pierre  
UTAH Reciprocity Salt Lake City Dec 20 Examination Salt  
Lake City Dec 28 30 Asst Dir Department of Registration Miss  
Rena B Loomis 324 State Capitol Bldg Salt Lake City  
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VIRGINIA Richmond Dec 14 17 Sec Dr J W Preston 30 1/2  
Franklin Road Roanoke  
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WISCONSIN Madison Dec 13 15 Sec Dr C A Dawson Tremont  
Bldg River Falls  
WYOMING Cheyenne Feb 7 8 Sec Dr M C Keith Capitol Bldg  
Cheyenne
- \* Basic Science Certificate required
- #### BOARDS OF EXAMINERS IN THE BASIC SCIENCES
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tration Mr H W Grefe Capitol Bldg Des Moines  
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C D Byrne University of Oregon Eugene

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Workmen's Compensation Acts Compensability of Disability from Idiosyncrasy to Soap Required to Be Used in Course of Employment**—The workman instituted suit under the workmen's compensation act of New Mexico against his employer and the employer's insurer for an injury alleged to have been accidental and to have arisen out of and in the course of his employment as a printer. The trial court found that in the course of the workman's employment it was necessary that he cleanse his hands frequently with a "lava soap" furnished by the employer, that the employer furnished a soap known as "Lan-O-Kleen," which had a base of lanolin and corn meal that the workman was highly allergic to Lan-O-Kleen soap and as a result of his continued use thereof in the course of his employment for six or seven months large painful eruptions broke out on the backs of his hands which developed to such an extent that on a stated date he became completely disabled. The court found that the use of Lan-O-Kleen would not have caused injury to the workman except for his allergy and that the resulting injuries constituted an unlooked for mishap which was neither expected nor designed and which was accidentally caused. Accordingly compensation was awarded the workman, and the employer and the insurer appealed to the Supreme Court of New Mexico.

The appellants contended, in effect, that the injury suffered by the workman was not a compensable "injury by accident" within the meaning of the New Mexico workmen's compensation act. In *Stevenson v Lee Moor Contracting Co* 45 N M 354, 115 P (2d) 350, said the Supreme Court, with respect to the phrase "injury by accident" this court said

We are satisfied with the conclusions of these courts and hold that injury by accident means nothing more than an accidental injury or an accident as the word is ordinarily used. It denotes an unlooked for mishap or an untoward event which is not expected or designed.

We had reference there to the definition in Lord MacNaughton's opinion in *Fenton v Thorley* (1903) A C 443 by the House of Lords in which he stated

I come therefore to the conclusion that the expression accident is used in the popular and ordinary sense of the word as denoting an unlooked for mishap or an untoward event which is not expected or designed.

'Accident' is defined by Webster as follows

A befalling an event that takes place without one's foresight or expectation an undesigned sudden and unexpected event chance contingency often an undesigned and unforeseen occurrence of an afflictive or unfortunate character casualty mishap

Lord MacNaughton's definition is substantially the same as that of Webster. It is obvious that the finding of the trial court brings the injury of the workman within the definition of "accident" as approved in the *Stevenson* case.

The employer and his insurer denied that the disability suffered by the workman was accidental because so they contended the so-called injury was not related to any specific time or event a necessary fact to be found so they asserted to support a judgment in his favor. The New Mexico statutes answered the Supreme Court not only do not define the word accident but do not undertake to limit its meaning to sudden injuries as do those of a number of the states nor is its meaning limited by any time test. Our statute is substantially the same as that of North Carolina regarding which the supreme court of that state said in *McNelly v Carolina Asbestos Co* 206 N C 568 174 S E 509

An examination of the Workmen's Compensation Act of North Carolina discloses many uses of the expression injured employee without the qualifying words accident or by accident. So that unless we attempt to whittle down or enlarge words or undertake to put the law through the eyes of little needles it would seem manifest that our act did not undertake to limit compensation to cases where the injury



begun and completed within narrow limits of time, but that it used the expression "injury by accident" in its common sense everyday conception as referring to an injury produced without the design or expectation of the workman

Accidental injuries, continued the court, are usually sudden happenings, and the time, event and circumstances can be definitely determined, but there are exceptional cases in which injuries are unquestionably accidental, although the precise time of their beginning is uncertain, such as those caused by breathing dust or gases frost bite, slow poisoning, a series of slight injuries culminating in a serious one, etc. In determining whether there has in fact been an accidental injury, time ordinarily may be considered and may be decisive against the claim. But if from the evidence, though the time is not definitely fixed, it can be consistently said that there has been an accidental injury according to the common usage of that phrase it is sufficient. After all it is a question of accident or no accident, and the precise second, minute, hour or day that it occurred is but evidence to be considered with the other facts and circumstances of the case in deciding whether the injury was in fact accidental. True, there must be a time when it can be said with certainty that a compensable accidental injury has been inflicted, but the cause, and the coming into existence of the evidence characterizing it as a compensable one, need not be simultaneous events. An injury may be gradual and progressive, and not immediately discoverable, yet certainly and definitely progress to discovery and then to compensable injury. Such was the injury to the workman in this case. The time did arrive when his injuries totally disabled him so he could not work, and at that time he became entitled to compensation for total disability. The findings of the trial court do not advise us as to when the eruptions began to appear on the workman's hands, but we are informed that after the use of the soap for six months he had become totally disabled to perform any labor. In the beginning it may be assumed that the effect was not discoverable, but that it had some physiologic cumulative effect may be reasonably inferred from the fact that a continuous use caused the injury complained of. The injury to the workman was by accident, although it was produced gradually and progressively through a period of months. The court concluded therefore that the time of the injury was established with sufficient definiteness to warrant compensation under the New Mexico statute.

The employer and his insurer next contended that the injury to the workman was not compensable because the workman was not subjected to any unusual or extraordinary condition or hazard not usual to his employment and to which other workmen on the job or the community generally were not subjected. In the *Stevenson* case, *supra*, said the court, we stated that there are three classes in which industrial injuries may be divided: (1) those injuries which result from some fortuitous happenings, such as the breaking of machinery, explosions, collisions, etc.; (2) those injuries in which there is no accident separate and distinct from the injury that caused it, such as strain which causes back injury, rupture, blood clots, hemorrhage, ordinarily the unintended result of an intentional act; (3) those injuries suffered by workmen to which they do not contribute by any specific act and which happen while they are in the performance of their usual and customary duties under usual, ordinary and expected conditions and circumstances, such as death caused by lightning, exposure to the elements and changing temperatures, sunstroke, breathing smoke, gas, fumes, dust, etc. The washing of the workman's hands was a necessary part of the labor for which he was employed. His injury, therefore, arose out of and was suffered in the course of his employment and, if accidental, it was compensable. It comes under our second classification, an injury that was the unintended result of an intentional act, received while performing his labor under the usual and ordinary conditions of his employment.

The appellants questioned whether there could be an accidental injury while performing duties under the usual and ordinary conditions of the employment and contended that but few, if any, supporting authorities can be found for such a view.

It is true, said the Supreme Court, that there are cases which rest on the broad holding that an injury is not compensable as an industrial accident if it occurs while the workman is performing his labor under the usual and ordinary conditions of his employment, notwithstanding he may have suffered an accidental injury within the meaning of that phrase as popularly and ordinarily used. But by far the larger percentage of accidents occur while workmen are performing their labor under the usual and ordinary conditions of their employment. The cases which hold that there must be an accident, sudden and catastrophic in its nature, apart from the injury, regarding which the time, place and event can be definitely ascertained, also hold that such condition is supplied if there is something in the nature of the work itself that increased the hazard beyond that faced by other people in the same locality or not common to fellow employees, but that if the work was done with no unusual occurrence constituting a mishap or fortuitous happening and the laborer was working under the usual and ordinary conditions of his employment, then there would be no compensable accident. But on the other hand those courts which take a more liberal attitude toward the workman, whose decisions this court has followed hold that the fact that the workman was or was not performing his labor in the usual and ordinary way is immaterial, if in fact there was an accidental injury suffered by him that arose out of, and happened in, the course of his employment. An injury resulting from unusual working conditions is usually held to be accidental, but there is nothing in the New Mexico compensation statutes that makes such condition (though there may not be an accident distinct from the injury) a necessary element of an accidental injury. Injuries often occur to workmen who have some physical condition or latent illness because of which the ordinary labor of the employment produces injuries that were not expected or designed which would not have injuriously affected a well person. This court agrees with the Supreme Court of Washington in *Gules v. Department of Labor*, 13 Wash (2d) 605, 126 P (2d) 195 in holding that "an accident arises out of the employment when the required exertion producing the accident is too great for the man undertaking the work, whatever the degree of exertion or the condition of the workmen's health."

Admittedly, continued the court, the workman's injuries in this case arose out of and were sustained in the course of his employment. His duties required him to wash his hands to prevent soiling the products of his labor. Except for his idiosyncrasy, it is true, he would not have suffered an injury, but the same may be said of a workman who, but for a defective physical condition, would have withstood the strain of his ordinary labors, yet suffered a compensable injury because of an exertion too great for one in his condition of health. Such are workmen who have heart afflictions, tuberculosis, etc., whose deaths result from strains or labor too heavy for their strength. As stated by the court of appeals of the fourth circuit in *Baltimore & Ohio Railway Company v. Clark*, 59 F (2d) 595, the statute

says nothing about unusual or extraordinary conditions [of employment] that he [the workman] may have been rendered more readily susceptible to injury than they [other workmen] were by reason of his physical condition cannot affect the matter.

Lava soap was a poison to the workman, and his injury was compensable.

The judgment of the trial court in favor of the workman was accordingly affirmed.—*Hobb v. New Mexico Pub Co*, 111 P (2d) 333 (N Mex, 1943).

## Society Proceedings

### COMING MEETINGS

Annual Forum on Allergy, St. Louis, Jan 22-23. Dr. Jonathan Lormay, 394 East Town St., Columbus, Ohio.  
Association for Research in Nervous and Mental Disease, New York, Dec 17-18. Dr. Thomas F. Bamford, Jr., 115 East 42d St., New York 28, Secretary.  
Society of Surgeons of New Jersey, Atlantic City, January 29-31. Walter B. Mount, 21 Plymouth St., Montclair, N. J., Secretary.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 15 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### Alabama State Medical Assn Journal, Montgomery

13 93-128 (Sept) 1943

Juvenile Delinquency in Its Relation to War Effort C P Taft—p 93

Treatment of Compound Fractures H Gray—p 95

Veneral Disease Problem from Air Corps Standpoint C W Farnmore—p 100

Anal Disturb W J Hoar—p 102

Environmental Sanitation and Postwar Planning T H Miltord—p 107

13 129-156 (Oct) 1943

\*Recent Advances in Treatment of Ruptured (Lumbar) Intervertebral Disks W F Dandy—p 129

Aviation Medicine B Groesbeck Jr—p 132

Suggested Treatment of Meningococci, Pneumococci and Influenzal Meningitis with Special Reference to Sulfonamides S H Welch and Vera B Stewart—p 134

Constrictive Pericarditis C Crote—p 141

**Ruptured Lumbar Intervertebral Disks**—According to Dandy spontaneous cures in cases of ruptured intervertebral disks are rare, although temporary remissions are the rule. There are two components of a ruptured disk: (1) the necrotic interior causing backache and (2) the protruding portion causing sciatica. The diagnosis of a ruptured disk is made solely from the signs, symptoms and x-ray examinations of the spine. Spinal injections of contrast mediums and spinal punctures are contraindicated, they are unnecessary and they will diagnose only one third of the total number. The small (concealed) disks outnumber the protruding ones two to one. They cannot be detected with spinal injections of contrast mediums. Two disks are involved in about 80 per cent of the cases and occasionally there is a third ruptured disk. The exposure is unilateral and between the laminae without removal of bone (Loves operation) or, when the interlaminal opening is too small the removal of a small bite of lamina may be necessary. Mobility of the vertebra, tested by pressure on the spinous process, will usually determine whether the disk is at the fourth or fifth lumbar (98 per cent are at these two disks) or at both. The entire necrotic content of the interior of the disk should be thoroughly removed with curets. This is the best insurance against recurrences. Fusion operations are unnecessary and are contraindicated. Fusion of the vertebrae occurs after removing the necrotic contents of the disk. The reason for the localization of 98 per cent of the lumbar disks to the fourth and fifth lumbar is probably due to a shift in the plane of the lateral articular processes from the horizontal to a transverse direction.

#### American Journal of Clinical Pathology, Baltimore

13 441-504 (Sept) 1943

\*Carcinoma of Stomach: Prognosis Based on Combination of Dukes and Broders Methods of Grading G R Dochat and H K Gray—p 441

Pathology of Lymph Nodes: Diagnosis and Prognosis N A Murray and A C Broders—p 450

**Prognosis of Carcinoma of Stomach**—Dochat and Gray discuss two factors which influence the period of survival after operation for carcinoma of the stomach: the grade of malignancy of the lesion as determined by the method of Broders and the extent or spread of the lesion. They used the Dukes method of typing gastric carcinomas in combination with Broders method of grading the malignancy in an effort to determine the period of survival of a particular patient. They limited their study to the cases of gastric carcinoma in which operation was performed at the Mayo Clinic in the years of 1922 and 1934 inclusive. Only those cases were considered in which gastric resection furnished sufficient tissue to permit microscopic examination. In all they studied 1251 cases. They designate

as type A lesions in which carcinoma involves only the mucosa and is not seen microscopically below the muscularis mucosae. Type B<sub>1</sub> lesions are those in which carcinoma extends from the submucosa into the muscularis and involves all or part of the stomach musculature. Type B lesions are those which have spread through the entire wall and have involved the serosa. Type C lesions include those in which there is metastatic involvement of the regional lymph nodes. All carcinomas studied were also graded according to the manner of Broders. The prognosis was found to be excellent in cases in which the lesion is either grade 1 or 2 or type A, B<sub>1</sub> or B. In cases in which the lesion is grade 3 or 4, or particularly if it is type C, the chance for postoperative survival is poor. Each of these methods when employed separately is inadequate for estimating accurately the period of survival. Combination of the methods is exceedingly useful. By using either of the methods alone, the tempering effect of the method not used is lost. The ideal conditions for treatment obtained in only 20 out of 1,045 cases, that is, in less than 2 per cent. In these cases the lesion was diagnosed early and removed promptly. Only 25 per cent of patients who come to the clinic because of a malignant lesion of the stomach undergo a gastric resection. The hospital mortality rate will be 16 per cent, and only 30 per cent of the remaining patients will live five years or more. Only 6 patients out of every hundred who have a malignant lesion of the stomach will live five years after the diagnosis is made.

#### American Journal of Ophthalmology, Cincinnati

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Story of Red Cross Institute for Blind (1918-1925) in Relation to Present Problem of War-Blinded A C Woods—p 1011

\*Corneal Vascularization Problems D Vail and K W Ascher—p 1025

Intraocular Injection of Sulfanilamide in Case of Purulent Iridocyclitis J Igersheimer—p 1045

Combined Ptosis Operation O H Ellis—p 1048

Procedures and Appliances That are Helpful in Treating Industrial Ocular Injuries W B Clark—p 1044

Improved Technique for Implantation of Ball in Tenon's Capsule F H Verhoeff—p 1057

Nonsurgical Aspect of Ocular War Injuries F C Cordes—p 1062

Ocular Findings in Case of Periarthritis Nodosa Case Report I E Gaynon and Mary Knight Asbury—p 1072

Summary of Findings at Eye Examination of Preparatory School Boys A E Sloane and J R Gallagher—p 1076

Visual Phenomenon Related to Binocular Triptopia H M Burian—p 1084

**Corneal Vascularization Problems**—Vail and Ascher compare their observations on the corneas of 711 patients seen in the Nutrition Clinic in Birmingham, Ala., during 1940 and 1941 and in the outpatient department of the ophthalmic department of the University of Cincinnati College of Medicine in 1942 with Sydenstricker's description of corneal vascularization caused by vitamin deficiency. They stress that concentric collaterals are engorged parts of the pre-existent limbal meshwork. Any long standing engorgement in conjunctival vessels may induce formation of concentric collaterals. They probably are due to a hindrance of venous outflow from the immediately corresponding venous limb and are a kind of collateral circulation leading to the conjunctival veins in the horizontal meridian because of overcrowding in the original venous drainage. This cannot be achieved without dilatation of the particular loops that have to form the new detour. The dilatation of these vessels persists after disappearance of the provoking cause. In a similar way, after engorgement of lower degree or of shorter duration dilated single loops may be observed around the corneal limbus. They probably are forerunners of concentric collaterals and are as uncharacteristic of vitamin deficiency as are the developed concentric collaterals. The occurrence of engorged limbal loops and concentric collaterals in the Birmingham and in the Cincinnati patients was more frequent in the female sex and was distributed over all age groups. No relationship could be deduced between any particular type of vitamin deficiency and concentric collaterals. All Birmingham patients gave a history of repeated conjunctivitis or exhibited signs of it. Among 69 cases selected at random in the Cincinnati Eye Clinic there were 37 in which congestion was present in the limbal region 31 of which showed typical concentric collaterals. The female sex predominated in the positive group. The percentage was higher in white than in Negro patients. The nasal limb was involved more often than the temporal limb and the

upper limb more often than the lower limb. There was no relationship between the dietary habits and the frequency of vascular congestion in the limb region. The number of positive cases was higher in the good diet group than in the poor diet group. Even the number of bilateral cases was higher in the group of well nourished patients.

### American Journal of Physiology, Baltimore

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- Responses of Heart to Reflex Activation of Right and Left Vagus Nerves by Pressor Compounds Neosynephrin and Pitressin H. T. Hanes, A. J. Lindgren, A. I. Karstens and W. B. Youmans —p. 675
- Potassium and Cause of Death in Traumatic Shock A. W. Winkler and H. E. Hoff —p. 686
- Effects Produced by Vitamin D on Energy, Appetite and Estrous Cycles of Rats Kept on Exclusive Diet of Yellow Corn C. P. Richter and Katherine K. Rice —p. 693
- Effect of Dietary Changes on Urine Volume and Renal Function in Experimental Diabetes Insipidus C. A. Winter, W. R. Ingram and R. C. Eaton —p. 700
- Observations on Polyuria Produced by Desoxycorticosterone Acetate C. A. Winter and W. R. Ingram —p. 710
- Effects of Potassium Arsenite (Fowler's Solution) on Respiration and Glycolysis of Normal and Leukemic Tissues, with Observations on Action of Menadione (2 Methyl 1, 4 Naphthoquinone) C. O. Warren —p. 719
- Augmentation of Blood Flow in Coronary Arteries with Elevation of Right Ventricular Pressure D. E. Gregg, W. H. Pritchard, R. E. Shipley and J. T. Weir —p. 726
- Anterior Cardiac Veins Their Functional Importance in Venous Drainage of Right Heart D. E. Gregg, R. E. Shipley and T. G. Bidder —p. 732
- Presence in Normal Urine of Cortin-like Material Which is Active in Muscle Work Test R. A. Shipley, R. I. Dorfman and B. N. Horvath —p. 742
- Comparison of Motor Integration in Mouse, Rat, Rabbit, Dog and Horse R. Gesell and A. K. Atkinson —p. 745

### American Review of Tuberculosis, New York

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- Complications of Closed Intrapleural Pneumonolysis J. Goorwitch —p. 205
- \*Empyema Prophylaxis and Treatment A. B. Dickey —p. 222
- \*Pneumonectomy in Pulmonary Tuberculosis H. J. Lorge and P. Dufault —p. 229
- Cephalosporium in Pleural Fluid R. Douglass and S. E. Simpson —p. 237
- Tuberculin Patch Test Noncommercial M. Grozin —p. 241
- Scheme for Numerical Recording of Tuberculous Changes in Experimentally Infected Guinea Pigs W. H. Feldman —p. 248
- Promin in Experimental Tuberculosis Comparative Results of Continuous and of Intermittent Treatment of Tuberculous Guinea Pigs with Sodium p,p'-Diaminodiphenylsulfone N, N'-Dioxetose Sulfonate (Promin) W. H. Feldman and H. C. Hinshaw —p. 256
- Effects of Secondary Microorganisms on Experimental Tuberculosis in Rabbits Part II H. A. Poindexter —p. 261

**Prophylaxis and Treatment of Empyema**—Where pneumothorax is given for intensive, widespread tuberculosis, the incidence of empyema will be high. Tuberculous empyema is much more prone to occur in pneumothorax cases in which the collapse is mechanically unsatisfactory and in patients with tuberculosis who do not adhere strictly to the rest cure. Overexercise will aggravate tuberculosis of the pleura. The percentage of tuberculous empyema complicating artificial pneumothorax is given by authorities as from 10 to 15. Tuberculous empyema following closed intrapleural pneumonolysis is not more frequent than in pneumothorax without pneumonolysis. At the Arkansas Tuberculosis Sanatorium in 1941, closed intrapleural pneumonolysis was done on 139 patients. To date, only 5 of these (3.6 per cent) have developed tuberculous empyema. This operation is responsible for some cases of empyema, but it prevents far more cases than it causes. The incidence of empyema following open extrapleural pneumonolysis is considerable. In a series of twenty-four operations of this type, 9 patients (37.5 per cent) developed tuberculous empyema. The author has abandoned this type of operation except as a preparation for thoracoplasty. It should never be used for any other purpose. Tuberculous empyema responds at times to all accepted methods of treatment, but best results are obtained by obliteration of the pleural cavity, whether by aspiration and reexpansion of the lung or by extrapleural thoracoplasty. Mixed empyema must be treated by open surgical drainage. Unless the pleural cavity can be obliterated, the outcome is

almost always fatal, even after the empyema is drained. Sulfonamide therapy is of little or no value in mixed empyema. Persistent pleural effusion, tuberculous empyema and mixed empyema are stages in the same pathologic process. Tuberculous empyema can be largely prevented by resorting to closed intrapleural pneumonolysis early. Where adhesions cannot be cut, pneumothorax should usually be abandoned.

**Pneumonectomy in Pulmonary Tuberculosis**—Lorge and Dufault report 3 cases of total pneumonectomy performed at the Rutland State Sanatorium in Massachusetts. In the first case a complete occlusion of a main bronchus was bronchoscopically visible. In the second, stenosis existed. In the third, no bronchial disease could be seen through the bronchoscope, but there was clinical evidence of repeated blockage of secretions. The symptoms of bronchial stenosis consisted of wheezing, retention of sputum, bouts of uncontrollable cough, fever and malaise, followed by profuse expectoration. These bouts occurred frequently and lasted from a few days to several weeks. When the development of bronchial stenosis and the accompanying symptoms of blockage created an intolerable situation there was no alternative but to permit the disease to continue its unfavorable course or to attempt extirpation of the lung on the side of the diseased bronchus. The authors concur with Alexander in regarding bronchial stenosis sufficient to cause partial blockage of the secretions and complete bronchial occlusion as the chief indication for pneumonectomy in tuberculosis. Their first patient developed a lesion in the contralateral lung in three months and died six months after the operation. The second patient, in whom a three rib thoracoplasty preceded the pneumonectomy, had a new lesion in the contralateral lung six months after the resection of the lung. In the third a pneumonectomy performed ten years after thoracoplasty has given satisfactory results.

### Annals of Otol, Rhin and Laryngology, St. Louis

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- Simulation of Deafness W. E. Grove —p. 573
- \*New Method for Treatment of Acute Aero Otitis Media R. H. Wisheart —p. 581
- Interrelationship of Upper and Lower Respiratory Infections Emphasizing Routes of Infection J. G. McLaurin —p. 589
- Observations on Paranasal Sinusitis Among Patients Subjected to Lobectomy for Bronchiectasis K. M. Simonton —p. 598
- Non-surgical Aspects of Treatment of Acute Laryngotracheobronchitis H. L. Baum —p. 608
- Acute Thyroiditis in Relation to Deep Infections of Neck D. Higbee —p. 620
- Supplementary Report on Extralaryngeal Arytenoidectomy as Relief for Bilateral Abductor Muscular Paralysis of Larynx J. D. Kelly —p. 628
- Some Aspects of Emergency Plastic Surgery in War Injuries of Face J. M. Converse —p. 637
- Röntgen Therapy of Laryngeal Tuberculosis C. W. Engler —p. 655
- Sound Transmission Through Ear and Its Relation to Sound Injury F. M. Grossman —p. 666

**New Treatment of Acute Aero Otitis Media**—According to Wisheart, aero otitis media is a common ailment among flying personnel, especially during the season of acute upper respiratory infections. The condition can be effectively treated by the Proetz displacement method. The nasal mucosa is shrunk by application of a suitable vasoconstrictor solution, such as 2 per cent ephedrine sulfate in isotonic solution of sodium chloride. When shrinkage has been accomplished the patient is instructed to clear the nose by gentle blowing. He is placed on his back in such a way that the head is inverted so that the chin and the external auditory meatuses are in the same vertical plane. While the patient is quietly breathing with his mouth widely open 3 cc of a weak vasoconstrictor, e. g. 0.5 per cent ephedrine sulfate in isotonic solution of sodium chloride, is slowly introduced into the upper portion of each nostril, covering the eustachian orifices in the nasopharynx. Negative pressure (approximately 180 mm of mercury) is then applied intermittently to one nostril by means of the displacement syringe, while the operator's finger closes the other and the patient closes the pharynx by saying 'ay' or 'ark'. This procedure is repeated for six fluctuations to each nostril and the patient is allowed to sit erect. After ten minutes to allow the vasoconstrictor sufficient time to shrink the nasopharynx—

gent tissue the same instillation suction procedure is repeated. Usually during this maneuver the patient feels the vacuum release and he will be able to open the ear at will. In the beginning of this treatment flies with otitis media were kept grounded for not less than six days in spite of their apparent improvement or cure. Later, Navigation Caskets were grounded for only twenty-four hours provided the ear drum had returned to normal and the Weber test indicated the removal of the obstructive deafness. More recently, pilots have been allowed to return to flying even as soon as six hours after treatment.

### Annals of Surgery, Philadelphia

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- Gastric Histology and Subtotal Gastrectomy A. J. Guitiz and R. Colp—p. 523
- \*Effect on Gastric Acidity of Gastroenterostomy and Gastric Resection for Peptic Ulcer C. J. Heuer and C. Holman—p. 551
- Cholecystenterostomy, Cholecystocholecystostomy and Interoenterostomy by Means of Rubber Band Use of Rubber Bands in the Mikulicz Operation J. S. Horsley and C. W. Horsley—p. 555
- Some Physiologic Problems in Surgery of Pancreas I. R. Dragstedt—p. 576
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- \*Thyrocardiac Disease: Review of 614 Cases F. H. Lahey, L. M. Hurxthal and R. E. Driscoll—p. 691
- Skin Removal in Radical Breast Amputation J. S. Rodman—p. 694
- Pilonidal Cysts and Sinuses F. C. Shute Jr., T. E. Smith, M. Levine and J. C. Burch—p. 706
- \*Thrombosis and Embolism: Review of 202 Patients Treated by Femoral Vein Interruption A. W. Allen, R. R. Linton and G. A. Donaldson—p. 728

**Effects of Grafts of Jejunum in Stomach on Secretion and Ulcers**—Andrus, Lord and Steffen demonstrated in dogs that a pedicle graft of jejunum implanted in the stomach wall produces profound effects on the gastric secretion. These effects consist in a reduction of the fasting free acidity and a diminution, or actual reversal of the normal response of the gastric acidity to such secretory stimulants as histamine and alcohol. Such effects are not produced by the ordinary gastrojejunostomy but appear promptly when the bowel about the stoma is converted to a pedicle graft and the normal continuity of the tract is reestablished. Grafts from the colon or ileum are without such action while those taken from the duodenum are effective but considerably less so than jejunal implants. The presence of the factor responsible can be demonstrated in saline washings of isolated jejunal loops and accumulated evidence indicates that its effects are exerted by actual inhibition of acid secretion at least so far as the response to histamine is concerned, rather than by neutralization. Pedicle jejunal grafts were effective both in the prevention and in the cure of experimental ulcers produced in dogs by the prolonged administration of histamine phosphate. The effects of a pedicle jejunal graft are lost in the presence of a gastroenterostomy or pyloroplasty. The operation has been applied to patients with duodenal or marginal ulcer with excellent immediate clinical results in all and with gastric secretory changes in 2 of the 3 studied for a sufficient period after operation. If subsequent work confirms these findings this may constitute a new approach to the surgical treatment of peptic ulcer.

**Effect of Gastric Surgery on Acidity**—In the course of a study of 1,200 patients with peptic ulcer admitted to their wards in the past ten years, Heuer and Holman have assembled those patients who have been subjected to operation and who

have had careful preoperative and postoperative acidity determinations made. The purpose of the study has been (a) to determine the effect of gastroenterostomy and gastric resection on acid secretion, (b) to determine the acid secretion according to the magnitude of gastric resection, (c) to determine the results of operation in relation to the postoperative acid secretion and (d) to determine the results of operation regardless of the acid secretion. A study of the preoperative and postoperative acidities of 163 patients with peptic ulcer subjected to gastroenterostomy or gastric resection shows that postoperatively 61, or 37.4 per cent, have achlorhydria or low acidity, while 102, or 62.6 per cent, have an adequate or high acidity. In the presence of these acidity findings 136, or 83.4 per cent of the patients have satisfactory clinical results. This lack of correlation between acidity and results leads the authors to doubt that a reduction in acid secretion is the sole factor in these two types of operation. Following gastroenterostomy there is no significant change in acid secretion, yet in this series of 75 patients 75 per cent have satisfactory results. It must be presumed that dilution and neutralization of acid rather than reduction in acid is the effective means of achieving these results if acid is the important factor in the genesis of ulcer. Following gastric resection there is in general a reduction in acid secretion in proportion to the extent of the resection. But resection of any magnitude, consistent with a reasonable mortality, does not ensure achlorhydria. Moreover, when comparing the clinical results with the acidity a lack of correlation is again found for in minimal resection 90 per cent of the patients have satisfactory results, while 25 per cent have a reduction in acid. It appears of doubtful value to pursue the idea of ensuring achlorhydria and, therefore, better results by larger and larger resections. The observations presented do not controvert the etiologic relationship between acid and ulcer.

**Thyrocardiac Disease**—Lahey and his associates feel that the advances in the surgical treatment of the thyrocardiac patient in the last twenty-five years have been gratifying. These advances fall into five periods. In the first period, approximately twenty-five years ago, most cases with a diagnosis of thyroid disease and associated cardiac failure were rejected as hopelessly inoperable, because the mortality was almost prohibitive. The second period started a little over twenty years ago when Hamilton described the diagnostic difficulties and surgical treatment of these patients and applied to them the term thyrocardiac. In this era it was demonstrated that these patients could endure subtotal thyroidectomy with a reasonable mortality and that subsequently an extraordinary degree of activity and cardiac capacity were restored and retained. The third period in which iodine was popularized by Plummer, was a most important one, since it contributed materially to reduction of operative mortality. In the fourth period total ablation was advocated by Blumgart, Levine and Berlin. This method has been largely discarded. The fifth, and present period is characterized by a much better understanding of what causes decompensation in a patient with hyperthyroidism why the patient is so dramatically benefited by subtotal thyroidectomy and why the benefits of subtotal and total thyroidectomy in a patient with decompensation but without hyperthyroidism are so transitory. This period is characterized by an improved understanding of oxygen needs, preoperative preparation, anesthesia selection, postoperative care and less importantly, vitamins. Under the term thyrocardiac the authors place only those patients whose heart complications are definitely attributable to an overactive thyroid. They hope for a sixth period in which earlier diagnosis and operation, and even prophylactic subtotal thyroidectomy for early toxic adenoma and early auricular fibrillation would give even better results.

**Thrombosis and Embolism**—Allen and his associates stress the high percentage of emboli that can be traced to the leg veins. These thromboses usually start in the veins of the calf muscles and propagate into the larger veins of the leg. The long straight femoral vein can harbor enough thrombus to occlude the pulmonary artery completely if it becomes free at one time. Actually repeated minor infarcts or at least sublethal emboli may precede for several days and rarely for several weeks a fatal episode. Thyroid heparin heparin

bar sympathetic block and dicumalol were variously employed. Homans suggested the feasibility of interrupting the deep veins of the leg to prevent pulmonary infarction. The authors ligated the femoral vein or veins in 202 cases. The indications are usually apparent. Pulmonary infarcts, tenderness over the leg veins, swelling of the leg, however slight, dilated superficial veins, discomfort in the calf muscles if the foot is passively dorsiflexed (Homans' sign), and slight elevation of temperature, pulse and respiration are all satisfactory guides. One usually has to make a decision on one or two of these criteria, although frequently all are present. Phlebograms are difficult to interpret and may be misleading. In a large majority of cases bilateral interruption should be undertaken. Unilateral interruption may be safely done in the younger age group. In patients beyond the age of 40 bilateral interruption at one sitting should be the rule. Mechanical removal of the thrombus from the vein by aspiration is a safe procedure. It certainly reduces the pain and swelling in the leg and hastens recovery. No deaths have occurred in a group of 202 patients as a result of femoral vein interruption. Sequelae are not severe and they are not disabling.

### Archives of Dermatology and Syphilology, Chicago

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- Mycosis Fungoides with Bullous Lesions. Report of Case Resistant to Roentgen and Arsenical Therapy. Effects of Empire Therapy, Partly Based on Laboratory Investigations. J. Garb and F. Wise—p. 359
- Calcium and Neocalciumine, 1942. II. Goodman—p. 369
- Treatment of Scabies in Wartime. M. Oppenheim and H. A. Smith—p. 370
- Evaluation of Measures for Prevention of Ivy Dermatitis. J. B. Howell—p. 373
- Chick Embryo Antigen (Lymphogranum) Test for Lymphogranuloma Venereum. Clinical Investigation. E. B. Heisel and G. Stroud III in collaboration with M. Krause, W. Hubler, H. N. Cole Jr. and R. Cord—p. 379
- Studies on Ointments. IV. Local Action of Salicylic Acid Plus Sulfur from Various Ointment Bases. E. A. Strakosch—p. 384
- Id. V. Ointments Containing Resorcinol. E. A. Strakosch—p. 393
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### Archives of Pathology, Chicago

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- Granulomatous Prostatitis. Histologic Study of Group of Granulomatous Lesions Collected from Prostate Glands. F. H. Tanner and J. R. McDonald—p. 358
- \*Changes in Thymus with Special Reference to Myasthenia Gravis. Observations in Series of Six Thousand Autopsies. F. Homburger—p. 371
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- Alkaline Phosphatase Level in Urine in Relation to Renal Injury. C. Breedis, C. M. Flory and J. Furth—p. 402
- \*Fulminating Meningococcal Infection (Waterhouse-Friderichsen Syndrome). P. A. Herbut and W. E. Manges—p. 413

**Thymus and Myasthenia Gravis.**—Homburger reports that among 6,000 autopsies performed at the New Haven Hospital there were found 41 instances of tumor or of enlargement of the thymus. Twenty-seven of these were in children under 16 years of age. The remaining 14 include 3 cases of cancer, 3 of enlargement of the gland in thyrotoxicosis, 6 of enlargement of the gland encountered incidentally at necropsy and 2 of noncancerous thymic tumor coincident with myasthenia gravis. Epithelial metaplasia was a prominent feature and was accompanied by scarcity of the corpuscles of Hassall in the 2 thymic tumors associated with myasthenia gravis. This is in accordance with the conclusions of Bell, Lievre and Norris that thymic tumors in patients with myasthenia gravis are of a distinct type characterized by epithelial metaplasia, it is in contradiction to the more recent opinion of Obiditsch and Sloan, who stress the predominance of lymphoid tissue in thymic tumors of patients with myasthenia gravis.

**Sudden Death of Athlete.**—Raab reports necropsy findings in a young, seemingly healthy athlete, aged 21, who died suddenly. The only striking pathologic change observed was an excessively high concentration of epinephrine-like substances in

the heart muscle (the highest of all values observed in a series of 54 normal and pathologic human hearts). From the results of studies of the hearts of animals and man it is concluded that this excessive concentration of sympathomimetic amines was incompatible with survival and was the immediate cause of death. The author suggests that chemical examination of the heart muscle may prove to be of forensic usefulness in cases of unexplained sudden death particularly in those of death occurring under emotional or physical strain.

**Fulminating Meningococcal Infection. Waterhouse-Friderichsen Syndrome.**—Herbut and Manges review the history of the Waterhouse-Friderichsen syndrome and report 4 cases, bringing the total to 125. Because of the rapid onset and the high fever, often associated with leukocytosis and a fulminating course with fatal termination, the syndrome has long been regarded as an overwhelming septicemia. Although meningococci have been shown to be the causative agent in over 60 per cent, the authors believe that this figure is much too low. It is the consensus that adrenal apoplexy is responsible for the death of the patients. The authors, however, concur with Aegeiter that there is no proof that death in the Waterhouse-Friderichsen syndrome is due to adrenal failure rather than to toxicity caused by invasion of the blood stream. In 3 of their cases there were bilateral and massive adrenal hemorrhages. In the fourth case only a single small circumscribed hemorrhage was found in the right adrenal gland, while both medullas showed areas of hypoplasia. Sections of skin in 3 cases showed respectively congestion of the dermal capillaries, congestion, hemorrhages and inflammation, and congestion, hemorrhages, inflammation and thrombosis. In 3 cases with predominantly septicemic symptoms there were found dissociation of the liver cords, cloudy swelling of liver cells, sinusoidal congestion, perisinusoidal edema and diffuse infiltration with polymorphonuclear leukocytes. Meningococci were isolated post mortem in pure culture from the spinal fluid and the cardiac blood in 1 case and ante mortem from the spinal fluid and the nasopharynx in 1 case. Postmortem blood cultures in the remaining 2 cases yielded respectively a member of the Friedlander group and *Staphylococcus aureus*. Sections of the skin in each of these and of the adrenal gland in the former disclosed within the capillaries gram negative, bean shaped diplococci morphologically similar to meningococci. It is probable therefore that most, if not all, of the cases of the Waterhouse-Friderichsen syndrome in which other organisms have been isolated were caused by meningococci.

### Bulletin New York Academy of Medicine, New York

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- Relation of Certain Endocrine Glands to Body Weight in Growing and Mature New Zealand White Rabbit  
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## Illinois Medical Journal, Chicago

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- Evaluation of Patient with Heart Disease as Surgical Risk  
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- Exposure of Retroduodenal Portion of Common Duct  
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- Importance to Adolescent Girl of Gynecologic Examination  
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- Psychiatric Problems in Adolescence  
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- Program of Medical and Hospital Care for Wives and Families of Enlisted Men  
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- Gold Therapy of Arthritis  
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- Importance of Proper Operative Incisions  
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- Convulsive Shock Therapy  
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- Factors Influencing Duration of Acute Tonsillitis  
M. Tamari and A. M. Berman—p. 269

## Journal of Clin Endocrinology, Springfield, Ill

3 483-528 (Sept) 1943

- Biometric Study of Total Neutral 17-Ketosteroid Excretion in Normal Adult Male  
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- Absorption Rate of Desoxycorticosterone Acetate Pellets  
E. P. McCullagh, Lena A. Lewis and F. L. Shively Jr—p. 493
- Addison's Disease Associated with Pubic and Axillary Alopecia and Normal Menses  
E. J. Kepler, G. A. Peters and H. L. Mason—p. 497
- \*Pregnancy Complicating Diabetes—Report of Clinical Results  
Priscilla White and Hazel Hunt—p. 500
- Estrone Sulfate Clinical Study  
P. H. Fried and Q. Hair—p. 512
- Present Status of Gonadotropic Therapy in Gynecologic Practice  
M. E. Davis and A. A. Hellbaum—p. 517

**Pregnancy Complicating Diabetes**—According to White and Hunt, pregnancy in diabetic women is often characterized by fetal wastage. The percentage of viable infants from diabetic mothers is still about the same as it was before the introduction of insulin. The authors made assays for chorionic gonadotropin and pregnandiol after the twenty-fourth week of pregnancy in 125 consecutive cases. Forty-one showed normal hormone excretion levels and 77 abnormal levels. In 27 of the latter replacement therapy was not employed. Of the 41 women classified as normal none delivered prematurely. 2 per cent developed toxemia and 95 per cent of the fetuses survived. The 27 classified as abnormal and untreated developed toxemia in 52 per cent premature delivery in 40 per cent and 60 per cent of the fetuses survived. Substitutional therapy was administered to 50 women with abnormal hormone excretion and 7 others classified as having had abnormal pregnancies because of past history or clinical signs. Toxemia appeared to be modified in this series. Premature delivery occurred in 25 per cent and fetal survival was 92 per cent. The management of the pregnant diabetic women at the authors' clinic includes endocrine therapy if indicated, adequate control of carbohydrate metabolism and premature delivery. Fetal wastage in diabetic mothers seems to be related to an imbalance of chorionic gonadotropin and pregnandiol in pregnancy. Correction of the imbalance in this series appeared to be followed by fetal survival approaching that of the group classified as normal on the basis of hormone assays and also approaching the fetal survival of non-diabetic pregnancies.

## Journal of Experimental Medicine, New York

78 225-326 (Oct) 1943

- Disappearance of Phosphatase from Hydronephrotic Kidney  
H. A. Wilmer—p. 225
- Stability of Variola Virus Propagated in Embryonated Eggs  
J. B. Nelson—p. 231
- \*Laboratory Transmission of St. Louis Encephalitis Virus by Three Genera of Mosquitoes  
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- Oxidation of p-Aminobenzoic Acid and Anthranic Acid by Specifically Adapted Enzymes of Soil Bacillus  
G. S. Mirick—p. 255
- Susceptibility of Cebus Capucina (South American Ringtail Monkey), and Cercopithecus Cephus (African Mustache Monkey) to Poliomyelitis Virus  
J. L. Melnick and J. R. Paul—p. 273
- Effects of Roentgen Rays on Cell Virus Associations. Findings with Virus Induced Rabbit Papillomas and Fibromas  
W. F. Friedewald and R. S. Anderson—p. 285
- Studies on Herpetic Infection in Mice  
G. P. Berry and H. B. Shinn—p. 305

**Laboratory Transmission of St. Louis Encephalitis Virus by Mosquitoes**—In previous communications Hammon and Reeves outlined the epidemiologic evidence pointing to mosquito transmission of St. Louis encephalitis virus. They now report mosquito transmission experiments which were performed in field laboratories in the lower Rio Grande Valley, Texas, and in the Yakima Valley, Washington. The St. Louis virus has been successfully transmitted in the laboratory by the following nine species of mosquitoes from three genera: *Culex tarsalis*, *Culex pipiens*, *Culex coronator*, *Aedes lateralis*, *Aedes taeniorhynchus*, *Aedes vexans*, *Aedes nigromaculis*, *Theobaldia incidens* and *Theobaldia inornata*. In experiments with *Culex tarsalis* infection occurred from feeding on chickens and ducks which had been previously inoculated by the subcutaneous route. After an incubation period these mosquitoes infected other chickens and virus was in turn demonstrated in the blood of these. This is interpreted as proof that fowl may serve as reservoirs of virus in nature. Since mosquitoes have been repeatedly found naturally infected with St. Louis virus and epidemiologic evidence supports their incrimination, their role as vectors is now established.

## Journal of Urology, Baltimore

50 265-388 (Sept) 1943 Partial Index

- Wilms' Tumor With Report of 8 Year Cure  
N. F. Ockerblad and H. E. Carlson—p. 265
- Reimplantation of Renal Pelvis  
S. F. Wilhelm—p. 274
- Reproduction of Renal Overdistention Pain—Its Clinical Diagnostic Value  
C. A. Wattenberg and D. K. Rose—p. 280
- Estimation of Renal Function Based on Specific Gravity Changes Following Intravenous Urography  
C. O. Baumrucker—p. 290
- Experiences with Ureteral Calculi  
H. S. Browne—p. 301
- Fracture of Pelvis with Perforation of Urinary Bladder  
A. E. Guerra—p. 307
- \*Response of Bladder Tumors to External Radiation  
C. C. Herger and H. R. Sauer—p. 310
- Gynecologic and Urologic Management of Cystocele  
S. B. Potter and H. T. Low—p. 322
- Hypospadias  
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- Carcinoma of Prostate  
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- Operative Management of Hypertrophy of Prostate with Complicating Coronary Heart Disease  
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- Downward Suction Drainage After Prostatectomy  
T. C. Hendrickson and H. K. Guth—p. 355
- Genitourinary Tuberculosis in Army General Hospital  
R. L. Smith and J. F. Harrold—p. 361
- Urologic Factors Influencing Hypertension  
B. A. Hayes and J. D. Ashley—p. 366
- Premature Ejaculation—Review of 1130 Cases  
B. Schapiro—p. 374
- Caruncle of Urethra in Female with Special Reference to Importance of Histologic Examination in Differential Diagnosis  
H. W. F. Walther—p. 380

**Response of Bladder Tumors to External Radiation**—Herger and Sauer report results in 160 patients with carcinoma of the bladder treated by external radiation. Twenty-five of these patients had papillary carcinoma. 91 had papillary infiltrating carcinoma and the remaining 44 had solid infiltrating carcinoma. If 200 kilovolts radiation was given two three and four fields were treated with a daily increment varying from 100 to 400 roentgens. If supervoltage radiation was employed radiation was given through three or four ports with a daily increment of from 100 to 300 roentgens. Satisfactory results were obtained in more than 50 per cent of the patients with papillary and papillary infiltrating carcinomas. In 13 of these the tumor disappeared entirely after external irradiation.



alone. In 44 definite regression in size and number of the tumor growth was obtained, rendering the tumor suitable for subsequent transcutaneous treatment. In 24 patients regression was only temporary. No response from external radiation was obtained in 35 patients with papillary carcinoma. Only 1 of the 44 patients with solid infiltrating cancer responded favorably, in the remaining 43 the response to irradiation was unsatisfactory. These tumors are radioresistant and are better treated with interstitial radiation or surgical procedures.

### Medical Annals of District of Columbia, Washington

12 327-372 (Sept) 1943

- Presidential Address "Present Needs and Future Requirements" J. C. Pullum—p 327  
Surgical Treatment of Thrombosis of Peripheral Veins J. R. Veal and H. H. Hussey—p 333  
Dementia Precoxa Complexes J. R. Ernst—p 343  
Peritoneoscopy L. Gerber—p 348

### Medicine, Baltimore

22 205-286 (Sept) 1943

- Physiologic Effects of Carbon Dioxide on Activity of Central Nervous System in Man, with Special Reference to Problem of High Altitude Flying Review Mary A. B. Brizier—p 205  
Tonus and Venopressor Mechanism Clinical Physiology of Major Mode of Death Y. Henderson—p 223  
Serum Sickness and Analogous Reactions from Certain Drugs, Particularly Sulfonamides W. T. Longcope—p 251

### Military Surgeon, Washington, D. C.

93 339-388 (Oct) 1943

- Medical Department of U. S. Navy in Philippines C. B. Cameron—p 339  
What Hitler Means in "Mein Kampf" or What American Soldier Should Know About Hitler's Book "Mein Kampf" in Case He Reads It M. Moore—p 352  
Primary Atypical Pneumonia (Virus Pneumonia) F. D. Sattenfield—p 360  
Pneumonia Survey of 106 Cases—p 364  
Technic for Apicectomy with Immediate Root Filling S. S. Shapiro and E. B. Master—p 368  
Adaptor for Fluoroscopic Depth Localization L. Mackta—p 372  
Gas Mask Spectacle Pliers K. D. MacMillan—p 375

### New England Journal of Medicine, Boston

229 533-570 (Sept 30) 1943

- Modern Pharmacy and the Medical Profession H. C. Newton—p 533  
Study on Effectiveness of Dietary Consultation H. T. Kelly and Myrtle Sheppard—p 536  
Potassium Sulfocyanate Therapy in Essential Hypertension Ethel Fanson, Deia Kinsey and R. S. Palmer—p 540  
Physiology H. E. Hoff—p 543

229 571-604 (Oct 7) 1943

- Work of Massachusetts Boards of Registration in Medicine and Nursing H. Q. Gallupe—p 571  
Carcinoma of Larynx L. A. Schall—p 574  
Erythroblastosis Fetalis Report of Case G. J. Newerly—p 576  
Histamine by Mouth in Treatment of Vasomotor Rhinitis J. C. Gant, R. J. Savignie and A. Hochwald—p 579  
Diagnosis of Gout W. Bauer—p 583

### New Orleans Medical and Surgical Journal

96 129-176 (Oct) 1943

- Lesions of Stomach F. J. Hodges—p 129  
Infantile Paralysis Its Description and Treatment Elizabeth Kenny—p 134  
Chronicity of Leprosy G. H. Faget—p 138  
American Contributions to Neurosurgery C. Wilson—p 140  
Undulant Fever Its Epidemiology and Diagnosis P. K. Thomas—p 147

**Chronicity of Leprosy**—Faget found among 380 inmates at the National Leprosarium in Carville, La., 5 with the neural type of leprosy who have had the disease for 53, 51, 48, 46 and 41 years respectively. Eighteen others, 14 with neural and 4 with mixed leprosy, have survived 30 to 40 years of leprosy, and 32 (19 neural and 13 mixed cases) have suffered from leprosy for 20 to 30 years. Thus a total of 55 patients, over 14 per cent of the entire population of the National Leprosarium, show a chronicity of leprosy of over 20 years' duration. This chronicity is found chiefly in the neural type, for, although neural leprosy exists in less than 30 per cent of the total number of patients at the Carville leprosarium, 38 of the 55 patients (nearly 70 per cent) who had survived leprosy for more than 20 years had the neural type.

### Ohio State Medical Journal, Columbus

39 889-984 (Oct) 1943

- Acquired Sensitivity to Injectable Liver Extracts R. T. Warburton—p 905  
Epileptoid and Shock Phases of the Syncope Syndrome and Possible Role of Acetylcholine in Their Genesis R. D. Barnard—p 907  
Psychologic Factors in Bilateral Prefrontal Lobotomy G. W. Kisker—p 913  
Ligation of Inferior Vena Cava Case Report L. N. Atlas—p 917  
Two Cases of Brenner Tumor, One of Unusual Size P. J. Reel and P. C. Foster—p 919  
Congenital Retroversion of Uterus Misnomer J. L. Bubis—p 922  
\*Intravaginal Sulfanilamide Insufflation in Treatment of Trichomonas Vaginalis Vaginitis R. K. Finley and J. M. Shaffer—p 924  
Management of Pregnancy and Labor Complicated by Extensive Bronchiectasis Z. J. R. Hollenbeck—p 926  
Preventive Approach to Defective Hearing E. E. Kleinschmidt—p 929  
Chronic Pyelonephritis with Hypertension and Vascular Disease of Abdominal Tract V. D. Huenstein and Pearl M. Zeek—p 932

**Intravaginal Sulfanilamide Insufflation in Trichomonas Vaginalis Vaginitis**—Finley and Shaffer employed intravaginal insufflation of sulfanilamide powder in the treatment of 31 patients with Trichomonas vaginalis vaginitis. Following one insufflation of 3 Gm. of powder, all symptoms subsided within a matter of hours. The powder appears to act specifically against both the flagellates and other bacterial invaders commonly found in conjunction with them.

### Psychosomatic Medicine, Baltimore

5 323-404 (Oct) 1943

- The Unfit How to Exclude Them L. G. Rowntree—p 324  
Multiple Choice Test for Screening Purposes (for Use with Rorschach Cards or Slides) M. R. Harrower Erickson—p 331  
The Unfit How to Use Them H. W. Brosim—p 342  
Sociopsychiatric Investigation of Schizophrenia Occurring in Armed Forces W. Mahmud and Irene Mahmud—p 364  
On So Called War Neuroses K. Goldstein—p 376

### Virginia Medical Monthly, Richmond

70 485-542 (Oct) 1943

- Treatment of Pneumonia and Its Complications J. H. Smith—p 488  
\*Meningococcal Meningitis Clinical Evaluation of 27 Cases Observed at Riverside Hospital, Newport News, Va., from Nov. 1, 1942 to May 3, 1943 E. B. Mewborne, I. S. Tolpin and G. Hirschberg—p 492  
Recent Advances in Intracapsular Cataract Surgery E. G. Gill and J. H. Grassette—p 501  
Meningococcal Meningitis Treated with Sulfadiazine J. S. Weitzel—p 505  
Robert Honyman Doctor of Physic M. H. Harris—p 507  
Cerebral and Basal Ganglia Degeneration Due to Anoxia Secondary to Anesthesia Case Report W. D. Suggs—p 513

**Meningococcal Meningitis**—Mewborne and his associates report 27 cases of epidemic meningitis treated at the Riverside Hospital of Newport News, Va., during a six month period. During increased prevalence of epidemic meningitis spinal puncture should become a routine measure. In all questionable cases repeated punctures should be done at twenty-four hour intervals. It is essential to watch for atypical cases, such as the severe septicemic form. Absence of signs of meningeal irritation does not exclude meningitis. The authors cite 3 cases in which stiff neck and Kernig's sign were absent. Three cases are reported because of the rapidity of onset, there was little or no prodromal period. In 1 case a meningococcal pneumonia developed, which did not respond to treatment. Age plays a decisive part in prognosis, in children and young persons it is favorable. The average case of epidemic meningitis will respond to adequate sulfadiazine therapy in from twenty-four to forty-eight hours. Treatment should be aimed at the early procurement of a high sulfadiazine blood level by a high initial dose followed by an adequate maintenance dose. Kidney complications due to sulfadiazine toxicity can be averted or mitigated by (a) alkalization and forcing fluids, (b) daily urine analysis and charting of intake and output and (c) discontinuance of sulfadiazine when signs of renal lesions develop.

### Western J. Surg., Obst. & Gynecology, Portland, Ore.

51 389-418 (Oct) 1943

- Subcutaneous Symphysiotomy in Incomplete and Complete Deflexion of Head—p 389  
Pyelonephritis G. Prewitt—p 393  
Ergonomics by Vein During Second Stage Observations in Private Practice G. McConnell and G. C. Schaeffer—p 403  
Practical Aspects of Endocrine Therapy S. C. Freed—p 407  
Premarital Examination Radiating Diagnostics—p 412

# FOREIGN

An asterisk ( ) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Surgery, Bristol

31 1-100 (July) 1943

- Role of Bile in Duodenal Regurgitation I. K. Brathwaite—p. 3
- Role of Chemotherapy in Treatment of Hematogenous Osteomyelitis K. C. McKeown—p. 13
- Intussusception of Appendix K. Fraser—p. 23
- Calculi Impacted in Lower Fourth of Ureter. Their Removal by Ureteral Corkscrew J. C. Answorth Davis—p. 34
- History of Blood Transfusion 1625-1914 C. Keynes—p. 38
- Abdominal Injuries Due to Under-Water Explosion C. R. Cameron K. H. D. Short and C. P. G. Wakeley—p. 51
- Clinical Study of Injuries of Abdomen Due to Under-Water Explosion W. G. Gill and C. P. Hay—p. 67

### Chemotherapy in Hematogenous Osteomyelitis—

According to McKeown chemotherapy may limit the extent of surgical intervention in acute osteomyelitis. He treated 20 cases with sulfathiazole in combination with various types of surgical intervention. In group 1 sulfathiazole was given in doses of 1 Gm to 20 pounds (9 Kg.) of body weight daily. Administration was begun at the onset of the disease and continued for eight days. A repeat course of similar dosage and duration was given after an interval of three weeks. The surgical treatment in these cases consisted in making multiple drill holes in the metaphysis. Operation was carried out between the second and the sixth day of the disease and the closed plaster technique was adopted. Patients in group 2 were given sulfathiazole in adequate doses. In the first case in this group no operation in the acute stage of the disease was carried out while in the other cases only the periosteum was incised. In group 3 sulfathiazole was given in two courses as in the first group, but the operative treatment consisted in incision of the periosteum and extensive bone guttering. Group 4 consisted of cases in which bone drilling was carried out but sulfathiazole was either given in small doses or its administration was not started until a considerable time after the onset of the disease. The administration of sulfathiazole in the early stages of acute osteomyelitis, when combined with bone drilling appears to confine the destructive bone changes to a relatively small area and to minimize their severity. The duration of the disease also is remarkably short. When sulfathiazole is given at a late stage in the disease or in small doses, as in group 4 the favorable features observed in group 1 are no longer attained, though the surgical intervention was identical. Early administration of adequate doses of sulfathiazole is not in itself sufficient to limit the severity of bone infection unless combined with surgical intervention. Simple incision of the periosteum does not provide sufficient drainage, while the procedure of bone guttering appears to be unnecessarily extensive and even harmful.

### Abdominal Injuries Due to Under-Water Explosion—

Cameron and his associates report 20 cases in which operation was done for abdominal injuries due to under-water explosions from depth charges, mines, bombs and torpedoes. There were ten deaths, or a mortality of 50 per cent. The commonest lesions were retroperitoneal and subserous hemorrhages which occurred in all cases. Perforations of the cecum were present in 9 cases and of the ileum in 7 cases, while multiple perforations were present in 4 cases. Late perforations occurred in 2 the cause being probably hemorrhages initiated by the primary injury. These local hemorrhages in the wall of the bowel gradually became infected and ruptured into the peritoneal cavity. The intestinal lesions varied from intramural hemorrhages to laceration of the intestinal wall. The large intestine suffered more than the stomach or small bowel (14 cases out of the total of 20) because the effects of blast are always more severe on air filled cavities and because the large intestine is not as muscular as the stomach or the small bowel. In 80 cases in which recovery occurred from the immersion blast without operation the commonest symptom was abdominal pain which persisted for from three days to three months. Melena was present in 82 per cent of these and in some it persisted for four months. In 20 per cent there was a history of hemoptysis and in 14 per cent hematemesis was reported. There was no history of external injury. Of 32 cases in which

sigmoidoscopy was performed only 2 presented definite abnormalities, and in these cases small scattered petechial hemorrhages could be seen high up on the rectal wall and in the lower sigmoid. Examination a month later revealed a normal mucous membrane. Patients who recover from immersion blast rarely suffer from permanent effects. The authors also report experimental studies on 16 goats.

### Abdominal Injuries Due to Under-Water Explosion—

Gill and Hay report clinical observations on 16 patients following injury to the abdomen by under-water explosion. These men had been in the vicinity of exploding depth charges, and 3 were involved by the explosion of a destroyer's magazine. There were no direct gunshot wounds of the abdomen. The clinical picture varied considerably, from those who climbed aboard the hospital ship unassisted and complained only of abdominal pain associated with tenderness and rigidity of the abdominal wall to those who were profoundly shocked and obviously suffering from a severe intra-abdominal catastrophe. The presenting symptoms always was abdominal pain, varying from a dull ache to a pain of agonizing character, and this was associated with a corresponding variation in the physical signs. Six patients were operated on. Of these 2 recovered, 1 having had two ileic perforations sutured and the other a diffuse peritonitis without discernible perforation and a postoperative pelvic abscess which developed later. Four died, 3 having sustained perforations of one or more hollow viscera, and 1 with subserous ecchymoses of the mesentery and small intestine and a severe lung injury. It is almost impossible to say during the first few hours after the injury which patients will require surgical treatment. After the preliminary treatment for shock and response to this treatment the presence of severe unremitting and more especially increasing abdominal pain, with tenderness and rigidity of the lower abdomen particularly in the presence of melena, bowel actions and difficulty in micturition, are indications for laparotomy. A midline abdominal incision is recommended.

## Journal of Endocrinology, London

3 235-322 (Aug) 1943

- Effects of Estrone on Ovary of Mouse W. S. Bullough—p. 235
- Studies on Parathyroid of Mouse I. Cytology of Normal Gland in Relation to Its Secretory Activity C. L. Foster—p. 244
- Comparative Action of Stilbestrol and Estrone on Body Growth and on Weight and Gonadotropin Content of Hypophysis T. E. Emery—p. 254
- Reaction of Uterine Epithelium of Rat to Estrogenic Stimulation E. S. Horning—p. 260
- Induction of Superovulation and Superfecundation in Rabbits A. S. Parkes—p. 268
- Cyclical Changes in Skin of Mouse During Estrous Cycle Helena F. Bullough—p. 280
- Rate of Absorption of Esters of Estrone and Estradiol as Determined by Feather Tests A. S. Parkes—p. 288
- Role of Adrenal Cortex and Anterior Pituitary Gland in Induced Secondary Shock Symptoms M. Reiss L. D. MacLeod and Y. M. L. Golla—p. 292
- Effect of Various Hormones on Chemical and Physical Properties of Bone G. H. Bell and D. P. Cuthbertson—p. 302
- Production of Ovulation in Hypophysectomized Rats I. W. Rowlands and P. C. Williams—p. 310
- Urinary Excretion of Estrogens Following Injection of Proestrogens in Guinea Pig C. W. Emmens—p. 316

## Journal of Royal Naval Medical Service, London

29 153-224 (July) 1943

- Post-rsenaical Jaundice and Dermatitis: Survey of Records from St. Thomas's Hospital 1929-1941 T. Ansell Davies—p. 153
- Arsenoxide (Mapharsen) versus Neosphenamine S. F. Dudley—p. 170
- Investigation into Incidence of Trachoma in Maltese Islands: Its Early Diagnosis and Mode of Spread with Special Application to the Armed Forces D. P. Gurd—p. 171
- Painful Feet R. M. Latta—p. 182
- Sciatic Pain H. L. Hoffman—p. 184
- Lookout Problem in Submarines: Defective Night Vision A. F. M. Barron—p. 189
- Serologic Tests for Syphilis in Personnel of Large Ships Under War Conditions R. P. Crick—p. 196
- Typhoid Infection in the Inoculated W. I. D. Scott—p. 195

**Post-rsenaical Jaundice and Dermatitis—**ANSSELL DAVIES shows that to become spirocheticidal the neosphenamines must be oxidized in the body. They contain from 18 to 21 per cent of arsenic. On exposure to air and to heat they undergo a change and then are rendered highly toxic. The solution

must be fresh and cold and must be injected immediately after preparation. Arsenoxide (mapharsen) is believed to be the active spirocheticidal principle and so does not require converting in the body to become spirocheticidal. It is believed to be the first product of the breakdown of arsphenamine in the tissues and invariably contains 29.01 per cent of arsenic. When stored dry and under cool conditions it is stable, but when exposed to air and moisture it is gradually oxidized to less toxic pentavalent compounds and so, in direct contrast to solutions of neoarsphenamine, does not become more toxic either in the body or while standing in solution. Of 1,946 patients treated with neoarsphenamine, 574 developed jaundice and 134 dermatitis, total, 35.65 per cent. Of 1,147 patients treated with mapharsen, 146 developed jaundice and 14 dermatitis, total, 13.95 per cent. Mapharsen gave the lowest percentage of intolerance (13.95 per cent) and the shortest average illness of 18.7 days per attack of jaundice compared with the other arsenicals, and its substitution for the neoarsphenamines has considerably reduced the mortality rate. One death occurred for 20,467 injections of mapharside against one death for 5,660 injections of neoarsphenamine. Some patients that have had jaundice following the neoarsphenamines subsequently tolerated mapharsen. Mapharsen, while being a more efficient remedy, appears to be less toxic than the neoarsphenamines. Age and seasonal factors in the causation of jaundice and dermatitis appear to be negligible.

**Typhoid Infection in the Inoculated**—Scott reports an epidemic of typhoid which had occurred among a group of inoculated naval ratings in a country where the infection is endemic. A higher percentage of contacts acquired the disease than might be expected among the inoculated. A concurrent epidemic of dengue made diagnosis difficult, particularly in the early stages, and failure to culture the organism, except in 1 case, enhanced the importance of the combination of clinical and serologic features. The course of the disease was atypical in many cases. There was no mortality, and toxic features predominated over those of virulence. The total number of inoculations was more important in determining the course of the disease than the recency of inoculation. Interesting clinical features included a high incidence of myocarditis and two virtually apyrexial patients, one diabetic. Typhoid H agglutinins in a titer of 1:125 or above were of some value in diagnosis. A completely negative result was not significant. There was a rise in the average titer of typhoid and paratyphoid H agglutinins in inoculated ratings who had recently suffered from a nonspecific febrile illness. Typhoid O agglutinins in a titer of 1:50 or less were present only in cases of clinical typhoid. Vi agglutinins were less valuable in the positive diagnosis of typhoid than O agglutinins. Their presence usually indicated an *Eberthella typhosa* infection, and they were found to persist up to at least six weeks after subsidence of the main symptoms. A positive Vi reaction was not proved to indicate the presence of living typhoid bacilli in the body, and extensive application of the test failed to detect a healthy carrier among those giving a positive result. Recent inoculation failed to produce agglutinins to *Salmonella paratyphi B* in a majority of cases.

### Revista de la Asoc. Méd. Argentina, Buenos Aires

57 343-412 (June 30) 1943 Partial Index

\*Tracheobronchial Lesions in Primary Tuberculosis L. Saye, A. Bence, A. Bottini, C. Emiliani, D. Fernandez Luna and J. C. Dighiero—p. 343  
Amebic Hepatitis and Rheumatic Pericarditis M. del Sol—p. 355

**Tracheobronchial Lesions in Primary Tuberculosis**—Saye and his associates report 10 cases of primary tuberculous infection observed in children and adults in which bronchoscopic examination revealed bronchial or tracheobronchial lesions of different nature such as congestive and hemorrhagic areas, ulcers, submucous infiltration and ulcerating and non-ulcerating granulomas. In all cases but one the tracheobronchial lesions were diffuse and extensive. There was a definite correlation between these lesions and the radiologic signs of atelectasis. The tracheobronchial lesions not only are responsible for

immediate complications but may lead, if neglected, to cicatricial processes and residual bronchiectasis. In 3 cases treated with gold salts a considerable reduction or complete disappearance of the bronchial lesions was obtained in four to five months with consequent patency of the bronchial tracts. The authors advise bronchoscopic examination in every case of primary infection.

### Revista Chilena de Pediatría, Santiago

14 391-468 (June) 1943 Partial Index

Treatment of Angiomas by X Rays A. Rahausen and J. Abud O—p. 391

\*Meningococcic Infection of Joints H. W. Jaeger—p. 414

**Meningococcic Infection of Joints**—According to Jaeger the meningococcic arthritis is an early feature of the hematogenous invasion. Thirty-seven (37.0 per cent) cases of meningococcic arthritis were encountered among 1,000 cases of meningococcic infection. The wrists and the knees were the joints most frequently involved. In about 60 per cent of the cases more than one joint was affected. The meningococcic infection of the joints is not limited to the articular surfaces but involves also the surrounding structures. Two cases of meningococcic purulent bursitis and tenosynovitis were casually found at necropsy and they are the first cases reported in the literature. The incidence is evenly distributed between the two sexes and among all age groups. The treatment failed to modify the clinical course of the arthritis. High doses of sulfapyridine and sulfadiazine had no influence on the joint infection even when it cured the meningococcemia and the associated meningitis.

### Revista Clínica Española, Madrid

8 219-298 (Feb. 28) 1943 Partial Index

\*New Method for the Experimental Production of Thiamine Deficiency J. A. De Loureiro and I. Rodrigues—p. 235  
Clinical Importance of the Uniform Activity of Digitalis Drugs T. A. Redonnet—p. 248

**Experimental Production of Thiamine Deficiency**—Based on William's sulfite cleavage of thiamine, Loureiro and Rodrigues developed a practical and simple way of obtaining thiamine deficient diets. By treatment with sulfur dioxide, thiamine was entirely destroyed in the diet and the sulfur gas was easily disposed of. The basic diet used contained casein flour, bakers' yeast, salts and cod liver oil. If both casein and yeast were treated by sulfur dioxide, the diet, administered to rats, caused an acute deficiency with death in three weeks. If only the yeast was sulfur treated the deficiency was subacute with severe symptoms of polyneuritis and death in five to six weeks. When thiamine was added to these diets the rats grew normally, showing that, with the exception of thiamine, all water soluble vitamins were unaffected by sulfur dioxide treatment.

### Revista de la Facultad de Medicina, Bogotá

11 567-630 (April) 1943 Partial Index

\*Concentrated Convalescent Serum in the Treatment of Lymphatic Typhus, Mumps, Measles and Chickenpox A. Marchavello—p. 567

**Concentrated Convalescent Serum in the Treatment of Typhus, Mumps, Measles and Chickenpox**—A simple method is described for the concentration of convalescent blood serum. The procedure consists of drying the serum in a cellophane bag in a vacuum followed by filtration. This concentrated serum was shown to offer some protection against exanthematic typhus. In a group of 50 persons who were susceptible typhus contacts only 2 acquired the disease. Thirty-four persons exposed to mumps were treated with the concentrated convalescent serum and none of them developed the disease. In a control group of 90 persons not treated 40 per cent developed mumps. When the serum was administered to 8 children with the disease, immediate regression of all local and general symptoms occurred. In measles the serum gave definite protection to exposed children and when administered early in the disease the so-called modified or attenuated form developed. Similar results were observed in a few cases of chickenpox. In all instances the dose given was 2 cc for infants up to 1 year of age and 0.5 cc more for each additional year.

## Archiv fur Kinderheilkunde, Stuttgart

125 65 112 (Feb 27) 1942 Partial Index

Treatment of Epidemic Meningitis Without Meningococcus Serum  
Hie Bauer—p 15  
Experiences with a Diagnostic Tuberculin Plaster I Henz—p 71  
Syphilis Constatia Cze W Abegg—p 85

**Treatment of Epidemic Meningitis Without Meningococcus Serum**—Baur reports observations on 68 infants and children with epidemic meningitis, who were treated during the years between 1930 and 1940. Meningococcus serum was given to none of these children because its use had been discontinued for lack of efficacy. The children were treated with blood transfusion with sulfapyridine or with a combination of these two. The combined treatment reduced the mortality rate to 3.2 per cent. When blood transfusion and sulfapyridine were given at once without waiting for the bacteriologic confirmation of the diagnosis the results were even better. The combination treatment reduced the duration of the disease as well as the action of the bacterial toxins and of the inflammatory manifestations. The author regards the combined treatment with blood transfusion and sulfapyridine as the method of choice in epidemic meningitis.

## Deutsche medizinische Wochenschrift, Leipzig

68 393 416 (April 17) 1942 Partial Index

\*Sulfonamide Therapy in Otogenous and Rhinogenous Meningitis W Tonndorf—p 393  
Prophylactic External Cephalic Version in Pelvic Presentation W Reiferscheid and W Vent—p 396  
Storage and Warming Up of Boiled Foods with Regard to Preservation of Vitamins C Diebst—p 400  
Early Diagnosis of Cardiac Lesions H C Landen—p 403  
Differential Diagnosis of Tumor Like Sclerosis K Zech—p 405  
Pathologic Changes in Course of Time H Hamperl—p 407

**Sulfonamide Therapy in Otogenous and Rhinogenous Meningitis**—Tonndorf treated 21 patients with otogenous and 3 patients with rhinogenous meningitis by excision of the primary focus, by lumbar puncture and by intraspinal, intramuscular and oral administration of p-amino-benzene sulfonamide (albacid). The minimum dose given was 17 Gm within eleven days to a boy 8 years of age, while the maximum dose given was 148 Gm within forty days to a man aged 41. Eight of the 24 patients died and 16 recovered. Three out of seven patients who were unconscious on admission recovered. Recovery occurred in 2 cases in which a cerebral abscess developed. Eleven patients with acute suppurative middle ear and 3 patients with chronic suppuration of the middle ear and labyrinthitis recovered. Recovery in all cases was slow and in some instances was interrupted by a relapse. Equally good results were obtained by Unterberger, who reports 25 recoveries out of 39 cases of otogenous meningitis.

68 441-472 (May 1) 1942 Partial Index

\*Cachectic Edema in Diffused Glomerulonephritis W Nonnenbruch—p 442  
Causes of Hypertension in Essential Hypertension A Ruhl—p 445  
Psychotherapeutic Treatment of Hypertension J H Schultz—p 453  
\*Hypertension in Youth and Its Evaluation H Sarre—p 457  
\*Pathogenesis and Treatment of Disturbances of Myocardial Blood Perfusion W Kampmann—p 461

**Cachectic Edema in Diffused Glomerulonephritis**—Nonnenbruch reports 4 cases of diffuse glomerulonephritis in which a soft, general edema combined with hypoproteinemia, a shift in the blood albumin picture to the left and lipoiduria suggested amyloid nephrosis or diffuse glomerulonephritis with a nephrotic syndrome. Cachexia of tissues due to some other process than the nephritic syndrome was considered to be responsible for the peculiar character of the edema. The absence of lipemia was decisive in the differential diagnosis. A sparing diet is contraindicated in these cases and hunger-thirst therapy should be limited to the shortest possible period and then be replaced by a diet rich in albumin. Recovery resulted in 1 case on a diet rich in calories and albumin instituted while hypertension and edema were still present. Improvement occurred in the 3 other cases. Apparently tissue condition determines the type of edema.

**Hypertension in Youth**—The general importance of hypertension in youth for military or labor service is overestimated. A considerable number of men with hypertension are persons with labile blood pressure. Any sort of excitement may be

the cause of their hypertension. Their functional capacity is not reduced. One should look for the basic disease in cases in which hypertension has become fixed. Diastolic pressure above 80 mm of mercury should be considered an alarming symptom. In many such cases renal hypertension or types secondary to chronic nephritis, malignant sclerosis, cystic kidney, pyelonephritis, kidney anomalies or hypertension after trauma may be demonstrated. There will be a few instances of essential hypertension in youth. The prognosis in these cases will be favorable in the absence of changes in the fundus oculi and of subjective disturbances such as headache or vertigo. Most of the time these persons will be able to work and a benign course of hypertension is to be expected.

**Pathogenesis and Treatment of Disturbances of Myocardial Blood Perfusion**—Kampmann discusses disturbances of myocardial blood perfusion of coronary and other origin. Sclerosis and thrombosis of coronary arteries resulting in narrowing of the arterial lumen or in complete obstruction are frequent instances of the first group, but coronary stenosis may also be purely functional, as in malignant sclerosis, pale hypertension or chronic nephritis. Good results were obtained in all types of myocardial disturbances of coronary origin by restriction of fluid intake, strict dechloridation and administration of strophanthin and digitalis preparations. Administration of acetylcholine is recommended in acute cases of coronary contraction. Special reference is made to disturbances of myocardial blood perfusion previous to or during the menopause. Functional myocardial capacity was restored almost completely by regular and prolonged administration of sufficiently high doses of the follicle stimulating hormone.

## Klinische Wochenschrift, Berlin

21 489-512 (May 30) 1942 Partial Index

Aspects of Mitral Stenosis E Edens—p 489  
Vitamin Economy in Newborn and Nurslings and Its Behavior During the Growth Period up to Maturity H Brieger—p 491  
\*Epidemiology of Typhus H Klose—p 498  
\*Some Observations on Clinical Aspects of Typhus G Liebau—p 500  
Investigations on Thyms Hormone with Particular Reference to Status Thymicolymphaticus C Bomskov—p 502

**Epidemiology of Typhus**—Klose shows that effective destruction of lice in regions where typhus is prevalent is one of the most important procedures in the war on typhus. It is important to destroy not only the lice and their eggs but also their highly infectious excreta. The feces of lice rather than their bite is most dangerous. This has been proved by investigators and the author found it corroborated by observations in a delousing station for Russian war prisoners among whom typhus had broken out. Of the delousing personnel 78.2 per cent contracted typhus, although they were never found to harbor lice and regularly went through the delousing process. Typhus was contracted by a physician who lived in surroundings that were entirely free from lice, and who vaccinated only deloused Russian war prisoners. A man active as clerk in an office located away from the prisoners' camp likewise contracted typhus after he had worked on a card index from the camp. He had never been inside the camp and he and his surroundings were entirely free from lice. Two French prisoners of war contracted typhus after they had passed through the same delousing station which had been used by Russian prisoners among whom typhus had existed. The author thinks that the bite of infected lice could be ruled out in all these cases. He reasons that these infections must have been caused by the fecal excreta of typhus infected lice. In the dried excreta of lice the rickettsias remain viable for a long time. Whether rickettsias can enter the skin when lice excreta reach it in dust form or whether inhalation or some other ways are responsible still remains to be explained. At any rate delousing by hydrocyanic acid apparently does not kill rickettsias in the dried excreta of lice and therefore is inadequate for delousing. Hot air currents of steam and chemical substances when properly used will kill rickettsias for they proved effective during the first world war.

**Clinical Observations on Typhus**—Liebau reports the development of typhus in 23 of 25 men of the watch force of a camp for typhus infected Russian prisoners of war. The men were between the ages of 26 and 40 and in excellent physical condition. They could bathe and change their linen

daily and they received added rations. Thus typhus was contracted by men who lived under favorable conditions, whereas typhus usually spreads in the presence of hunger and unhygienic conditions. The mortality remained comparatively low, there being only two fatalities. It is generally believed that the bite or the excreta of lice are the exclusive source of typhus, but the fact that the physician taking care of the aforementioned 23 patients contracted the disease after four weeks and never had contact with lice or their excreta seems to suggest that blood smear infection was responsible in his case. The titer of the Weil-Felix reaction varied between 1:200 and 1:20,000. The height of the titer did not parallel the severity of the clinical picture. Comparative Weil-Felix tests on the medical and nursing personnel revealed titers between 1:100 and 1:400 in 5 of 21. Of 50 soldiers who never had had contact with typhus patients 4 gave Weil-Felix titers of 1:100. The author thinks that the generally accepted belief that a titer 1:200 definitely indicates typhus requires closer inspection. The author observed considerable anemia in the majority of patients. Electrocardiographic studies revealed the possibility of late cardiac lesions. Impairment of the acoustic nerve with hardness of hearing was observed in nearly half of the patients. The treatment of typhus is still chiefly symptomatic. The author's patients found one or two daily baths of 37 to 40 C gratifying. Dryness in the throat was counteracted by infusion of isotonic solution of sodium chloride, vaporization of the room or inhalation. The diet should be fluid or pureed but not too low caloric. Generous amounts of fruit and vitamin C and B<sub>1</sub> were given.

### Munchener medizinische Wochenschrift, Munich

89 71-92 (Jan 23) 1942 Partial Index

- Contribution to Problem of Cancer W. Brünings—p 71  
 \*Etiology of Epidemic Hepatitis H. Voegt—p 76  
 Modern Therapy of Cancer G. Will—p 79  
 New Knowledge About Causes and Treatment of Spontaneous Abortion W. Schultze—p 82

**Etiology of Epidemic Hepatitis**—According to Voegt the majority of investigators assume an infectious origin for epidemic hepatitis, either bacterial or virus in nature. Transmission experiments from man to man were carried out by Carelli and also by Lainer with negative results. Voegt gave each of 4 persons by mouth 5 cc of duodenal juice from a patient with epidemic hepatitis. After nearly four weeks these persons exhibited signs of hepatic impairment. One of them had a subicterus of the skin and scleras. Since some reports indicate that epidemic hepatitis can be transmitted by infected human vaccines or convalescent serums, the author investigated the effect of subcutaneous or intramuscular injections of serum, plasma or hemolyzed erythrocytes on 6 additional persons, the material being obtained from patients with epidemic hepatitis. One man developed a subicterus and he and another man showed increase in the bilirubin content and a positive Takata reaction. Four women had positive Takata reactions and other signs of hepatic disturbance. The author concludes that, although he did not succeed in producing the complete picture of epidemic hepatitis, all the persons tested developed clinically demonstrable signs of hepatic impairment and a picture which resembled epidemic hepatitis.

89 161-184 (Feb 20) 1942 Partial Index

- \*Infectious Icterus (Epidemic Hepatitis) K. Gutzeit—p 161  
 Mortality of Pneumonia as Measure of Value of Treatment W. Batschwarow—p 164  
 Experiences with Lumbar Sympathectomy in Endangitis Obliterans of Vessels of Legs and Feet F. Schörcher—p 166  
 Temporary Exclusion of Sympathetic in Treatment of Ulcers of Extremities D. Philippides—p 174

89 185-206 (Feb 27) 1942 Partial Index

- \*Infectious Icterus (Epidemic Hepatitis) K. Gutzeit—p 185  
 Diagnosis and Treatment of Trachoma W. Meisner—p 190  
 Precancerosis of Colon and Rectum H. Westhues—p 192  
 Renal Impairment Following Use of Sulfapyridine R. Enger and H. Wendel—p 196

**Infectious Icterus (Epidemic Hepatitis)**—According to Gutzeit, Weil's disease and the so-called field, swamp or harvest fever are caused by organisms of the genus *Leptospira*. The major part of the discussion is concerned with a third type

of icterus, the infectious nature of which can be regarded as established although its etiologic agent is still unknown. The author calls attention to increased frequency of epidemic hepatitis during wars. It appears particularly among soldiers. The clinical picture is characterized by three stages: the febrile, the gastrointestinal stage, which is followed by a phase of relative improvement, and the icteric phase, during which the gastrointestinal symptoms become prominent once more. In some cases jaundice fails to appear or is so mild that it is not recognized. The majority of cases remain mild and uncomplicated, but occasionally epidemic hepatitis may be followed by acute yellow atrophy. The generally slow increase in epidemic curves and the fact that they never occur with explosive suddenness indicate that water and food infections are not responsible. The question arose whether the disease might not be a sequel of dysentery or paratyphoid. On military fronts where the jaundice appeared Flexner dysentery had often preceded it by one or two months. Some of the men who developed jaundice had had dysentery, but others had not. The etiologic significance of dysentery is contradicted by the fact that at the time of the greatest prevalence of dysentery in Greece and Russia there was no jaundice. Although there have been occasional agglutinations with paratyphoid in patients with epidemic hepatitis, bacteriologic and serologic investigations were generally negative. Transmission experiments suggest the virus nature of the agent. Epidemic hepatitis likewise occurs after injection of convalescent measles serum, of yellow fever vaccine and of smallpox vaccine. Rest in bed and dietetic measures are most important in the treatment of the condition.

### Zentralblatt für Chirurgie, Leipzig

69 769-816 (May 9) 1942

- Effects on Speech in 300 Plastic Operations on Palate G. Axhausen—p 770  
 Intrathoracic Bronchial Cysts Operation on Giant Bronchial Cyst H. Klose—p 776  
 \*Spontaneous Cure of Malignant Myeloma G. Beyer—p 781  
 Fibrosclerotic Peripylitis a Rare Entity H. Dieckow—p 790  
 Two Cases of Total Umbilical Fistula A. Cserny Pechany—p 795  
 \*Spontaneous Perforation of a Swallowed Needle Through Abdominal Walls Without Suppuration and Peritoneal Symptoms N. Guntcheff—p 797

**Spontaneous Cure of Myeloma**—Beyer reports the history of a man aged 65 who had a plasmacellular myeloma in one clavicle and in one rib. The focus in the clavicle was removed but the patient refused the removal of the other lesion. The period of observation was about two years. During this time no relapse occurred in the clavicle, and the focus in the rib regressed spontaneously. This case raised the question of the pathologic nature of the myelomas. On the basis of the microscopic structure of the removed myeloma, the author agrees with those who classify myeloma with the malignant growths. Even if myeloma is regarded as a systemic disease it must be admitted that it has the behavior of a malignant neoplasm, it has an expansive, infiltrative and destructive growth, it may cause metastases and it is frequently fatal. With regard to the case under consideration, the question arises whether the cure of the costal tumor represents the spontaneous cure of a second primary tumor or the dying out of a metastasis following removal of the primary neoplasm. That the two tumors appeared simultaneously and that myelomas are often multiple and rarely produce metastases speak against the metastatic character of the costal tumor, but the cure could speak for the metastatic nature. If, however, the costal neoplasm is a second primary tumor, the spontaneous cure is even more surprising.

**Perforation of Swallowed Needle Without Peritoneal Symptoms**—Guntcheff reports the case of a boy of 14 months who had swallowed a needle 5 cm in length. During the ensuing days the food intake was small and the child lost weight. Between the seventh and eighth days the eye end of the needle appeared in the skin. It had spontaneously perforated the abdominal walls. There was no secretion from the perforation canal, and peritoneal symptoms did not appear.



## Book Notices

**The Dental Treatment of Maxillofacial Injuries.** By W. J. Lewis, D.D.S., M.C.S., I.R.C.P., Consulting Dental Surgeon to the Royal Air Force; P. Rae Shepherd, D.D.S., R.C.S., Dental Surgeon, East Grinstead Maxillofacial Unit; Alan C. McLeod, D.D.S., R.C.S., Dental Surgeon, East Grinstead Maxillofacial Unit; and Albert I. Parrott, M.R.C.S., I.R.C.P., D.D.S., Dental Surgeon, East Grinstead Maxillofacial Unit. With foreword by Professor F. R. Travis, M.D., F.R.C.I., Director, General Emergency Medical Service. Cloth. Price \$1.50. 1 p. 2.0 with 337 illustrations. Philadelphia & Montreal: J. B. Lippincott Company, 1943.

The authors have had a wide experience in the treatment of fractures of the jaws both in civilian and in military practice. The present volume is based chiefly on the work of the maxillofacial unit at the East Grinstead Military Hospital in England. Pathologic considerations in maxillofacial injuries receive adequate attention and complications such as infection, shock, hemorrhage and associated head lesions are given due consideration. The greater part of the book is concerned with the diagnosis and various methods of fixation of fractures of the jaws. Every conceivable type of jaw fracture is mentioned and discussed in detail, and the appropriate methods of fixation for each are described. While the authors include a description of treatment by the use of dental wire ligatures for most fractures in military practice they show a distinct preference for metal cast splints on the teeth. Provided as they are with adequate facilities and experienced technicians for the construction of these appliances their preference is not surprising although the alleged damage to teeth by the use of wires is somewhat exaggerated. Adequate but cautious attention is given to the use of skeletal pin fixation for fractures of the mandible. The book is highly recommended as virtually indispensable to those who expect to care for large numbers of jaw fractures in military practice.

**Anopheles Gambiae in Brazil 1930 to 1940.** By Fred L. Soper and D. Bruce Wilson. Cloth. Pp. 262 with 75 illustrations. New York: Rockefeller Foundation, 1943.

In describing the invasion of Brazil by *Anopheles gambiae* in 1930, the devastating outbreak of malaria caused by it in 1938 and the ultimate eradication of the species from its spreading focus in northeastern Brazil, Soper and Wilson have described, albeit in scientific form, one of the most dramatic episodes in public health history. Few persons outside the devastated area were aware during this period that the fate of a large section of the Western Hemisphere hung in a delicate balance, menaced by the most serious disease threat of its history. The authors, who played a vital role in the successful campaign to bring *A. gambiae* under control and later to exterminate it from its "beachhead" in the Western Hemisphere have written an authoritative and semiofficial account of this program carried on jointly by the Brazilian government and the Rockefeller Foundation. After a brief description of *A. gambiae* and its habits and of the terrain of northeastern Brazil, there follows an account of the discovery of the species around Natal in 1930 and its spread and ultimate fatal invasion of the states of Ceara and Rio Grande do Norte, where it accounted for 15,000 to 20,000 deaths in one season. The bulk of the volume deals with the successful control program. The volume is of tremendous value in recording for posterity the details of a noteworthy public health accomplishment. As such it is one of the most valuable documents published in years and merits the careful study of all students of public health. Of even greater significance is its value in showing what can be accomplished in the field of disease prevention if funds and public support are provided. It is to be regretted that the volume will not be read by all who are responsible for determining public policy: politicians as well as scientists.

**Kinetic Bandaging Including Splints and Protective Dressings. The Kinetic Method of Visual Teaching.** By Seymour W. Meyer, B.S., M.S. Cloth. Price \$3.50. Pp. 210 with 510 illustrations. Philadelphia: F. A. Davis Company, 1943.

The simplicity of style makes this book of great value in teaching. The diagrams are instructive. The demonstrations are easily understood. The illustrations are clear and concise. Each turn of bandage is numbered so that its position and course can be easily followed. The book should be of value to

Army and Navy Medical Corps, Red Cross workers, general practitioners, interns, medical students, nurses and laymen. The author perceives the human body as a composite of but three geometric figures, viz. ovoids, cylinders and truncated cones. He divides the body into fifteen parts, which fall into these three categories. The fundamental principles applicable to each group are given in detail. The illustrations contain numbers of each constituent of the bandage, and arrows indicate their directions. The description of the scultetus binder—its manufacture, uses and technique of application—are excellent. The Velpeau dressing is clearly demonstrated. The numerous uses of the triangular bandage are illustrated. Adhesive plaster dressings are added. The sections on splints might have been omitted without loss. In the section on plaster of paris the author made an unfortunate choice of cast cutter. In many capable hands it is a dangerous instrument.

**Personal and Community Health.** By C. F. Turner, A.M., Sc.D., Dr. P.H., Professor of Public Health in the Massachusetts Institute of Technology, Boston. Seventh edition. Fabriloid. Price \$3.50. Pp. 585 with illustrations. St. Louis: C. V. Mosby Company, 1943.

This book is prepared for students at various college levels. It is a comprehensive extensively documented treatise on personal and community phases of modern health problems. Its approach is that of combined anatomy, physiology and hygiene. The effort is made in each instance, of which the discussion of digestion is a typical example, to furnish the necessary information on structure of the organs comprising the digestive system, their function and interrelationship and the hygiene of living in the light of these facts. A similar approach is employed for each of the principal bodily functions. The chapters on nutrition, digestion, respiration, mental hygiene, foot hygiene, heredity and health, narcotics and stimulants, to choose but a few from the section on personal health, indicate the functional approach of the book. In part II dealing with community health, a similar approach is maintained. As in previous editions the book is comprehensive and accurate. It has been improved over previous editions in more modern approach to illustrations and in readability. A particularly valuable feature is the extensive and well selected list of references at the end of each chapter. Tables and diagrams, as well as photographic illustrations, are numerous, clear, attractive and well labeled. A few well selected color plates add greatly to the book.

**Handbook on Physical Fitness for Students in Colleges and Universities.** Prepared by a committee appointed by the U. S. Commissioner of Education with the collaboration of the U. S. Army, the U. S. Navy, the U. S. Public Health Service and the Physical Fitness Division of the Office of Defense Health and Welfare Services, Federal Security Agency, U. S. Office of Education. Paper. Price 25 cents. 1 p. 140 with illustrations. Washington, D. C.: Supt. of Doc. Government Printing Office, 1943.

The committee which prepared this pamphlet on physical fitness is composed predominantly of men and women interested primarily in physical education and physical training rather than of physicians and physiologists. The contents consequently, emphasize the technical aspects of sports and exercises and their immediate effect on the muscular and physical development of men and women. This handbook should be of special value to the physical educators for whom it is unquestionably designed and it will be a useful reference also for physicians on whom the ultimate responsibility for the prescribing and limiting of violent physical exertion should rest.

**Biology of Acarus Scabiei.** By Reuben Friedman, M.D., Associate Professor of Dermatology and Syphilology, Temple University School of Medicine, Philadelphia. Cloth. Price \$3. Pp. 147 with 112 illustrations. New York: Froben Press, 1942.

This has many excellent features. It is timely because scabias always assumes greater importance in wartime. The book is rich in references and in illustrations. The historical facts are critically considered and presented in an interesting manner and all knowledge of the subject is brought down to date. Because of its limited scope it will have particular value as a source book only for those interested in entomology; the general reader however will find it worthwhile reading just as were the author's companion books *The Empress's Flea* and *Scabies: Civil and Military*.



## Queries and Minor Notes

THE ANSWERS HEREF PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EACH LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### RELAXED INGUINAL RINGS AND HERNIA

To the Editor—There has been much discussion of relaxed inguinal rings. Da Costa's Surgery (ed 9, p 1124) states that "in a healthy man the external ring should admit the tip of the little finger but not that of the index finger. If the end of the index finger can be made to enter the ring that aperture is dilated and, even if there is no hernia in the canal, in the future a hernia will probably descend." If this was to be followed as a standard, then a large percentage of inguinal rings would probably be classified as relaxed. I have seen men, turned down by one branch of the service because of so-called relaxed rings, promptly accepted at induction centers by the Army. Some of us have passed men for industrial plants or on preliminary physical examinations for selective service, only to have them turned down in turn by induction centers because of relaxed rings. Recently one of us was asked to examine a man who had spent ten months in the Army, been discharged to the enlisted reserve because he was over 38 and who then had taken a physical examination for the volunteer Coast Guard Auxiliary. He was told by the examining physician (U S P H S) that he had relaxed rings, these same rings had survived two army examinations and were not relaxed in the opinion of the private physician consulted. 1 Should persons with inguinal rings which readily admit the index finger and produce a moderate impulse on coughing be classified as having relaxed rings and be required to wear a belt, such as the McIntosh, if engaged in work of a strenuous nature? Should they be considered as potential subjects of hernia from an industrial standpoint? 2 When a small hernia exists (ring enlarged and on coughing visceral impulse felt which follows finger on withdrawal) will the wearing of a support of the McIntosh type prove of much help as far as further progression is concerned if the man is engaged in work which requires a fair amount of effort? 3 Do a large percentage of those in the upper age brackets (50 and over) have relaxed rings and relaxed inguinal support in general as an incident of age? Should individuals in this age group be required to wear a McIntosh belt if the rings are relaxed and they are to engage in fairly strenuous activities? 4 Should young persons with small asymptomatic congenital umbilical hernias be required to wear a support if engaged in strenuous work? Does the same apply to those of moderate size? To add to the confusion, frequently a man will be told in one industrial plant that he has relaxed rings and when he changes employment later is passed in another plant as having normal rings.

M D, Louisiana

ANSWER—The question of what constitutes a relaxed inguinal ring and the question of the possibility of the development of a hernia in the future cannot be answered categorically. In these problems one must rely heavily on clinical experience and judgment. A number of factors must be considered, such as the age of the patient, the general health of the patient, the muscular development of the abdominal wall, obesity, constipation and other conditions which tend to affect the intra-abdominal pressure.

Most surgeons today do not subscribe to Da Costa's opinion with regard to determination of a relaxed inguinal ring by the finger test. An external inguinal ring may admit two fingers and may not lead to the development of hernia. The question of the development of an indirect inguinal hernia is determined by the degree of obliteration of the processus vaginalis testis and the development of the abdominal musculature. The existence of an inguinal hernia is best determined by seeing a bulge on coughing or on asking the subject to spread his leg wide and then to lift a weight. If no impulse (bombardment) is felt by the examining finger within the ring while the subject is coughing, the question of hernia need not be considered.

In answer to the specific questions: 1 Such a person does not require the wearing of a truss. The term "potential hernia" is not admissible. Every human being may be considered to have "potential hernia."

2 A properly applied truss would be indicated, for it would at least prevent further descent and possible strangulation. However, the proper treatment for "a small hernia" is the operative treatment.

3 A large percentage of people in the upper age brackets have relaxed rings and relaxed inguinal support. They need not wear a truss, since the truss will not affect the development of a hernia if one is going to take place.

4 Small, asymptomatic, congenital, umbilical hernia in men doing strenuous work constitutes an indication for a properly applied belt. Men with "moderate size" umbilical hernia should be treated by operative intervention.

### TREATMENT OF SAPHENOUS PHLEBITIS

To the Editor—Recently I saw a man with thrombophlebitis of the internal saphenous vein which extended from the right midthigh to the fossa ovalis, where there was a swollen, indurated mass about 1 inch in diameter which was part of the aforementioned vein. At the time I saw the patient the lesion was quiescent, as there was no fever or leukocytosis and there was no redness or swelling about the vein. The patient had had varicose veins in the left leg for fifteen years and for the past five years he had had some swelling of ankle and pain in leg on standing for any length of time. About three weeks ago he began to have severe pain and tenderness along the inner aspect of the right thigh, which persisted for five to six days and then gradually began to subside. He stated that previous to the present illness he was able to squeeze out the lump in his thigh but after this illness the lump became hard and could not be reduced. It is my belief that the patient had a varix in the internal saphenous vein just as it entered the fossa ovalis and that it became hard following the thrombophlebitis. At present there is a hard, cordlike, tortuous structure which extends from this lump down toward the inner aspect of the thigh for a distance of 12 inches following the course of the internal saphenous vein. As far as I can make out there is no blood flowing through this at the present time. Should this be left alone since it is already quiescent? Should a ligation be attempted in order to prevent pulmonary complications in the event of an exacerbation of the thrombophlebitis? I should also like to have an opinion on the proper treatment of other similar cases of thrombophlebitis of the internal saphenous vein which do not rise quite so high. Should these patients have ligation and injection, and, if so, what would be the time interval after subsidence of symptoms, and what laboratory data would you suggest in addition to clinical evidence of quiescence? In the American Medical Association manual on varicose veins, ligation and injection of acute phlebitis are contraindicated but nothing is said of the management of the patient after subsidence of symptoms.

M D, Pennsylvania

ANSWER—The treatment of saphenous phlebitis occurring in preexisting varicosities differs in some respects from that employed in patients not suffering from phlebitis. Ligation of the saphenous vein at its junction with the femoral in the presence of saphenous thrombosis not only relieves pain but hastens the subsidence of inflammation and prevents early recanalization of the soft red thrombus. It is one of the clear-cut indications for ligation of the saphenous vein as indicated in the American Medical Association manual on varicose veins, table 1, page 16.

It must be realized, however, that the surgeon may encounter considerable periphlebitis, lymphangitis and enlargement of inguinal lymph glands in such a stage which make dissection more difficult. He may also find that the vein is thrombosed clear up to the saphenofemoral junction, which is often bulbous. If a thrombus is encountered at this level, the proximal stump should be aspirated with a suction tip, since thrombus may extend from the saphenous bulb into the femoral vein and float freely in the lumen or adhere to the wall.

While the ligation of the saphenous vein can and should be done in the acute stage, injections of any sort are better postponed until the periphlebitis, hyperemia and induration have definitely subsided, the injections activate a subsiding phlebitis and may prolong convalescence. To hasten the regression of phlebitis, elastic support, small doses of x-rays or injections of sodium tetrathionate are useful. The patient may be ambulatory after a day or two of hospitalization. Injections are started several weeks later, when the edema, hyperemia and induration around the superficial veins have subsided. The clinical findings are more valuable than any laboratory aid, but a sedimentation rate or a heparin tolerance test (*Surg, Gynec & Obst* 77 31 [July] 1943) may be of some help to gage the activity of the process.

### ALCOHOL INGESTION AND TREATMENT OF SYPHILIS

To the Editor—Would the ingestion of excessive amounts of alcohol daily appreciably affect the results of antisyphilitic treatment? Would the daily ingestion of excessive amounts of alcohol by a patient receiving antisyphilitic treatment for a period of two years be a cause for the persistence of a positive Wassermann reaction? The Wassermann reaction of a patient of mine who answers this description was 3 plus six weeks ago. At a clinic four weeks later she had another Wassermann test, after having ceased to drink alcohol as ordered, and the Wassermann reaction was negative. How would you explain this strange serologic reversal?

M D, New York

ANSWER—Except as far as excessive alcoholism may affect the patient's ability to adhere to a regular treatment schedule there is no adequate scientific information that alcohol affects the therapeutic efficacy of antisyphilitic treatment.

Alcoholism is not cause for the persistence of a positive blood serologic test.

The reversal of the blood test in the patient described can be attributed to nothing more important than coincidence.

## LATE NEUROSYPHILIS AND TRYPARSAMIDE

To the Editor—Several problems have arisen concerning our antisyphilitic treatment and I should like an opinion on them. 1 Should a patient with dementia paralytica who for some reason or other (excluding definite sensitivity or kidney and liver disease) fails physically to the extent that he becomes bedridden or comatose be continued on tryparsamide treatment? It is assumed that the patient has not received his full fifty weeks of arsenicals. 2 If a patient with dementia paralytica has early optic atrophy should he be given tryparsamide treatment if he has never had tryparsamide? 3 If a patient has complete optic atrophy with total blindness regardless of etiology should tryparsamide be given? 4 Is advanced age a contraindication to treatment? M D California

ANSWER—1 The results of fever therapy for patients with dementia paralytica who have become bedridden and comatose have been in the main unsatisfactory. However, every now and then one such patient is materially improved by either malaria or hyperthermia. In a study reported by the subcommittee of the Cooperative Clinic Group, the comparative value of the two types of fever therapy showed that hyperthermia treatment followed by tryparsamide offered the patient with advanced dementia paralytica a higher incidence of improvement than did malarial therapy. If the patient has not had fever therapy he would seem to be entitled to it, and if he has already had fever therapy the continued use of tryparsamide and a bismuth compound for a minimum of one hundred injections of each drug is warranted.

2 A patient with dementia paralytica who has evidence of early optic atrophy should not be given tryparsamide but preferably should be given the advantage of fever therapy followed by intraspinal measures. The combination of fever therapy and intraspinal treatment with either a soluble mercury or a bismuth preparation has offered the highest incidence of arrest of the loss of vision. This incidence approximates 15 per cent and low as it seems to be it is apparently the safest program for patients of this type.

3 If the optic atrophy has advanced to the point of total blindness and the patient is manifesting signs of mental change he may be given tryparsamide. On the other hand if evidence of dementia paralytica is not present in other words an optic atrophy in association with tabes dorsalis, continued use of bismuth compounds or iodides and small doses of an arsenical are warranted. Tryparsamide should be limited to patients showing mental changes but not with early involvement of the optic tract.

4 Advanced age is not necessarily a contraindication to the use of tryparsamide. In fact small doses of tryparsamide may be given to elderly persons with neurosyphilis of either the parietic or the meningovascular type with definite advantage. The dosage should be small and the patient watched carefully for objective and subjective visual complications.

## SEVERE BACKACHE AND INFANTILE UTERUS

To the Editor—A married woman aged 25 came to my office on Aug 21 1942 complaining of severe low back pain radiating into both lower quadrants. Examination was negative except for an infantile cervix and uterus and cervical os which was almost completely occluded. The uterus was sharply anteverted. I performed an electrocoagulation of the cervix with dilation and curettage on Sept 1 1942. The patient enjoyed relief from all symptoms for a period of six months at which time there was a recurrence of all symptoms. On June 16 1943 the opening of the cervix would scarcely admit a fine examining probe and I repeated the previous operation and coned out the cervix to 1 cm in diameter. She was relieved only slightly from this second operation. On Sept 4 1943 she came to my office and reported that all her previous symptoms had returned in greater severity than she had ever experienced. She stated that her last menstrual period was extremely painful and at the time of her last menstruation little menstrual fluid passed. The uterus remains her last menstruation little menstrual fluid passed. The uterus remains small and in the same anteverted position. The cervix remains small and I am unable to pass the smallest examining probe. Her suffering is so great that hysterectomy is being considered. Will you kindly advise any measure that I might employ to relieve her condition so that such radical procedure will be unnecessary? D K Matthews M D Dresden Ohio

ANSWER—In spite of the fact that the patient's symptoms were absent for six months following the first electrocoagulation dilation and curettage a careful examination including the use of roentgenograms should be made of the patient's back, bony pelvis, joints, legs and feet in order to rule out an orthopedic or other condition. The pelvic organs are by no means responsible for most backaches in women.

Before a hysterectomy is contemplated in a case like this the following may be done. Under anesthesia (intravenous pentothal sodium will be satisfactory) the cervical canal should be dilated up to at least No 10, preferably No 12 Hegar dilator. Then a hard rubber or metal pessary of the White type should be placed in the cervical canal and sutured in place.

The pessary should be left in the cervix for three months. Almost certainly at the end of this time the cervical canal will be sufficiently large to permit the escape of blood without discomfort. During the time the pessary is in the cervix the menstrual blood will readily come out.

## PROLONGED FEBRILE ILLNESS WITH POSITIVE WASSERMANN REACTION

To the Editor—A woman aged 23 while a senior in college two years ago majoring in bacteriology and handling live cultures of many different pathogenic organisms suffered a gradual onset of malaise joint pains and slight fever which slowly became more severe. A complete and apparently adequate examination including agglutination reactions for Brucella Tularemia Salmonella and other pathogens was negative except that a palpable spleen and positive Wassermann and Kahn reactions were present. She was given two doses of arsenicals and developed an encephalitis (comatose for a week) which cleared up but left her with a partial hemiplegia. Soon after this while still in bed she developed pneumonia complicated by an empyema requiring a rib resection. In spite of all this she recovered but continued to have an enlarged spleen almost daily temperature increases to about 102 F with occasional bouts of joint pains and enlargements and a gradual loss of weight from 125 to 55 pounds (56.7 to 25 Kg). At one time a course of chemotherapy exact drug unknown resulted in severe dermal reactions with great increase in temperature and oral and pharyngeal lesions suggesting a granulocytopenia for which transfusions were given. After this a bismuth compound was given but its administration resulted in much nausea and vomiting. Her serologic reactions for syphilis continued to remain strongly positive. Her fever and joint symptoms have continued for two years. The patient's parents are both in excellent health clinically and serologically negative for syphilis she has no siblings. There is no history suggestive of secondaries or of a genital or extragenital primary lesion. The patient an intelligent frank and alert young woman states that she did not have any intercourse and examination indicates that she is a virgin. Recent Wassermann and Kahn tests on two occasions showed strongly positive reactions. Examination now reveals quite a large spleen severe emaciation partial left hemiplegia and slight contractures of the joints on the right side none of which are enlarged. Lymph nodes heart and lungs nose and throat and other systems are essentially normal. The patient is able to stand only momentarily and hence is confined to bed most of the time. An x ray film of the chest taken a few months ago was said to be normal. Laboratory examination reveals hemoglobin 11 Gm per hundred cubic centimeters and white blood cell count 8700 with an essentially normal differential. Blood culture is negative. Blood agglutinations for Brucella Salmonella tularemia and dysentery organisms were negative. Several Mantoux tests made before I saw her were reported as negative. The patient has never been out of the state of Washington hence malaria and other tropical diseases hardly need consideration. She has recently gained weight and felt somewhat better using physical therapy high caloric diets sedatives and antipyretics. In view of the prolonged course and other aspects I have about decided that rheumatoid arthritis is the most likely diagnosis and am arranging with her former bacteriology teacher to have a series of agglutination reactions with the various Lancefield types of streptococci. The questions I should like to ask are Does syphilis the great imitator ever give such a clinical picture over such a prolonged time? Isn't it probable that the chronic infection present is causing the serologic reactions to be false positives? What other diseases besides abdominal Hodgkin's disease histoplasmosis of Darling periarteritis nodosa chronic Brucella infection and some of the more rare splenomegalic diseases should one consider? I have neglected to add that a tonsillectomy was without effect on the course of this disorder and that all teeth have been x rayed and seem normal. M D Washington

ANSWER—Even the excellent description provided of this patient does not permit many more definite suggestions than those which have already been made by the inquirer. It is highly improbable that syphilis could be causing this picture and much more likely that the illness is due to another cause which has produced false positive serologic reactions of the blood. In respect to syphilis and since the patient has suffered a cerebral vascular accident it is of course essential to examine the spinal fluid—the one examination which does not appear yet to have been made. If the spinal fluid shows a positive Wassermann reaction, one may with much more certainty feel reasonably sure that the patient does have syphilis even though this may not be the cause of her long continued febrile illness. False positive reactions in the spinal fluid produced by systemic infections (i.e. outside the nervous system) other than syphilis are exceedingly uncommon and probably do not occur.

One of the best recent articles on the diagnosis of unexplained long continuing fever is that of Hamman and Wainwright (*Bull Johns Hopkins Hosp* 58 109 [Feb] 307 [April] 1936). Among those causes which might conceivably produce a symptom complex such as the one described are brucellosis tuberculosis Hodgkin's disease rheumatic fever malignant tumor tularemia amebiasis and localized or generalized septic infections. Occasional instances of long continued fever may also be due to multiple sclerosis or in rare instances to hysteria or other psychogenic causes. These are of course in addition to periarteritis nodosa and histoplasmosis as named by the inquirer.

It would seem desirable to obtain a muscle biopsy to rule out periarteritis (and probably also trichiniasis, although this seems unlikely in view of the normal differential blood count) and in respect of brucellosis to have performed an opsonic index and cutaneous tests. Has an electrocardiogram been done? This might be helpful in respect to rheumatic fever.

If the symptom complex is due to syphilis, which seems the least likely of the possibilities enumerated, the fever, if not the other symptoms, should promptly disappear on the administration of bismuth and potassium iodide.

### CRUSTING OF NASAL MUCOUS MEMBRANE AND EXPOSURE TO DUSTS

*To the Editor*—A man aged 37 has a perforation of the nasal septum about 4 cm long. He is in good health and has no complaints. The Wassermann reaction is negative. He has been in glass making for eight or ten years and has been exposed to the following chemicals:

	Percentages
Sand	99 + silicon dioxide
Soda ash	99 + sodium carbonate
Salt cake	99 sodium sulfate
Limestone	99 + calcium carbonate
Dolomite	54 calcium carbonate
	44 magnesium carbonate
Feldspar	20 aluminum oxide
	65 silica
	15 sodium and potassium oxides
Arsenic	96 + arsenic trioxide
Coal	common blacksmith coal

Hydrochloric acid was used to dip the glass in formerly. He had three injuries to his nose about fifteen years ago, and one side was blocked for a long time afterward. Since the perforation has crusts and is a bit swollen and might be increasing in size, it would be desirable to find the cause. Are any of the chemicals named in dust form likely to have caused the trouble? What is the possibility of a cartilage having become dislocated to the extent of atrophy and sloughing? M D, Arkansas

*ANSWER*—A concentration of any or all of the chemicals mentioned in the dust inhaled over a period of time could cause sufficient irritation and dryness of the nasal mucous membrane to predispose to crusting. This would undoubtedly be accelerated by the presence of a deviated septum resulting from previous trauma. The exposed angle of the fractured or luxated cartilage would be the point at which the crusting would first be manifest, and this would in time lead to ulceration and finally perforation of the septum. Continued exposure to dust laden air would only result in increased crusting about the margins of the perforation which increases in size from erosion. It is not uncommon to find the external nose red and swollen at times in cases of this sort and therapy would be only moderately successful as long as the man continues to work in the same atmosphere.

### DELIVERY ON LEFT SIDE

*To the Editor*—Can you give me any information with regard to left side delivery? I have been using this method for thirty years with rarely any perineal tears, much to the gratification of my patients. I should like to know of the experiences of other physicians using this method in order to improve on this method as I have worked it out.

Roy G. Perham, M.D., Hasbrouck Heights, N. J.

*ANSWER*—The delivery of the patient on her left side was a favorite method some years ago. It is still quite popular in Great Britain. However, it is practiced today by few physicians in the United States. The abandonment of this position for delivery probably resulted from the fact that many primiparas have episiotomies prior to delivery.

### WORK CONDITIONS OF PATIENTS WITH SILICOSIS

*To the Editor*—Is it reasonably safe for a molder with second stage silicosis to continue working in the foundry which now uses a parting sand free from silica? The company indirectly claims that the silicosis is no more apt to progress under the present conditions than it would if the patient should be removed from the foundry entirely. M D, Michigan

*ANSWER*—The advice to silicotic subjects about continuing work in their former occupations is governed by their age, local conditions in the plants and employment policies. From a strictly medical point of view, men over 45 who have developed silicosis slowly over a period of twenty or more years of exposure can return to work in a clean foundry without appreciable danger. Younger men and particularly those who have developed their silicosis within a period of five or six years are probably unusually "susceptible" to dust and should be removed to some other job. The legal aspects of the problem may necessitate removal of all silicotic persons from any further exposure regardless of its severity, for compensation officials may hold

that exposures, however slight, are dangerous to preestablished silicosis. To permit the silicotic to work who are perfectly able to do so may create financial liabilities which the employer is unwilling to accept.

### SEVERE PELVIC PAIN FROM INTERCOURSE

*To the Editor*—I have treated a nullipara aged 38 for two years, mostly with ovarian injections and prescriptions of diethylstilbestrol, for the climacteric caused by radiation treatments at the age of 32. She is about over that condition but continues to have her chief complaint of severe pelvic pain on intercourse, which she claims appeared a year or so after the irradiation. At the age of 32 she claims to have had radium treatments inserted intravaginally for uterine hemorrhage, and one year later she had three weeks of x-ray treatments of fifteen minutes each on alternate days. She stopped flowing, lost the pubic and vulval hair and now has suprapubic and vaginal telangiectasis. Bimanual examination elicits a small uterus and excruciating pain into the center of the pelvis on pressure. The same pain is felt on pressure against a small closed cervix with a cotton ball on dressing forceps and is not lessened with the same procedure following cocaineization of the cervix and vaginal vault. Is this pain due to a condition in the shrunken uterus or nerves in possibly taut broad ligaments? What could be done to relieve it?

L. S. Besson, M.D., Portland, Ore.

*ANSWER*—The pain following irradiation is probably due to a parametritis. The scar tissue has formed in the parametria and when the uterus is moved pain is elicited. Heat applied by means of the Elliot apparatus may be helpful.

Possibly there is some atrophy of the vaginal mucosa which will respond to estrogen suppositories. Vaginal smears should aid in diagnosing this condition.

### LENS SHAPES

*To the Editor*—In *Queries and Minor Notes* in *The Journal*, September 18, there are several questions on lenses asked by Dr. H. W. Garton, the answers to which I think need a little revision. Dr. Garton asks: "(4) Is there any advantage of a flat, clear lens over a curved clear lens? and (5) Must curved lens glasses be fitted more exactly in relation to the eye than a flat lens?" The answer to 4 and 5 contains these statements:

"because of the eyelashes, the curved glass goggles can be fitted closer to the eyes and give a greater field of vision" also "we might state that a curved lens is capable of rendering more space for eyelashes, thus permitting the goggle to be fitted close to exclude foreign matter."

The idea that a curved lens, i.e., one having a concave surface facing the eye, can be placed closer to the eye than a flat lens, i.e., one having a plano or convex surface facing the eye, is prevalent, but it is not quite correct. If a double convex spherical lens or a plano convex cylindrical lens is placed before the eye and placed as close to the eye as the lashes will permit, making the lens in meniscus form with the concave surface facing the eye, will not permit the lens to be set nearer to the eye. The distance of a lens from the eye is taken to be the distance from the apex of the cornea to the center of the posterior surface of the lens when the eye looks straight ahead. If the center of the lens just clears the lashes, then the center of any other lens, whatever its form, cannot be placed any nearer to the cornea. The meniscus form of a lens seems to be nearer to the eye because its concave inner surface follows partly the contour of the eye and sort of "hugs" the eye. The peripheral parts of a meniscus lens are nearer to the eye than the peripheral parts of a double convex or plano convex lens. The peripheral parts of the latter stand off from the eye and therefore such a lens rather than the meniscus "is capable of rendering more space for the eyelashes."

This communication is not intended to deny the superiority in general of the meniscus lens over the flat lens, though in some cases, as in some cataract lenses, it is preferable to use a flat plano convex or a flat compound (toric) type. The principal objective is to correct a widely held wrong notion which sometimes leads to other errors. For instance, if a trial lens which is double convex corrects an eye, then any lens, plano or meniscus, having the same vertex power will correct the eye if placed at the same distance from the cornea. If the trial lens is placed as close to the eye as the lashes will permit, the physician can safely prescribe that lens to be made up in meniscus form, and if this lens is also placed as close to the eye as the lashes will permit, this lens will have exactly the same effect as the trial lens. In the course of teaching physiologic optics I have come across many a doctor who was worried about prescribing a meniscus lens from his double convex trial lens because he had the idea that the former could be placed closer to the eye and would therefore lose in effectivity. Some would, on a hit or miss guess, add on a plus 0.25 spherical lens for this reason, only to find later that the lens was too strong. Joseph I. Pascal, M.D., New York

### IDENTIFICATION OF NEWBORN

*To the Editor*—In *The Journal*, September 25, I noticed a question from D. H. Palmer, research engineer, Hospital Bureau of Standards and Supplies, New York, regarding methods of identification of newborn infants. I should like to call attention to research work of mine covering a period of two years beginning in 1932. This work was published in the *Illinois State Medical Journal* in April 1936, in *Fingerprint Magazine* in August 1936, in *Hospitals*, official publication of the American Hospital Association, in January 1937 and in the *Modern Hospital* in June 1936. In 1936 I demonstrated this method at the Scientific Exhibit of the American Medical Association in Cleveland and at the Illinois State Society convention at Springfield. Gilbert Palmer Pond, M.D., Oak Park, Ill.

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## PENICILLIN THERAPY OF SURGICAL INFECTIONS IN THE U S ARMY

A REPORT

MAJOR CHAMP LYONS

MEDICAL CORPS, ARMY OF THE UNITED STATES

On April 1 1943 the Office of the Surgeon General U S Army, sponsored a pilot unit for penicillin therapy at the Bushnell General Hospital at Bingham City Utah. A second unit was established at Halloran General Hospital Staten Island New York on June 3 1943. Both of these units have functioned as "schools" in penicillin therapy and selected medical officers have been trained for one month periods to use penicillin in accordance with an overall program seeking definition of the effectiveness of the drug in surgical infections. It is the purpose of this report to summarize the experience of these trained observers as reported from several general hospitals within the Zone of the Interior.

During this period of evaluation of a new drug it has seemed wise to concentrate experience as far as possible. Each general hospital has set aside a ward unit for penicillin therapy under direction of a trained medical officer and the chief of the surgical service. With few exceptions these wards have provided single rooms or cubicles for each patient. Surgical dressings have been done under operating room conditions. Patients and attendants have been masked, dressers have been scrubbed, gowned and gloved and individual sterile dressing packets of instruments have been used. Every effort has been taken to prevent cross infection and secondary contamination of wounds.

The work reported herein was done under the auspices of the Office of the Surgeon General U S Army and with the cooperation of the Committee of Medical Research of the Office of Scientific Research and Development.

The clinical work has been directed by Lieut T W Cooper M C Ashford General Hospital Lieut Col R B Grant Jr M C Brooke General Hospital Lieut Col H G Hollenberg M C Lieut Col F B Queen M C Major J E L Keyes M C Major J M Walker M C Capt T F Barrett M C Capt A J Ingram M C and Capt W J Morgan, M C. Bushnell General Hospital Lieut Col V S Johnson M C Major G K Carpenter M C and Capt K F Meach, M C. Halloran General Hospital Lieut W I Glass M C Kennedy General Hospital Capt A L Evans M C Lawson General Hospital Major C V Evin M C Jetterman General Hospital Major G F Wollgast M C McCloskey General Hospital Lieut J M Ferrer Jr M C Percy Jones General Hospital Capt W H McKean M C Valley Forge General Hospital, and Capt J E Hamilton M C Walter Reed General Hospital.

The laboratory studies have been under the supervision of Lieut R Rustigan, Sn C and Barbara J Silverman for bacteriology and G Margaret Rourke BA Eleanor G Fogerty BA and Jane LeFetra BS for chemistry.

Col Ralph G DeVoe M C U S Army commanding officer Halloran General Hospital and Col Robert M Hardaway M C U S Army commanding officer Bushnell General Hospital gave invaluable advice and cooperation in the establishment and maintenance of the penicillin units.

Valuable assistance was given by Drs A N Richards A Baird Hastings A R Dochez Chester Keefer and Major John D Stewart M C A U S.

At one of the units (Halloran General Hospital) special bacteriologic and chemical laboratory facilities have been set up. At other hospitals an especial liaison has been established with the routine laboratories to allow for preferential treatment of problems in the penicillin ward.

The program as outlined has been concerned with surgical infections and has not included the treatment of sulfonamide resistant gonorrhea. The accumulated data will be reviewed in the following order:

I Penicillin Methods of administration, dosage and reactions

II Experience in the treatment of acute pyogenic infections

III Experience in the treatment of chronically septic compound fractures with observations on the bacteriology of war wounds and the anemia of chronic sepsis

### I PENICILLIN

*Methods of Administration*—Both the intravenous and the intramuscular routes have been used extensively for intermittent injections. In unskilled hands the incidence of thromboses after intravenous injection is sufficiently great to make the intramuscular route preferable. The deltoid and gluteus muscles have been used most frequently. The intramuscular route has proved practical, and no contraindication to its continued use has been observed.

The constant intravenous method of treatment has been preferred for immediately life endangering infections. Penicillin has been dissolved in 5 per cent dextrose or isotonic solution of sodium chloride for constant drip administration, or injections of concentrated solutions have been made at frequent intervals directly into the tubing or into an adapter valve in the tubing.

Local application of the powdered sodium salt of penicillin is too irritating for general use.<sup>1</sup> Concentrations up to 5,000 units per cubic centimeter have been used occasionally, but the usual preparation has contained 250 units per cubic centimeter. The antibacterial activity of such solutions has been demonstrated in exudates for twenty-four hours after a single local application. More frequent applications may be necessary under particular circumstances but the single daily application is usually adequate to keep the wound clean and free from pyogenic cocci. Penicillin has been injected through tubes and spigots, has been incorporated into ointments and has been applied as a wet dressing. Both calcium and sodium salts have

<sup>1</sup> Clark A M Colebrook L Gibson T and Thompson M L. Penicillin and Propamide in Burns. Elimination of Hemolytic Staphylococci and Staphylococci. *Lancet* 1: 695 (May 15) 1943.

<sup>2</sup> Florey M E and Florey H W. General and Local Administration of Penicillin. *Lancet* 1: 387 (March 27) 1943.

been used. The nature of the wound is the chief factor in the selection of the method or vehicle for local application.

The inability of investigators<sup>3</sup> to demonstrate penicillin in spinal fluid after intravenous or intramuscular injection has led to a recommendation of intrathecal injection for patients with meningitis. Ventricular fluid has been shown to possess an antibacterial effect following an injection of penicillin into the lumbar space. Spurling<sup>4</sup> has expressed a preference for the injection of penicillin into the lateral ventricles through a burr hole as more likely to insure better diffusion of the drug from above downward than vice versa. In any event, it is important to make certain that there is no intrathecal block in a case treated through a single site of injection. Enough experience has been accumulated to state that lumbar, cisternal and ventricular routes are all practical.

**Reactions to Penicillin**—Increasing experience leads to the conviction that certain untoward reactions are peculiar to particular batches of the drug and are attributable to toxic impurities rather than to the active penicillin fraction. Such impurities constitute 80 to 90 per cent of the final product and may vary from batch to batch in the hands of a single producer. It is our impression that deeply colored penicillin which foams during preparation or contains a nonfiltrable residue is most apt to give reactions. The yellow pigment is not the active agent.<sup>5</sup>

The reactions associated with particular batches of penicillin and thought to be due to impurities are

- 1 Chills with or without fever after intravenous injection
- 2 Eosinophilia of 20 to 30 per cent
- 3 Burning pain at the site of intramuscular injection
- 4 Headache
- 5 Faintness and flushing of the face
- 6 Unpleasant taste after parenteral injection
- 7 Tingling in testes
- 8 Muscle cramps
- 9 Femoral phlebothrombosis

Most of these reactions were encountered during the developmental period of penicillin therapy and could be prevented by Seitz filtration of the solution before injection. Such precautions are no longer generally necessary, and the various commercial products are satisfactory for use as issued. It should be noted, however, that about half the patients will experience a transient burning discomfort at the site of intramuscular injection during the first forty-eight hours of treatment but not thereafter.

There is an extremely low incidence of untoward reactions attributable to products of penicillin available at present. This product still contains many impurities in addition to penicillin, so that it cannot be concluded that even these reactions are due only to penicillin. The most that can be said are that the following reactions have not been limited to particular batches of the drug:

- 1 Urticaria
  - (a) Without fever
  - (b) With fever to 101 F
  - (c) With fever to 103 F and abdominal cramps

<sup>3</sup> Rammelkamp, C. H., and Keefer, C. S. The Absorption, Excretion and Toxicity of Penicillin Administered by Intrathecal Injection. *Am. J. M. Sc.* **205**: 342 (March) 1943. The Absorption, Excretion and Distribution of Penicillin, *J. Clin. Investigation* **22**: 425 (May) 1943.

<sup>4</sup> Spurling, Glenn, Lieut. Col., M. C., A. U. S. Personal communication to the author.

<sup>5</sup> Reid, R. D. Some Properties of a Bacterial Inhibiting Substance Produced by a Mold, *J. Bact.* **29**: 215 (Feb.) 1935.

- 2 Fever in the first five days of therapy
- 3 Transient azotemia
- 4 Thrombophlebitis at the site of constant intravenous injection

**Urticaria**—The commonest single complication is probably urticaria and occurred in 12, or 57 per cent of 209 cases. It has occurred during every week of treatment, as early as the first day and as late as the fourth week. It has been reported once as a complication of local therapy alone. The lesions usually develop during treatment but may occur as late as nine days after treatment has been stopped. The wheals are widely distributed over the body, the face and eyelids become swollen, and there may be swelling of the fingers with joint pains in the hands. The process continues for three to five days and is usually benefited by epinephrine or ephedrine. The course is independent of continuance or cessation of treatment. Subsequent courses of penicillin therapy in patients with a history of urticaria during the first treatment period have been uneventful and not associated with recurrent urticaria.

The complications associated with urticaria are fever and abdominal cramps. The fever is present only when the urticaria is severe and does not usually exceed 101 F. Two patients receiving large doses of penicillin (400,000 and 600,000 units daily respectively) subsequently developed urticaria, fever to 103 F and abdominal cramps with frequent formed stools. In two other patients an unexplained fever of 103 F without urticaria has been noted on the eighteenth and twenty-seventh days respectively. The first of these patients had no other symptoms, but the second showed dermatographia, lacrimation, conjunctival injection and sneezing. These symptoms have suggested an analogy to serum sickness, but eosinophilia has not been definite. Tests for cutaneous and ophthalmic sensitivity during and after the reactive phase have been negative. Precipitins for penicillin have been absent in the serum of patients tested during the phase of urticaria. Heterophil agglutinins have been irregularly demonstrated by means of a system adjusted for maximal sensitivity, but such agglutinins have not been significantly and constantly increased.<sup>6</sup> However, chemical assays of penicillin have revealed only trace amounts of nitrogen, and the active drug is not a protein.<sup>7</sup> For practical purposes of clinical management the urticarial reaction may be considered an atypical sensitization phenomenon. It is atypical in the sense that the period of sensitivity is remarkably transient. Therapy may usually be continued through the period of urticaria, and subsequent courses of treatment reveal no evidence of persistent sensitivity.

**Fever Without Urticaria**—In a few patients fever without urticaria has been noted during the first three to five days of treatment. Such fever is most apparent in patients previously afebrile, although it may also occur and cause some concern in patients with febrile infections. In general the temperature chart reflects clinical progress less dramatically than one might expect on the basis of experience with sulfonamides. There is no evidence that penicillin is antipyretic per se.

<sup>6</sup> Serums from patients under treatment examined by Dr. W. H. Goebel, Rockefeller Institute, New York City, and Dr. C. A. Stuart, Brown University, Providence, R. I.

<sup>7</sup> Abraham, E. P., and Chain, E. Purification and Some Physical and Chemical Properties of Penicillin with a Note on the Spectrographic Examination of Penicillin Preparations by E. R. Holiday. *Brit. J. Exper. Path.* **23**: 103 (June) 1942. Meyer, K., Chaffee, E., Ho, G. L., Dawson, M. H., Schwenk, E., and Fleischer, G. *On Penicillin*. *Science* **96**: 20 (July 3) 1942.



**Transient Azotemia**—This has been reported during the course of treatment by the Floreys.<sup>8</sup> In some of their cases the blood urea nitrogen was moderately elevated during therapy but returned to normal after penicillin was stopped. Albuminuria was not noted. In the present series the nonprotein nitrogen content of the plasma has been followed. Transient elevations of 5 to 10 mg per hundred cubic centimeters have been recorded but the total concentration has never exceeded 35 mg per hundred cubic centimeters, the highest recorded value being 48 mg per hundred cubic centimeters.<sup>9</sup> Urinary casts have been noted occasionally in the urine but albuminuria has been absent. No clinical significance has been attached to these lesser degrees of azotemia. The observations did suggest that penicillin might have some inhibitory effect on the enzyme urease. Experimentally, penicillin failed to inhibit the urease system of *Proteus mirabilis*.

**Thrombophlebitis**—At the site of constant intravenous injection thrombophlebitis occurs frequently. The phlebitis is noticeable during the second day of injection and may lead to chills and fever if therapy is continued through the same vein. The complication may be avoided by the use of dilute solutions of penicillin and a daily change of the position of the needle. Active phlebitis does not occur at the site of intermittent intravenous injections, and the incidence of thromboses reflects the skill with which venipuncture has been performed. As many as 500 intravenous injections have been given to 1 patient without thrombosis of a single vein.<sup>10</sup> The hazard of pulmonary infarction as a consequence of thrombophlebitis in the lower extremity has led to the recommendation that all intravenous injections be given in arm veins.

**Dosage of Penicillin**—The greatest difficulty attends precise definition of therapeutically effective dosage for penicillin. The limited supply of the drug has encouraged determination of the minimally adequate rather than the maximally tolerated dose, and there is a definite trend to higher dosage as more liberal quantities of the drug become available. Bioassays of penicillin activity have given fairly close agreement, but it is possible to have variations of 25 per cent.<sup>11</sup> There is considerable variation in the stability of prepared solutions, and in certain instances it would appear that such changes were responsible for inadequate therapy. In addition, the susceptibility of bacteria to penicillin is variable not only from group to group but from strain to strain. To date it has been necessary to maintain laboratory controls of the potency of penicillin and bacterial susceptibility to insure uniformly successful results.

In general, the following suggestions in regard to dosage are valid.

**Streptococcal Infections**—The group of streptococci includes resistant and susceptible species. Resistant forms have been encountered most commonly in the viridans group and the thermophilic (capable of growth at 45 C.) group of nonhemolytic streptococci (faecalis type). The susceptible species include most of the

beta hemolytic, mesophilic nonhemolytic and some alpha hemolytic, or viridans, streptococci. Sensitive strains are usually extremely susceptible to penicillin. Adequate therapy for susceptible infections has been provided by 90,000 units of penicillin daily given as 15,000 units every four hours intramuscularly.

**Staphylococcal Infections**—As a group the staphylococci require two to four times as much penicillin for inhibition as do susceptible strains of streptococci or pneumococci but some strains of staphylococci are extremely sensitive. A recognized complication of therapy is the tendency of bacteria, particularly staphylococci to become resistant, or "fast," to penicillin. Inadequate dosage tends to develop resistant strains. In our experience penicillin fastness has usually developed within the first week of treatment if it is to occur. Resistant strains have been responsible for persistence or recurrence of infection during treatment and for relapses after weeks of apparent cure. Occasional cases will progress to satisfactory healing in spite of the development of penicillin fastness by the infecting strain of staphylococcus. It has been shown that strains made resistant by in vitro passage in the laboratory develop degraded metabolic characteristics and attenuated virulence.<sup>11</sup> The coagulase activity and mannite fermentation of the resistant strains in this series have not been altered, and loss of virulence has not been apparent clinically. On the other hand, incomplete therapy does not lead necessarily to loss of sensitivity. A sensitive strain was recovered from a bone abscess of the femur two months after conclusion of treatment with 10,000,000 units of penicillin for a fulminating hematogenous osteomyelitis.

In summary, the hazard of penicillin fastness dictates intensive and effective initial dosage for all infections. It is particularly necessary to use large initial dosage for staphylococcal infections. For bacteremic infections the constant intravenous treatment is recommended with an initial dose of 25,000 units and 5,000 to 7,500 units every half hour thereafter for a total of 240,000 to 360,000 units daily. As much as 600,000 units daily has been required for such infections. As progress warrants or as an alternative method for maintenance, a dosage of 25,000 units every three hours has provided 200,000 units daily. The latter dosage is routine for all nonbacteremic staphylococcal infections treated with the penicillin of present potency. It is known that this dosage will vary from one infection to another and from one particular product of penicillin to another.

**Clostridial Infections**—The pathogenic clostridia have been found sensitive to penicillin,<sup>12</sup> but these are

11. McEhee C. M. and Houck C. L. Induced Penicillin Resistance in *Pneumococcus* Type III Culture. *Federation Proc.* 2: 100 (March 16) 1943. Induced Resistance to Penicillin of Cultures of Staphylococci, Pneumococci and Streptococci. *Proc. Soc. Exper. Biol. & Med.* 53: 33 (May) 1943. Abraham Chaim, Fletcher Gardner, Heatley Jennings and Florey.<sup>10</sup>

12. Chain E., Florey H. W., Gardner A. D., Jennings M. A., Orr-Ewing J. and Sanders A. G. Penicillin as a Chemotherapeutic Agent. *Lancet* 2: 226 (Aug. 24) 1940. Dawson M. H., Hobbs G. L., Meyer K. and Chaffee E. Penicillin as a Chemotherapeutic Agent. *J. Clin. Investigation* 20: 434 (July) 1941. Florey H. W. and Jennings M. A. Some Biological Properties of Highly Purified Penicillin. *Brit. J. Exper. Path.* 23: 120 (June) 1942. Gardner A. D. Morphological Effects of Penicillin on Bacteria. *Nature* London 146: 87 (Dec. 28) 1940. Hac L. R. and Hubert A. C. Penicillin in Treatment of Experimental Clostridium Welchii Infection. *Proc. Soc. Exper. Biol. & Med.* 53: 61 (May) 1944. Hobbs G. L., Meyer K. and Chaffee E. Activity of Penicillin in Vitro. *ibid.* 50: 277 (June) 1942. McIntosh J. and Selbie F. R. Zinc Peroxide, Proflavine and Penicillin in Experimental *C. Welchii* Infections. *Lancet* 2: 730 (Dec. 26) 1942. Reiss H. J. Toxicity and Efficacy of Penicillin. *J. Pharmacol. & Exper. Therap.* 77: 70 (Jan.) 1944.

8. Patient of Lieut. J. M. Ferrer Jr. M. C. Percy Jones General Hospital Battle Creek, Mich.  
9. Patient of Lieut. F. W. Cooper Jr. M. C. Ashford General Hospital West Virginia.  
10. Abraham E. P., Chain E., Fletcher C. M., Gardner A. D., Heatley A. G., Jennings M. A. and Florey H. W. Further Observations on Penicillin. *Lancet* 2: 177 (Aug. 16) 1941. Foster J. W. and Woodruff R. B. Microbiological Aspects of Penicillin. *J. Methods of Res.* J. Bact. 46: 187 (Aug.) 1943.



laboratory and animal observations. Dosage for human beings is uncertain because of lack of experience with the therapy of gas gangrene. No cases of gas gangrene have been reported in this series. The proteolytic clostridia recovered from war wounds require four to five times as much penicillin as do staphylococci, whereas organisms of the tetanus-tetanomorphum group are similar to streptococci in their sensitivity. These bacteria have been responsible for anaerobic cellulitis or putrefactive locally necrotizing infections and have been isolated in frequent association with *Proteus* bacilli of various types. Wound infection with these organisms in abundance is indicative of devitalized

has been given it is difficult to evaluate the observed relative sensitivity of the particular strain in terms of fastness.

## II. PENICILLIN THERAPY OF ACUTE INFECTIONS

The results in the treatment of acute infections are in keeping with the findings of Keefer and his associates.<sup>13</sup> An analysis of reported cases is presented in table 1.

**Bacteremias**—Six of 9 patients with staphylococemia recovered. All the infections were severe. The three deaths included 2 instances of endocarditis and

TABLE 1—Analysis of Reported Cases

	Num ber	Im proved	Died	No Effect
<b>Bacteremias</b>				
Staphylococcus	9	6		0
Beta hemolytic streptococcus	4		1	0
Pneumococcus, nonhemolytic streptococcus	1	0	1	0
Staphylococcus, nonhemolytic streptococcus	1	1	0	0
<i>Proteus</i> bacillus	1	0	1	0
<i>Meningococcus</i>	1	1	0	0
<i>Coli</i> , aerogenes, nonhemolytic streptococcus	1	0	1	0
<i>Salmonella</i>	1	1	0	0
	19	12	7	0
<b>Nonbacteremic staphylococcus infections</b>				
Abscesses	12	11	0	1
Burns	2	1	1	0
Conjunctivitis	3	3	0	0
Empyema	2	2	0	0
Mastoiditis	3	1	0	2
Meningitis	2	2	0	0
Osteomyelitis	12	11	0	1
Osteomyelitis of skull	4	4	0	0
Parotitis	2	2	0	0
Skin and subcutaneous tissue	12	11	0	1
Urinary tract	4	4	0	0
Wound infections	21	17	0	4
	79	69	1	9
<b>Nonbacteremic hemolytic streptococcus infections</b>				
Cellulitis	5	5	0	0
Empyema	1	0	1	0
Erysipelas	1	1	0	0
Mastoiditis	2	2	0	0
Osteomyelitis	1	1	0	0
Pansinusitis	1	1	0	0
	11	10	1	0
<b>Staphylococcus and beta hemolytic streptococcus infections</b>				
Burns	2	1	1	0
Mastoiditis	4	4	0	0
Wound infections	2	1	0	1
	8	6	1	1
<b>Anaerobic cellulitis</b>				
<i>Clostridium welchii</i>	2	2	0	0
	2	2	0	0
<b>Lung abscess</b>				
Putrid	2	0	0	2
Pyogenic	2	2	0	0
	4	2	0	2
<b>Intraperitoneal infections</b>				
Appendical	3	1	1	1
Subphrenic abscess	2	1	0	1
Peritonitis, unknown cause	1	0	0	1
	6	2	1	3
<b>Infections with unproved or unknown etiology</b>				
Pyoderma	1	1	0	0
Cellulitis of leg	1	1	0	0
Pansinusitis	1	1	0	0
Osteomyelitis of tarsus	2	2	0	0
Osteomyelitis of mandible	1	1	0	0
Atypical pneumonia	1	0	1	0
Meningitis	3	2	1	0
Postoperative pneumonitis	1	1	0	0
Perinephric abscess	1	1	0	0
Scarlet fever	1	0	0	1
Arthritis, knee	1	1	0	0
Rheumatic fever	1	0	0	1
Submental abscess	1	1	0	0
Iridocyclitis	1	0	0	1
Choroiditis	1	0	0	1
Multiple sinuses	1	0	0	1
	19	12	2	6
<b>Septic compound fractures</b>				
Staphylococcus	30	26	0	4
Staphylococcal arthritis	2	2	0	0
Staphylococcus and beta hemolytic streptococcus	13	12	0	1
Putrid	2	2	0	0
	47	42	0	5
<b>Miscellaneous infections</b>				
Actinomycosis	4	4	0	0
Malaria ( <i>Plasmodium vivax</i> )	4	0	0	4
Chronic ulcerative colitis	2	0	0	2
Coccioidosis	1	0	0	1
Pneumococcal meningitis	1	1	0	0
Pyelonephritis (nonhemolytic streptococcus)	1	1	0	0
Conjunctivitis (Koch Weeks)	1	1	0	0
	11	7	0	7
	209	164	13	32

tissue or bone fragments. Systemic penicillin therapy in dosages of 200,000 units daily has controlled the associated anaerobic cellulitis but has not arrested suppuration as dramatically as in the cases of pyogenic coccic infection. Local therapy is almost a necessary supplement to systemic therapy; local therapy alone has not been as effective as combined therapy. Increasing the systemic dosage up to 400,000 units daily has not seemed to be more effective. Control of the anaerobic infection usually follows wound revision and sequestrectomy. The subsidence of inflammation is entirely clinical, for the clostridia persist in the wound throughout the period of healing in spite of intensive local therapy.

The problem of penicillin fastness among clostridial species has not been investigated. It is not uncommon to isolate clostridia for the first time from a wound by culture of a sequestrum removed at operation. As such cultures are made after a period of treatment

a secondary staphylococcal infection of an extensive atypical pneumonitis. It is of interest that in both instances of endocarditis the strains recovered before treatment were subsequently shown to be resistant to penicillin. In other words, penicillin fastness was inherent and not induced in the two endocarditis strains.

The 4 patients with hemolytic streptococcus bacteremia had failed to respond to sulfadiazine. The one death occurred during the first forty-eight hours of treatment from major intracranial thromboses secondary to frontal sinusitis.

The death recorded in consequence of a bacteremia due to pneumococci and nonhemolytic streptococci represents an instance of treatment of a moribund patient with pneumonia.

13. Keefer, C. S., Blake, F. G., Marshall, F. K., Jr., Lockwood, J. S., and Wood, W. B., Jr. Penicillin in the Treatment of Infections. A Report of 500 Cases, J. A. M. A. 122: 1217 (Aug. 29) 1943.

The mixed staphylococcus and nonhemolytic streptococcus bacteremia arose from an empyema. Rib resection was performed at the time penicillin therapy was started.

The recovery recorded for meningococcemia represents a complicated case. Sulfadiazine and meningococcal antiserum were given for acute meningitis and a retrobulbar abscess. The response was slow but progressive until the tenth day at which time serum sickness developed with an exacerbation of the infection and the appearance of multiple metastatic abscesses. The meningitis did not recur, and the patient responded to intravenous penicillin therapy without intrathecal supplement.

A recovery is listed under the heading of salmonella bacteremia. The focus of infection was a large ischio-rectal and retroperitoneal abscess containing beta hemolytic streptococci in quantity. It is likely that penicillin controlled the streptococcal component of the infection, whereas the clearance of the salmonella infection was merely coincidental.

A patient with *Proteus bacillus* bacteremia quite understandably showed no improvement and died. Penicillin is not effective against this organism.

Another patient succumbed during penicillin therapy for a mixed bacteremia due to *Escherichia coli*, *Aerobacter aerogenes* and nonhemolytic streptococci. A septic compound fracture of the pelvis and a pelvic abscess were associated with septic thrombophlebitis of the inferior vena cava and its tributaries.

**Staphylococcal Infections Without Bacteremia**—Sixty-nine, or 87 per cent, of 79 patients showed a favorable response to penicillin therapy. One patient with third degree burns died. The cause of death was not apparent at autopsy, but the clinical record is one of persistent hypotension following curettage of the wounds without blood transfusion. The two failures recorded under mastoiditis were instances of the development of penicillin resistance by the etiologic strains.

Osteomyelitis due to staphylococci deserves special comment. Eleven of twelve infections were reported improved as judged by sterilization of pus and complete or partial healing of sinuses. Three patients treated at Halloran General Hospital had osteomyelitis of the femur. A patient with Brodie's abscess and an abscess of the popliteal space was given systemic penicillin after a pure culture of staphylococcus was obtained at the site of spontaneous rupture of the soft parts abscess. The inflammation subsided rapidly, and on the fourth day of treatment the femur was saucerized and the wound closed around a rubber tissue drain. All subsequent cultures were sterile, the wick was removed on the fifth day and the wound healed and has remained healed for two months. A similar experience was recorded in the treatment of a cortical lesion of the shaft with subperiosteal abscess formation. A third patient was treated with penicillin through a period of acute osteomyelitis of the entire shaft of the femur. Symptomatic recovery with demineralization and new bone formation occurred. The patient was kept under observation and three months later developed an extensive medullary abscess. The entire femur was saucerized and the wound was closed without drainage. Positive cultures were obtained from the pus recovered at operation, but a sterile culture was recovered from a small amount of hematoma evacuated on the tenth

postoperative day. At the present time it seems likely that the penicillin therapy of chronic staphylococcal osteomyelitis of the long bones may require surgical intervention with incomplete or primary closure of the wound. Two cases of osteomyelitis of the tarsus in which there was response to penicillin therapy without suppuration are recorded under "infections of unknown etiology." In 1 of the cases already discussed there were spontaneous subsidence and healing of a focus of osteomyelitis in the sacrum. Similar spontaneous and rapid healing of osteomyelitis of the vertebra has been observed with penicillin in cases not included in this series. There is reason to believe that penicillin may effect subsidence of osteomyelitis of flat bones without surgical intervention in the absence of sequestrums.

**Hemolytic Streptococcus Infections Without Bacteremia**—Satisfactory bacteriologic sterilization was achieved in every case. One death resulted from pulmonary edema as a complication of the treatment of empyema.

**Mixed Staphylococcus and Hemolytic Streptococcus Infections**—One patient with extensive third degree burns died with anuria from a cause not related to penicillin therapy. Six of 8 cases responded favorably and 1 wound infection was not influenced.

**Anaerobic Cellulitis**—Two patients with low grade infections of the subcutaneous tissues due to *Clostridium perfringens* have responded favorably to penicillin therapy.

**Lung Abscess**—Penicillin has been without effect on 2 patients with putrid lung abscess, two pyogenic streptococcus lung abscesses were healed.

**Intraperitoneal Infections**—Infections arising as complications of appendicitis have not been responsive to treatment, although 1 patient showed improvement coincident with treatment. The series is too small for evaluation.

The response of patients with subphrenic abscess varies with the susceptibility of the causative bacteria.

**Miscellaneous Infections**—Malaria due to *Plasmodium vivax* is not affected by penicillin. In addition to the 4 recorded failures, 2 other patients have developed recurrent malaria under treatment. Four patients with actinomycosis were improved by treatment, but further follow-up is necessary. Chronic ulcerative colitis failed to respond in 2 instances.

### III THERAPY OF CHRONIC INFECTION IN GUNSHOT FRACTURES

The soldier with a chronically infected gunshot fracture presents a complex clinical problem. The degree of nutritional depletion is variable and may be so extreme as to take precedence over all other factors. The bacterial infection is usually polymicrobial and may be latent or active. The anatomic abnormality is irregular, and a wide variety of surgical procedures may be adapted to the proper solution of the problem. Penicillin therapy has a definite place in the management of these cases. Our observations will be recorded in relation to the problems involved.

- 1 Nutritional depletion
- 2 Bacteriologic characteristics of the infection
- 3 Selection of cases and surgical management
- 4 Results of treatment

*Nutritional Depletion*—The clinical picture of the patient with chronic infection is well known. There is weight loss, diminished strength and muscle mass, anorexia and anemia. Clinical experience with a large group of comparable cases always emphasizes similarities frequently overlooked in the course of contact with individual cases. It seems pertinent to record the observations during this period of treatment with penicillin.

The weight loss has been considerable, varying from 5 to 30 Kg. A loss of 10 Kg. is clinically obvious. Muscle atrophy and loss of strength precede weight loss, and restoration of muscle bulk and strength appear prior to significant weight gain during convalescence.

The distribution of extracellular body fluids has been examined by the sodium thiocyanate<sup>14</sup> and Evans blue

great for the standard of the patient's observed weight and significantly larger than the standard for the weight prior to injury. During convalescence the interstitial fluid volume slowly decreases without apparent diuresis. The sedimentation rate has been correlated more closely with improvement than any other laboratory determination. Progressive weight gain is rarely apparent before the sixth to the eighth week of convalescence.

Significant fluctuations in the concentration of serum protein and hemoglobin have been recorded. These have been correlated with changes in blood volume and are independent of penicillin therapy. During periods of hemoconcentration the urine volume may equal or exceed the fluid intake. Unless the blood volume is known, a single observation of the concentration of the serum protein or hemoglobin may be misleading. Reductions of 1,500 to 2,000 cc. in blood volume have been recorded. This degree of reduced blood volume is dangerous if it exists at the time of operation because minor blood loss may produce an ineffective blood volume and shock.

Charts 1 to 5 demonstrate also that there is a deficit in the total quantity of circulating hemoglobin and that there is a normal or nearly normal quantity of plasma protein present. Fractionation of the serum proteins into albumin and globulin by the ammonium sulfate method in 30 cases has failed to show any significant variation from accepted normal values. The plasma fibrinogens have been constantly elevated. There have been no abnormalities of the blood electrolytes. It appears that the major deficiency in these chronically infected battle casualties is hemoglobin. This deficiency is frequently masked by hemoconcentration and normal or near normal quantities of hemoglobin in a given unit of blood. Accurate values may be obtained only by calculation of the total circulating hemoglobin when the blood volume and concentration are both known. The practical difficulties of routine blood volume determinations preclude routine use of the method. From a clinical point of view it must be assumed that every patient with chronic infection is anemic.

Liver function has not been specifically investigated. Prothrombin times have invariably been normal. With normal serum proteins and increased fibrinogen values it has been assumed that liver function is satisfactory.

Penicillin therapy does not appear to have any specific effect on the metabolic balance of nitrogen, calcium or phosphorus (table 2).

In this series of patients it has been found that the urinary nitrogen tends to be high (15 to 20 Gm. daily) without increased values for urinary potassium. Positive nitrogen balance is attained by any method that provides an intake of 130 Gm. of protein or more per day. One of the important consequences of penicillin therapy is the improved appetite. Intakes of 150 to 200 Gm. of protein are relatively easily achieved during treatment.

Observations of nitrogen balance have been made for periods of two to six weeks on 15 patients. Two standard diets have been given to provide 2,500 calories for smaller patients and 3,000 calories for larger patients. The general composition of the diet has been 60 per cent carbohydrate, 20 to 25 per cent protein and 15 to 20 per cent fat. With the exception of 2 patients with acute infections, this diet produced a positive nitrogen balance independently of penicillin.

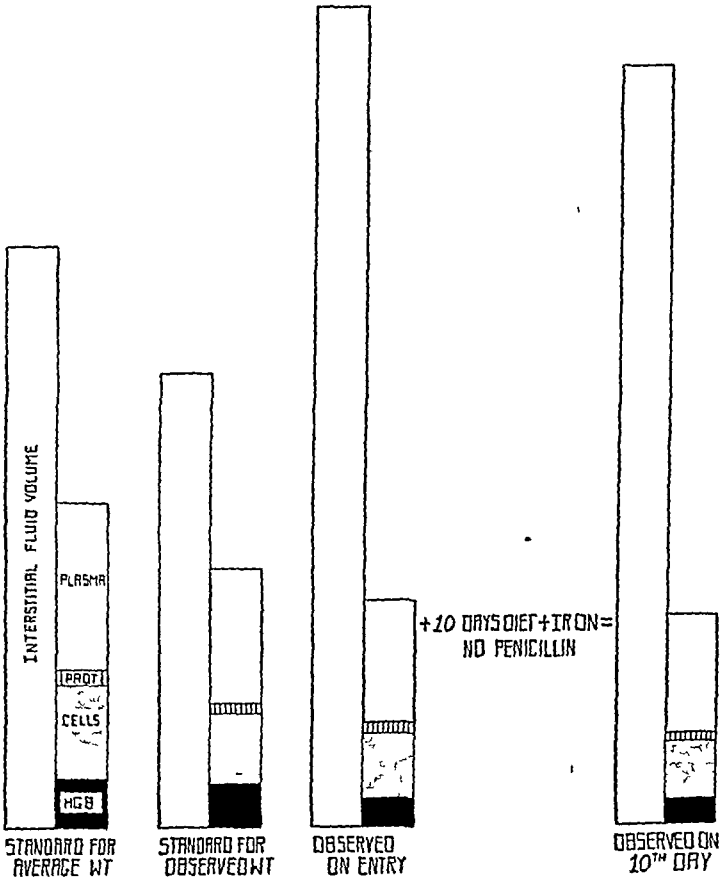


Chart 1—The interstitial fluid volume was larger than the standard for the observed weight and for the actual weight. The blood volume was less than the standard. The deficit of hemoglobin was greater than indicated by the concentration of hemoglobin as determined in grams per hundred cubic centimeters. This patient was confined to bed with elevation of his infected leg. An abundant diet with added iron was provided. No penicillin, plasma or whole blood was given, and the patient served as a control for the effects of the usual treatment methods. After ten days of known positive nitrogen balance there was a further reduction in blood volume and total grams of hemoglobin.

	Standard		Observed	
	Average Weight	Observed Weight	On Entry	10th Day
Body weight (kg.)	70	55.1	55.1	54.8
Interstitial fluid volume (cc.)	11,200	8,800	15,800	14,700
Blood volume (cc.)	6,300	5,000	4,400	4,100
Grams hemoglobin per 100 cc.	15	15	13.4	12
Total grams hemoglobin	945	825	545	490
Grams protein per 100 cc.	6.8	6.8	7.6	7.5
Total grams protein	240	190	300	180

dye<sup>15</sup> methods. These findings are presented in charts 1 to 5. On admission to the ward the patients have had an interstitial fluid volume 4 to 7 liters too

14 Crandall, L. A., and Anderson, M. X. Estimation of the State of Hydration of the Body by the Amount of Water Available for the Solution of Sodium Thiocyanate, *Am J Digest Dis & Nutrition* 1: 126 (April) 1934.  
15 Gregersen, M. I., Gibson, J. J., and Stead, E. A. Plasma Volume Determination with Dyes. Errors in Colorimetry, the Use of the Blue Dye T 1824, *Am J Physiol* 113: 54 (Sept) 1935.

therapy. On the other hand positivity of nitrogen balance was not associated with restoration of hemoglobin values unless penicillin was given. The extraordinary virtue of penicillin in this regard is shown in charts 1 and 2. Further studies relating positive nitrogen balance to the rate of hemoglobin formation and hemopoietic activity are clearly indicated.

Patients subjected to operation without supportive intravenous supplement have been studied carefully after operation. The hematocrit, hemoglobin and plasma protein values are relatively unchanged, but the pulse rate is accelerated during the first forty-eight hours. On the third or fourth postoperative day there is a decrease in the hematocrit and hemoglobin values with an unchanged or increased plasma protein concentration. These changes are illustrated in charts 3 and 4. The blood volume is greatly reduced and there is a disproportionate reduction in the total quantity of hemoglobin as compared to the total quantity of plasma protein. It has not been possible to determine whether this is due to preferential utilization of hemoglobin, less rapid synthesis of new hemoglobin or faulty red cell regeneration. The implications for clinical therapy are clearly for whole blood instead of plasma. The quantitative aspects of replacement therapy to prevent these changes are shown in chart 5.

We have briefly reviewed the results of an extensive investigation of the nutritional status of battle casualties with chronic sepsis as they arrive in this country and after treatment with plasma and sulfonamides. The most apparently deficient substance is hemoglobin, and the interstitial fluid volume is large. Penicillin therapy does not alter nitrogen balance per se but does favor a positive balance in consequence of an improved appetite with controlled infection. Effective restoration of hemoglobin does not result from positive nitrogen balance unless penicillin is given to control infection. However, the rate of metabolic regeneration fails to keep pace with the clinical program made possible by the rapid control of the infection. Frequent transfusions of 500 to 1,000 cc of whole blood are necessary during the preoperative and postoperative periods. A judicious combination of whole blood and plasma in 1,000 cc quantities on the day before operation, the day of operation and the day after operation is necessary to maintain blood volume and positive nitrogen balance. Similar quantities of whole blood are necessary once or twice a week until hemoglobin values are restored and maintained at a level of 15 to 16 Gm per hundred cubic centimeters. It should be remembered constantly that the dietary intake alone may fail to meet the reparative demands of the penicillin program.

**Bacteriologic Characteristics of the Infection—**Forty six cases of septic gunshot fracture have been the subject of extensive aerobic and anaerobic bacteriologic study. The majority of the wounds have proved to be a bacteriologic garden, but it has been possible to define four main types of infection. These are listed according to incidence:

- (a) Putrid
- (b) Staphylococcus
- (c) Hemolytic streptococcus
- (d) Pseudomonas (pyocyanus)

**Putrid Wound Infection—**This produces dirty malodorous wounds. The etiologic flora is mixed and there may be some synergistic relationship on the part

of the involved bacteria. Functionally the infection is proteolytic and attacks dead tissue, devitalized bone fragments ischemic or avascular muscle and blood clot. In a sense these bacteria are wound scavengers of potential pathogenicity in wounds with extensive tissue destruction or ischemia from closure under tension. The attribute of proteolysis has clinical and bacteriologic significance. The breakdown of an organic protein matrix leads to the foul odor and the release of organically bound sulfur. Hydrogen sulfide is formed and in the presence of iron, black iron sulfide is produced. Clinically there is frequently a distinct odor of hydrogen sulfide and hemoglobin is blackened. In the laboratory, diagnosis depends on the digestion

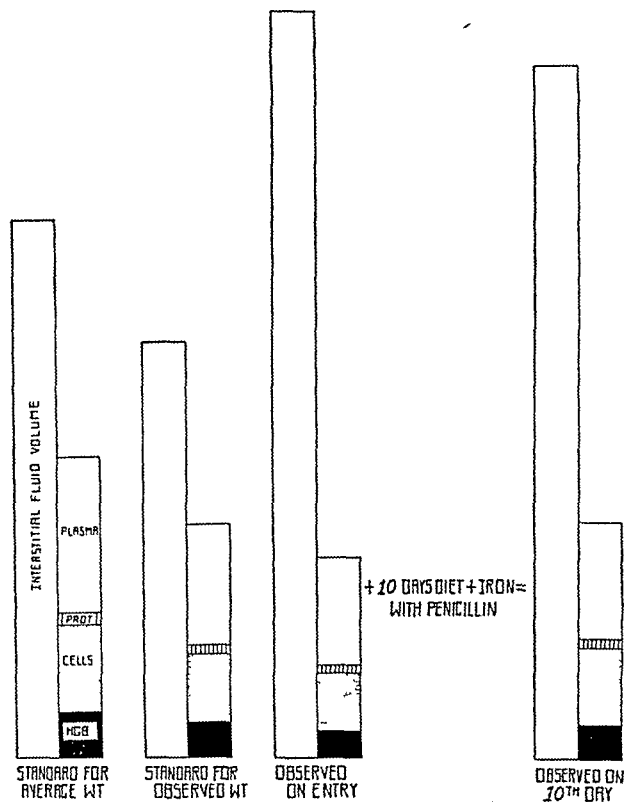


Chart 2—This chart is to be compared with chart 1. Systemic penicillin therapy has supplemented treatment of a similar infection. An abundant diet with added iron was given but there were no blood or plasma transfusions. The positivity of nitrogen balance was comparable to that recorded in chart 1. Attention is directed to the initially reduced blood volume and total hemoglobin with restoration of normal values during the period of treatment. The increased interstitial fluid volume was not altered significantly.

	Standard		Observed	
	Average Weight	Observed Weight	On Entry	10th Day
Body weight (kg.)	75	58.2	58.2	55
Interstitial fluid volume (cc.)	12,000	9,300	16,600	13,400
Blood volume (cc.)	6,750	5,200	4,500	5,000
Grams hemoglobin per 100 cc.	10	10	13.2	14.5
Total grams hemoglobin	1,010	790	600	760
Grams protein per 100 cc.	6.8	6.8	6.7	7.0
Total grams protein	900	900	170	210

of meat particles or casein and the detection of sulfur released from sulfur containing amino acids.

The mixed flora includes proteolytic clostridia, microaerophilic and anaerobic nonhemolytic streptococci and Proteus.

The clostridia are predominantly of the sporogenes bitermentans and tetanomorphum groups (the 'fecal anaerobes' of World War I). In vitro studies have shown the sporogenes and bitermentans clostridia to be relatively resistant to penicillin but they are inhib-

ited by four to five times the effective dose for staphylococci. The tetanomorphum clostridia are as sensitive as the hemolytic streptococci. All these organisms are difficult to remove completely from a wound. Spore forms are as sensitive as the vegetative forms of any given species.

The nonhemolytic streptococci are isolated most easily by anaerobic culture. The thermophilic and heat resistant strains of the faecalis group are generally insensitive to penicillin. The mesophilic and heat sensitive strains are as susceptible as hemolytic streptococci.

The *Proteus* group of bacteria has shown a preponderance of mirabilis and morgani strains. In 17 of 18 instances of *Proteus* infection the bacteria have been present in association with proteolytic clostridia. *Proteus* is not sensitive to penicillin.

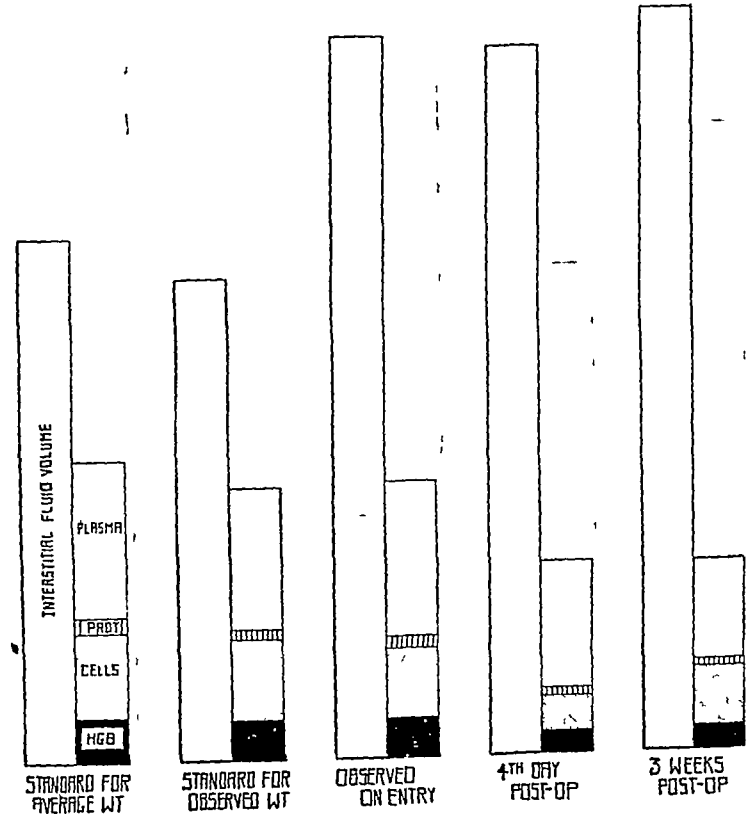


Chart 3—This patient entered with normal blood values and an increased interstitial fluid volume. Penicillin was given to control active infection without blood or plasma. On the fourth day after operative reduction of fractured metatarsals with sequestrectomy under a tourniquet, the studies were repeated. The hemoglobin concentration fell to 12.8 Gm per hundred cubic centimeters, the plasma protein rose to 7.4 Gm per hundred cubic centimeters in consequence of hemoconcentration and a greater decrease in hemoglobin. It is significant that this hemoconcentration was accomplished without reduction of an excessive interstitial fluid volume. The nitrogen balance was negative throughout this period. The values recorded at three weeks after operation emphasize the slow rate of metabolic regeneration in the absence of supportive transfusions with whole blood.

	Standard		Observed		
	Average Weight	Observed Weight	On Entry	4th Day Post-operatively	3 Weeks Post-operatively
Body weight (kg)	64	57.6	57.6	57.9	59
Interstitial fluid volume (cc)	10,000	9,200	13,800	13,600	14,300
Blood volume (cc)	5,750	5,200	5,300	5,700	3,600
Grams hemoglobin per 100 cc	15	15	14.5	12.8	13.2
Total grams hemoglobin	860	780	770	420	480
Grams protein per 100 cc	6.8	6.8	6.9	7.4	7.4
Total grams protein	220	195	220	165	155

The presence of proteolytic putrid infection was demonstrated in 34 or 74 per cent, of 46 cases (table 3). Bacteriologic demonstration of proteolysis has been more helpful than species identification in the clinical management of putrid wound infection.

*Staphylococcal Infection*—This was the second most prevalent complication. Coagulase positive staphylococci were present in 30, or 65 per cent, of 46 cases.

*Beta Hemolytic Streptococcus Infection*—These were isolated from 15, or 33 per cent, of 46 patients. All except 1 of these patients had received prophylactic sulfonamide therapy. Nine received local and systemic chemotherapy, 4 only systemic, and 1 only local. The serologic groups of these strains is shown in table 4. No strain was completely resistant to penicillin therapy, but in 3 cases the strains persisted in diminished numbers in the wound until sequestrectomy was performed. There was no instance of a pure hemolytic streptococcus infection.

*Pyocyanus*—This organism was recovered in 12 or 26 per cent, of the 46 cases. Never the only etiologic organism, it frequently became predominant in the treated wounds. The abundant and intensely bluish green pus of these late wounds is almost a feature of penicillin therapy and has some diagnostic value. When the dressing is green on the surface and brown in the depths of the wound it can be assumed that anaerobic conditions were produced in consequence of improper packing. *Pyocyanus* seems to thrive in the wound under treatment with penicillin. Its presence has not interfered with successful skin grafting or secondary closure of extensive defects.

The foregoing patterns of infection exist in combination (table 5). The response to penicillin therapy may be predicted fairly accurately in accordance with the susceptibility of the various infecting organisms, as shown in table 6. There has been no opportunity to conduct significant observations on the organisms of gas gangrene.

Staphylococcal and beta hemolytic streptococcus infections are controlled satisfactorily with few exceptions. When these bacteria are predominant, penicillin therapy induces a prompt subsidence of cellulitis and inflammatory edema, a diminution in the quantity of pus and a mucoid character of the exudate. This "penicillin effect" correlates with the disappearance of the bacteria on smear and culture of the pus. Cultures of sequestrums removed during treatment are often negative for streptococci but positive for staphylococci. Seventy per cent of the total of 46 wounds harbored bacteria of one or both of these susceptible species.

*Pyocyanus* has a high nuisance value and may retard wound healing without causing any real concern.

The paramount problem in the penicillin therapy of septic gunshot fractures is putrid wound infection. It has been impossible to remove these organisms completely from wounds. There is a patent discrepancy between in vitro and in vivo results in many cases. A combination of systemic and local therapy will abolish fever and initiate clinical improvement in patients with pure putrid infections. In such instances suppuration continues until sequestrectomy is performed. The association of putrid wound infection with retained fragments of devitalized bone or foreign bodies is constant. After surgical trauma the infection flares up temporarily as the bacteria gain a foothold in the damaged tissue and blood clot of the wound. Attempts at partial or complete wound closure invite anaerobic cellulitis. Operative sequestrectomy should be per-

formed with minimal trauma and no exposed cortical bone should be left in the wound. Local therapy should be continued until the wound is healed to prevent secondary staphylococcal infection. The pus of such secondary infection provides an acceptable medium for the growth of proteolytic bacteria. Penicillin therapy must be supplemented with meticulous local care of the wound when putrid infection is present.

*Gram Negative Bacilli*—Gram negative bacilli of the colon, *praeacolon*, *Acrobacter*, and *para-Acrobacter* groups have been inconsistent and transient contaminants of the wound. They rarely persist for more than a week in a properly managed wound. The air of the dressing room has been found to be a source of such contamination. These bacteria have been below the level of clinical significance.

*Selection of Cases and Surgical Management*—It is necessary to have a definite program for the primary selection and subsequent management of all surgical patients. The presence of infection presents no diagnostic problem, but it has been recognized that infection may be latent or active. Activity of infection has been evaluated in terms of fever, cellulitis or gross suppuration.

The presence of sequestrums or retained foreign bodies is almost universal in these patients. Metallic missile fragments are not a frequent source of chronic suppuration. Bits of clothing, particles of concrete from land mines and other debris have been a fairly constant source of suppuration persistent during treatment. Sequestrums have been sterilized of streptococci but continued to harbor staphylococci, clostridia, *Proteus* and *Pyocyanus* in spite of local therapy. Sequestrectomy and the removal of foreign bodies are an essential part of an effective penicillin program.

Septic arthritis, uncomplicated by foreign bodies in the joint, responds dramatically. Local therapy is an effective supplement in the management of this complication. In some instances the plan of repeated aspiration and injection of penicillin has been followed. In other cases it seemed preferable to establish surgical drainage without actually placing drains in the joint cavity. Sequestrums or foreign bodies in the joint have required removal.

These observations have established operative procedures as part of the program and made it necessary to define a schedule of penicillin therapy in relation to operative intervention. The patients have been divided into four groups.

- Group 1 Latent infection and no nutritional depletion
- Group 2 Latent infection with nutritional depletion
- Group 3 Active infection with no nutritional depletion
- Group 4 Active infection with nutritional depletion

Nutritional depletion is estimated in terms of weight loss, general appearance of the patient and anemia.

Patients in group 1 with latent infection and no nutritional depletion receive no preliminary therapy. Penicillin is reserved for those cases which present postoperative exacerbations of infection. In a few patients with staphylococcal or mixed staphylococcal and hemolytic streptococcus infection penicillin has been used as a prophylactic measure to permit bone graftings or platings with primary closure. These cases have been carefully selected, and the results warrant a cautious expansion of such practice.

Patients in group 2 with latent infection and nutritional depletion profit by a period of supervised diet and repeated blood transfusions. The decision to use or withhold penicillin has been variable in accordance with clinical opinion and the predominant bacterial pathogen in the wound.

Patients in group 3 with active infection and no nutritional depletion usually represent instances of acute infection. As such they are candidates for immediate therapy.

Patients in group 4 with active infection and severe nutritional depletion comprise the majority of patients under treatment. By and large replacement therapy with diet, iron and whole blood is more effective when penicillin is used to control the infection. The timing of operation depends on the efficacy of the supportive program. Three to five days of penicillin and trans-

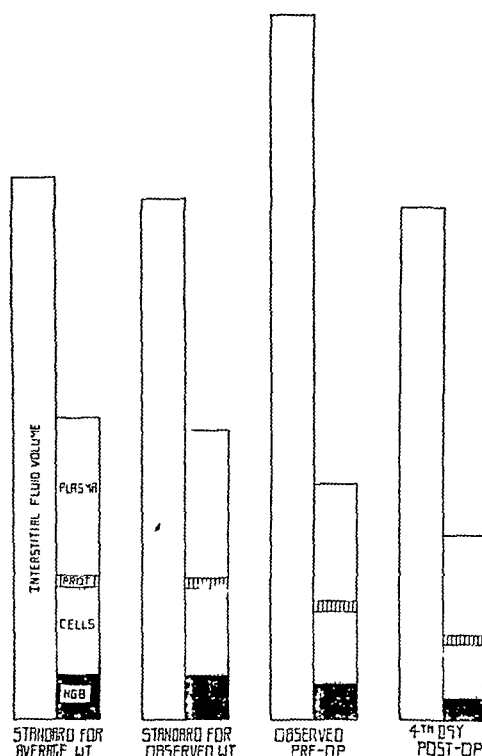


Chart 4—This chart is to be compared with chart 3. The patient received penicillin without supportive transfusions. A compound fracture was reduced and plated. The initial concentration of hemoglobin was nearly normal, the blood volume was reduced. After operation there was a further diminution in blood volume with a definite decrease in hemoglobin. The significant feature of the study was the observation that a loss of 4300 cc from the interstitial fluid volume was recorded coincidentally. It is argued that an available interstitial fluid may buffer the reduction of blood volume without preventing critical deficit in the hemoglobin fraction.

	Standard		Observed	
	Average Weight	Observed Weight	On Entry	4th Day Post-operatively
Body weight (kg.)	77	72.8	72.8	71.7
Interstitial fluid volume (cc)	1300	11700	13900	11600
Blood volume (cc)	680	660	5400	4300
Grams hemoglobin per 100 cc	15	15	14.5	11.7
Total gram hemoglobin	1020	990	810	500
Grams protein per 100 cc	6.5	6.8	6.0	5.5
Total grams protein	420	4	2	130

fusion therapy is often sufficient to prepare the patient for the indicated operation. For a few patients a week to ten days of preparation has seemed valuable.

Postoperatively it is important to maintain nitrogen balance. This can be done by supplying 130 Gm of protein daily. In most cases intravenous therapy is



necessary to maintain this intake on the day of operation and the first postoperative day Plasma supplies 7 Gm of protein per hundred cubic centimeters, whereas whole blood supplies more nearly 18 Gm per hundred cubic centimeters It can be seen that this protein requirement is met by 2 liters of plasma, 750 cc of whole blood or a mixture of 500 cc of whole blood and 500 cc of plasma The greater need for hemoglobin has been emphasized, and there is an increasing preference for whole blood Transfusion therapy is continued during the phase of convalescence to maintain blood volume, hemoglobin and red cell values

Patients with closed wounds and an uneventful convalescence have received penicillin systemically for eight to ten days The management of the open wound has been variable Removal of the pack in the first five days leads to wound hemorrhage, putrid wound infection of the blood clot and contamination with air

apy is continued for five to seven days The wound is then dressed and gently cleansed with hydrogen peroxide to remove blood clot and devitalized tissue fragments Gauze is saturated with salt solution containing 250 units of penicillin per cubic centimeter and gently placed in the wound under a seal of gauze impregnated with ointment Systemic penicillin is usually discontinued at this time if subsequent daily dressings are feasible Some form of therapy must be continued until all bare bone is covered with healthy granulation tissue Local therapy is preferable whenever practical because it is more economical than systemic therapy A high local concentration is particularly useful to reduce the intensity of infection with proteolytic clostridia

*Results of Treatment*—Table 7 records the results of penicillin therapy in 45 cases of septic compound fractures Forty, or 88 per cent, showed improvement in consequence of treatment Sequestrectomy was performed in 34 of the 40 "improved" cases, whereas no operation was performed in the 5 failures (table 8) One of the 5 failures ultimately came to amputation of the foot for extensive osteomyelitis of the entire tarsus Complete wound healing is known to have occurred in 25 of the 40 successful cases and the wound was clean and granulating at the time of the report in 13 others Of the 6 cases in which improvement occurred without sequestrectomy, recurrent infection in a previously healed wound subsequently developed in 2

A review of the data sheets reveals the fact that the scarcity of penicillin has led to its use for only the more seriously infected patients with extensive anatomic defects The period between penicillin therapy of the infection and complete wound healing may be considerable The results as given for the 45 patients followed through to wound healing are substantiated by the clinical progress of 20 other patients incompletely healed at the present time It is significant that no death has resulted from this early correction of the infected fractures The importance of the studies to date lies in the demonstration that penicillin permits active surgical intervention almost immediately Many of the patients reported as healed will require reconstructive operations It is premature to draw any conclusions as to the role of penicillin in such a program The incidence of late recurrence of infection cannot be predicted The need for continued observation of these patients is recognized

SUMMARY

For the routine systemic administration of penicillin there is a preference for the intramuscular route Intravenous therapy is used for the constant administration of the drug in cases of immediately life endangering infections In the treatment of meningitis, penicillin has been injected into the lumbar space, the cistern and the ventricles Systemic therapy has been used initially Local therapy has been supplemental and effective in those wounds appropriate for topical therapy In many cases a short period of systemic therapy has been followed by local treatment of an operative wound

It is premature to attempt a precise definition of dosage The quality and potency of penicillin are still showing rapid improvement A safe average dose for streptococci and similarly sensitive bacterial infec-

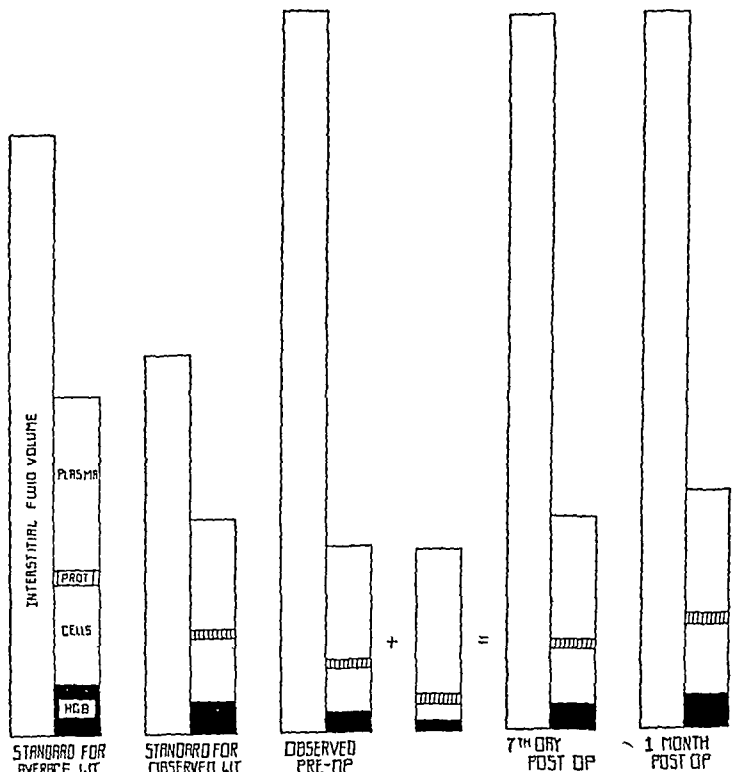


Chart 5—This chart should be compared with charts 3 and 4 It is designed to show the measure of benefit from 1,500 cc of whole blood and 2,500 cc of plasma, a total of 4,000 cc given over a three day period in relation to sequestrectomy The blood volume was increased to a standard normal value, but 1,500 cc of whole blood did not raise the total hemoglobin value to a normal level The total deficit would have been met more effectively by the use of a total of 2,500 cc of whole blood than by the mixture of blood and plasma The interstitial fluid volume remained unchanged throughout this period The increase in blood volume one month after operation is due entirely to an increase in cells with an unchanged plasma volume, the hematocrit has returned to normal

	Standard		Observed			
	Average Weight	Observed Weight	On Entry	Given as Trans fusions	7th Day Post opera tively	1 Month Post opera tively
Body weight (Kg)	82	82.1	52.1	4,000 cc	52	
Interstitial fluid volume (cc)	13,100	8,300	10,800		15,700	15,800
Blood volume (cc)	7,400	4,700	4,100		4,700	5,300
Grams hemoglobin per 100 cc	10	15	11		12.2	13.8
Total grams hemoglobin	1,100	705	450	225	570	730
Grams protein per 100 cc	6.8	6.8	7.2		6.6	7.22
Total grams protein	280	175	190	220	190	215

borne gram negative bacilli Immediate irrigation of the operative wound with penicillin introduced through irrigating tubes may prolong the period of postoperative bleeding At the present time systemic penicillin ther-

tions is about 20,000 units per day given in divided doses intramuscularly every four hours. Staphylococcal infections require 200,000 to 400,000 units daily given in divided doses every three hours intramuscularly. Solutions for local therapy containing 250 units per cubic centimeter have been satisfactory.

The untoward reactions attributable to penicillin are analogous to the syndrome of serum sickness. Urticarial reactions have been noted in approximately 5 per cent of the cases and have occurred as a complication of local therapy without parenteral penicillin. The urticaria may appear after the first dose or as long as nine days after the last dose. It appears equally frequently in the various weeks of treatment. Fever and, more rarely, abdominal cramps may appear with urticaria. Fever with dermatographism and no urticaria has been seen. These reactions suggest a form of

TABLE 2—Metabolic Balance as Affected by Penicillin Therapy in a Convalescent Patient

	Period 1—6 Days No Penicillin	Period 2—6 Days With Penicillin
Intake in grams		
Calcium	0.88	0.88
Phosphorus	5.33	5.13
Nitrogen	70.2	70.2
Urine output in grams		
Calcium	2.79	2.40
Phosphorus	4.85	4.62
Nitrogen	61.6	61.9
Urine volume in cc	11,518	11,145
Stool output in grams		
Calcium	1.42	1.28
Phosphorus	2.14	1.73
Nitrogen	17.7	11.5
Total output in grams		
Calcium	3.71	3.68
Phosphorus	6.99	6.55
Nitrogen	76.3	73.4
Metabolic balance		
Calcium	-2.83	-2.80
Phosphorus	-1.66	-1.42
Nitrogen	-6.1	-3.2

sensitization, but tests for sensitivity are negative. Treatment can be continued usually through the three to five day period of urticaria with subsidence of the reaction. There is no evidence of permanent sensitization to penicillin.

The results in the treatment of acute infections due to staphylococci and the sulfonamide resistant streptococci are additional proof that penicillin is an exceptionally potent antibacterial agent. The inability of the drug to control staphylococcal endocarditis has been confirmed. Evidence is accumulating that surgical intervention is often necessary in the penicillin therapy of staphylococcal osteomyelitis of the long bones, whereas a more conservative program is warranted in infections of the flat bones. Temporary improvement has been recorded during brief periods of treatment in actinomycotic infections. In general, the response to therapy is conditioned by the susceptibility of the infecting organism and the pathologic anatomy of the inflammatory process.

Particular emphasis has been given in this report to the usefulness of penicillin in the immediate management of septic gunshot fractures. When susceptible

bacteria predominate in a wound there is prompt improvement during treatment with recurrence later. This recurrence is due to sequestrums or foreign bodies and the inability of penicillin to sterilize such foci of infection. Surgical intervention is necessary in most

TABLE 3—Analysis of Bacterial Flora in 34 Cases of Putrid Infection in Septic Gunshot Fractures

1. <i>Enterobacteriaceae</i>	32
2. <i>Proteus bacilli</i>	18*
3. Nonhemolytic streptococci	19
a. Microphilic	6
b. Thermophilic	9
c. Mixed	4

\**Proteus bacilli* were present with *enterobacteriaceae* in 17 cases.

TABLE 4—Serologic Grouping of Beta Hemolytic Streptococci

Group A	6	Not group A, B, C	4
Group B	0	Not tested	4
Group C	1		—
Total			15

instances. Operations on patients with chronic infections are notorious for their incidence of shock, anoxic complications and prolonged convalescence. It is not surprising that this investigative program has been conducted with intensive operative preparation and postoperative care.

The "unsteady state" of these patients has been related to a reduced blood volume, a deficiency of the total circulating and available hemoglobin and an excessive interstitial fluid volume.

The blood volume is always small in relation to the standard, but considerable fluctuation in the actual

TABLE 5—Bacteriology of Septic Gunshot Fractures

Type of Infection	Number of Cases
Putrid only	4
+ <i>Staphylococcus</i>	9
+ <i>Staphylococcus</i> and hemolytic streptococcus	5
+ <i>Pyocyanus</i>	5
+ <i>Staphylococcus</i> , hemolytic streptococcus and <i>pyocyanus</i>	5
+ <i>Staphylococcus</i> and <i>pyocyanus</i>	4
+ Hemolytic streptococcus	2
+ Hemolytic streptococcus and <i>pyocyanus</i>	0
<i>Staphylococcus</i> only	4
+ Hemolytic streptococcus	1
+ <i>Pyocyanus</i>	1
+ Hemolytic streptococcus and <i>pyocyanus</i>	1
Hemolytic streptococcus only	0
+ <i>Pyocyanus</i>	1
<i>Pyocyanus</i> only	0
Total	46
Putrid infections	24 or 52%
<i>Staphylococcus</i> infections	30 or 65%
Hemolytic streptococcus infection	15 or 33%
<i>Pyocyanus</i> infections	10 or 22%

size of the blood volume occurs without apparent cause. Such a finding is not surprising in view of the increased interstitial fluid volume. During these phases of hemocoagulation and hemodilution there is considerable variation in the concentration of red cells, hematocrit, hemoglobin and serum protein. The usual laboratory findings show wide discrepancies from day to day unless

they are interpreted in terms of total circulating quantities on the basis of a known blood volume

A positive nitrogen balance may be established by an adequate diet alone, but restoration of hemoglobin values demands effective control of the infection. Penicillin therapy is associated with an improved appe-

TABLE 6—Response to Penicillin

Type of Infection	Penicillin Response	
	Systemic	Local
I Putrid		
1 Proteolytic clostridia	+	+
	(large dosage)	
2 Proteus bacilli	0	0
3 Nonhemolytic streptococcus		
a Mesophilic	+	+
b Thermophilic (Strep. faecalis)	0	0
		(or slight)
II Staphylococcus	+	+
	(7 days)	(often necessary)
III Hemolytic streptococcus	+	+
	(10 days)	(not essential)
IV Pseudomonas (pyocyaneus)	0	0

rate and effective repair of hemoglobin deficits. The rate of metabolic regeneration is too slow to keep pace with the needs of an operative program, however, and economy of penicillin and hospitalization requires a supplemental source of hemoglobin. Whole blood meets this demand more effectively than plasma. The quantity is formidable. It is estimated that 1,500 to 3,000 cc of blood per patient is necessary.

The bacteria present in the wounds are variously susceptible to penicillin and are important limiting factors in the choice of operative procedure in a given case. The staphylococci and hemolytic streptococci can be controlled effectively in the great majority of instances. Pyocyaneus is not inhibited and has a high nuisance value but rarely does more than delay wound healing. The proteolytic bacteria of putrid wound infection are present in three fourths of the cases.

TABLE 7—Results of Treatment of Septic Compound Fractures\*

Site	No. of Cases	Improved	Died	No Effect
Femur	17	13	0	4
Lower leg	17	12	0	0
Foot and ankle	8	7	0	1
Upper extremity	7	7	0	0
Skull	1	1	0	0
	41	40	0	5

\* This series is composed of cases followed for a sufficient period of time to allow evaluation and should be distinguished from the group of 10 cases reported in the bacteriologic analysis.

Anaerobic cellulitis is favorably influenced by penicillin given systemically in large doses. High concentrations of locally applied drug are necessary for the maximal inhibition of the proteolytic clostridia and the non-hemolytic streptococci. Proteus and the faecalis groups of streptococci are insensitive to penicillin. Putrid wound infection is a contraindication to extensive surgical revision or primary wound closure even when penicillin is given.

The results in the treatment of septic gunshot fractures indicate that dramatically successful results may be achieved by the meticulous surgeon who combines penicillin, effective blood transfusions and conservative surgical procedures into a program of thoughtful management of individual cases.

CONCLUSIONS

- 1 Penicillin has been administered intravenously, intramuscularly, intraarticularly and locally. The indications for each of these routes have been established.
- 2 The untoward complications noted in this series have been limited to urticaria and other reactions suggesting an analogy to serum sickness. The reactions are transient during therapy and there is no permanent sensitization. No significantly harmful effects have been observed.
- 3 Penicillin is an effective antibacterial agent in the treatment of acute infections caused by staphylococci, hemolytic and nonhemolytic streptococci, mixed infections due to gram positive bacteria and actinomycosis. The gram negative diplococci are susceptible to treatment. Gram negative bacilli are resistant. Mixed infections with both gram positive and gram negative bacteria may be benefited through the effect on the susceptible bacterial species. Malaria has not been controlled by penicillin.
- 4 An intensive investigation of the clinical status of patients with chronically infected gunshot fractures

TABLE 8—Relation of Sequestrectomy to Result of Penicillin Therapy

	Number of Cases	Sequestrectomy
Improved	40	34
No effect	5	0

has revealed a major deficiency of red blood cells and hemoglobin. Positive nitrogen balance may be established in the presence of continuing infection, but the synthesis of new tissue proteins and the regeneration of red cells and hemoglobin are dependent on control of the infection. The dramatic effectiveness of penicillin in rapidly establishing this phase of convalescence is added proof of the unique position of the drug among antibacterial agents. The normal rate of hemoglobin regeneration is not surpassed, and whole blood transfusion therapy is necessary.

5 The polymicrobial character of septic gunshot fractures has been defined in terms of putrid wound infection, staphylococcal infection, hemolytic streptococcus infection and Pyocyaneus infection. Staphylococci and streptococci are rapidly responsive to therapy. Anaerobic cellulitis due to the proteolytic bacteria of putrid wound infection responds to penicillin, but the bacteria may persist in the presence of devitalized tissue or wound exudates. Pyocyaneus is not susceptible to penicillin and is relatively unimportant as a single pathogen in the surgical management of the wound.

6 Penicillin therapy permits a direct and immediate surgical approach to the management of septic gunshot fractures. Its role in this regard is analogous to the use of vitamin K for patients with obstructive jaundice. Such a concept emphasizes the limitations of penicillin therapy and designates the supplemental position of penicillin in the overall surgical program.

# TRIBAL EPIDEMICS IN THE YUKON

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Native peoples in isolated parts of the world frequently experience fulminating epidemics following exposure to inhabitants of populated regions. The American Indians have recently experienced such epidemics along the course of the new Alaska Highway over previously remote regions of Alaska and Canada. Among these may be cited the diphtheria epidemic among the Indians on the Ross River during August 1943 and a pneumonia epidemic which has resulted in the death of 50 of the 200 or more inhabitants of Telegraph Creek, British Columbia between October 1942 and September 1943. The sequence of epidemics at the Indian settlement on Teslin Lake in the Yukon Territory reflects certain endemic diseases of populous areas which may constitute a hazard to remote communities.

The Indian village at the junction of Nisutlin Bay with Teslin Lake contains about 130 individuals who have had little exposure to outside civilization since the great gold rush of 1896. The tribe, which speaks the language of the Tlingit Indians of Alaska,<sup>1</sup> once descended the Takou River each spring to peddle furs at Juneau. From the time of the Klondike gold rush the people settled at a trading post established midway along the 110 mile expanse of Teslin Lake. Living along the trap lines in winter and returning to the lake village each summer for hunting and fishing, they have had little intercourse with the white man for almost half a century except through a few traders, mounted police and missionaries.

Work on the Alaska Highway in the spring of 1942 brought a change in the Indian way of life. The men worked on construction projects instead of going on the hunt, and the settlement was visited by numerous soldiers and workmen recently arrived from metropolitan areas. For the first time the tribe wintered in the village instead of going out along the trap lines. During the long preceding interval of isolation there had been little infectious disease except for occasional upper respiratory ailments in the spring trading season and one relatively severe epidemic of respiratory disease in 1936 supposedly introduced by placer gold miners. Acute illness was regularly absent during the months spent in the bush.

The first outbreak of serious infectious disease began in 1942, on September 20 of the summer during which construction work was begun. Within a month, in spite of strict quarantine measures, measles had spread to 121 natives and 8 half breeds in a population of 135 and had resulted in three deaths from a complicating bronchopneumonia. Of the 6 natives spared by the epidemic 5 were more than 70 years of age and 1 girl of 18 thought to have had the disease while away at school. Shortly after the appearance of measles more than half the tribe also came down with diarrhea.

This was identified as dysentery. The patients were observed and treated by army officers from a nearby dispensary.

In the year which followed, a succession of other infectious diseases invaded the village. Cases of jaundice began to appear in January 1943, the symptoms usually consisting of visible jaundice accompanied by malaise, anorexia and vomiting. This disease, which appears to have been catarrhal jaundice, affected only a few at a time but had reached nearly all the inhabitants within a period of four months. In April 1943 whooping cough appeared. This too spread to nearly every one but did not result in any fatalities. In June 1943 German measles reached nearly all. There were also sporadic cases of mumps, tonsillitis and middle ear disease complicating upper respiratory ailments. Tuberculosis was diagnosed in 3 cases, but this disease has been endemic among the local tribes for a long time.

The largest number of fatalities accompanied the meningococcic meningitis epidemic which began in the summer of 1943. On the morning of June 28 a 17 year old Indian youth died suddenly after an illness of twenty-four hours. The symptoms included drowsiness, headache, stiff neck, fever, vomiting, abdominal cramps and finally a shower of purpuric spots on the skin. On the following day 3 other Indians had developed similar symptoms. They were transported 100 miles by hydroplane to the Whitehorse General Hospital, where a diagnosis of meningococcic meningitis was made from spinal fluid studies by Dr. F. B. Roth. Two of these patients died soon after arriving at the hospital. One was a 22 year old brother of the first victim, the other a girl of 4 from the family next door. The third, a youth of 18, responded to therapy and recovered.

In the week which followed 6 more children from 2 to 18 years of age developed a sudden febrile illness with a similar onset consisting of irritability, restlessness, drowsiness, headache and varying degrees of stiff neck. Five were treated on the day of onset of symptoms and responded promptly to sulfadiazine therapy. In the youngest, aged 2, the disease was not recognized or treated until the third day after the onset of symptoms. This infant, a brother of the 4 year old girl who died, received four days of intensive therapy with sulfadiazine and intravenous and intrathecal antimeningococcus serum before the spinal fluid became clear and there was evidence of recovery. On July 16 the 6 year old son of the chief of the tribe developed the same sequence of symptoms and died within ten hours. He was examined at the time of death, and purulent spinal fluid was obtained which contained gram-negative diplococci. A small brother and sister and a cousin next door developed headache and fever but recovered after a few days of treatment with sulfadiazine. Altogether 14 children became ill and 4 died but no known cases of meningitis occurred among children or adults outside the tribe.

## COMMENT

The popular impression that these epidemics were a menace to the neighboring population resulted in the imposition of strict quarantine measures intended to prevent the contagion from spreading from the village to nearby troops and workmen. It is apparent, however, that these recent epidemics among the Teslin

From the P. R. A. Raucheria River Hospital on the Alaska Highway. This work was done under the auspices of the University Committee on Pharmacotherapy. Dr. Marchand was formerly research fellow in pharmacotherapy at Harvard University. 1. Jenness, Diamond A. The Indians of Canada. National Museum of Canada, Ottawa, 1934.

Indians can be attributed neither to insanitary living habits, since such habits have changed little from time immemorial nor to some supposed lack of resistance to disease in general on the part of the Indian. In the meningitis epidemic described, treated patients recovered and the course of both treated and untreated patients was not unlike that observed in white communities. No cases occurred in the neighborhood except among the Indians and the actual effect of the quarantine was the reverse of that intended, it served only to protect the village from further exposure to carriers among the white men.

Risk to the white population from these tribal epidemics was negligible because exposure was already universal and any one not immune would have contracted the disease previously. The danger of spread to the white population was therefore largely imaginary, but a real psychologic hazard which could readily have precipitated a panic.

It is well known that the common childhood diseases which attacked the Teslin Indian village are endemic in any large white population. The source of the meningococcic meningitis epidemic cited is even more clearly apparent from the fact that the tribe was surrounded by men recently arrived from urban communities where 30 per cent or more of the population carry meningococci in the nose and throat during the summer months. Meningitis occurring under such conditions of universal exposure must therefore be limited to susceptible individuals not previously exposed. This accounts for the appearance of the disease in epidemic form in a remote Indian village and its more sporadic occurrence in metropolitan areas where such infectious diseases are most frequent among small children and persons recently arrived from isolated regions.

#### SUMMARY

Infectious diseases endemic in urban communities have appeared along the Alaska Military highway as sudden epidemics among the American Indians. In 1942 and 1943 the native settlement on Teslin Lake was attacked successfully by measles, dysentery, catarrhal jaundice, whooping cough, German measles, mumps, tonsillitis and meningococcic meningitis. There were three fatalities from measles and four from meningitis. The proper medical management of such tribal epidemics requires recognition that the risk of infection is a serious hazard to the native population but not to previously exposed individuals recently arrived from populous areas.

**The Thyroid Gland**—It was just a little over one hundred years ago (1836) that T. W. King at Guy's Hospital in London saw and described for the first time the elementary units of which the thyroid gland is composed—the follicles with a translucent material called colloid. As the result of a long series of clinical and experimental studies, we now know that this gland secretes and supplies the body with a hormone which is of vital importance to body economy. This hormone was isolated and identified as an iodine-containing compound in 1915 by the American chemist E. C. Kendall, who called it thyroxine. It was subsequently (1927) synthesized by the London chemists C. R. Harrington and G. Barger. Our knowledge of the physiology and chemistry of the thyroid is intimately bound up with the story of the surgeon's efforts to remove safely enlargements of the thyroid—so-called goiters—Haagensen, C. D., and Lloyd, Wyndham E. B. *A Hundred Years of Medicine*, New York, Sheridan House, Inc., 1943.

## THE TRANSFUSION OF BLOOD AND BLOOD DERIVATIVES UNDER EMERGENCY CONDITIONS

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The problems which arise in connection with the transfusion of war casualties differ to some extent from the problems of peacetime injuries. In the first place the war casualties transfused are usually healthy persons who have suddenly had a knockout blow while the peacetime patients are sick people with a weak if not grossly disordered cardiovascular mechanism. Secondly the majority of wartime transfusions are given under adverse circumstances. Only too often the bombs responsible for the casualties destroy the lighting system and the heating and the water supplies. The transfusion team if the incident occurs at night, may be entirely dependent for instance on its own light supply. If all the windows in the building have been broken even electric torches are likely to cause a good deal of concern to air raid wardens in charge of the blackout. Work has to be carried out with a forehead lamp only the battery being carried in the pocket. Further, the number of patients requiring immediate attention often exceeds the accommodation and the staff is overwhelmed. Such conditions make both laboratory and clinical investigations extremely difficult. The sick patient or the single street accident in peacetime can on the other hand be treated under optimum conditions as regards both general and laboratory facilities.

My object in the present paper is to discuss the principles that have been tentatively formulated as the result of recent experience for the treatment of casualties under the type of emergency conditions outlined.

#### TRANSFUSION TEAMS

It has proved both impracticable and unwise to supply every hospital with sufficient transfusion fluids and equipment to enable it to meet any wartime emergency, however severe. In the first place the quantities required for the whole country would reach astronomical figures and secondly if the hospital itself is hit as has not infrequently occurred the stocks are destroyed. In practice hospitals have been given enough derivatives and equipment to meet the needs of the first few hours and instructed to telephone immediately to a blood depot for further supplies as soon as the incident occurs. The depot then at once dispatches equipment, blood derivatives and often personnel trained in transfusion technique. It has been found that this system causes no delay in instituting treatment since casualties are not usually rescued from ruined buildings for some hours and the transfusion teams reach the hospital in many cases before the patients. In the case of the smaller country hospitals this provision of skilled personnel has proved of considerable value. It is essential that nurses as well as doctors should understand the principles of treating patients suffering from shock. They must be able to record blood pressure readings and manipulate the administering apparatus since the maintenance of treatment must be left in their hands when large numbers of casualties occur. The importance of adequate maintenance treatment cannot be overstressed. Unless the

From the Northwest London Blood Supply Depot

patient is constantly watched and the rate and quantity of the transfusion controlled the best results are not obtained. One trained person can at most look after two casualties after the transfusion has once been started and it is preferable to allocate one nurse to each casualty.

#### TYPICAL CASE IN WHICH TRANSFUSION IS REQUIRED

In the early weeks of the blitz on London casualties were considered to require immediate transfusion only if they showed signs of circulatory collapse as evidenced by a blood pressure below 100 mm of mercury, a cold and clammy skin, pallor or cyanosis, restlessness and a rapid thready pulse. If the blood pressure was above this level and the associated signs and symptoms were not present however severe the injury the patient was sent to the operating theater without transfusion. It was then noted that many of these patients who had no obvious "shock" on admission showed a rapid deterioration either in the theater or on return to the ward and subsequently died. Others who owing to their apparently poor condition on admission were retained for resuscitation and were given transfusions before operation did well.<sup>1</sup> Careful analysis of the available observations made it clear that certain individuals especially the younger people may even show a compensatory rise in blood pressure as a result of severe injury.<sup>1</sup> Further trauma however as for instance debridement in the operating theater results in a sudden collapse of such patients which even prompt transfusion may then be unable to counteract. It is now widely held that any severely injured patient should be transfused, irrespective of the clinical condition and the level of the blood pressure before being sent to the operating theater in fact transfusion should be begun as soon as possible after the injury. The victims of severe industrial accidents should be transfused in the factory, the victims of the airplane crash on the site of the incident, battle casualties as near the front line as possible. After the transfusion has been started the patient may be transferred to a hospital for surgical treatment, and the transfusion carried on in the ambulance. It is in this way sometimes possible to prevent a serious fall of blood pressure and resulting renal damage. Recently of 4 patients with extensive burns, 3 were transfused before a fall in blood pressure had occurred. Subsequently they showed only minimum impairment of renal function. The fourth patient received no transfusion until cleaning up in the theater was almost complete and the blood pressure was unobtainable. Renal impairment in this patient was considerable and he subsequently died.

It is perhaps difficult to define what constitutes a severe injury. Any compound fracture especially compound fracture of the femur, multiple fractures, severe lacerations of large areas of muscle crush injuries and second degree burns of an area bigger than one hand should all be regarded as severe injuries requiring transfusion irrespective of the clinical condition and the blood pressure level.

Though as already stated, the majority of casualties are healthy persons, it is inevitable that bombs should sometimes fall on the old and infirm. The treatment of elderly subjects who have become casualties presents certain difficulties. Is the woman of 60 with auricular fibrillation or the man of 70 with bronchitis and evidence of hypertension to be transfused with large

quantities of blood or derivatives? If they are not transfused they will die of circulatory failure, therefore the risk of overloading an already damaged heart by forcing fluids into damaged vessels must be taken. In practice such patients have often stood transfusion extremely well.

#### TRANSFUSION FLUIDS

1 *Blood Substitutes*—Such substitutes as pectin and isinglass have not been used. No opinion can therefore be expressed as to their value in the treatment of circulatory failure following injury. No use has been made of saline solution as adequate supplies of blood and blood derivatives have always been available and are theoretically more suitable.

2 *Blood*—In discussing the relative values of blood and derivatives it is important to distinguish between immediate and late transfusion therapy following injury. The transfusion unit called to the scene of an incident usually carries stored blood and serum or plasma. The bigger hospitals are also stocked with both blood and derivatives the former in small quantities.

(1) *Immediate Transfusion* Experience has shown that serum and plasma are adequate for the immediate transfusion of all patients suffering from circulatory collapse following injury. There is an impression among surgeons that such patients do better when given blood, but there is no evidence to substantiate this. In one district in London all air raid casualties over a period of months were treated with derivatives only no blood was made available and the results compared favorably with those obtained elsewhere.<sup>2</sup>

In practice it is usual to give one or more bottles of serum or plasma followed by one or more bottles of stored blood if this is available. Transfusion depots, however do not all now hold large stocks of blood. In some only enough blood is kept in stock to cover day to day needs and small air raid incidents, since derivatives made from out of date blood are less satisfactory than those made from fresh blood taken especially for the purpose. In the event of a sudden large scale emergency, derivatives are used with every confidence for the first twelve hours, during which time additional supplies of blood are collected and made available for subsequent use.

(2) *Late Transfusion* The importance of transfusion therapy in the first twenty-four hours following injury is now generally recognized, its importance in the later stage is less well appreciated. It has, however, been found that following injury anemia develops with remarkable frequency. This is particularly true in the case of burns. This anemia may be extremely severe when associated with extensive burns as shown in the case to be reported but is found in milder degree following less serious burns. Two patients who had second and third degree burns of the hands and face only showed a fall in hemoglobin from 100 per cent (Haldane) to 70 per cent (Haldane) within eight days. This was associated with the appearance of nucleated red cells in the peripheral blood in 1 patient. The cause of this anemia its occurrence and its nature require further study but are not for discussion here. It must however, be looked for in all cases and obviously requires treatment with blood rather than derivatives. On theoretical grounds it might be argued that fresh blood should be transfused in this stage largely because sepsis is often present and leukocytes which may be of

<sup>1</sup> Grant R. T. and Reeve E. B. Brit. M. J. 2: 293 (Aug. 30) 1941.

<sup>2</sup> Brown H. A. and Mollison P. L. Brit. M. J. 2: 821 (Dec. 14) 1940.



value rapidly deteriorate in stored blood. No controlled experiments have however been carried out to prove that fresh blood is preferable to stored blood even in such cases. Many patients have indeed done extremely well who have received preparations of concentrated red cells prepared from stored blood.

**Stored Blood**—For routine purposes 420 cc of blood is taken into an anticoagulant mixture consisting of 100 cc of 3 per cent sodium citrate in distilled water to which is added 20 cc of 15 per cent dextrose in distilled water. The survival rate of the red cells in this preservative is satisfactory up to fourteen days. Recently a more acid dextrose citrate diluent has been used which gives satisfactory survival up to twenty-one days at least.<sup>3</sup> For emergency use only group O blood is stored and issued. For the treatment of anemia that may develop later blood of the same group as the donor is supplied whenever possible. A rigid technic for the determination of blood groups is adopted by all the blood supply depots organized by the Ministry of Health and Medical Research Council.<sup>4</sup> When trained personnel are available direct matching of the donor's cells against the recipient's serum is carried out. High standards in grouping technic have proved to be a basic requirement of any efficient transfusion service.

#### BLOOD DERIVATIVES

In treating large numbers of severely injured patients when speedy action is essential derivatives have the advantage over blood that they can be given without preliminary cross matching. For this reason it is usual to start treatment immediately with plasma or serum and while the first one or two bottles are running in, cross matching may be carried out, and if further fluid is available and required, blood known to be compatible may then be given. Serum and plasma have been used extensively since the spring of 1940 in both fluid and dried form. All observers agree that the clinical results obtained are equally satisfactory with all preparations. Actual records are available of 1,600 bottles of serum and 368 of plasma used in the area served by the Northwest London Blood Supply Depot for the treatment of acute cases. No severe or alarming reaction of any sort was reported. In a few instances there was some rise of temperature, a rigor or vomiting, but such incidents are not unlikely to occur without transfusion in the severely injured patient who may also have had a general anesthetic. Reactions of a more severe sort have been noted in medical patients, such as those with nephrosis or ulcerative colitis, to whom derivatives have been given to raise the serum protein level. The cause of such reactions is obscure and is being further investigated; the problem is clearly an academic one, since reactions are not seen in the traumatic cases for which derivatives are at present needed. From the clinical point of view, dried are to be preferred to fluid preparations for the following reasons:

i. A dried preparation is always sterile, while it is less easy to be sure of sterility in fluid preparations.

ii. The concentration of protein given can be varied by altering the amount of diluent added. This is of considerable importance especially in the treatment of burns, as will be discussed later.

iii. Different diluents may be used for reconstituting the dried products, for instance, distilled water, dextrose or saline solution may be added.

**Concentration of Derivative**—For patients with circulatory collapse following operation, delivery or trauma apart from burns and possibly crush injuries, derivatives are used in normal concentration. The circulatory collapse associated with injury other than burns or crush is dependent on a reduction in circulating blood volume due to loss of fluid, either into the tissues or externally. This fluid in the great majority of cases is probably whole blood, since hemoconcentration is not seen.<sup>1</sup> In order to restore this volume it is essential to administer fluid as well as protein and salts. Theoretically fluid might be administered by mouth and the protein and salts given in concentrated form by intravenous injection, but for severely injured patients who may be delirious, vomiting or unable to help themselves it is much simpler to administer fluid by the same route as other necessary therapy. These derivatives are given in normal concentration in an attempt to supply protein, salts and fluid.

In the case of burns the situation is different. Hemoconcentration is almost invariably present. Even when only such a small area as one hand is burnt some degree of hemoconcentration is often found. This is due to loss of fluid into the skin and subcutaneous tissues and to actual exudation from the burnt areas.<sup>2</sup> The immediate need is to replace fluid and reduce the hemoconcentration. For this purpose it is clearly better to use derivatives than whole blood which will add cells to the already concentrated circulating fluid. Proteins as well as fluid, however, pass out into the burnt areas and need replacement, it is therefore an advantage to give at least a twice concentrated derivative. The use of concentrated derivatives has been found in practice to serve a further important function, since it reduces the local edema present in the burnt areas. Such reduction, especially of the facial edema, is difficult to assess accurately. Two patients were seen recently who had second and third degree burns of the face and hands; one had also a compound fracture of the right tibia and fibula and the other an injury to his right knee. Both were treated with approximately 1 liter of twice concentrated serum on admission. Fifteen hours later one was given a further 400 cc of three times concentrated serum with the object of reducing the facial edema, since both the blood pressure and hemoglobin levels were satisfactory. Within a few hours there was a definite difference between the faces of the 2 patients. The man who had received further doses of concentrated serum was much less tense and swollen than the one who had not. The difference in their general condition was equally definite. Unless certain special preparations are used, more than twice concentrated derivatives are rather viscid.

In transfusing a severely shocked patient when it may anyhow be difficult to maintain an adequate rate of flow this is a disadvantage. In practice, therefore, in the Northwest London area it is usual to give patients with burns an initial dose of twice concentrated serum followed especially if the face is affected, by further treatment with three or four times concentrated serum. At the same time every effort is made to ensure as large an intake of fluid by mouth as possible.

It has been found that patients with burns affecting only a small area of the body surface, such as one hand, may often show some degree of hemoconcentration. An initial transfusion of about 800 cc of twice concentrated derivative is therefore now given to all such patients.

<sup>3</sup> Louttit, J. F., Mollison, P. L., Murray, H., and Young, I. M. Personal communication to the author.

<sup>4</sup> The Determination of Blood Groups, Medical Research Council War Memorandum No. 9, London, His Majesty's Stationery Office, 1943.

<sup>1</sup> Leach, I. H., Peters, R. A., and Rositer, R. J. J. F. Exper. Physiol. 32, 67, 1943.

**Diluent for Blood Derivatives**—Satisfactory results are obtained with distilled water isotonic solution of sodium chloride and dextrose solution as a diluent for blood derivatives. In the case of burns it is however a great advantage to use dextrose wherever possible. If only fluid derivatives are available 10 cc of 50 per cent dextrose may be added to each bottle of derivative (containing 400 cc of fluid). If dried products are used they may be dissolved in 5 per cent dextrose. It has been found that patients vomit less and are in better general condition during the first forty-eight hours when dextrose rather than distilled water is used. This is possibly due to the effect of dextrose in mitigating liver damage.

#### DOSAGE

**Immediate Transfusion**—No hard and fast rule can be laid down for dosage of blood or derivatives. Each patient must be treated individually and should be watched throughout the transfusion, serial blood pressure readings being made. If the patient when first seen has a low blood pressure, enough fluid must be given to raise the blood pressure to 100 mm of mercury and maintain it at that level for half an hour before the patient is allowed to go to the operating theater. When possible the transfusion should be continued throughout the operation and on the return to the ward. For some patients 500 cc may be sufficient to raise and maintain the blood pressure, for others it may be necessary to give 2 to 4 liters to raise the pressure and more will be required to maintain it during the period of operation. No case should be regarded as hopeless until at least 3 liters has been given without any rise in pressure or clinical improvement. To a patient with a severe injury but an initial high pressure at least 1 liter should be given before allowing the patient to go to the theater and more during the operation. The pressure of such patients often falls to normal levels while the transfusion is in progress. The pulse rate has proved a most unreliable guide to treatment. Both fast and slow pulse rates have been found in association with a low blood pressure. As the blood pressure rises the pulse rate may, if it is already rapid, become slower or, if originally slow, it may quicken. Of patients in whom it is impossible to take a blood pressure because, for instance, both arms are broken the quality of the pulse may give some indication of the quantity of fluid to be administered, but serial blood pressure readings should never be omitted even under the most adverse circumstances if they can possibly be obtained. Hemoconcentration is rarely if ever found except following burns or crush injuries. From the point of view of treatment and apart from the collection of data which may be of value in our understanding of the general pathology of the effects of injury, serial hemoglobin readings are of little value in the acute stage following simple trauma. In the case of burns and crush injuries they are an essential guide to treatment. An attempt should be made to take serial hemoglobin readings at least two hourly intervals for the first twenty-four hours even under the most adverse circumstances. In such cases derivatives must be administered until the hemoglobin level is at or below 100 per cent (Haldane). If the blood pressure is then also satisfactory the transfusion may be stopped or the rate reduced to an extremely slow drip. Further observations must however be made to ensure that hemoconcentration does not recur. If it does further fluid must be given. Additional interesting information is obtained if it is possible

to take hematocrit readings. It must, however, be remembered that the number of veins of the severely injured patients are often limited, centrifuges are not always available and personnel are insufficient when many burns have to be attended to at once. Unless red cell counts are also done, the hematocrit reading is likely to be misleading.<sup>7</sup> In practice, hemoglobin determinations alone have proved a satisfactory guide to treatment in the acute stage.

Experience has shown that there is little risk of overdosage while many lives have undoubtedly been lost by underdosage. A patient with extremely severe burns was given 25 pints of serum in forty-eight hours because whenever the transfusion was stopped he became restless, the blood pressure fell and hemoconcentration occurred. When the transfusion was resumed the patient slept quietly, the blood pressure rose and the hemoglobin fell to normal levels. At postmortem no fluid was found in the body cavities, and lung tissue floated. Considerable amounts of fluid were found, however, in the muscles. The risk of causing edema of the lungs appears to be extremely slight.

**Later Transfusion**—In the case of later transfusion therapy it is essential to have available daily red and white cell counts, hemoglobin determinations and protein estimations. Anemia developing at the end of the second or third week associated with hypoproteinemia is commonly seen in burns. Leukocytosis is usually found, but a white cell count of under 2,000 per cubic millimeter may occur, unassociated with sulfonamide therapy. At this stage, as already stated, whole blood should be given in doses sufficient to maintain a satisfactory hemoglobin, white cell and protein level. Again no rule for dosage can be given, each case must be judged on its merits. It must be remembered, however, that repeated large transfusions are often necessary. The most satisfactory results are obtained with blood of the same group as the patient rather than with universal donor blood. Transfusions must be continued in some instances at intervals over several weeks. Some of these points are illustrated by the subjoined case report and the accompanying chart.

M. S., a man aged 28, was burned at 7 p. m. by his clothes catching fire. At 10.30 he was admitted to the hospital. The blood pressure was 130 systolic, 78 diastolic. There were second degree burns with small areas of third degree of the neck, back, buttocks, both legs, upper arms, hands and wrists. At 11.30 p. m. cleaning up was begun in the theater with saline solution and 1 per cent gentian violet. Tanning was done with 10 per cent gentian violet and gentian violet jelly. Sulfanilamide powder and tulle gras were employed on the hands and round the anus. At 12.30 transfusion was started while the patient was still in the theater. The hemoglobin prior to transfusion was 120 per cent (Haldane). Further blood pressure readings were unobtainable owing to dressings. The patient was returned to the ward at 1.30 a. m. During the first twelve hours 1,500 cc of twice concentrated serum was given, and during this period the hemoglobin fell to 80 per cent. The patient was taking fluids well by mouth and was not vomiting. Two days later he developed a cough and signs in his chest and he was given sulfapyridine 4 grams (0.25 Gm.) every four hours. On the fifth day the hemoglobin was 50 per cent and the red cell count 2,500,000 per cubic millimeter. He was given 2 pints of fresh group O blood. The count continued to fall and on the seventh day his hemoglobin had fallen to 36 per cent, red cells numbered 1,700,000 and white cells numbered 40,000. There were 29 nucleated red cells per hundred white cells, many of them extremely immature. The serum protein was 6.4 Gm per hundred cubic centimeters and the blood urea 66 mg per hundred cubic centimeters. Two pints

of group A blood, the patient being group A, was given with some improvement in the hemoglobin and serum protein and a fall in the blood urea. The rise in hemoglobin was, however, slight and there was a further fall in serum protein to 5.2 Gm per hundred cubic centimeters, the albumin fraction being greatly reduced. He was given a further 2 pints on the tenth day and a further 2 pints on the sixteenth day. After this point the hemoglobin and protein rose steadily to a satisfactory level, which was maintained. Throughout the period of observation urinary output was satisfactory, though albumin, hyaline casts and urobilin were present during the first few days. Serum bilirubin reached a maximum figure of 2.85 on the third day and then fell, being below 1 mg on the ninth day, though the urine still contained much urobilin. Detailed bacteriologic investigations were not made, as facilities were not available. Hemolytic streptococci were not found.

It is recognized that this patient should have been transfused before he went to the theater and that in the later stage he should theoretically have been given larger transfusions to produce a more rapid rise of hemoglobin. He had, however, only one vein available, all the rest of the body being burnt. This vein was in the antecubital fossa with burns above and below, and as the patient was nursed on his face it was something

proved particularly important when the veins of the leg are used, since even if they are not collapsed these veins are liable to undergo spasm, especially when serum is used.

*Late Transfusion*—After the first twenty-four hours, all transfusions should be given at a slow drip rate.

#### SITE OF ADMINISTRATION

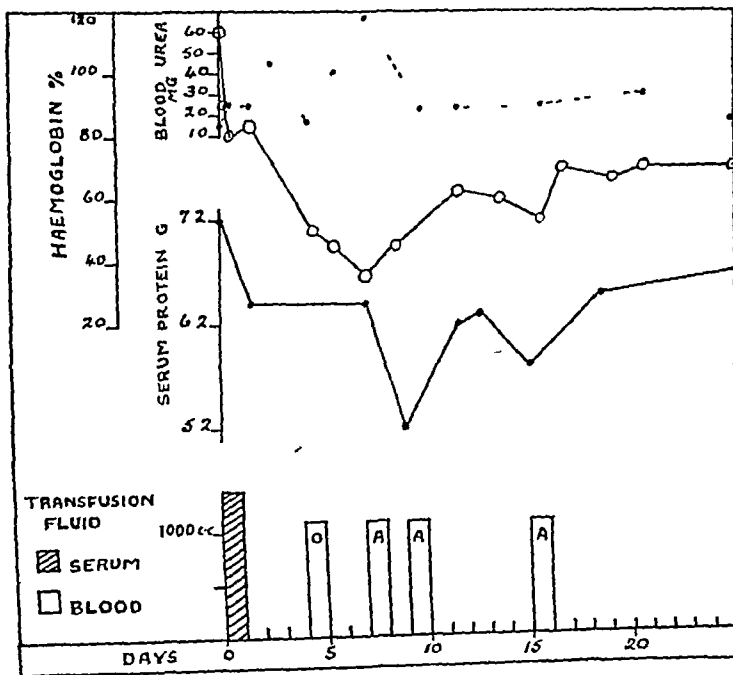
The vein in the antecubital fossa, though often the most obvious, is not the site of choice. Even though the arm is splinted the restless patient is likely to bend the arm slightly and in so doing jerk the needle out of position. A splint also adds to the patient's general discomfort. If possible a small vein on the front of the forearm should be used. When the needle is in the vein the rubber tubing is curled round and strapped in position so that no direct pull is exerted on the needle if the tubing above the needle is jerked. The patient is also able to move the arm freely without affecting the position of the needle. The stability of the apparatus is of considerable consequence, since it is important to start transfusion as soon after injury as possible though the patient may have to be moved considerable distances immediately it has been begun. In adults, especially if the arm is first warmed by the application of a hot water bottle, no difficulty is usually experienced in finding the veins of the forearm.

If both arms are injured and the leg has to be used, it is wise to cut down and insert a cannula into the internal saphenous vein without trying to perform a venipuncture. Pressure will almost always be required to maintain an adequate flow of fluid for at least the first 500 cc when a leg vein is used.

If a patient has been severely burnt no vein may be available. Fluid can then be administered by the sternal route. Indeed this has often proved to be a life saving measure. The Salah or other sternal puncture needle should be regarded as a routine piece of equipment for every resuscitation team. If no special needle is available a sawed off lumbar puncture needle may be used. The needle is passed into the sternal cavity in the usual way, filled with sterile saline or citrate solution by means of a syringe and connected with the routine administering unit. If pressure is not applied, 400 to 500 cc can be usually given by this route in about forty minutes. If pressure is applied the rate is quickened. The needle may sometimes appear to get blocked, but if one changes the position of the needle without actually withdrawing it the flow usually is restored. Large quantities may be given successfully by this route.

#### CONCLUSION

This paper has been concerned with only one aspect of the treatment of the severely injured patient, namely transfusion. The personnel of a transfusion unit must, however, be prepared to administer and control other measures adopted for the resuscitation of casualties. The use of heat or cold, of oxygen and of sedatives and the administration of fluids by mouth must all be considered and adjusted to meet the needs of each particular patient, special attention being paid to both respiratory and renal function. A satisfactory blood pressure and hemoglobin level is of little value if associated with greatly reduced urinary output. Further, the necessity of the closest cooperation in all aspects of treatment between the resuscitation unit, the surgical unit and the anesthetist must be recognized if the best results are to be obtained.



Hemoglobin, serum protein and blood urea levels in a patient with severe burns treated with serum and blood transfusion

of a gymnastic feat to insert the needle and not too easy to retain it in position for long periods. It might be commented that in this case the sulfapyridine was a complicating factor. It may have been, but anemia has also been noted in patients who have not received sulfonamide drugs. The patient made an excellent recovery.

#### RATE OF ADMINISTRATION

*Immediate Transfusion*—As already stated, the type of patient under consideration is usually healthy. The rapid administration of at least a liter of fluid does not cause cardiac embarrassment. It is safe and often essential to give this quantity in the first half hour, further amounts may then be given at a drip rate depending on the level of the blood pressure. It is often necessary to give this initial volume with the help of pressure, since circulatory failure may have led to complete collapse of the veins and gravity alone is insufficient to cause a free flow of fluid. Later the flow usually becomes satisfactory with gravity. Pressure is most readily applied by means of a Higginson syringe or other form of rubber bulb attached to the air entry tube of the transfusion bottle. The use of pressure has

It may be concluded that much has been learnt in the last four years about transfusion therapy following severe trauma. The use of massive dosage of both blood and of high quality derivatives and the recognition of the late development of anemia has greatly increased the chance of survival of the severely injured person. It is, however, clear that there is still much that is obscure about the underlying disturbances of function that result from such injuries. Why do some individuals require only 400 cc and others several liters to restore their circulation? Why does severe injury result in impairment of renal function? Why does even a small burn lead to the development of anemia?

Careful and detailed studies carried out under optimum working conditions rather than under emergency conditions on human beings rather than on animals are required. The accident wards of any large hospital should provide the necessary material. Even under emergency conditions it has been shown that the best results are obtained only by a careful study and analysis of factors such as the blood pressure and hemoglobin in each individual patient. Controlled though simple observations rather than clinical judgment are the necessary guides to transfusion therapy.

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## TOXIC NECROSIS OF THE LIVER FROM TRINITROTOLUENE

### REPORT OF THREE CASES

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Trinitrotoluene poisoning is primarily a civilian war-time problem. In the first world war there occurred among the munition workers in several plants in the United States 17,000 instances of poisoning with 475 deaths.<sup>1</sup> Apparently in the present conflict the incidence is much lower, although no statistics are available as yet. Doubtless there are many reasons for the improvement. Roberts,<sup>2</sup> Bedford<sup>3</sup> and other British physicians<sup>4</sup> have emphasized the important role of the physician in the prevention of disease by careful selection of workers, determination of their condition at the time of employment and constant supervision. In the modern munition plants every effort is made to protect the worker. The employees are provided with freshly laundered uniforms daily, a shower bath is required at the end of the work period, ventilation has been improved, respirators have been provided in some instances, but nevertheless exposure to dust and fumes is sometimes excessive. Evans<sup>5</sup> observed 7 cases of jaundice, 2 of them fatal, in one factory in England in 1941. Toxic necrosis of the liver is one of the rarer manifestations of trinitrotoluene poisoning but it is fatal in approximately one third of the patients so

afflicted.<sup>6</sup> The present cases are reported to emphasize the problems involved. Similar isolated instances are probably occurring among munition workers throughout the country.

### REPORT OF CASES

CASE 1—R, a man aged 46, was admitted to the hospital on May 3, 1943 because of progressive jaundice of five or six weeks' duration accompanied in the last two weeks by weakness and 15 pound (6.8 Kg) loss of weight, and clay colored stools. For two and one-half months prior to the onset of the jaundice the patient had been employed in an ordnance plant engaged in the loading of shells with trinitrotoluene and other explosives.

The record disclosed that for the first three and a half weeks of his employment the patient was not exposed to trinitrotoluene in any form. For thirteen days, from Feb. 4 to Feb. 18, 1943 he spent a total of ninety-five hours in a "cubicle" tending a vat of a fuming mixture of trinitrotoluene. "Sores" in the nostrils appeared during this period. These would bleed and crust over and were attributed by the patient to the fumes. From February 19 to April 20 the patient had little or no exposure to explosive being engaged in the baling of empty cardboard boxes some of which, although cleaned, may nevertheless have been contaminated with particles of powder. Weakness, fatigability and shortness of breath developed as the jaundice progressed. A local physician prescribed a "liquid medicine and some green pills." The patient continued to work until two weeks before admission to the hospital.

On admission there was some dull, boring, intermittent but not colicky pain in the left hypochondrium. The patient's past history and the systemic inquiry yielded no relevant information. Physical examination revealed that the patient was well nourished, well developed and deeply jaundiced. He weighed 170 pounds (77 Kg). The spleen was not palpated. The lower border of the liver was palpable about 6 cm. below the costal border in the right midclavicular line. The blood picture was normal and remained so. During the first week of hospitalization the oral temperature fluctuated between 99 and 100 F and then remained normal. The blood Wassermann and Kahn reactions were negative. On two occasions the red blood count was 5,000,000 with a hemoglobin of 15 Gm and a white cell count of 8,200, containing 63 per cent polymorphonuclears, 9 per cent large lymphocytes, 15 per cent small lymphocytes and 13 per cent mononuclear cells. Repeated urinalyses were normal except for the presence of bile. Urobilinogen was present. Bile was absent from the stool on admission but soon returned. The dextrose tolerance test on May 8th gave the readings as follows: 8.45 a.m., blood sugar 75 mg. per hundred cubic centimeters; 9.15 125 mg.; 9.55, 143 mg.; 10.45, 112 mg. The tests of hepatic function are given in table 1.<sup>7</sup> The Webster test performed by Dr. E. S. Guzman Barron was negative.

The treatment consisted of rest in bed and a high carbohydrate moderately high protein and low fat diet supplemented by the intravenous infusion of dextrose, the patient receiving 1,500 cc. of 10 per cent dextrose in distilled water or isotonic solution of sodium chloride intravenously on May 4, 6, 7, 8, 10, 11 and 12. His appetite continued good, enabling him to eat from 1,500 to 2,500 calories daily (approximately 400 Gm.

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<sup>1</sup> Voegtlin, Carl, Hooper, Charles W. and Johnson, J. M. Trinitrotoluene Poisoning—Its Nature, Diagnosis and Prevention. Bull. 126. Hyg. Lab. L. S. P. H. S. 1920.

<sup>2</sup> Roberts, Harry M. The TNT Health Hazard. Brit. M. J. 1: 647 (1941).

<sup>3</sup> Bedford, T. Preventive Work in Connection with TNT Poisoning. Publ. War Med. 2: 526 (July) 1942.

<sup>4</sup> Discussion on Trinitrotoluene Poisoning. Proc. Roy. Soc. Med. 35: April 21, 1942.

<sup>5</sup> Evans, Robert M. TNT Jaundice. Lancet 2: 552 (1941).

of carbohydrate, 100 Gm of protein and 20 Gm of fat) Twenty-five mg of sinkayvite<sup>8</sup> was given intramuscularly on May 5

On May 8 at the suggestion of Dr E S Guzman Barron, 180 mg of cystine hydrochloride dissolved in 50 cc of isotonic solution of sodium chloride and neutralized with 0.5 normal sodium bicarbonate was given intravenously Vitamin B was administered daily beginning on the twelfth day of hospitalization and crude liver extract daily beginning with the seventeenth day The patient's condition had definitely improved, however, before either of the latter medications was given The jaundice gradually subsided, and the tests of liver function returned to normal The patient was discharged on June 5 He returned on June 28 for x-ray examinations, which disclosed a normal visualization of the gallbladder, after the administration of dye, without evidence of stone, and a normal esophagus, stomach, duodenal bulb, terminal ileum and colon

decreased, as may be seen from the level of the serum bilirubin in table 2 The appetite returned rather rapidly, as did the patient's sense of well being Treatment consisted of rest, a high carbohydrate moderately high protein and low fat diet (approximately 300 Gm of carbohydrate, 75 Gm of protein and 15 Gm of fat daily) No medication of any kind was prescribed After the subsidence of the jaundice the gallbladder visualized normally roentgenologically

The patient had been employed in an ordnance plant since January 1943 In January, February, May and June her only contact with explosives was the slight one occasioned by dealing with patients whose clothes were contaminated with explosives other than trinitrotoluene In March, April and July she worked in a first aid room in which she came in contact with patients whose clothes were probably contaminated with mixtures of trinitrotoluene and ate two meals a day in a concrete bombshelter often crowded with these workers The air in this

TABLE 1—Laboratory Studies in Case 1

Date	Bilirubin <sup>a</sup>			Cholesterol <sup>b</sup>	Cholesterol Esters	Prothrombin <sup>c</sup>	Proteins <sup>d</sup>			Fibrinogen	Hippuric Acid Excretion <sup>e</sup> Gm	Galactose Tolerance <sup>f</sup> Gm
	Direct, Mg per 100 Cc	Indirect, Mg per 100 Cc	Per Cent				Total, Gm per 100 Cc	Albumin, Gm per 100 Cc	Globulin, Gm per 100 Cc			
5/4	21.6	23.2	91	169	20	51%	6.48	3.71	2.77	0.38	0.11	7.0
5/7				145	16							
5/10	19.5	20.6	73									
5/12						75.6					0.48	
5/13						100						
5/14				130	10	100						
5/17	15.5	22.7	68	155	16	100	6.38	3.50	2.88	0.37		
5/22				160	20		7.3	3.70	3.6			
5/23											0.99	
5/25	7.4	9.8	76	180	46		7.5	4.18	3.32	0.42		
5/28				190	69							
5/30												0.99
6/1	4.1	5.3	73	210	80		7.18	3.91	3.27			
6/4											0.82	
6/28	1.1	1.8	61	135	56	.8	6.77	4.44	2.33	0.31	0.97	1.8
6/12	Normal	Normal		150	63						1.03	
8/30	Normal	Normal		160	73	.83	6.74	4.38	2.36			0.99

References to laboratory methods are given in footnote 7

TABLE 2—Laboratory Studies in Case 2

Date	Bilirubin			Cholesterol	Cholesterol Esters	Prothrombin	Proteins			Fibrinogen	Hippuric Acid Excretion, Gm	Galactose Tolerance Gm
	Direct, Mg per 100 Cc	Indirect, Mg per 100 Cc	Per Cent				Total, Gm per 100 Cc	Albumin, Gm per 100 Cc	Globulin, Gm per 100 Cc			
7/26	10.9	14.3	76	170	33	100%	6.24	4.66	1.58	0.27		
7/27											0.5	
7/28	14.0	17.0	82	170	30	100	5.29	4.43	0.86			2.80
7/31	17.0	21.8	81								0.31	
8/2	14.3	17.6	81									
8/3	13.4	16.9	79	210	38		6.01	4.49	1.52		0.5	
8/4												2.17
8/5	7.4	10.0	74									
8/7	5.9	8.1	73									
8/9	5.2	6.9	76	190	83	100	6.60	4.76	1.84		0.56	
8/10												2.43
8/12	3.8	4.6	83									
8/14	2.9	7.6	81									
8/31	1.22	1.52	80	180	88	90	6.91	5.22	1.69		1.25	

CASE 2—L, a woman aged 22, married, a nurse, entered the hospital on July 25, 1943 because of weakness, nausea, vomiting and jaundice She dated the onset of her illness to six days before admission, when she noted that the scleras were tinged with yellow On the second day her temperature rose to 99.4 F On the morning of the third day nausea and vomiting appeared There was no recurrence of the vomiting subsequently, but the tendency to nausea persisted The jaundice progressively deepened

The physical examination on admission disclosed normal findings except for a moderately intense icterus The liver was palpable on deep inspiration 2 fingerbreadths below the costal border in the right midclavicular line Its edge was sharp, its surface smooth, slightly tender The urine on admission was strongly positive for urobilinogen and bile The Wassermann and Kahn reactions were negative The red blood cell count was 4.65 million with a hemoglobin of 13 Gm and a white cell count of 7,150 The patient remained in the hospital for twenty days, during which time the jaundice increased and then

bombshelter is known to contain the dust of trinitrotoluene She had used two different types of "leg makeup," but there seems to be no reason to suspect these of causing the jaundice The patient had always been well previously and had been in excellent health before the appearance of the jaundice, although for a month she had lost considerable sleep because of family worries

CASE 3—B, a man aged 63, entered the hospital on June 9 1943 listing the following complaints fatigue, attacks of fainting and prostration, yellow finger nails, jaundice, belching rumbling in the abdomen, flatus, nocturia, epigastric and umbilical pain, somnolence, swollen ankles, puffy eyes, cramping of the right hand and forearm, and a bad taste in the mouth The patient had been employed as a sweeper and cleaner in a men's dressing room in an ordnance plant from Jan 17 to March 14, 1943 He came in contact with men wearing clothes contaminated with mixtures of explosives but was not directly exposed to the dust or fumes of trinitrotoluene during this period On March 15 he changed jobs and for two months was exposed more or less continuously during his working hours to either the powder or the fumes of trinitrotoluene

<sup>8</sup> The tetrasodium salt of the diphosphoric acid ester of 2-methyl-4-naphtholhydroquinone

About two weeks after he changed jobs he noticed a slight fatigue which persisted. This was not severe and did not interfere a great deal with his work. About one week after the onset of this fatigue he experienced an acute attack of fainting, dizziness and prostration. He was taken to the first aid station, where he quickly recovered and returned to work. A second such attack occurred some days later. A week or two after this a yellowish discoloration of the finger nails appeared and persisted. About four weeks prior to admission the patient experienced a third sudden attack of fainting with vomiting, but without nausea or pain. The physician at the first aid station remarked that the sclerics were icteric and the skin of the body "pinker than normal" and sent the patient home. Apparently the local physician prescribed iron and vitamins. The patient could not tolerate the iron pills so they were stopped after one week. Daily intravenous infusions of dextrose were given for three weeks at home. During the four weeks at home the patient complained of belching, rumbling and eructing in the abdomen and excessive amounts of flatus. There was no diarrhea, constipation or change in the color of the stool. A dull, gnawing epigastric pain appeared about three weeks prior to admission to the hospital. It was rather irregular in its appearance but frequently came on one or two hours after eating was relieved by eating and occasionally awakened him between 1 and 2 a m.

The physical examination on admission revealed slight icterus with some yellow staining of the finger nails and a residual inflammation and pigmentation of the skin about the ankles

seen during almost the same period of time 3 similar cases of jaundice occurring in civilians not known to have been exposed to any toxic substance and therefore presumed to be infectious in origin. In case 3, however, the clinical evidence incriminating trinitrotoluene seems conclusive. There was a history of rather heavy exposure for two months, the first symptoms, according to the patient appeared about two weeks after the beginning of this exposure. The yellowish discoloration of the fingernails produced by the powder was observed, the "pink" color of the skin remarked on by the physician at the first aid station is suggestive of anilism, the anorexia, nausea, vomiting, epigastric and abdominal pain are characteristic of the so-called trinitrotoluene gastritis, the mild icterus with recorded abnormalities of hepatic function are, in our opinion, more suggestive of "toxic" than of infectious hepatitis. The failure to obtain a positive Webster test is not surprising. The absence of definite dermatitis or anilism in the first 2 cases is also not surprising for they have been absent in most of the instances of toxic necrosis of the liver hitherto reported.

We incline to the view that all 3 cases described were instances of trinitrotoluene poisoning with toxic necrosis of the liver of varying degrees. The severity of the

TABLE 3—Laboratory Studies in Case 3

Date	Pituitin In		Choles- terol	Choles- terol Esters	Prothrom- bin	Proteins			Fibrin ogen	Hippuric Acid Excre- tion Gm	Galactose Toler- ance Gm
	Direct Mg per 100 Cc	Indirect Mg per 100 Cc				Total Gm per 100 Cc	Albumin Gm per 100 Cc	Globulin Gm per 100 Cc			
6/2	2.1	3.0	21.5	60	100%	5.9*	3.0	2.9*	0.20	0.26	
6/16	1.1*	1.5†	17.0	5		5.06	2.40	2.66		0.51	2.7
6/27	Normal	1.4	15.5	5	90	5.81	2.63	3.15	0.27	0.58	4.3 and 4.0
7/7	Normal	Normal			78	5.78	4.07	1.71			
7/11	Normal	Normal	180	85	78					1.00	0.5
7/19	Normal	Normal			91						
9/7	Normal	Normal	190	105	94	5.78	3.27	2.51		0.10*	2.50

\* Small urine volume—Incomplete collection? Patient clinically well

which the patient stated he had had for some time. On deep inspiration the liver was palpable a good fingerbreadth below the costal border in the right midclavicular line. The edge was sharp, the surface smooth and not tender. The spleen was not palpated. The Webster test performed on the urine and on bits of tissue scraped from around the finger nails was negative. The urinalysis was normal. The red blood cell count was 4.75 million with a hemoglobin of 14 Gm and a white cell count of 8100. The patient remained in the hospital for nineteen days during which time his course was rather uneventful. The listlessness disappeared slowly as did the slight icterus. The tests of hepatic function and other laboratory procedures are shown in table 3. Treatment consisted of a high carbohydrate, moderately high protein, low fat diet (carbohydrate 400 Gm, protein 100 Gm and fat 30 Gm) plus the administration of multiple vitamins. Initial x-ray examinations disclosed a nonvisualization of the gallbladder and suggested also a deformity of the duodenal bulb. However on subsequent examinations the esophagus, stomach and duodenum were found to be normal and a faint but presumably normal visualization of the gallbladder was obtained. At the time of the patient's discharge from the hospital he was entirely free of jaundice and felt quite well.

## COMMENT

The diagnosis of trinitrotoluene poisoning in these cases is based primarily on circumstantial evidence, jaundice of the parenchymal type occurring in persons exposed to trinitrotoluene compounds. In case 1 the exposure was considerable, in case 2 relatively slight and in case 3 rather great. Cases 1 and 2 were on the whole indistinguishable from acute catarrhal jaundice, indeed, the possibility that they were in fact infectious jaundice cannot be denied. One of us (W. L. P.) has

hepatic injury in the 3 cases is evident from the intensity and duration of the jaundice and is indicated further by the percentage of cholesterol esters, the prothrombin and the excretion of hippuric acid and galactose.

Although recovery might have occurred without any of the treatment employed, we nevertheless believe that the accumulated experimental and clinical evidence in favor of a high carbohydrate, moderately high protein and low fat diet to be sufficiently great to strongly justify its use.<sup>9</sup> It is not possible to know whether the cystine hydrochloride suggested by Dr. Barron<sup>10</sup> on theoretical grounds and given in case 1 was of any value or not. The second patient recovered without it, but she was not as sick and hepatic injury as judged by the tests of function, was much less pronounced.

## SUMMARY

In 3 cases of apparent trinitrotoluene poisoning with recovery the evidence suggests that the toxic necrosis of the liver was severe in one, moderate in the second, and slight to moderate in the third.

A residual pigmentation and inflammation of the skin of the ankles was noted in the third patient in addition to the jaundice, anilism and gastrointestinal symptoms characteristic of trinitrotoluene intoxication.

<sup>9</sup> Ravdin, I. S., Thorogood, Elizabeth, Riegel, Cecelia, Icteric Rozanne and Rhoads, J. E. The Prevention of Liver Damage and the Facilitation of Repair in the Liver by Diet. *J. A. M. A.* 121: 322 (Jan 30) 1943.  
<sup>10</sup> Barron, E. S., Guzman, and Singer, T. P. Enzyme Systems Containing Active Sulfhydryl Groups. The Role of Glutathione. *Science* 87: 356 (1943).



# MAGNESIUM POISONING FOLLOWING AN ENEMA OF EPSOM SALT SOLUTION

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Poisoning due either to abuse or to idiosyncrasy is to be expected with any drug which is widely used by both practitioners and laymen. Epsom salt is one of the most commonly employed household purgatives. In spite of its general use, reports of poisonous effects from magnesium sulfate are not numerous.

Charles Fraser<sup>1</sup> in 1909 reviewed the literature of the period from 1841 to the time of his publication and was able to collect only 7 cases. Two of these had as prominent features nausea, vomiting, abdominal pain and distention. The 2 patients showed little or no central depression and recovered in two or three days. William Boos<sup>2</sup> in 1911 added 3 more cases of poisoning from magnesium sulfate with one death. In one of these there were vomiting and obstipation. In the others the toxic effects were due to a cumulative effect of repeated doses rather than to rapid absorption of a single dose. F. E. Byron<sup>3</sup> in 1939 reported 5 cases of fatal poisoning following administration of magnesium sulfate solution. The patients were children between 2½ and 10 years of age who were being treated for intestinal helminthiasis and all died within two hours. In 18 cases of poisoning by magnesium sulfate collected from the literature the illness followed oral administration of the salt. As far as we have been able to determine, toxic effects following rectal instillation of a solution of magnesium sulfate have not hitherto been reported. Following are our 2 cases of flaccid paralysis and coma coming on rapidly after an enema containing epsom salt solution. In the first case magnesium intoxication was not considered until after the patient had died, hence no confirming laboratory data are available. Although the final diagnosis of magnesium poisoning was not proved we have no hesitation in presenting it, as the circumstantial evidence is as great as for any of the fatal cases reported in the literature. Moreover it was our knowledge of the first case which later made us alert to the possibility of magnesium poisoning in the second instance in which we were able to verify the diagnosis and avert a fatality by administering the specific antidote.

## REPORT OF CASES

CASE 1—J. B., a 2 year old boy, was admitted for a plastic operation for imperforate anus. When 10 hours old he had undergone colostomy. The new stoma functioned well for seven months. A stricture then developed for which he had to have an operation. At the present admission he was well developed and nourished, with physical findings normal for his age. One week after entry an abdominoperineal plastic operation was carried out to correct the congenital anomaly. Post-

operatively pyelonephritis developed, which responded to chemotherapy, and his progress was considered satisfactory. Two months after the operation fecal impaction developed, and the impacted fecal matter was broken up by digital manipulation. Following this he was given an enema containing epsom salt solution. This was expelled, with good results. Almost immediately thereafter the patient became limp and stopped breathing. Artificial respiration and oxygen therapy were begun at once, and he received 0.5 cc of nikethamide intramuscularly. Respirations were resumed at 28 per minute but remained shallow, irregular and entirely abdominal. The pulse rate was 130. The baby was comatose, the pupillary reflexes were absent and there was generalized flaccid paralysis. In spite of vigorous supportive measures, including intravenous injection of fluids and blood transfusion, he died a few hours later of respiratory failure. Autopsy including examination of the brain failed to reveal the cause of death.

CASE 2—P. M., an Italian woman aged 23, single, was admitted to the emergency ward of the Massachusetts General Hospital complaining of severe cramping in the left flank and in the left lower abdominal quadrant of forty-eight hours' duration, associated with nausea and vomiting. The past history was irrelevant except for an equivocal history of rheumatic fever at the age of 15 years. On admission the physical examination gave essentially normal results except for minimal tenderness in the left flank and the left costovertebral angle. The white blood cell count was 11,000. Urinary sediment contained 50 red blood cells per high power field. A diagnosis of left ureteral calculus was made and confirmed by x-ray examination, which revealed a 0.3 cm stone in the region of the intramural portion of the left ureter. The patient was given forced fluids and atropine sulfate preoperatively, ½ grain (0.43 mg), every three hours until midnight. In preparation for an intravenous pyelogram, all fluids were withheld after midnight. The following morning the patient received one ampule of prostigmine methylsulfate 1:2,000 followed in fifteen minutes by a small "MGW enema." This enema mixture, formerly in daily use in this hospital, ordinarily consists of 2 ounces (60 cc) of glycerin, 2 ounces of water and 2 ounces of a saturated solution of magnesium sulfate (1½ ounces [45 cc] of the solution containing 1 ounce [28 Gm] of the salt). In this instance the patient received at 6 a.m. a four ounce (120 cc) enema containing 40 cc each of the three ingredients. The full enema was retained for only two minutes. She then passed considerable fluid and a small amount of feces. Ten minutes later she had a large fluid movement and again in ten minutes a third movement, this time mostly clear fluid. On being helped from the bed pan at about 6:30 a.m. she complained to the nurse that she "felt hot all over" and was "very thirsty." At 7:15 a.m. she was found to be unresponsive, although on strong auditory and painful stimuli she could make a sound and moved her tongue as if to speak. Her systolic blood pressure was 150. The pulse was of good quality and not rapid. Her respirations were shallow and entirely abdominal. The pupils were dilated and reacted only slightly to light. Her limbs were flaccid, and there was complete loss of all the reflexes, including the corneal. There was incontinence of feces but not of urine. Respirations grew progressively more shallow, and finally no painful stimulus would evoke a response. When first seen she appeared to have lost motor power without complete loss of consciousness. Recalling that parenteral magnesium produces a curare-like effect on the peripheral neuromuscular apparatus, it was thought that the patient might be suffering from magnesium poisoning. The central depression produced by the magnesium ion is known to be completely antagonized by calcium effect. Therefore 1 Gm of calcium gluconate was given intravenously while the patient was being moved into a room in which there was a respirator. In less than ten minutes there was an obvious improvement in her general condition. She was able to move her head, and her respirations improved so that a respirator was not needed. At this time, about 9 a.m., venous blood was taken for a serum magnesium determination. Another gram of calcium gluconate was given, and within ten minutes thereafter she was fully conscious and asking for water. By questioning it was found that she had been aware of what was

From the Massachusetts General Hospital.  
The determinations of serum magnesium were made by Miss Dorothy M. Tibbetts of the Collis P. Huntington Memorial Hospital. Dr. J. C. Aub and Miss Tibbetts placed at our disposal some unpublished data on the absorption of magnesium in nephritic patients.

1. Fraser, Charles. Epsom Salts as a Poison, *Lancet* 1:1174, 1909.  
2. Boos, W. F. Magnesium Poisoning. A Study of Ten Cases, *J. A. M. A.* 55:2037 (Dec 10) 1910. Priestley, J. P. Toxic Effects of Magnesium Sulphate, *New York M. J.* 96:665, 1912.  
3. Byron, F. E. Fatal Results Following the Administration of Magnesium Sulphate, *J. Malaya Br. Brit. M. A.* 3:100, 1939.

coming on around her for some time after she had been unable to move. Her most vivid recollections of the period immediately preceding her loss of consciousness were those of extreme thirst and a feeling of heat. Interestingly enough her corneal reflex did not reappear until two or three hours later. Having passed the ureteral stone (as determined by subsequent x-ray examination) and being asymptomatic, the patient was discharged three days later.

In addition to the dramatic response to calcium the laboratory findings confirmed the diagnosis of magnesium poisoning. The serum magnesium content of the first sample of blood drawn approximately three hours after the enema was 20.8 mg per hundred cubic centimeters. Magnesium was determined by the colorimetric method of Fiske and Logan.<sup>4</sup> The serum calcium was 9.9 mg per hundred cubic centimeters. A second sample of blood drawn later and analyzed by a different laboratory was reported to contain 15.4 mg of magnesium and 11.2 mg of calcium per hundred cubic centimeters of serum. A catheter specimen of 300 cc of clear amber urine was obtained from the patient early in her period of unconsciousness. The magnesium content of this sample was 0.72 mg per cubic centimeter. Soon after regaining consciousness she voided 46 cc of urine containing 2.38 mg of magnesium per cubic centimeter and 2.52 mg of calcium. Hence the patient excreted about 196 mg of magnesium in three hours. Through an oversight the specific gravity of this urine was not determined. This measurement would have been of great interest, as some of the highest values for specific gravity recorded have been obtained in cases of magnesium poisoning.

At the present time, magnesium sulfate solution is seldom administered by rectum except for its osmotic effects. It is occasionally used in the treatment of neurosurgical patients with acute cerebral edema to produce rapid dehydration. It is commonly employed in combination with glycerin and water as a cleansing enema. Contrary to the general belief that magnesium is not absorbed from such an enema, the cases reported here establish that in certain persons absorption may occur and toxic effects ensue even when epsom salt solution is administered by rectum. The high serum magnesium level in case 2 proves that the toxic effects were not the result of abnormal sensitivity to the magnesium ion but were due rather to a peculiarity of the intestinal tract which permitted rapid absorption of the salt from the rectum and colon.

Sensations of internal heat and thirst are probably valuable premonitory signs of impending magnesium poisoning.

Eight of the persons reported as showing magnesium poisoning have been children between the ages of 2½ and 10 years. Six of these died in ten to one hundred and twenty minutes after taking a solution of epsom salt. The large percentage of the total number with fatal poisoning who were children suggests that overwhelmingly rapid absorption of magnesium salts may be more common in children than in adults or that intestines infested with worms may be particularly permeable to these salts.

#### SUMMARY

Toxic effects followed rectal instillation of a solution of magnesium sulfate.

There is a group of patients whose intestines are peculiarly permeable to magnesium salts. In regard to these otherwise normal persons, toxic effects from

magnesium sulfate cannot be predicted, but if they are recognized promptly a fatal outcome can be entirely prevented by intravenous administration of calcium.

Complaints of severe thirst and of "feeling hot all over" or the like by a patient who has been given magnesium in any form should be taken as a premonitory sign of impending magnesium poisoning in order that the administration of calcium may be instituted as soon as possible.

## REPORT OF REEXAMINATION OF 4,994 MEN DISQUALIFIED FOR GENERAL MILITARY SERVICE

BECAUSE OF THE DIAGNOSIS OF CARDIO-  
VASCULAR DEFECTS

A COMBINED STUDY MADE BY SPECIAL MEDICAL  
ADVISORY BOARDS IN BOSTON, CHICAGO, NEW  
YORK, PHILADELPHIA AND SAN FRANCISCO

ROBERT L. LEVY, MD  
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National Research Council

(Continued from page 944)

The more important results of reexamination of men originally disqualified for general military service require special comment here.

#### A RECLASSIFICATION AS 1A<sup>1</sup>

(a) *General Figures, Comparisons with Introduction and Borderline Cases*—The total number of men resubmitted as 1A among the 4,994 statistically studied in the five cities was 863, or 17.3 per cent, which includes 103 of the borderline cases already referred to (section 5). If these borderline cases were omitted, the number would be considerably reduced, to 760, or 15.2 per cent.

Chicago gave the smallest return of 1A cases resubmitted for military service (only 3.8 per cent) as the result of the procedure developed in that city in the original examinations, whereby cardiovascular experts had been freely used in the decision about doubtful cases. It would appear, therefore, at the outset that Chicago's example might profitably be followed by other examining groups throughout the country.

Boston, New York and Philadelphia turned in very similar figures for acceptance and rejection, respectively 18.8, 19.2 and 16.5 per cent and 81.2, 80.8 and 83.5 per cent. San Francisco gave a higher percentage of 1A men (28.6 per cent), in some degree, at least, as the result of acceptance of more borderline cases recorded as such (see section 5).

(b) *Original Rejection Diagnoses of the Cases Reclassified as 1A* (table 2)—Valvular heart disease was by far the commonest diagnosis found on the records of the men reclassified as 1A, having been the original rejection diagnosis in 299 of the 589 cases reclassified as 1A in four of the five cities: in 79 (41.4 per cent) of the 188 resubmitted cases in Boston; in 14 (36.8 per cent) of the 38 resubmitted cases in Chicago; in 109 (56.7 per cent) of the 192 1A cases in New York; and in 97 (58.7 per cent) of the 165 cases in

<sup>4</sup> Fiske, C. H. and Logan, M. A. in Folin, Otto. Laboratory Manual of Biological Chemistry, ed. 5. New York: D. Appleton Century Company, Inc., 1934.

Philadelphia Hypertension as the original diagnosis ranked second with 133 of the 589 resubmitted cases in 52 of the resubmitted cases in Boston, in 5 of the 38 cases in Chicago in 43 (22.4 per cent) in New York and in 33 in Philadelphia. Tachycardia as a specific entity ranked third with 51 of the 589 resubmitted cases: 2 in Boston, 8 in Chicago, 27 (14.1 per cent) in New York and 14 in Philadelphia. Other diagnoses in approximately the order of their occurrence in the 1A group were heart disease unspecified, neurocirculatory asthenia and cardiac enlargement.

Thus it is evident that the three findings that had bothered the original examiners and had resulted in the rejection of these men were murmurs, usually a systolic blow at the apex, elevated blood pressure and increased heart rate. All of these were either not found in the reexamination or subsided on resting quietly one-half hour recumbent or were interpreted as non-pathologic and hence unimportant. However, there were in all five cities cases of these three types that were considered as probably but not certainly normal (table 4), some having been accepted for resubmission in Chicago, New York and Philadelphia and all having been lumped together in the borderline group in Boston and rejected. More of the 114 cases in the Boston group had been originally diagnosed hypertension (46) than valvular disease (30), neurocirculatory asthenia (15), heart disease unspecified (12) or tachycardia (6). The final rearrangement of possible diagnoses in the Boston borderline group was hypertension ("nervous") 70, tachycardia ("nervous") 27, doubtful valvular disease 19, doubtful cardiac enlargement 10 and miscellaneous 7.

#### B. REJECTION CONFIRMED

(a) *General Figures and Comparison*—The great majority of all the 4,994 cases, actually 4,131, or 82.7 per cent, were confirmed in their rejection. In Chicago over 95 per cent (actually 96.2 per cent) were rejected, strongly endorsing the work of the Chicago induction station and local boards. In Boston, New York and Philadelphia the rejections were confirmed in a little over 80 per cent, and in San Francisco the figure was 71.4 per cent.

As stated earlier in the comment, the rejections were confirmed, as would be expected, more often in the cases of the men examined by the induction stations than in those examined by the local boards; in the ratio of about 2 to 1 as calculated in Boston, New York and San Francisco.

(b) *Details of Rejection Diagnoses* (table 3)—The commonest cause for rejection in all five cities was valvular disease, that is, essentially, rheumatic heart disease. It was diagnosed in 2,476 (59.9 per cent) of the 4,131 rejected cases, or 50 per cent of the entire lot of 4,994 men. The greatest number of rheumatic heart rejectees (both absolutely and relatively) was found in the third decade of life. Negroes as well as white men were commonly affected: 63.9 per cent of the rejected white men and 63.8 per cent of the rejected Negroes in four of the five cities. Five of the 6 rejected Chinese and all 4 of the rejected Filipinos in four cities had rheumatic heart disease (table 8).

There was some variation in the incidence of rheumatic valvular disease in the different cities. This diagnosis was recorded in 415 cases (51.1 per cent) in Boston, in 676 cases (70.3 per cent) in Chicago, in 545 cases (67.4 per cent) in New York, in 569 cases (65.9 per cent) in Philadelphia and in 271 cases (39.6 per cent) in San Francisco, which showed much the lowest incidence.

The valves involved and their lesions were, as one might expect, mitral first, being diagnosed alone in 1,500 cases in the five cities (stenosis in 750 cases and regurgitation without obvious stenosis in the 750 others), aortic and mitral combined second, reported in 628 cases in these same cities, and aortic alone in 280 (stenosis in 72 and regurgitation without obvious stenosis in the 208 others) (table 5). There was, however, great individual variation in the several cities depending doubtless in large part on the interpretation of the murmurs, thus the greatest difference was found between Boston and Philadelphia where mitral regurgitation and stenosis without aortic valvular disease were diagnosed in 58 and 101 cases respectively in the former, and in 300 and 131 respectively in the latter, and aortic regurgitation and stenosis without mitral valvular disease were diagnosed in 53 and 18 cases respectively in the former and in but 4 and no cases respectively in the latter, although there were a number of cases of aortic stenosis combined with mitral valvular disease in Philadelphia. It would seem that the diagnosis of uncomplicated mitral valvular disease, especially regurgitation, was made much more often in Philadelphia than in Boston, whereas the order was reversed with respect to the diagnosis of uncomplicated aortic valvular disease.

A history of rheumatic fever was obtained in slightly over a fourth of all the cases of rheumatic heart disease, 28.8 per cent in four of the cities (table 6), and in nearly half of those in Boston and New York. A history of chorea was rare (1.8 per cent of the rheumatic heart cases in these same four cities).

Auricular fibrillation complicating rheumatic (mitral) valvular disease was relatively uncommon, being found in only 24 (2.5 per cent) of the 960 rheumatic cases in Boston and New York, but auricular fibrillation of non-rheumatic origin was rarer still, being noted in only 4 of the 2,000 Boston and New York cases (0.2 per cent).

Syphilis as a cause of aortic valvular disease or of aortitis definite or suspected was very rare, having been diagnosed by the special advisory boards in only 17 cases of the 4,131 rejected (0.4 per cent), in 5 of the 17 cases aortic regurgitation was found, in 7 aortitis without aortic regurgitation and in 5 the lesion was not specified. Seven of the 17 cases were in New York and all in Negroes (table 8), all of the 5 Chicago cases were in white men, 2 of the 3 cases in Philadelphia were in Negroes, no syphilitic cases were found in Boston, where only 23 Negroes were examined, in contrast to the 90 Negroes in New York and 207 in Philadelphia.

The second most common cause for rejection was arterial hypertension, diagnosed in 1,059 (25.6 per cent) of the 4,131 finally rejected men, or 21 per cent of the total of 4,994 men reexamined. The incidence was strikingly similar in four of the five cities, there having been 249 cases in Boston, 239 in Chicago, 200 in Philadelphia and 212 in San Francisco, why there were fewer in New York (159) is not clear. Separation into systolic, diastolic and both systolic and diastolic hypertension was not carried out universally, but as a rule the elevation of pressure involved both systolic and diastolic levels, in Boston for example of the 249 cases both levels were elevated in 146, the systolic alone in 80 and the diastolic alone in 23. A few men with systolic hypertension (level of systolic pressure up to 160 or 170 mm but with diastolic pressure not over 90 mm) were accepted for resubmission in the various cities or

were included in the borderline group in Boston, no men with diastolic hypertension were so accepted. Negroes were more often rejected than white men for hypertension, for example 12 of the 23 Negroes (52 per cent) compared to 25 per cent for the white men reexamined in Boston. 26 per cent compared to 18 per cent in Philadelphia, and 20 per cent compared to 16 per cent in New York.



Fig. 2—Thorax showing heart shadow beyond the normal in size according to the Hodges-Eyster calculations based on height and weight but apparently normal for this man's build (very wide chest). In this type of build it seems probable that the cardiothoracic ratio may be more suitable as a standard than the Hodges-Eyster figures based on height and weight (height 66 inches [167.6 cm], weight 127 pounds [58 Kg]) which according to the Hodges-Eyster calculations give an expected transverse diameter of 12.2 cm. 1 cm added to this equals 13.2 cm. The actual width of the heart is 13.8 cm and the internal diameter of the thorax 30.5 cm. The cardiothoracic ratio =  $13.8 \div 30.5 = .45$  per cent.

All the other causes for final rejection aside from rheumatic heart disease and hypertension amounted to only 596 cases or 14 per cent of the 4,131 cases finally rejected, or 12 per cent of the entire group of 4,994.

The third most common cause for final rejection was neurocirculatory asthenia, with 204 cases (49 per cent of those finally rejected, or 40 per cent of the total of 4,994 cases). The numbers varied from the maximum

of 78 in Boston to the minimum of 11 in Chicago, there were 31 in New York, 54 in Philadelphia and 30 in San Francisco where an additional group of 6 men were rejected for cardiac neurosis. 5 men in Boston were also rejected for cardiac neurosis. Negroes were rarely affected, there being only 3 so diagnosed in four of the five cities out of 174 cases rejected for that condition and out of a total of 340 Negroes rejected (table 8). The diagnosis requires an evaluation of symptoms rather than signs, and doubtless for that reason more correction was required in the case of neurocirculatory asthenia than for other diagnoses. There was a tendency to overdiagnose it originally when there was apparently only tachycardia, or to underdiagnose a far more important fundamental condition as tachycardia.

The fourth most common cause for final rejection, and probably the most debatable of all, was simple tachycardia diagnosed in 189 cases, or 46 per cent of the 413 cases and 38 per cent of the entire group of 4,994 men. It ranged in incidence in the rejected group, from a high of 75 cases in Chicago to a low of 8 cases in Philadelphia, there were 32 in Boston, 48 in New York and 26 in San Francisco. A number of cases (27) of slight "nervous" tachycardia with rates of over 100 and up to 120 and nothing else abnormal, were put in the 'borderline' group in Boston.

The fifth most common cause for final rejection was congenital heart disease (table 7) with 183 equaling 44 per cent of the 413 cases and 37 per cent of the total of 4,994. The incidence varied from the highest (63 cases) in San Francisco to the lowest (18 cases) in Philadelphia, there were 45 in Boston, 28 in Chicago, and 29 in New York. Over a third of all the cases (73) were diagnosed as ventricular septal defect (Roger's

disease). The second most common lesion was patency of the ductus arteriosus with 29 cases, the third was pulmonic stenosis (15 cases 2 of which were diagnosed specifically the tetralogy of Fallot), the fourth, coarctation of the aorta (14 cases) the fifth auricular septal defect (6 cases), and the sixth subaortic stenosis (5 cases). Four men were thought to have both patent ductus arteriosus and ventricular septal defect. One man with dextrocardia, hypertension and cardiac enlargement was rejected in New York, another with simple dextrocardia was passed as 1A in Boston. In a number of instances no specific defects could be identified but congenital heart disease seemed undoubted.

No other cause for final rejection besides the five mentioned totaled as many as 100 men. Cardiac enlargement alone that was unexplained and discovered usually only by x-ray film amounted to 76 cases, ranging from 26 in San Francisco to 9 in Chicago and Philadelphia in which city 36 other instances of "x-ray enlargement" according to the Hodges-Eyster standard, were considered after careful study to be normal hearts. Twenty men were rejected on this basis alone in New York. Several such dubious but probably normal cases (10) were put into the "borderline" group in Boston and comments by the examiners in San Francisco, where the highest number was rejected, expressed dissatisfaction with the criteria. (See figures 2 to 5 for illustrative x-ray examples.)

Arrhythmia was the cause for final rejection in 32 cases (less than 1 per cent) throughout the five cities, including 17 instances of paroxysmal tachycardia, 6 of uncomplicated auricular fibrillation, 2 of flutter and 5 of auriculoventricular heart block. Ten cases were diagnosed bundle branch block by electrocardiogram.

Electrocardiographic abnormalities alone were the cause for rejection in another 32 cases, with evidently a considerable variation in the interpretation of moot or borderline findings in the various cities, as shown in the tables. This variation is further evidence revealing the need for more adequate knowledge than any one possesses at present of the range of the normal electrocardiogram. (See figures 6 to 9 for illustrative electrocardiograms.)

Cardiovascular (aortic) syphilis was diagnosed in only 17 cases (04 per cent) of those finally rejected. This condition has already been taken up following the discussion of rheumatic heart disease above.

Phyrotosis as a cause of tachycardia or of other symptoms and signs was diagnosed in 14 cases, recent rheumatic fever (that is authenticated attacks within the last five years) in 13 cases, cardiac strain from chest deformities in 10, coronary heart disease in only 6 (with a record of myocardial

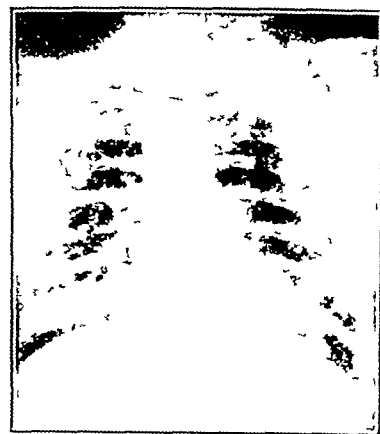


Fig. 3—Thorax of a fat man (weight 222½ pounds [101 Kg], height 68 inches [172.7 cm]) without coat, shirt or shoes. This film shows a large triangle of fat at the pericardiodiaphragmatic angle which increases the heart shadow by at least 2.5 cm and perhaps more, leaving the transverse diameter of the heart 15.5 cm, which is well within the normal limits both by the Hodges-Eyster tables and by the cardiothoracic ratio.

infarction in 3 of them), pericarditis in 4, peripheral vascular defects in only 3 cases and unspecified heart disease in 113 more

(c) *Changes in Diagnosis in the Finally Rejected Group* (table 9)—Not only were the original diagnoses changed in the case of the men resubmitted for

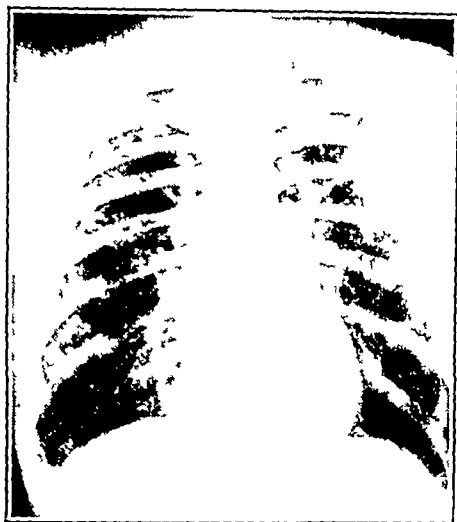


Fig. 4—Normal heart, vertical in position, with prominence of the pulmonary arc and hilus shadows, giving a straight left upper border of the heart shadow. This contour of the left upper border of the heart shadow, sometimes in more exaggerated degree may simulate the so called mitral shape but is due to the position of the heart. Transverse diameter of the heart = 13.0 cm. Expected transverse diameter by Hodges Eyster calculations = 12.8 cm. at a height of 68 inches (173 cm.) and a weight of 145½ pounds (66 Kg.)

military service, but not infrequently the reexamination resulted in a relabeling of the diagnoses in the case of the men whose rejection was confirmed. The majority of the changes were quite unimportant, consisting simply of the addition of data to diagnoses already adequate for rejection, for example, "mitral stenosis" to the simple diagnosis of "rheumatic heart disease" or "aortic regurgitation" to the correct but incomplete diagnosis of "mitral valvular disease".

On occasion, however, important corrections were made as in the case of the diagnosis of "heart disease" changed to "neurocirculatory asthenia" "neurocirculatory asthenia" changed to "tachycardia" "rheumatic heart disease" to "congenital heart disease" or "hypertension" or vice versa, "mitral regurgitation" to "aortic stenosis," "pericardial effusion" to "markedly enlarged rheumatic heart" and "patency of the ductus arteriosus" to "ventricular septal defect".

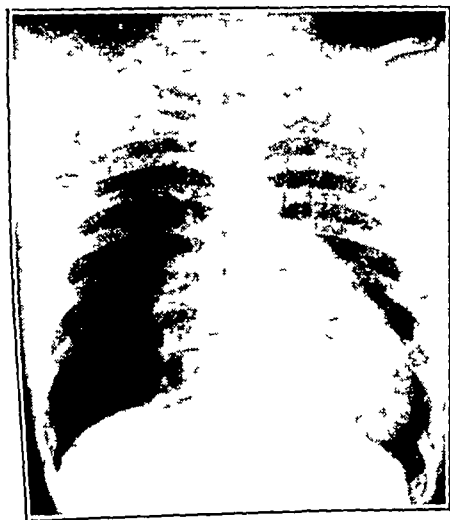


Fig. 5—Thorax showing the shadow of the heart displaced considerably to the left by depression of the sternum. The right border cannot definitely be made out and doubtless underlies the sternum. No evidence of heart disease was found in this person.

The most common disagreement universally was in the diagnosis of rheumatic heart disease, the next in that of hypertension, the third in that of tachycardia and the fourth in that of neurocirculatory asthenia. Without doubt the greater amount of time and the quieter environment aided as much or more in the correction of diagnosis as did the greater experience of the

specialists themselves. Furthermore, it should be stated that the changes in diagnosis were sometimes only provisional or questionable and that the specialists themselves were in a quandary about at least a few of the diagnoses, especially congenital heart disease.

7 *Race* (table 8)—In the early part of the discussion under section 3, Men Reexamined, mention was made of the higher incidence of the confirmed rejection of Negroes, Chinese and Filipinos than of white men. In four of the five cities all 6 Chinese and all 4 Filipinos were again rejected and 340 (88 per cent) of the 386 Negroes. Cardiovascular syphilis had a far higher, and hypertension a somewhat higher, incidence among the Negroes than among the white men, rheumatic heart disease about the same, and neurocirculatory asthenia a much lower incidence.

8 *Status in Civilian Life of Men Whose Rejection Was Confirmed*—It was the general rule to find that the men reexamined who showed heart disease, hypertension or other cardiovascular abnormalities were engaged in occupations suited to their conditions and exposed to adequate medical advice by private physicians or hospital clinics. Rarely was it found necessary to urge a visit to a doctor or to suggest any change in occupation or therapy. The advice to "carry on" was the order of the day. Almost all the men were engaged in useful occupations despite their heart trouble, but the majority expressed a strong desire to be accepted for military service, very few were unable to work at all.

9 *Problems*—There were eight outstanding problems in cardiovascular examination for military service revealed by this study. They will be discussed in the order of their frequency and importance.

(a) *Systolic Murmurs at the Cardiac Apex*—These were commonly found both in health and in disease according to the opinion of the special examining boards in all five cities. It was generally agreed that very slight to slight systolic murmurs at the cardiac apex, little or not at all transmitted to the axilla, especially if late in timing and in the absence of any evidence of cardiac enlargement, diastolic murmurs, or a history of rheumatic fever, should be considered as within the normal range, particularly if they varied greatly, sometimes to the point of disappearance, with change in body position or respiratory phase. However, there lacked complete agreement, not only between the different cities but also between the examiners in any given city, both as to the intensity of the murmurs and as to their significance. A follow-up study of the cases that were resubmitted despite the presence of apical systolic murmurs and of the Boston "borderline" group should prove of great importance in a final appraisal of such murmurs. All moderately loud or loud apical systolic murmurs were uniformly a cause for rejection.

The importance of other heart murmurs was less difficult to assess. Aortic systolic murmurs of slight degree, comparable to those acceptable at the apex, were few in number, the louder murmurs being indicative of aortic stenosis in nearly every case. Slight left lower

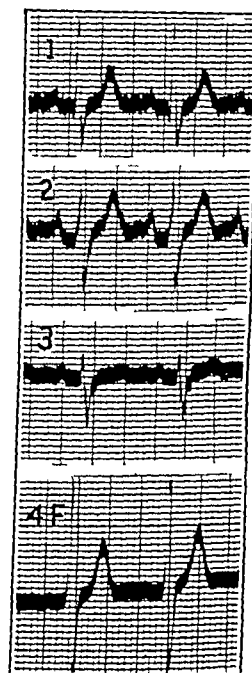


Fig. 6—White man aged 22. No rheumatic history. Said to have had murmur since the age of 6. Examination showed inconstant systolic blow at apex. X-ray examination revealed no enlargement of the heart. An electrocardiogram disclosed incomplete bundle branch block with QRS of 0.12 second. Was not resubmitted.



sternal border murmurs of uncertain origin were also few in number. Pulmonary systolic murmurs were almost universal in the supine position and on expiration, and only when they were loud and persistent were they a cause for rejection. Extracardiac scratchy to and fro murmurs varying greatly with respiration were occasionally encountered in normal persons, and an interesting "normal" variation was the extra sound in systole the "systolic click" which had at times been a cause for original rejection.

(b) *Blood Pressure Levels*—A close second to the problem of the apical systolic murmur was that of the upper levels of the normal blood pressure. Although in general the present limits as given in MR 1-9 of 150 mm for the systolic and 90 mm for the diastolic are satisfactory for the majority of young men at rest, there may be exceptions, and an unusually nervous or excited person can conceivably have a normal systolic blood pressure up to 160 or even 170 mm under the conditions of the examination and perhaps a diastolic blood pressure up to 95 mm, although that is more doubtful. A relatively high pulse pressure was not uncommon in the reexamination especially when the subject had recently taken a good deal of liquor. The more obviously nervous mild hypertension was attended as a rule by a nervous tachycardia. Elevation of the blood pressure with a heart rate of average or low frequency is probably more serious. A follow-up study of these particular borderline cases should yield valuable information.

(c) *Heart Rate*—The heart rate was considered much less of a problem by the special advisory boards in the five cities than were the apical systolic murmur and the blood pressure or, in fact, than it was apparently considered by the local boards and induction stations. The figure of 100 per minute was the criterion followed in most instances but it has been the general opinion of all the five groups that heart rates of 110 or indeed even 120 should be acceptable under the conditions of the examination, if there is no evidence of heart disease, febrile illness, thyrotoxicosis or other physical ailment responsible for the tachycardia, or of other rejectable conditions, such as neurocirculatory asthenia, for example. Artificial elevation of the pulse rate by the use of drugs has probably been but little resorted to by the registrants for the draft, that was considered in this reexamination but only rarely suspected. It is known that the normal heart rate in outstanding athletes at rest or relative rest can vary from 35 to 120 per minute, and so it is evident that heart rate is one of the poorest criteria of cardiovascular fitness.

(d) *X-Ray and Heart Size*—One of the most difficult cardiovascular problems of today is the determination of the normal heart size and shape by any method of examination including x-ray study, and the present investigation may yield its quota of information in the solution of this problem by careful follow-up studies, both of those who were accepted despite full heart size, that is with measurements at the upper range of size agreed on, those put into the "borderline" group because x-ray measurement alone just failed to fit the so-called normal criteria, and those who were flatly rejected because the measurement slightly exceeded the upper range agreed to. The standard for the upper normal limit used in the reexamination was 1 cm greater than that of the transverse diameter calculated by the Hodges-Eyster formula but it seemed to many of the examiners that this measurement was

inadequate. In Boston, for example, several men were examined who seemed perfectly normal in every other way except for transverse heart diameters in the teleoroentgenogram (2 meter film) a little (up to 1 cm) more than the upper limit set, these men tended to be of unusual stature, rather short and with wide chests and shoulders, which resulted in perfectly normal "cardiothoracic ratios" (transverse diameter of heart not over 50 per cent of the internal diameter of the thorax). It was evident that height and weight alone do not properly indicate important variations in normal body build and that no criteria as yet introduced adequately cover the range of size of the normal heart.

(e) *Electrocardiography*—The same difficulty exists with respect to the electrocardiogram as in the case of the x-ray heart shadow. We do not yet know the full range of the normal, and so there were men reexamined in all the cities whose electrocardiographic

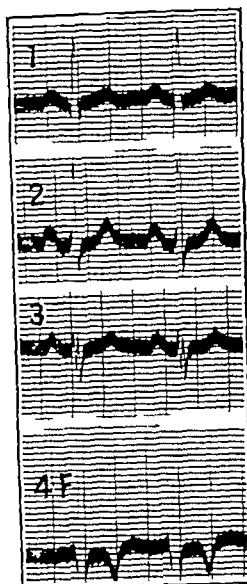


Fig 7—Negro aged 23. No rheumatic history. No symptoms. Systolic murmur at apex regarded as cardiorespiratory. X-ray examination revealed no cardiac enlargement. Electrocardiogram showed sharply inverted T<sub>4</sub> with Q<sub>1</sub> of 3 mm. Final diagnosis heart disease type unspecified. Was not re-submitted.

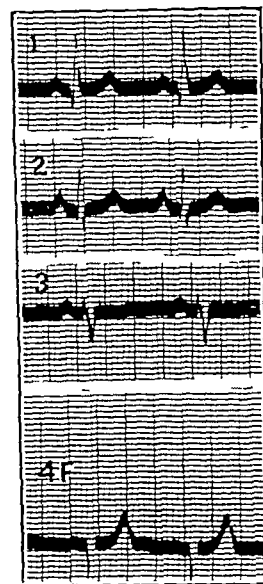


Fig 8—White man aged 28. History of arthritis when 4 years old. No cardiac symptoms. Short faint systolic blow at apex. X-ray examination revealed no cardiac enlargement. Electrocardiogram showed large Q waves in leads 1 and 4F. Final diagnosis rheumatic valvular heart disease mitral regurgitation. Was not re-submitted.

records were borderline. The particular problems concern the length of the PR interval (may it normally exceed 0.2 second by a little in rare cases?) the width and shape of the QRS wave (may there normally be a duration a shade over 0.1 second and is it normal to see prominent S waves in lead 2?) the level of the ST segment (may it be normally elevated by more than 1 mm in the limb leads and 2 mm in lead 4F?) and the shape and amplitude of the T waves (may they be flat notched or inverted in lead 2 on occasion as well as in lead 3, especially when the heart is vertical in position?).

(f) *Neurocirculatory Asthenia*—There are two problems as far as neurocirculatory asthenia is concerned first its recognition and second the acceptability of men with slight grades of the condition. We may answer the last question first by stating that there is general agreement that neurocirculatory asthenia



moderate or pronounced degree readily diagnosable in civilian life, is ample reason for rejection for any military service. It has been the general consensus of the examiners in the present study that it is wise to reject even the mildest cases though this view is unsupported by factual evidence. The problem of the recognition of the condition is more difficult, however, especially in the milder cases. The diagnosis must perforce be made only by history of symptoms or by actual and perhaps prolonged testing and not by physical signs, such as heart rate and blood pressure, which may be well within normal limits at the time of the induction examination. The syndrome, which includes the combination of dyspnea (usually with sighing), palpitation, headache, faintness and exhaustion on relatively little effort or excitement, is generally attended in civilian life by some definite psychoneurosis, in particular the anxiety neurosis. This fact, and also the significant report that to date, at least in this war neurocirculatory asthenia has been found in our armed forces much less often or at least less pronounced than in the last war, suggest that many of these cases have been excluded from the service as a result of the neuropsychiatric part of the induction examination.

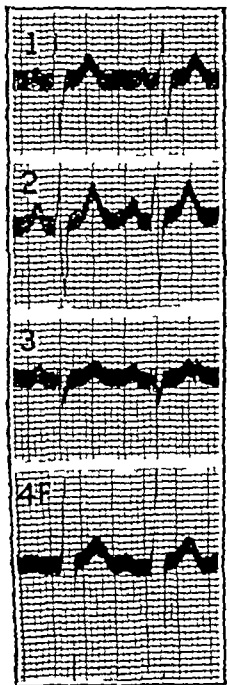


Fig 9—White man aged 23. History negative. No abnormal physical signs. X-ray examination revealed no cardiac enlargement. Electrocardiogram showed deep S waves. Final diagnosis no cardiovascular disease. Was resubmitted.

(g) *Rheumatic Fever*—There is also the problem of rheumatic fever. To exclude registrants simply because there has been a history, even though authenticated, of one attack (or even more) of rheumatic fever in early childhood, in the absence of any evidence of heart damage, has seemed to the reexaminers unnecessary in contrast to the undesirability of accepting those with rheumatic fever within five years, even though the heart seems normal. However, as yet this is really but an opinion and is in need of verification.

(h) *Exercise Tests*—One of the interesting results of this reexamination study has been the apparent neglect of exercise tests or at least of their mention as of any particular importance. To be sure, simple exercises such as hopping or a "standing run" were utilized in the search for diagnostic heart murmurs, in particular the mitral diastolic,

but the general recognition that exercise tests yield information about physical fitness in general, rather than about the heart and circulation in particular, was undoubtedly the chief reason for the failure to utilize such tests during this combined study. Such testing would be more applicable, though not diagnostic, in cases of neurocirculatory asthenia, did time permit, but, in the recognition of this condition, reliance was placed largely on the history of symptoms and on neuropsychiatric examination.

#### SUMMARY AND CONCLUSIONS

1 An analysis has been made this year of the reexamination, by physicians trained in the study of cardiovascular diseases, of 4,994 men rejected for military service by local boards and induction stations because of the diagnosis of cardiovascular defects or

neurocirculatory asthenia. The project was carried out under the auspices of the Selective Service System and with the aid of support from the Office of Scientific Research and Development. The registrants were composed of groups of approximately 1,000 men each in five cities—Boston, Chicago, New York, Philadelphia and San Francisco.

2 The chief reasons for the reexamination were to determine (a) the problems in cardiovascular diagnosis that particularly concern the range of the normal cardiovascular system with respect to service, (b) the possible salvage of men for the Army by reclassification as 1A and (c) the comparison of opinions of cardiovascular experts with those of the examiners at local boards and induction stations to determine the desirability of such reexaminations in this or other special medical fields throughout the country.

3 Of the total number of 4,994 cardiovascular rejectees examined, there were 863 (17.3 per cent) resubmitted as 1A and 4,131 (82.7 per cent) whose rejection as 4F was confirmed.

4 The percentage of men resubmitted as 1A was quite similar in Boston (18.8 per cent),<sup>8</sup> New York (19.2 per cent), and Philadelphia (16.5 per cent). In San Francisco 28.6 per cent were resubmitted.<sup>9</sup> Chicago yielded the lowest salvage (3.88 per cent), apparently because of the fact that cardiovascular experts had already been freely used in the decision about doubtful cases—a procedure which might profitably be followed by other examining groups throughout the country.

5 The chief cause for rejection was rheumatic heart disease, found in 2,476 men, or 50 per cent of the total 4,994 and in 59.9 per cent of the final 4F group. Mitral valvular disease without aortic valvular disease was diagnosed in the majority of these rheumatic heart cases, 1,500, or 60.6 per cent (750 with obvious stenosis), aortic valvular disease without apparent mitral valve involvement in 280, or 11.3 per cent (72 aortic stenosis and 208 aortic regurgitation alone), and mitral and aortic valvular disease combined in the remaining 628, or 25.4 per cent. Auricular fibrillation complicating mitral stenosis was found in 24 of the cases. The incidence of rheumatic heart disease varied from 70.3 per cent of the rejectees in Chicago to 39.6 per cent in San Francisco.

6 The second most common cause for final rejection was hypertension, found in 1,059 cases (25.6 per cent of the 4F cases and 21 per cent of the total series). The majority showed elevation of both systolic and diastolic levels, a few had either systolic hypertension alone or diastolic hypertension alone. The incidence varied little from city to city but was relatively more common in the fourth than in the third decade.

7 Third in frequency as a cause of rejection was neurocirculatory asthenia with 204 cases (4.0 per cent of the total series, or 4.9 per cent of those finally labeled 4F). Negroes were rarely affected. The incidence varied from 7.8 (8 per cent) in Boston to 11 (11 per cent) in Chicago.

8 The fourth condition responsible for rejection of more than 100 men was sinus tachycardia, there were 189 cases, or 3.8 per cent of the entire group and 4.6 per cent of the final 4F cases. The numbers varied from 75 in Chicago to 8 in Philadelphia.

8 Another 11.4 per cent were considered borderline in Boston but after special consideration were not resubmitted.

9 The men resubmitted in San Francisco included a moderate number of borderline cases while in Chicago, New York and Philadelphia the majority of "borderline" cases were rejected again.

9 The fifth most common cause for rejection was congenital heart disease found in 183 cases (44 per cent of the 41 cases). The abnormality most commonly diagnosed was ventricular septal defect (Roger's disease) in more than a third of all the cases 73. Five other defects in the order of their frequency, were patency of the ductus arteriosus (20 cases), pulmonary stenosis (13 cases and 2 more with the tetralogy of Fallot), correction of the aorta (14 cases), auricular septal defect (6 cases) and subaortic stenosis (5 cases). The city incidence varied from over 6 per cent (63 cases) in San Francisco to 1.8 per cent (18 cases) in Philadelphia.

10 Other causes for rejection included cardiac enlargement alone determined by x-ray examination (76 cases), arrhythmia in 32, including 17 cases of paroxysmal tachycardia, 6 of uncomplicated auricular fibrillation, 2 of auricular flutter and 5 of auriculoventricular block, electrocardiographic abnormalities alone in another 32 cases including 10 with bundle branch block, cardiovascular syphilis in only 17 cases, thyrotoxicosis in 14, recent rheumatic fever in 13, cardiac strum from chest deformities in 10, coronary heart disease in only 6, pericarditis in 4 and peripheral vascular defects in 3. Unspecified heart disease was diagnosed in 113 cases.

11 A history of rheumatic fever was obtained in slightly over a fourth of all the cases of rheumatic heart disease (28.8 per cent in four of the cities) and in nearly half of those in Boston and New York. A history of chorea was rare (1.8 per cent of the rheumatic heart cases in these same four cities).

12 Although the great majority reexamined were white men there were a good many Negroes (something under 10 per cent, 386 out of 4,035 examined in four of the five cities) and a few Chinese and Filipinos. There was a high rejection rate for Negroes (88 per cent) and a very high rejection rate for the Chinese and Filipinos (100 per cent) in the four cities in which racial data were available. Nine of the fifteen cases of aortic syphilis found in those cities were among Negroes, and hypertension was also more often found in the Negroes (38.5 per cent of the final 4F cases compared to 23.1 per cent for the white men). Rheumatic heart disease was evenly represented (63.8 per cent compared to 63.9 per cent), but neurocirculatory asthenia was very much less in the Negroes (0.9 per cent compared to 5.5 per cent).

13 There were eight problems of particular interest which remain unsolved and should be the focus of follow-up study but concerning which tentative opinions were expressed: (a) the interpretation of apical systolic murmurs (may they, if very slight or even slight in the absence of any other abnormal or doubtful finding, be considered inadequate reason for rejection?), (b) the upper limits of the normal blood pressure (may the systolic pressure in very nervous young men be set perhaps as high as 160 mm of mercury or even a shade more, provided the diastolic pressure does not exceed 90 mm?), (c) the limits of the normal pulse rate at rest (may there not be a wider range, say from 40 to 120 per minute, than that actually given in the current criteria?), (d) the heart size, which also varies widely, especially according to body build, and may perhaps in a few normal individuals exceed the standards set by Hodges and Lyster, (e) the electrocardiogram, of which the wide range of normal has not yet been explored adequately, (f) neurocirculatory asthenia, difficult to diagnose in mild degree,

but probably rejectable even when slight unless there is an obvious cause which can be corrected, (g) recent rheumatic fever a hazard even when the heart seems perfectly normal, and (h) exercise tests the usefulness of which, in cardiovascular examination for military service, is open to question.

14 A follow-up study of the men reclassified as 1A and especially of the doubtful "borderline" cases in the final 4F group should, in the years to come, aid in solving some of the various problems in cardiovascular diagnosis that still remain.

15 The wisdom of extending these reexaminations for the sake of the salvage alone is doubtful in view of the time required, the few expert examiners available and the relatively small percentage of men reclassified as 1A, but the applications of the lessons learned in the course of this study should be helpful in future examinations.

## Clinical Notes, Suggestions and New Instruments

### A SEVERE PEMPHIGUS LIKE REACTION FOLLOWING ADMINISTRATION OF SULFAMERAZINE

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Another sulfonamide has been released for clinical use, and a list of toxic reactions are certain to follow. Little has been reported on the toxicity of sulfamerazine. Hageman, Harford, Sobin and Ahrens<sup>1</sup> guardedly endorse the drug. They report drug fever and a morbilliform eruption in 2, or 19 per cent, of their cases. Flippin, Geffer, Domm and Clark<sup>2</sup> found no dermatitis in 160 cases of pneumonia treated with sulfamerazine. Geffer, Rose, Domm and Flippin<sup>3</sup> reported 6 cases of drug eruption in 45 cases of meningococcal meningitis. Clark, Flippin and Murphy<sup>4</sup> had 3 per cent toxic dermatitis, none serious. Cutaneous reactions to the sulfonamides are frequent and are usually mild, however, severe and even fatal dermatitis has been reported.<sup>5</sup>

We are reporting a near fatal pemphigus like reaction to sulfamerazine after the administration of only 4 Gm over a period of forty-eight hours.

#### REPORT OF CASE

J. I., a youth aged 20, white, was first treated for acute gonorrhea on Aug. 30, 1943. He was given calcium gluconate intravenously and sulfathiazole 8 Gm daily for one week. At the end of this period the penile discharge was unchecked, and he was placed on a mild silver proteinate injection and all sulfonamides were stopped. On September 27 he was started on sulfamerazine two 0.5 Gm tablets every twelve hours. After only eight tablets in forty-eight hours a generalized macular rash not unlike that of measles was noted, all mucous membranes were fiery red and there were some tiny blebs in the mouth; the temperature was 102 F. September 30 he entered St. Joseph Hospital with a maculopapular eruption involving the entire body; there were many blebs in the nasopharynx, the

1 Hageman P. O., Harford C. G., Sobin S. S. and Ahrens R. E. Sulfamerazine: A Clinical Study of Its Pharmacodynamics, Therapeutic Value and Toxicity. *J. A. M. A.* 123: 325 (Oct. 9) 1943.

2 Flippin H. F., Geffer W. I., Domm A. H. and Clark J. H. Studies on 2 Sulfanilamido-4 Methylpyrimidine (Sulfamerazine Sulfamethyldiazine) in Man. IV. Treatment of Pneumococcal Pneumonia. *Am. J. M. Sc.* 206: 216 (Aug.) 1943.

3 Geffer W. I., Rose S. B., Domm A. H. and Flippin H. F. Studies on 2 Sulfanilamido-4 Methylpyrimidine (Sulfamerazine Sulfamethyldiazine) in Man. III. Treatment of Meningococcal Meningitis. *Am. J. M. Sc.* 206: 211 (Aug.) 1943.

4 Clark J. K., Flippin H. F. and Murphy F. D. Studies on 2 Sulfanilamido-4 Methylpyrimidine in Man. II. Toxic Manifestations. *Am. J. M. Sc.* 205: 546 (June) 1943.

5 Greenberg S. I. and Messer A. L. Fatal Bullous Dermatitis Following Administration of Sulfamerazine. *J. A. M. A.* 122: 64 (July 31) 1943. Raffetto J. F. and Nichols Stanley A. A Near Fatal Reaction to Sulfadiazine in a Ten Year Old Girl Involving Skin, Eyes and Oropharynx. *J. Pediat.* 20: 753 (June) 1942.

conjunctiva was edematous and injected. In about thirty-six hours there were many bullae over the body filled with a clear straw colored fluid. There was a positive Nikolsky sign. He was delirious at times. The temperature was of a septic type, varying from 105 to 97 F. The course was septic until October 7, when he began to improve, and the temperature gradually leveled off by lysis. He was discharged on October 23 greatly improved, to convalesce at home. He still had a purulent urethral discharge, but no gonococci were found on a smear. His only sequela was conjunctival adhesions to the left eyeball, which caused no symptoms.

The patient had had pneumonia three times at ages 6, 7 and 8. No sulfonamides were used. At 9 he had mastoiditis. No sulfonamides were used. In 1942 he had purulent otitis media, which was treated successfully with sulfathiazole without reactions.

Laboratory examinations resulted in a negative Vincent smear from the mouth, blood sulfamerazine on October 2, 24 mg per hundred cubic centimeters, blood culture at height of fever,



Appearance six days after onset. Note denudation. Skin is covered with zinc oxide.

negative, blood count within the accepted range of normal, urinalysis negative except for a trace of albumin and many pus cells (urethral discharge).

Treatment consisted in the intravenous administration of fluids, sedation, multiple vitamin and iron capsules by mouth, zinc oxide to the skin, boric acid packs to the eyes and phenacaine hydrochloride and ephedrine ointment to the eyes. Parenterally liver extract was administered, massive doses of vitamin B complex, ascorbic acid, menadione and vitamin D.

#### COMMENT

The rapid and acute onset after only 4 Gm of sulfamerazine over a period of forty-eight hours after no toxic symptoms to sulfathiazole probably indicates some type of allergic manifestation. The skin and mucous membrane reactions were not unlike those seen in pemphigus. This was concurred in by a dermatologist and an otolaryngologist who saw him in consultation. This reaction indicates that, although sulfamerazine may prove to be an excellent therapeutic agent, it is not without dangerous sequelae.

Dermon Building

#### TREATMENT OF PITYRIASIS ROSEA BY THE INJECTION OF TYPHOID VACCINE

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Pityriasis rosea is a fairly common acute self-limiting cutaneous eruption which causes no systemic symptoms. Intrinsically it is not of great importance, although it may cause uncomfortable itching in perhaps one third of the cases. However, it causes considerable worry to the patient. Its extensive distribution and unsightly appearance suggest serious possibilities. Untreated it usually heals spontaneously in four to ten weeks, leaving no sequelae. It rarely recurs.

The symmetrically disposed lesions are round or oval pinkish maculopapules which vary greatly in size and are slightly scaly. They are ordinarily easy to recognize, especially if the long axes of the ovals lie along the lines of cleavage of the body. Frequently a "herald spot" antedates the eruption by a week or ten days. The mode of spread of the eruption is as characteristic as the lesions in most cases. As Darier has said, it is "successive, progressive and descendent." Ordinarily the upper part of the trunk and the neck are first affected. The new lesions spread downward on the trunk and along the arms and centrifugally on the lower extremities. In some cases the face may be affected. The hands are almost always spared. Many clinical variants occur. In recent years it has seemed that the typical maculopapules are often accompanied by an extensive eruption of very small follicular papules, and indeed these may seem to dominate the clinical picture. Several instances of this type were included in our series. Again the lesions may be confined to the axillary folds or the groins or both with very little further extension.

The most serious error in diagnosis would be to mistake a secondary macular or maculopapular syphiloderm for pityriasis rosea. This is best avoided by remembering that secondary syphilis is a systemic disease, so search should be made for adenopathy, lesions of mucous membranes, anogenital lesions, palmar and plantar lesions and alopecia. Inquiry should be made for sore throat, hoarseness, headache and other symptoms. A doubtful eruption in a patient with positive serologic tests is not always syphilitic but a dark field examination will usually settle the matter.

A toxic dermatosis closely simulating pityriasis rosea may occasionally follow the administration of arsphenamine, bismuth compounds or gold salts. A careful history will help identify this eruption.

The etiologic agent of pityriasis rosea is still obscure. Many facts point to an infectious agent. The disease rarely recurs in a person once affected. It seems to produce solid immunity. The number of cases seen by physicians in private practice and public clinics is definitely increased during the spring and the fall. It is true that multiple cases rarely occur in one family, but Wile,<sup>1</sup> working in a university community, was struck by the appearance of epidemics of the disease among students living in fraternity and sorority houses. He also was able to present experimental evidence supporting the idea of the infectious nature of the disease. By subepidermal inoculation of volunteers with artificial blister fluid from lesions of pityriasis rosea he was able to produce in 4 instances a sparse, transient generalized eruption which in some ways resembled the natural disease.

The usual methods of treatment of pityriasis rosea are palliative at best and frequently unsatisfactory. The use of ultraviolet radiation from the mercury vapor quartz lamp may shorten the course of the disease but is time consuming. On the assumption that an infectious agent was the cause of the eruption it seemed feasible to treat the disease by the intramuscular injection of typhoid vaccine in the hope that this might have a nonspecific effect in stimulating the general immune processes of the body. The work was done at the Fantus Outpatient Clinic of Cook County Hospital from March to July 1943. Standard typhoid vaccine of the type used to immunize against typhoid was used. Except in the instance of a very young child the dose used varied from 50 to 150 million killed

From the Bernard Fantus Outpatient Department, Cook County Hospital.

<sup>1</sup> Wile, L. J. Experimental Transmission of Pityriasis Rosea. Preliminary Report. Arch. Dermat. & Syph. 16: 185 (Aug.) 1937.

organisms. With more experience we used the larger dose. This was administered intramuscularly in the region of the left triceps muscle by using a fine needle held perpendicular to the skin surface. Preliminary suction was made with the plunger to avoid making the injection in a vessel. Some redness and pain were complained of the night of the injection and occasionally the next morning. No systemic reactions were noted. No other treatment, local or internal, was employed.

It is doubtful whether this treatment would be effective in patients who recently had been immunized against typhoid or who had recovered from the disease. There were no such patients in our series.

After some experience with our method we made a search in the literature for reports of similar experiences. Not one was found. However, Findanza, Carrillo and Schuyman<sup>2</sup> of Rosario University in Argentina reported the use of mixed streptococcus vaccine in the treatment of pityriasis rosea. They administered three intravenous injections every other day in ascending dosage. Twenty-two case histories were appended with results paralleling our own. The majority of the eruptions cleared in eight days.

A total of 32 patients were treated. Of these, 17, or more than half, were Negroes. The disease is apparently as common among the Negroes as among white persons as the patients coming to our clinic are not predominantly of the Negro race. There were approximately twice as many female patients as male patients. The age ranged from 4 years to 54 years. Five patients were in the first decade of life, 10 in the second and 8 in the third. Twenty-two, or 69 per cent, of the total were under 26 years of age, thus verifying the statement usually made that pityriasis rosea is a disorder of the young. In 24 instances the eruption had been noticed by the patient for one week or less, and in no case was the duration reported by the patient as longer than two weeks.

The smallest dose administered was 20 million killed typhoid bacilli, to a child of 4 years. The other children received 50 million. Patients over 13 years of age received from 100 to 150 million killed bacilli. The larger dose was adopted after more experience with the method. Observations were ordinarily made one week after treatment and at weekly intervals thereafter. Eighty per cent were followed for two weeks or longer. In 75 per cent of the cases serologic studies were made. The Kahn reaction was uniformly negative. A biopsy of a lesion was made in 4 instances with a severe eruption. The sections studied confirmed the clinical diagnosis.

At the end of the first week all lesions had completely disappeared in 4 patients, or 12.5 per cent of the total. Only faint relics persisted in 10, or 31 per cent. Involution was estimated to be 80 per cent complete in 6 others, or 18.7 per cent. Thus a total of 20 patients, or 62.6 per cent, were entirely clear or very greatly improved one week after the injection was administered. Of the remaining 12 patients improvement was estimated at approximately 50 per cent in 7, or 22 per cent. The itching which was a disturbing feature in many instances, particularly among the Negroes, was the first symptom to respond. The eruption instead of progressively extending was not only checked but estimated to be approximately 50 per cent improved. On subsequent observation the improvement continued. In 2 instances, or 6.2 per cent, there was no improvement. In 3 others, or 9.3 per cent, the erythema had faded and the itching ceased but the lesions had not undergone involution. The response in cases with intensive eruption was frequently spectacular. A second injection may be administered one week after the first. However, since pityriasis rosea is self limiting and lasts only a few weeks, we chose in this study to limit our observations to the effect of a single injection.

#### SUMMARY

In the treatment of pityriasis rosea a single intramuscular injection of killed typhoid bacilli causes an abortive involution of the disease if administered early. No unpleasant reactions have been noted. A total of 32 patients were treated with greater success than we have observed with any other type of treatment.

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<sup>2</sup> Findanza, E. P., Carrillo, Francis and Schuyman, Salomon. Results of Streptococcus Vaccine Therapy of Gilbert's Pityriasis. *Semana Med.* 43: 1045 (April 2) 1936.

## Special Article

### AMERICAN HEALTH RESORTS

#### THE HISTORICAL BACKGROUND OF RESORT THERAPY

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*These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.*

Few branches of healing are more ancient than the branch of resort therapy and none, with the possible exception of surgery, has been more influenced in its display by the regard in which it has been held by the physician. Unfortunately, these views have often had little or no relation to the actual benefits of the therapy but they have nevertheless largely determined the extent to which it has been employed. Much of the discussion to follow on the historical background of resort therapy will be concerned with the forces which at different periods have raised this therapy to the central feature of medical care, have reduced it to the status of a superstition, have diverted its main features into voluptuous cultural practices, have opposed its use on the puritanical background that its measures coddled the flesh that needed scourging for the sins of disease, have degraded it to a social fad, have allowed it to pass into the hands of the charlatan and enthusiast as a panacea, have obstructed it with lack of economic provision for care and have brushed it aside with a disinterest that has come from attention fixed on only the novel in medicine. Few branches of therapy have ever suffered more, particularly in this country, from entanglements which had no relation to actual merits. Resort therapy can achieve its valid place in American medicine only when it is evaluated, not in the light of preconceived views arising from these entanglements, but solely on its basic merits.

#### HEALTH RESORTS OF THE PAST

The origin of health resorts, in the sense that the ill and infirm might sojourn in certain favorable localities and there have applied measures, particularly balneotherapy, to the restoration of their health, stems, in the main, as do in crude form all other great principles of therapy, from the priestly healing of pagan peoples.<sup>1</sup> There appear to be some exceptions to this generalization, but they are notable more by their rarity than by any general influence on the ancient origin or spread of health resort therapy. Thus among the East Indians<sup>2</sup> the origin appeared to have been climatic rather than religious. The ancient Sanskrit *Susruta* distinguishes six seasons of the year and describes their effects on men and animals. The rainy season (*Varsāh*) from July 15 to September 15 was regarded

From the Laboratory of Applied Physiology, Yale University.  
<sup>1</sup> Horneffer, A. *Der Priester*. Jena: Diederichs, 1912. vol. 2, pp. 37-38.  
<sup>2</sup> Jolly, J. *Medizin in Buhler's Chronik der Indio-Artien*. Philologie, Strasbourg: K. J. Trubner, 1901.

as the most dangerous to health and change to a dry climate was strongly recommended. But so dangerous was this time of year regarded that even in dry places it was necessary to take especial hygienic precautions. The laws of this period imposed on the king the necessity of sojourning in such a locality in this season and of applying suitable measures of hygiene. The migration in following the king was considerable, and, since bathing, massage and general care of the body were emphasized, the representatives of the healing art flocked to those places which developed into health resorts. Unquestionably also in early but isolated instances mineral springs and the warm spring had been found by chance to give relaxation and relief from pain and so locally obtained a reputation for curative powers.<sup>3</sup>

In Babylon the growth, although not the origin of health resorts was political rather than primarily religious.<sup>4</sup> When Hammurabi consolidated all the power of the country in the city of Babylon, other sections lost their political and commercial significance, and, to compensate for this loss, they developed the prestige of their temples until these became places of pilgrimage and health resorts.

Aside from such instances as these, the origin and growth of the health resort were probably entirely religious. Therapy centered primarily about the sacred spring or well.<sup>5</sup> Water was the essential purifying agent, it visibly removed the spirits which lurked in dirt and in many objects with which the body came in contact. Spirits were the cause of disease, and the lustrations of water cured disease. Drinking the water carried its virtues into the body. Often the seeker after health cast a sacrificial gift into the water as a covenant of his belief and confidence—an important feature for the psychotherapy which was inseparable from any ceremonial religious healing. Wells and springs frequently attained to special significance through unusual and mysterious properties of the water caused by high temperature, bubbling gases or mineral content which gave peculiar taste and odor.<sup>6</sup> Experience has shown that some of these springs have medicinal effects, but their original use probably comes less from empirical observations of these benefits than from religious ideology. It was, however, doubtless the valid benefits experienced that made this form of healing persist while other forms of religious healing tended to decay or alter. Those in search of health made pilgrimages to the healing waters, temples were built for the priests, and quarters were provided for the pilgrims during their stay. Thus it was that many sacred health resorts developed.

The religious element in the health resort of the past has been the greatest inspiration to the use of resort therapy, but it has also been an obstacle to the recognition and acceptance of the actual somatic benefits of this therapy. The patient was inspired to travel

to the resort in the belief that the divine influence emanating from its waters would cure his disease. With his attention fixed wholly on the supernatural element, he was oblivious to the benefits of the salubrious location, to the rest he obtained, to the relief he found by being removed from his accustomed environment and responsibilities, to the balneotherapy he received to the relaxing sunlight or the stimulating altitude and to the possible actual medicinal action of the mineral water. If the symptoms of his disease abated and his health improved—and these frequently occurred—it was the gods on whom his attention was centered who received the credit.

There can be little doubt that the enthusiasm engendered by the conviction of supernatural benefits was a prominent factor in many "miraculous" symptomatic recoveries. But equally there can be little doubt that many pilgrims who sojourned at the ancient wells and springs, particularly those who had chronic infections, skin diseases, arthritic and rheumatic disturbances, hypertension, gastric and nervous disorders and those who were convalescents were definitely, if less spectacularly, benefited.

These benefits were no doubt particularly obvious in the instances of city dwellers, since for them there was an especial element of rest and relaxation in the visit to the resort. Sigerist<sup>3</sup> attributes the growth of health resorts in part to the development of cities and the corresponding development of a definite need for periodic change of surroundings. Statements of this association of city and resort occurs frequently in older writings, thus Carey<sup>7</sup> in 1799, in giving his views of the curative and social advantages of various English resorts says "they (the waters of Cheltenham) are said to relieve an aching head, clear an over-charged stomach, and promote good appetite, disorders naturally brought on by the mode of living in London."

With the rise and spread of Christianity, the pagan healing waters became Christian healing waters,<sup>8</sup> the curative effects were usually attributed to the endowment of a patron saint. Under Christian influence there was a tendency to minimize, or even to abolish, the physical ministrations which had played an important part in some pagan therapy and to elevate the supernatural element. Mere visit and ceremony at the well or spring were sufficient for cure, and by extension for convenience, ordinary waters of any stream or ocean were given curative powers on special occasions, as St. John's night or Easter morning.<sup>9</sup> Such healing has persisted, although the belief in the supernatural powers as curative forces is no longer held by the physician. Consequently to him this form of healing has become a superstition.<sup>1</sup> He dismisses any reputed cure as due solely to psychotherapy. But, unfortunately, the association of water at the holy well and in the health resort sometimes leads him to transfer something of his opinion from the one to the other even though no feature of religious healing enters into the health resort. In reality, the procedures surrounding the holy healing wells are not true or complete repre-

3 Sigerist, H. American Spas in Historical Perspective, Bull. Hist. Med. 11: 133-147, 1942.

4 Jastrow, M. Die Religion Babyloniens und Assyriens, Giessen, Topelmann, 1905, vol. 1.

5 Rohde, E. Psyche, eds. 5 and 6. Tübingen: Mohr, 1910. Oldenberg, H. Die Religion des Veda, Stuttgart, Cotta, 1917. Wiedemann, A. Herodot's zweites Buch, Leipzig, Teubner, 1890. Weinreich, O. Antike Heilungswunder, Giessen, Topelmann, 1909. Horneffer.<sup>1</sup> Jastrow.<sup>4</sup>

6 Walton, A. The Cult of Asklepios, in Cornell Studies in Classical Philology, 1894, vol. 3. Marggraff, H. Badewesen und Badetechnik der Vergangenheit, Berlin: Habel, 1881.

7 Carey, G. The Balnea ed. 2. London: W. West, 1799.

8 Preis, F. Antikes Leben nach den ägyptischen Papiri. Leipzig: Teubner, 1916. Horneffer.<sup>1</sup>

9 Grimm, J. L. K. Deutsche Mythologie ed. 4. Berlin, F. Dümmel. 1875-1878. pp. 487-515. Wuttke, A. Der deutsche Volksglaube in Gegenwart ed. 2, Berlin: Wiegand & Griepen, 1869, p. 17. Renz, Düringsfeld, O. Das festliche Jahr. Leipzig: Spamer, 1863, p. 45.



sentatives of the principle of the health resort they are, as indicated here, extensions of the theological but not the physiologic features of these resorts.

#### RELIGIOUS AND NONRELIGIOUS ELEMENTS

The rational development of the nonreligious element of ancient resort therapy was made in the classic period of medicine which began with the time of Hippocrates. Many of the therapies passed with little change except that of theory and ceremonies, from the religious rites of the temple to the rational recommendations of the physician. Sojourn at a special resort might be omitted—and indeed it was desirable to do so in many acute diseases—but the basic somatic therapy used at the temples became the basic therapy of the bedside.

Prior to this period, the healing of internal diseases was in the hands of the priests of Aesculapius. Surgery was not given this dignity. There was no mystery about wounds: cause and effect were obvious. Internal diseases were regarded as manifestations of the malign influence of gods and spirits, demons and heroes and hence within the domain of the priest. The temples of Aesculapius were dedicated to the care of the ill. These temples were health resorts, they were often beautiful stone buildings with shady colonnades and olive groves and great courtyards with fountains. The ruins of many exist today. The emphasis in the healing procedures was on divine intervention received during the temple sleep, but the feature important to resort therapy lay in the fact that the patients did not receive the divine aid immediately on their arrival but only after a period of preparation. While they waited with hope and enthusiasm for their day of cure they lived in inns outside the temple. As part of the preparation the patients were made to observe certain rules for physical and spiritual purification. These rules included the general therapy of a health resort: rest, sleep, diet and bathing and probably, in many instances, the use of mineral waters. The actual physical benefits of the temple treatment undoubtedly came from this regimen, which the priests had probably long since observed as an important adjuvant to the religious ceremony which climaxed the treatment.

Under the hippocratic philosophy of medicine the inherent recuperative powers of the body received their fullest and most salutary recognition—a recognition which at subsequent periods of medicine, even perhaps the modern, was too often obscured by the belief that the cure was effected by the therapy. The principle of this ancient philosophy was summed up in the famous, modest, but honest statement of Pare: "I treated him and God healed him." Under the hippocratic doctrine<sup>10</sup> disease was due to a disturbance in the humors of the body, the therapy was designed to assist the workings of nature, as the physician understood nature, in restoring the normal balance of the humors. The practices of the therapy were those found empirically in the long experience of priestly health resorts to be harmless and beneficial, and this basic therapy was fresh air, light, massage, balneotherapy, local application, diet, purgation and the relaxation of a quiet and restful environment.

Within this classic period there is a notable example of the sensible separation of theory and practice which

particularly in relation to the history of resort therapy, bears repetition here. Often, in the history of medicine, therapy has been developed solely on a theory, and, with each shift of theory, therapy has altered even to the extent of complete reversal. The instance here, to the contrary, is that from the school of Asclepiades of Bithynia (128 B. C.) under which the theories of causation were entirely opposed to those of the hippocratic.<sup>10</sup> Disease was viewed not as a disturbance of the humors but as a constriction and relaxation of its solid particles, the doctrine of *strictum et laxum*, which was subsequently revived as the brunonian theory of sthenic and asthenic states and Hoffman's theory of tonic and atonic conditions. Under the Asclepiadean doctrine nature was not to be assisted but systematically interfered with. This theory however, did not in this fortunate instance in any way alter the therapy used, it was the same as that of the hippocratic school, a therapy which, on the basis of centuries of empirical observation was found to yield the greatest curative benefit of any therapy then available.

The classic therapy, whatever the theory which dictated it, did not give spectacular results, the measures used were commonplace, they were often slow in operation and they were frequently time consuming for the physician. In subsequent periods, when theory became the dictator of therapy, it was often found easier by the physician and more impressive to the patient, to prescribe a medicine or order a purge and bleeding than to nurse back health by the simple but tedious methods of classic therapy. And, as we look back, it is clear that many of the highly vaunted medicines probably had less actual virtues than the religious element of the ancient health resort and that the clyster and phlebotomy knife were more often than not true obstructions to the recovery of health. It was only the inherent recuperative powers which allowed many of the patients to survive in spite of the remedy.

The classic therapy of assisting nature is today, although not exploited as such, the basis for all therapy when better and more specific methods have not been developed. This fact gives the ancient therapies an almost negative position in the continual search for more aggressive methods, they are not looked on as curative and hence are not given the emphasis or used with the enthusiasm and perseverance that existed when no other methods were available. The search for the novel, the specific, which in certain diseases but certain ones only, has yielded the spectacular results of some modern therapies has so attracted attention that we are prone to forget that for many diseases—and of consequence often chronic diseases—there are no better therapies than those of the classic period of two thousand years ago. Hippocrates had successes with only the means at his hands. Likewise there seems to be a tendency in modern medicine, even though it may not be explicitly expressed, toward the Asclepiadean theory of interference with nature, a theory which in the past has given some of the most undesirable therapies in the history of medical practice. There is an inclination to view the success of surgery and of specific medications as an interference with the course of disease while in reality the surgery and the medication may operate more often as Hippocrates saw them by removing obstructions to the free display of the inherent healing power of the body.

<sup>10</sup> Garrison Fielding, *An Introduction to the History of Medicine* (1) Philadelphia: W. B. Saunders Company, 1929.



## EMPIRICAL NATURE OF RESORT THERAPY

Resort therapy has had no striking and accepted theory to explain its benefits. Little modern investigation has been inspired to find any basis for its benefits. They are essentially empirical—as empirical as the most commonly employed, most unspectacular but most widely beneficial therapeutic measure of all modern medicine: rest in bed. They are as empirical in their benefits as is sleep. The scientifically trained physician is inclined to belittle—and often justifiably so as experience has shown—therapies that have only empirical basis. And yet many of the most ancient of resort therapies have been important rediscoveries of modern medicine and as such have had no firmer basis than the observation that the patient benefited, among these, to mention only a few, are the ice pack, the cold or hot application for inflammation, infection and sprains, the use of cold water both externally and internally in fever and in insolation and the use of continuous sedative warm baths for certain psychotic manifestations. The last use was commented on most favorably by Smollett<sup>11</sup> in the eighteenth century, but the theory he postulated would seemingly discourage any physician from using the practice today. “the use of it [the warm bath] is nothing more successful, than in *maniac* disorders, whether the melancholy or frantic species both these are owing to a disordered circulation in the brain, occasioned by a thick foul viscosity in the juices, which by a nervous constriction of the lower parts, are forcibly driven upwards, yielding an impure and interrupted secretion of the animal spirits, and disturbing their containing vessels, so as to create various *Chimæras* in the imagination.” The explanation of the manic depressive psychosis is perhaps no more satisfactory today, but the empirical benefits of the bath have fortunately survived.

From the development of alchemy and particularly the works of Paracelsus, great virtue was attached to the mineral content of medicinal waters. The application of crude chemical analysis was exploited in the hope of determining the basis of their virtues, but by the eighteenth century it led instead to the opposite result. It cast doubt on the medicinal virtues by finding in many famous waters no more mineral ingredients—and of no more peculiar nature—than in some city water supplies. This finding may be a bona fide condemnation of mineral waters in general, but equally it may be an expression of the inadequacy of chemical analysis. It was not by chemical analysis that vitamins were discovered in foods, the chemical analysis for their assay was developed only after their presence was postulated by biologic experimentation, and the findings of the biologic experimentation can now be seen, with the clarity of hindsight, to be writ large in the medical experience and domestic experience of the past. On this feature Sigerist,<sup>3</sup> urging the promotion of laboratory and clinical experimentation on balneotherapy, says “Chemistry until recently was gross chemistry: micro-chemistry is in its infancy still and we are beginning to realize that a few molecules of a chemical compound can cause definite biological reactions. The theory of dissociation and the discovery of radioactivity greatly stimulated the study of medicinal springs and Bau-

disch<sup>12</sup> has pointed out how important and illuminating Alfred Werner's concept of coordinated valence (co-valence) is in this particular field.” The recent discovery of the considerable effects on the teeth of minute traces of fluorine in drinking water is also suggestive.

Smollett,<sup>11</sup> previously quoted on the use of the warm baths in the manic state, had an especially pertinent comment on the relation of chemical analysis and healing virtue. He said “Such diversity of opinion, among those who have laid themselves out for *analyzing* Mineral Waters, cannot fail to perplex and embarrass people who attempt to reason upon the use of them, without having had the advantage of seeing their effects, in a long course of practice, by which alone their Medicinal Virtues are to be ascertained.”

In ancient as in modern times the balneotherapy consisted both in the internal use of medicinal waters and in the external application at a great range of temperatures and in a great variety of methods: the immersion bath, local application, douching and the vapor bath. Hippocrates writes of warm springs impregnated with copper, silver, gold, sulfur, and bitumen and niter. Aristotle, Strabo, Theopompus, Archigenes, each in turn, has commented on the virtues of mineral waters. Galen eulogizes certain of them for treatment of the gravel, and Vitruvius and Seneca, Celsus and others of the general period detail the use of various waters for different complaints, especially those of the stomach and liver, the skin (sulfurous waters for scabies) and for rheumatism. Pliny, with his flair for classification, treats the mineral waters in much the same manner as the chemists of the eighteenth century, but without the aid of their analytical methods, as acidulous, sulfurous, saline, nitrous, aluminous, ferruginous and bituminous.<sup>13</sup>

Most of the ancient writers on mineral waters, including Hippocrates, warned against their use as common beverages. In line with the disappointing discoveries from chemical analysis in later centuries has been the fact that many famous mineral waters with reputed curative powers have become widely used table waters with no indication of either ill effect or, what is more pertinent, any exuberance of health in the users who were normal. Again, as with chemical analysis, this cannot be taken by the openminded as refutation of long empirical observations. It proves only one fact, nothing more nor less: that a healthy person is not made appreciably more healthy by their use. It is likewise true that a healthy man does not become healthier and his blood redder when he takes an excess of vitamins and iron, but this fact does not prove that the debilitated and anemic show an equal lack of benefit on taking them.

These statements, and those concerning chemical analysis, are made here not because the author knows of any laboratory evidence which proves the benefits of mineral waters but to present in more fairness than is sometimes shown by the physicians of this country the situation with regard to the medicinal waters. Regard in these respects is definitely a part of the

12 Baudisch, Oskar. *Magic and Science of Natural Healing Waters*. J. Chem. Educ. 16: 442, 1936.

11 Smollett, cited by Jones, C. E. “Essay on External Use of Water” by Tobias Smollett, *Bull. Inst. Hist. Med.* 3: 3182, 1935.

13 Patissier, P. *Manuel des eaux minérales de la France*. Paris: Mequignon Marvis, 1818. Martin, A. *Deutsches Badeleben in Vergangenheit und Gegenwart*. Stuttgart: Fink, 1933. Badewesen in Vergangenheit und Gegenwart. Berlin: Allg. med. Verlagsanstalt, 1910. Negrier, P. *Les bains à travers les âges*, Paris: Librairie de la construction moderne, 1925.

historical background of resort therapy since, as stated at the beginning of this article, it has been regarded rather than demonstrable facts of scientific investigation for or against such therapy which has influenced its use and consequently its historical situation. On the one hand, there is a paucity of substantiated scientific evidence to support a consistent claim for the healing virtue of mineral waters, other than that some waters are laxative and many influence gastric motility<sup>14</sup> and circulation presumably because of their content of carbon dioxide, on the other there is more than two thousand years of empirical observation. While waiting for a determined scientific investigation which will give indisputable proof, or disproof, the attitude of the medical scientist can properly only be that of open-mindedness. Such investigation as suggested will probably not be instituted, however, until the medical profession at large develops a far greater interest in many of the chronic, disabling but not incapacitating diseases and their distressing symptoms than is at present widely evident.

#### RESORT THERAPY IN ENGLAND AND AMERICA

Among the Greeks and Romans the balneotherapy of the ancient temples was developed into a cultural practice of esthetics, luxury and hygiene. Wherever the Romans settled in their conquests, the bath became a central feature of the civilization which they imposed on the conquered. In Rome the skill of the greatest architects and engineers was devoted to the development of famous baths, both public and private. The public baths were open to all classes for an insignificant fee, they were often great clubs with libraries and lounges. The bath itself was formalized as a ceremony and became a central feature in daily life, so much so that it constituted part of the demonstration of public rejoicing equal with other spectacles and, like them, was prohibited as a sign of mourning when the country suffered any calamity. In the Mohammedan countries of later date the vapor bath with plunge, massage and rest achieved as important a position in daily life if not as great a one in national affairs.

The extensive use of bathing in the Mediterranean and Eastern countries is in contrast to its little use in England and America in the eighteenth and nineteenth centuries.<sup>15</sup> A warm bath in the latter countries was an impressive ceremony not to be undertaken lightly. In both countries there was generally a great timidity about wetting the skin and a considerable fear that dire results would follow from immersing the body. Taking the waters at Bath or a similar resort, at the basin or under the pump, or timidly entering the sea water in a bathing machine had a distinctly daring quality that needed the support of a physician's advice. It was Count Rumford<sup>16</sup> who at Harrowgate carried out the hazardous experiment of taking a warm bath every day for thirty-five consecutive days, staying each time for a half hour in water at 96 F. Instead of suffering from the dire consequences that were predicted, he found instead "a better appetite for

my dinner a better digestion and better spirits, and was stronger to endure fatigue, and less susceptible to cold in the afternoon and evening";<sup>17</sup>

A more detrimental influence than fear of bodily cleanliness militated against the health resorts of both England and America. It was the overdevelopment of the social features of the resort. Many became fashionable watering places far more than health resorts, it was the paying guest rather than the ailing guest who received attention. This feature was often clearly indicated in the descriptions of the English resorts, such as that of Carey<sup>7</sup> in the eighteenth century, who, in describing the charms of Margate, complained that it was hard to hear the actors at the theatrical performances held in the evening because of the "noise produced from the multiplicity of dice boxes which were generally rattled at the theatre hour."

In the early days of New England the sojourn at a health resort was a conception that was entirely incompatible with the puritanical idea of rigorous discipline of the flesh. At the time of the Revolution, however, there was, as Thoms<sup>17</sup> has indicated, a developing interest in such resorts. In the more southern part of the United States health resort therapy was taken seriously. Bell<sup>18</sup> has given an excellent description of the early resorts of this country. In time, however, the social rather than the medical feature became predominant and many of the resorts which had played host to ailing men and women became centers of sporting activities with a wealthy and far from ill clientele.

This social feature, with the highly important one of economics, has done much to hamper the development of health resorts in the United States. The economic feature is fully discussed by Sigerist<sup>8</sup> in his article, previously cited, "American Spas in Historical Perspective." Most of the European resorts made full provisions for patients of humble means, many of these resorts, as also Saratoga and Hot Springs National Park in this country, are not privately owned but publicly. Sigerist describes the Russian system of supporting the resorts as a particularly advantageous one and the reader is referred to his article for full discussion of this important feature.

Social and economic factors were no doubt discouraging influences in determining the attitude of the American physician toward resort therapy, but equally so were the extravagant claims that many of these resorts made as to the efficacy of their cures. When the supernatural element was the inspirational feature of resort therapy, many spectacular symptomatic recoveries could be expected among psychoneurotic and hysterical patients, the blind would see and the paralytic would walk. But even these recoveries were exceeded by those claims for some of the resorts of the nineteenth century which were privately owned and operated by enthusiasts or charlatans, malaria, consumption, syphilis and cancer were, according to the literature of these establishments, cured with the same ease and certainty as by the "patent medicines" of the period and the cure was supported by the same evidence, that of testimonials of the patients.

In contrast to these misconceptions and misrepresentations, which have done much to discredit resort therapy in this country, it is refreshing to turn to the

<sup>14</sup> Binet M., and Lebon, H. De l'influence du bicarbonate de soude sur la durée de l'évacuation stomacale. *Clinique* Paris 7: 241-243 1912.  
<sup>15</sup> S. Mohamed author of *The Bath* (London 1843) although possibly prejudiced since he was the owner of a bathing establishment comments pungently on the lack of ordinary bodily cleanliness of the Englishmen of his times.  
<sup>16</sup> Bell J. On Baths and Mineral Waters. Philadelphia: H. H. Butter 1831.

old records of some of the English resorts and classify the cures which were attested by the attending physicians. The inadequacy of diagnoses is more than compensated for by the lack of any supernatural attributes and of any blatant advertising, and by the sincere support of the medical profession of the period. Thomas Guidott,<sup>18</sup> physician at Bath in the late seventeenth and early eighteenth centuries, records some two hundred cures from the register of Bath for that period. No record is given of the total number of individuals treated or the number of failures, although the presumption is that the latter was high since many of those coming for treatment undoubtedly had incurable diseases of long standing and were sent by their physicians to Bath as a last hope or for relief of some symptom. Such temporary relief was not recorded in the register, although the implication in the writing is that it was frequent. There could not, of course, at that period be any record of amelioration of hypertension or any other disturbance requiring instrumental detection. In somewhat over a hundred of the cures recorded, sufficient indications are given of the nature of the disease to permit tabulation, and this tabulation

Nature of Diseases Most Frequently Benefited at Bath

Disease	Pcr Cent
"Old aches" and persistent pains including those from old traumatic injuries	20
Rheumatism, lumbago, sciatica ("hip gout") and gout	19
Skin diseases, including fistulas and ulcers	14
Palsy	13
Gastrointestinal, urinary and liver disturbances	10
Weakness	10
Lameness	8
Paralysis	6

is given here solely to indicate the nature of the disease which the physician of the time found to be most frequently benefited.

Even at Bath at this period some of the patients who obtained relief were unquestionably suffering only from psychoneuroses. Likewise it is probable that some of the disturbances would have cleared up without any treatment. It is possible that these factors may have operated in a fair proportion of the palsies, lameness and paralysees, which constituted some 27 per cent of the cures. It is improbable that they would play an important part in the "old aches" and pains, the rheumatisms and skin diseases which constituted 53 per cent of the cures. In many instances the statement is made in the "register" that the pain or disease had been present for long periods before treatment at Bath and that in the instance of the pains and rheumatic disturbances the amelioration of the symptoms occurred soon after the treatment was started and continued with slow but progressive improvement. In a few instances there are reports on the satisfactory condition of the patient for months or even years after the cure. It is gratifying to notice that no cures are claimed for consumption, although improvement is noted.

On the continent of Europe, resort therapy had a long and dignified history, it was supported by the medical profession and its principles were taught in the medical schools. Many Americans in the last and

present centuries went to these spas and it is estimated that, in 1930, 100,000 Americans took treatment in European spas, spending some \$100,000,000.<sup>19</sup>

Interest in the French mineral waters is said<sup>20</sup> to have been revived for a brief time by Charlemagne, who had a bath constructed for the use of his family at Aix la Chapelle. A more persistent and more definitely medical interest arose near the end of the fifteenth century, especially in Italy. In 1489 Savonarola of Padua wrote what may be the first medical treatise on baths, he dealt mainly with the thermal waters of Italy. Bell,<sup>16</sup> in commenting on this serious interest, makes a statement which could be applied to a later period when, in this country, resort therapy did not receive the wide or serious support of the physician, he says "Until then [the late fifteenth century] the mineral springs were the rendezvous of gamblers and provincial buffoons, and the superintendency of the waters was left to quacks, who readily imposed on blind and superstitious credulity." Henry IV of France is said to have corrected these abuses by an edict, later confirmed by Louis XIV, XV and XVI, from which superintendents were charged with the control over the use of mineral waters, baths and fountains of the kingdom, subsequently resident physicians were appointed by the government. Most of the European spas have been maintained under a modification of this general system, which has done much to prevent their abuse and to maintain a high scientific interest. The system has carried with it provision for the treatment of the poor and those of moderate means.

BALNEOTHERAPY AND RESORT THERAPY

While balneotherapy has been emphasized in the discussion here as a central feature of resort therapy it is nevertheless, as pointed out earlier, only one of the features, the rest, relaxation, relief from responsibility, change of environment, diet and climate each plays its beneficial part. On the ancient bathing establishment at Bejae on the gulf of Naples where the emperors came for "cure" is the inscription "Qui curat non curatur." Some of the balneologic features which at one time were exclusively those of the resort have been, as likewise indicated earlier, taken over in the treatment of diseases of a nature not treated at the resort. The use of the cold pack, bath and douche, first studied in typhoid by James Currie in the eighteenth century, employed by Cullen and put on a firm basis by Ernest Brand in 1861, serves as an instance of this progeneration, and in this instance the offspring had advantages not so liberally shared by the parent. Most of the conditions for which resort therapy is used cannot be subjected to the same positive diagnostic evaluation or direct measurement as can those, such as typhoid, which are acute and for which the thermometer often serves as an index of change in severity and mortality statistics as a prompt and convincing index of the success of therapy. Until investigation yields equally exact indexes for the diseases to which resort therapy is suited, this therapy will be forced to share some of the disadvantages of the diseases for which two thousand years and more of observation have indicated that it is beneficially applicable.

18 Guidott, Thomas. Treatise Relating to the City and Waters of Bath, London, J. Leake, 1723.

19 Beazell, W. Report on the Spas of the Eastern United States. Report of the Saratoga Springs Commission to the Legislature, No. 7, Albany, N. Y., 1930.  
20 References given in footnotes 13 and 16.

## Council on Pharmacy and Chemistry

At its annual meeting in 1942 the Council on Pharmacy and Chemistry declared contraceptive devices for consideration on the same basis as therapeutic agents. Prior to this time the Council's consideration of the contraceptive problem had consisted in sponsoring with the Council on Physical Therapy occasional status reports. To aid the Council in its considerations an Advisory Committee consisting of outstanding authorities in this field was formed and it initiated a list of criteria so that contraceptive agents might be evaluated consistently and fairly. At first the Council on Pharmacy and Chemistry was prepared to consider chemical agents such as pills and creams and physical devices, since the latter are often part of the contraceptive package available on the market. Later the Council on Physical Therapy voted to cooperate with the Council on Pharmacy and Chemistry by receiving for consideration and investigation products recommended for contraception (appliances but not drugs) and by reviewing data or other evidence submitted by the firms or by organizations fitting substantiating or refuting the efficacy of these products. By the time this latter decision had been made the Council on Pharmacy and Chemistry had reviewed the status of appliances submitted by two firms but voted to refer all other submissions of appliances to the Council on Physical Therapy. This therefore follows on these facts a description of certain physical devices which received fairly consideration by the Council on Pharmacy and Chemistry.

The Council has also authorized publication of the following status report by Dr. Robert L. Dickinson, statement of actions and uses for new and nonofficial remedies and criteria on which such contraceptive agents have been examined. As pointed out, these criteria may be changed as experience grows.

AUSTIN J. SMITH, M.D., Secretary

### CONCEPTION CONTROL

ROBERT LATOU DICKINSON, M.D.

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Medicine is beginning to assume responsibility for marriage counsel, for fostering desirable fertility, for prescribing protection against unwise or hazardous pregnancy, for providing sex instruction to further enduring marriage. The ability to give advice on bearing all the children compatible with well-being of parents, progeny and community calls for knowledge of the best methods of spacing births. Twenty years of experience in clinics, urban and rural, has been studied and summarized.<sup>1</sup> Basic research for better means is well started. There is demand for ways of protection covering a longer or shorter continuous span, as well as for those suited to the very poor out of reach of medical attention. Harmlessness, simplicity and low cost are counted as essentials. Preferred means are those in the hands of the partner most concerned, the wife.

There are two methods outstanding and equal in degree of protection. These are the diaphragm combined with jelly and the condom. For permanent prevention of pregnancy vasectomy and salpingectomy are increasingly utilized, the latter sometimes immediately after delivery. No single method encompasses all the variants in preference and in unusual conditions. The male may resort to the condom withdrawal, closure of the spermatic ducts, the female to the fitted diaphragm with jelly or cream, the cervix cap, jelly or cream alone, douche, suppository, sterile or safe period and closure of the fallopian tubes.

Openmindedness in prescribing contraceptives is in order. Whatever method has yielded efficacy, satisfaction and a sense of well-being to a given couple should be endorsed but may be accompanied by an offer of an alternative. As an example, diaphragm-jelly appeared effective enough for prescription to the exclusion of

all other methods, but long years of follow-up observation have shown a large number of couples sufficiently dissatisfied to return to their earlier procedures.

#### DIAPHRAGMS AND CAPS

Of the two kinds of cover for the cervix, the smaller depends on retention by suction preferably to the fornices around the projecting portio. The other provides a partition in the vagina, the upper or anterior pocket holding the cervix, the lower or posterior part providing the channel for the penis. High protection rate depends not a little on the doctor's skill in fitting, as in all office gynecology, doctors outside this specialty (and often within it) need a brief teaching in a birth control clinic, particularly in order to cope with the difficult cases. The diaphragm is unsuited to much damaged or relaxed pelvic floors or to the short (infantile) forms of anterior vaginal wall, all of these preventing the front rim of the device being held well up to the pubic arch. An obese woman with short fingers cannot reach in far enough. There may be objections of psychologic origin.

Bimanual and speculum examinations precede measurement, selection and fitting. The size of diaphragms most used is 75 (diameter in millimeters), the range from 50 to 105. The size chosen should be as large as is comfortable. The woman examines the device after the doctor has placed it and removes and replaces it. She must learn to recognize the cervix both covered and defectively protected, and appreciate the correct subpubic location of the anterior rim. Sometimes a long thumb may guide the farther rim past the cervix, or the compressed oval can slide to one side of the cervix. Postures such as sitting on the edge of a chair or squatting may help. For premarital fitting the patient may be instructed about gradual self stretching of the hymen up to the passage of her two fingers, which diameter permits placement yet remains within the limits of anatomic virginity. A mechanical inserter or introducer has some advocates, as it imposes an oval form on the spring during introduction, readily pushes the far rim past the cervix and minimizes intravaginal finger contacts for those who object to such contact. The diaphragm is fully lubricated with a contraceptive jelly for introduction, plus a near teaspoon in the fold that goes up against the cervix, whether one's preference is with the device used cupwise or domewise. Leaving the diaphragm in place six or eight hours after ejaculation obviates the need of a douche. If removed soon after coitus, part of the douche precedes taking out and part follows, with due care to distend fully the vaginal passage. A condition improper for the circular device is cystocele, for which the forms called Matrisalus or Duraflex (resembling a reversed Smith-Hodge pessary) lift the sagging front wall up behind the symphysis. Short anterior walls and very conical cervixes are indications for caps or condoms.

The rubber caps that fit more or less snugly around the cervix are the French, Prorace (Stopes) and the Mizpah, the Dumas being of intermediate size and with suction action. The hard caps are metal or plastic, best with a thickened rim. These hard caps may be worn for one night, for days at a time or continuously between periods. They are said to afford a definite degree of protection against gonococcal infection of the cervical canal.<sup>2</sup> Prolonged wear requires healthy organs in women who can manipulate the device and individuals who can be trusted to report often enough during test-

<sup>1</sup> Dickinson, R. L., *Techniques of Conception Control* Baltimore Williams & Wilkins Company, 1943. *Control of Conception* Baltimore Williams & Wilkins Company, 1938.

<sup>2</sup> Pinku, Felix, *prope* or of dermatology, Frederick Wilkin Institute Berlin. Fertility in Woman per the communication to the author.

ing to be sure irritation is not caused and who will make their own observations on fluid retained and its odor, and clean the interior as often as indicated. Hard caps have for decades greatly outsold diaphragms in Germany.

As the diaphragm cannot be sperm tight at the contact circle with the vaginal walls, spermicidal jelly or cream is a necessary adjunct.

#### TAMPONS AND SPONGES

A wad of wool or cotton or a fine meshed rubber or marine sponge is the carrier of a chemical and is provided with a thread for removal. The contraceptive is jelly, cream or powder. When powder is used the sponge is first moistened, then dusted, then squeezed to produce foam before its insertion. These protectives are used by persons out of reach of physicians.

#### JELLIES AND CREAM

Contraceptive jelly is the general term for the semi-fluid preparations made for deposit in the upper vagina, and it includes creams or pastes. The objectives of using such agents are two, blockade of the opening into the cervical canal by adequate viscosity and paralysis of spermatozoa by a spermicide of high efficiency. The average amount used is 1 teaspoon (5 cc) injected through a nozzle screwed onto the supply tube after taking off its cap, or drawn into a slender tube syringe that fills from a supply tube. Dosage is regulated by a turnkey on the end of this tube or by the size of the syringe. A well adjusted viscosity keeps part of the preparation in place some hours after coitus. The consistency persists for a year or more in some kinds, while in others it changes in summer temperatures or separates into solid and liquid portions. Hence dating is desirable. The vehicle should be water soluble and not sticky. The chemical must not cause local irritations or damage as do cresol preparations if concentrated and mercuric chloride. The latter, even when dilute, affects the kidneys of some patients.

#### SUPPOSITORIES

Suppositories possess the unique advantage of being free of apparatus but also the drawback of uncertainty of time needed for melting and spreading in the vagina and, if soluble at body heat, of running into paste in our summer temperatures. In cooler England they have long been popular and endorsed.

#### DOUCHES

To distend the vagina so as to open out every fold, the vulvar lips must be held together about the nozzle, then freed for each successive gush of water. This can be done by pelvic floor muscles if strong, by finger pressure, or by the conical shields on some nozzles. As sperms are rubbed during coitus into mucus on the external os and travel an inch in eight minutes, prompt action is called for, even without acceptance of the idea of "insuck" into the uterus. Among household remedies are strong soapsuds, vinegar (2 tablespoons to the half pint), alum (a level teaspoon) or lemon juice (a tablespoon to the quart). The effervescent douche directly from the neck of the bottle of the popular cheap carbonated acidulated beverages is much used and is spermicidal.

#### LATHERING

Immediate scrubbing of the upper vagina and cervix can be done in the squatting posture while bearing down. There is evidence that it is also of value in lessening chances of infection.<sup>3</sup>

#### CONDOM

The condom is the effective mechanical measure most generally available in well-to-do countries. Among commercial contraceptive articles it is by far the most frequently used. Half of those who come to birth control clinics have employed it and it is relied on to furnish about a fourth of the protection in the United States. It stands alone as a safeguard against venereal infection. The conclusion drawn from studies of all methods shows that it deserves a much more favorable place among the physician's birth control prescriptions than is generally accorded to it. It is suited to those males with good erection and with strength of feeling tolerating some numbing, to the man taking his share of the responsibility, to the wife careful to douche promptly should it slip off as he makes exit, or in case of break. Practice often lessens objection. Easy procurability is an important factor, as well as cheapness beyond any other means when each condom is used several times. The skin condom dampens sensation much less than the rubber but is much more expensive.

Lubrication with a nonfatty contraceptive jelly inside and out is desirable. As to quality, it has been raised to a high point by federal control through the Food and Drug Administration. Therefore there is less need of test for holes by air inflation, whereby distention to about 6 by 10 inches is effected with the ring or rim held between two digits, the thicker tip distending least.

#### WITHDRAWAL

Coitus interrupted just before ejaculation is the contraceptive measure most extensively employed the world over. Its advantages are simplicity and availability with absence of preparation or equipment and complete local contact. The man must have trained capacity for control until his wife has full orgasm or orgasms, without undue restriction of activity and with no sequel of nerve strain for either partner. Withdrawal is not suited to males unwilling to accept limitation of gratification or for the one man in eight who has quick emission or possibly the few with some sperms in the mucus at the meatus. Medical literature shows general but by no means universal condemnation of coitus interruptus, with reported cases of nervous disorders and pelvic congestions ceasing after discontinuance. Coitus reservatus, with orgasm for the woman only, is also credited by the urologists as a cause of pathologic changes in the prostate. In France where coitus interruptus is especially utilized by peasants and laborers, among fifty-nine prominent medical men two thirds considered it harmless or probably harmless.

#### LACTATION

Two thirds of babies in the United States get partial or complete breast feeding. In the first three months of suckling three out of four mothers fail to menstruate, and half the mothers will not menstruate during the entire nursing period. Ovulation and conception can occur without return of periods. Until some simple self test for ovulation is discovered, protection by mechanical or chemical measures is in order.

#### ABSTINENCE

The risk of psychologic disturbances and antisocial substitutes for marital coitus precludes such prescription by the physician except for limited periods or for the spiritually ascetic, the frigid wife and the impotent husband.

<sup>3</sup> Dixon, R. S., Detroit. Personal communication to the author.



## RHYTHM OR SAFE PERIOD

By avoidance of coitus during the few days in the monthly cycle close to ovulation control of conception is possible. The difficulty is that there has not yet been discovered any simple means of determining the single day an ovum will receive one of the sperms which can enter after lying in wait in the tube for about two days. Ovulation occurs about the fourteenth day before the next period is due but the relative infrequency of regularity in menstruation makes all calculation complicated. Four fifths of all women vary five days or more in length of cycle, some eight or nine days. Latz<sup>4</sup> outlines this "simplest" form of direction for birth control:

"By keeping records preferably a year of the exact dates and the hour when menstruation began the cycle is determined. If the variation does not exceed three or four days, twenty six to thirty, she is ready to figure. She marks the thirtieth day on the calendar, counts back eleven days then crosses off the eight days preceding. Thus the first nine days are sterile, the next eight fertile, the last eleven sterile. Next she figures on the twenty six day possibility, counts back eleven days then eight, and finds another figure, twelve days fertile and she avoids these. She will go on marking date and hour month by month thereafter and keep a written record. For each length of cycle such double calculation is needed. Any minor disturbance like a cold, a passing illness, a journey, a fright, an emotional storm, may disturb her cycle. There is no absolute certainty of course."

Thus about ten days preceding the period, the period itself and the few days close after it show low risk or none, but there are records of conception on every day of the cycle.

## INTRAUTERINE STEMS AND RINGS

The device most commonly worn continuously was a Y shaped gold plated wire placed within the cavity of the uterus with a disk outside the cervix. This can form a ladder for infection to climb. Misfit or excessive spread of the spring sometimes cuts into the lateral or posterior wall. Rings are of fine coiled silver wire or of a single coiled silk-worm strand introduced within a capsule which melts. All are generally condemned because of a few deaths and some infection,<sup>1</sup> but systematic follow-up is lacking either for countries with very extensive employment or for our own.

## TEMPORARY IMMUNITY

Temporary immunity by hypodermic use of some constituent of semen offers as yet little hope of success. Temporary suspension of ovulation by irradiation is uncertain and involves risk of sterilization. Permanent arrest by x-rays applies only to patients with inoperable conditions, as of kidney, heart or lungs, and does not affect sex response unduly.

## STERILIZATION WITHOUT UNSEXING

Closure of the spermatic ducts or the uterine tubes has been done so extensively that one can declare that it does not bring about loss of satisfaction or desire. Its application has been almost entirely to that half of the adult feeble minded who elect it in order to return to self support as the alternative to life long segregation, and sterilization qualifies many psychotic persons to leave institutions. Vasectomy is done under local anesthesia with almost no absence from work. Salpingec-

tomy at present involves laparotomy and weeks of convalescence unless done under local anesthesia within hours or days after delivery.

## EFFECTIVENESS AND ACCEPTABILITY

Effectiveness and acceptability are two factors in appraisal of any measure which are nearly equally involved.

Degree of protection<sup>5</sup> means the reduction in frequency of conception when a given method is used, as compared with frequency found in the same group in the absence of precautions. Estimates are rendered difficult by the number of variables involved such as correctness and consistency of patient usage and deductions for illnesses, absences and infertility during child bearing and nursing. Hardest to evaluate are skill or care in technique and the invariability of use. Reports are therefore quoted from average performances. Most of them refer to underprivileged groups.

With diaphragm and jelly the degree of protection can be expected to register prevention around 90 per cent, or from 85 to 95. For white collar, manual labor and relief groups in Cincinnati, effectiveness ran to 95, 92 and 85 per cent respectively, but the poor in Puerto Rico and Tennessee secured far less protection by this means. It figured above this best in private practice in Philadelphia or one failure in sixteen hundred times of usage.

With the condom protection ran up to 95 per cent but sometimes was as low as 70.

Withdrawal technique offers a longer range from 35 to 80.

Of jelly or cream alone there has been insufficient study. An average may be above 80 per cent, between 70 and 90 but the range is wide.

For foam powders on sponges the figures are 55 to 95, with rather less favorable returns as time passes.

The douche has a variant score, all the way from 16 to 70.

There are no American data on the suppository, but English returns and usage encourage research in this field.

Acceptability presents wide variants and is a factor of weight. In urban private practice in expert hands, 70 per cent were continuing the use of diaphragm and jelly at the end of three years. In birth control clinics 50 per cent carry on with this means after two years, but as few as 30 per cent even in a fine service after three years. For jelly or cream alone continuance after two years ran from 63 to 15 per cent. The return is to previously used methods, such as condom and withdrawal. For the foam-sponge and the suppository insufficient or conflicting evidence is available bearing on long continued use.

## RESEARCH

Present methods of conception control are in large part beginnings with no method accepted by all couples or to be guaranteed for all occasions. One of the most complex and difficult problems in the world the optional defeat of that determined tendency to excess fertility which nature took millions of years to evolve and

5 If expectation is 100 for example and the observed pregnancy rate 6 the degree of protection is here called 94 per cent. A pregnancy rate compares the number of conceptions with the number of months during which conception was possible. The latter is termed exposure to the risk of pregnancy. The expression  $\frac{1200 \times \text{conceptions}}{\text{months of exposure}}$  is the usual pregnancy rate or the pregnancies per hundred women-years of exposure to the risk of conception. This rate is computed for specified groups of women during defined types of experience and is for individual women.

<sup>4</sup> Latz L. J. The Rhythm of Sterility and Fertility in Woman, ed. Chicago: Latz Foundation pp. 36, 55, 66, 106, 107.



fortify—such a problem can look toward solution only when large funds back decades of systematic research on the details of the fundamentals of human reproduction

#### CRITERIA FOR ACCEPTABILITY OF CONTRACEPTIVE JELLIES AND CREAMS AND OF SYRINGE APPLICATORS AND NOZZLES

For guidance in reviewing contraceptive products, the Advisory Committee on Contraceptives of the Council on Pharmacy and Chemistry has proposed the following criteria. These have been adopted by the Council but it should be emphasized that they may be changed from time to time. As the experience of the committee and the Council grows, improvements may appear desirable.

1 The use of the word "contraceptive" need not be limited to materials which will prevent conception on every occasion of use.

2 Evidence shall be furnished that use of the material decreases the incidence of pregnancy. This evidence may be secured in connection with occlusive devices unless the manufacturer's advertising is directed chiefly toward the use of the jelly or cream without such devices.

3 Evidence shall be submitted that 100 or more couples have used the material on six or more occasions without subjective injury.

4 Evidence is desirable that 12 or more women have received vaginal applications of the recommended dosage on twenty-one successive days without subjective irritation or injury and without evidence of physical damage shown by a physician's speculum examination.

5 The quantitative formula from which the contraceptive mixture is prepared shall seem to the Advisory Committee to be safe and, presumably, effective.

6 The consistency shall be satisfactory to the committee. It shall not show separation into more liquid and more solid portions visible to the naked eye.

7 Evidence is desirable that the consistency is not substantially changed after storage for twelve months at 27 C.

8 The consistency shall be reasonably uniform from batch to batch.

9 The spermicidal time of the contraceptive material as measured by the method of Brown and Gamble (Human Fertil. 5:97 [Aug.] 1940) with proportions of material, isotonic solution of sodium chloride and semen of 1:4:5 shall be thirty minutes or less as measured by the average of four or more tests.

10 The use of jellies or creams suggested by the manufacturer need not be limited to use in conjunction with an occlusive device.

11 If a syringe applicator or nozzle is furnished for use in connection with the jelly or cream, it shall be sufficiently translucent to permit the detection of air which might lead to inadequate dosage.

#### CRITERIA FOR ACCEPTABILITY OF CONTRACEPTIVE DIAPHRAGM OR CAP

1 The advertising and directions of the manufacturer should make it clear that contraceptive diaphragms are intended for use in conjunction with a spermicidal jelly or cream.

2 The manufacturer's advertising must not state or imply that the appropriate diaphragm can be chosen without the aid of a physician.

3 Evidence is desirable that the diaphragm will last for twelve months or more without perforations or other defects.

4 With each diaphragm should be packed directions warning the user not to expose it to oils or greases, unless evidence is submitted that the material of which the diaphragm is made is not damaged by these substances.

5 The design shall be satisfactory to the committee.

6 The directions packed with each diaphragm shall include instructions to the user to inspect the diaphragm from time to time for holes or tears and discard the diaphragm if one is present.

(The following statement of actions and uses and descriptions will appear in N. N. R. 1944)

#### CONTRACEPTIVE PREPARATIONS

When protection from pregnancy is considered advisable, contraceptives are used to prevent passage of active spermatozoa from the vagina into the uterus. This is accomplished mechanically by occlusive devices, such as diaphragms, which lengthen the route which the spermatozoa must travel to reach the os, thereby assuring extensive exposure to a spermicidal jelly or cream. Contraceptive jellies and creams act as chemical agents immobilizing the spermatozoa with which they come into contact. Because of their consistency they also have an obstructive function. Certain accessory devices are used with these, such as inserters and extractors for the diaphragms, and syringe applicators for the jellies and creams. In control of conception acceptability probably plays a greater role in the use and therefore the effectiveness of a prescription than in most fields of medicine. The esthetic block or reluctance toward various methods differs with different users, and variation of method by a single user is often found to lead to greater acceptability and consequently a higher degree of protection.

#### CONTRACEPTIVE JELLIES AND CREAMS

**Actions and Uses**—Jellies and creams for contraceptive use are introduced into the vagina usually with an occlusive diaphragm or cervical cap not more than twelve hours before sexual intercourse. They may also be used without an occlusive device, but this may result in a lower degree of protection. Some users find this technique definitely more acceptable, sufficiently so to outweigh the differential in fertility rate. When so used the jelly or cream is introduced into the vagina within an hour before intercourse by a syringe applicator. The recommended dose varies but is usually approximately 5 cc. To allow adequate time for chemical immobilization, the occlusive device should not be removed nor should a douche be taken within six hours after ejaculation.

As most of the contraceptive diaphragms are made of rubber, which will deteriorate if exposed to greases, the jellies and creams used should not contain greasy substances.

**Ortho-Creme** A nonfatty stearic acid cream having a  $pH$  of 6, prepared from the formula

Stearic acid	24.00%
Stearyl alcohol	0.50
Glycerin	7.00
Ricinoleic acid	0.75
Sodium lauryl sulfate	0.28
Boric acid	2.00
Perfume	0.05
Water to	100.00%

**Actions and Uses**—See preceding article, Contraceptive Jellies and Creams.

**Dosage**—5 cc

Manufactured by Ortho Products Inc., Linden, N. J. U. S. Patent pending under serial number 360,665. Vaginal Creams. U. S. trademark number 390,141.

**Ortho-Gynol Vaginal Jelly** A water soluble jelly formed from tragacanth and acacia, having a  $pH$  of 4.5, prepared from the formula

Tragacanth	3
Acacia	0.5
Glycerin	5
Boric acid	3
Ricinoleic acid	0.75
Propyl ester of parahydroxybenzoic acid	0.05
Oxyquinoline sulfate	0.025
Perfume	0.025
Water to	100.00%

The consistency is indicated by a 55-60 mm. dart penetration at 40 C. when tested with the Braun dart penetrometer.

**Actions and Uses**—See preceding article, Contraceptive Jellies and Creams.

**Dosage**—5 cc

Manufactured by Ortho Products Inc., Linden, N. J. U. S. Patent number 271,159 (October 5, 1943; expires 1960). U. S. trademark number 298,222.

#### Contraceptive Diaphragms

**Actions and Uses**—As diaphragms cannot be designed to form a junction with vaginal wall or cervix which will prevent the passage of an organism of the size of a spermatozoon, a

spermicidal jelly or cream should be prescribed for use with them

The appropriate size of diaphragm (varying from 50 to 105 mm in diameter) must be chosen for each user. It should be as large as is comfortable, large enough to extend easily over the cervix, anchoring posteriorly in the posterior fornix and anteriorly behind the symphysis. The appropriate size may change after a delivery and during the postpartum months. Satisfactory fitting is not possible in some cases of variant anatomy of the soft parts (this does not refer to bony structure).

The diaphragm and jelly or cream should be inserted before intercourse (not more than twelve hours before) and left in place until six hours or more after ejaculation (not more than thirty-six hours). Rubber diaphragms should not be exposed to fatty substances and should be inspected from time to time for holes or tears.

**Ortho Diaphragms** Latex rubber diaphragms covering a circular coiled spring, the external diameter varying in gradations of 5 mm from 55 to 90 mm.

Manufactured for Ortho Products Inc., Linden, N. J. U. S. Trade mark number 387,030.

### SYRINGE APPLICATORS FOR CONTRACEPTIVE JELLIES AND CREAMS

**Uses**—Applicators are designed for ready filling from the container of contraceptive jelly or cream and for delivery under moderate pressure of the recommended dose (usually 5 cc) into the upper vagina. They should be transparent, to permit detection of air which might lead to inadequate dosage and, if made of glass, should be sufficiently thick walled to make breaking while in the vagina extremely improbable. The end should be blunt, and sufficiently large to prevent entry into the urethra.

**Ortho Vaginal Applicator** A transparent plastic syringe threaded at the blunt, intravaginal end, to screw onto the tubes of Ortho-Gynol Vaginal Jelly or Ortho-Creme, to permit filling by compression of the tube. The full capacity is 5 cc, the recommended dose.

Manufactured by Ortho Products Inc., Linden, N. J. Registration of the trademark "Ortho" for measured dose applicator was issued by the U. S. Patent Office May 5, 1942.

**Ramses Vaginal Applicator** A transparent plastic tube, threaded at the blunt intravaginal end to screw onto the tubes of Ramses Jelly to permit filling by compression of the tube. A short plastic cylinder fitting inside the tube permits air pressure from a detachable bulb to expel the jelly. The full capacity is 5 cc., the recommended dose.

Manufactured by Julius Schmid Inc., New York. U. S. Patent number 2,252,212.

### CONTRACEPTIVE DIAPHRAGM INSERTERS

**Uses**—Inserters are designed to stretch the circular spring of a contraceptive diaphragm into a long oval and to furnish a handle with which it may be inserted into the vagina and guided beyond the cervix. To some users they have the esthetic appeal that they minimize digital contact with jelly or cream, or genitals.

**Ramses Diaphragm Introducer** A transparent plastic device designed to stretch and hold for insertion a diaphragm of a given size. Made in different sizes marked for diaphragms from 50 to 90 mm in diameter in gradations of 5 mm. On the handle end is a blunt hook to assist in extracting the diaphragm.

Manufactured by Julius Schmid Inc., New York. U. S. Patent number 2,252,212. U. S. Trademark number 353,028.

### CONTRACEPTIVE FITTING RINGS

**Uses**—To enable the physician to test the size of contraceptive devices needed for a given patient, circular coiled springs of the various sizes have been prepared without the thin rubber diaphragm. As these have thick rubber coatings, repeated sterilization by boiling is possible without deterioration.

**Ramses Fitting Rings** Prepared in sets having sizes from 50 to 90 mm in diameter in gradations of 5 mm.

Manufactured by Julius Schmid Inc., New York.

## NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

**MENADIONE** (See New and Nonofficial Remedies, 1943, p. 619)

The following dosage form has been accepted  
**GEORGE A. BRON & COMPANY, INC., KANSAS CITY, MO.**  
Tablets Menadione 2 mg

**F.H. UPJOHN COMPANY, KALAMAZOO, MICH.**  
Menadione (in oil) 1 mg per cc. 10 cc and 50 cc vials  
Capsules Menadione 1 mg

**STAPHYLOCOCCUS TOXOID** (See New and Nonofficial Remedies, 1943, p. 549)

The following dosage form has been accepted  
**PITMAN-MOORE CO., INDIANAPOLIS**  
Staphylococcus Toxoid 5 cc vials containing in each cubic centimeter the toxoid derived from one necrotizing dose of toxin. Preserved with 1:10,000 merthiolate.

**DIETHYLSTILBESTROL** (See New and Nonofficial Remedies, 1943, p. 403)

The following additional dosage form has been accepted  
**ELI LILLI AND COMPANY, INDIANAPOLIS**  
Ampules Diethylstilbestrol (in cottonseed oil), 0.25 mg per Cc 1 cc

**SODIUM DEHYDROCHOLATE** (See New and Nonofficial Remedies, 1943, p. 324)

The following product has been accepted  
**ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.**  
Ampoules Solution of Sodium Dehydrocholate 20% W/V 3 cc and 10 cc

**ESTROGENIC SUBSTANCES** (See New and Nonofficial Remedies, 1943, p. 401)

The following dosage forms have been accepted  
**GEORGE A. BREON & CO., INC., KANSAS CITY, MO.**  
Ampul Solution of Estrogenic Substances (in oil) 1 cc and 10 cc rubber stoppered vials. Each cubic centimeter contains 2,000 international units of estrogenic substance.  
**THE SMITH-DORSEY COMPANY, LINCOLN, NEB.**

Ampul Solution of Estrogenic Substances (in sesame oil) with Benzyl Alcohol 3% 1 cc. Size containing the equivalent of 2,000 I. U. per cc, 5,000 I. U. per cc and 10,000 I. U. per cc of estrone.

Ampul-Vial Solution of Estrogenic Substances (in sesame oil) with Benzyl Alcohol 3% 10 cc. Each cubic centimeter contains the equivalent of 10,000 international units of estrone.

**NICOTINIC ACID** (See New and Nonofficial Remedies, 1943, p. 596)

The following additional dosage form has been accepted  
**AMERICAN PHARMACEUTICAL CO., INC., NEW YORK**  
Tablets Nicotinic Acid 50 mg

**VIOFORM** (See New and Nonofficial Remedies, 1943, p. 121)

The following additional dosage form has been accepted  
**CIBA PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.**  
Vioform Insufflate 1 ounce bottles

**POSTERIOR PITUITARY INJECTION** (See New and Nonofficial Remedies, 1943, p. 424)

The following dosage form has been accepted  
**WILLIAM R. WARNER & CO., INC., NEW YORK**  
Ampuls Posterior Pituitary 1 cc, 5 mg

**ACRIFLAVINE** (See New and Nonofficial Remedies, 1943, p. 111)

The following additional dosage form has been accepted  
**ABBOTT LABORATORIES, NORTH CHICAGO, ILL.**  
Tablets Acriflavine 0.1 Gm

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SATURDAY, DECEMBER 18, 1943

## MOSQUITO TRANSMISSION OF ENCEPHALITIS

Successful laboratory transmission of St Louis encephalitis virus by several species of mosquitoes has been accomplished by Hammon and Reeves,<sup>1</sup> of the Hooper Foundation, University of California. They have demonstrated also a symptom free viral septicemia in domestic fowls as an essential prerequisite for transmission by the mosquito.

During the summer of 1941 a study was made of the possible role of arthropods in the annually recurring epidemics and epizootics of encephalitis in the Yakima Valley, Washington.<sup>2</sup> About 50 human cases and an equal number of equine cases occur each year in this valley. Over 15,000 living arthropods were collected and identified in this survey. These included 12,500 mosquitoes of four different genera and about 3,000 domestic flies, black flies, ticks, mites, gnats, horse and deer flies, bedbugs and other insects. These were immediately frozen and transported by air express to the central laboratory in San Francisco. Pools of from 75 to 100 arthropods of the same species were thoroughly ground and emulsified in 30 per cent sheep serum-salt solution. The resulting emulsions were centrifuged free from visible particles and most bacteria, and the clear supernatant fluid was inoculated intracerebrally into 21 day old Swiss mice.

Inoculations showed that eight mosquito pools contained either the St Louis or the western equine encephalitis virus in infectious concentration. All the positive emulsions were from *Culex tarsalis*, and virus was not isolated from other species of mosquitoes or from other arthropods. It was estimated that 1 out of every 286 *C. tarsalis* mosquitoes caught during this period was a carrier of encephalitis virus. Final identification of the virus was made by specific neutralization tests.

This survey was supplemented by a study of the serums of wild and domestic animals in the same region and in neighboring noninfected areas.<sup>3</sup> By means of specific neutralization tests 576 serums representing seventy-four animal species were examined. Approximately 50 per cent of the serums from domestic fowls (chickens, ducks, geese, pigeons, turkeys) would neutralize one or both strains of encephalitis virus. Among the wild birds of the valley only about 20 per cent were positive. Thirty-five per cent of the serums of domestic mammals were positive, contrasted with 8 per cent positive among the wild mammals of the same region. The conclusion was drawn that domestic fowls probably serve as the main reservoir for the infection of mosquitoes.

Whether or not mosquitoes could play an important part in the spread of this infection would depend on their power to transfer the virus in infective doses during their subsequent feeding on wild or domestic birds or mammals. Hammon selected a strain of St Louis encephalitis virus originally isolated from infected mosquitoes and inoculated into 4 to 8 week old chickens and ducks as the experimental animals. Preliminary tests had shown that these birds may be infected subcutaneously with minute doses of this virus. Following such inoculation the fowls rarely showed visible manifestations of disease. From twenty-four to forty-eight hours later, however, the serums of these birds became highly infectious for intracerebrally inoculated Swiss mice. The development of a viral septicemia or "viremia" in mosquito bitten fowls, rather than manifest symptoms, therefore, was taken as the criterion for successful insect transmission.

Mosquitoes of various species were then allowed to feed on chickens or ducks, forty-eight hours after experimental subcutaneous inoculation. Following this infective meal all mosquitoes were held at a temperature averaging 80 F or above in a room of a high relative humidity simulating the usual summer conditions in the regions under investigation. During this period the mosquitoes were allowed to feed on cotton soaked with sugar water. From two to twenty days later the presumably infected mosquitoes were allowed to feed on new experimental animals. Forty-eight hours after this feeding, blood was drawn from the fowls by cardiac puncture and 0.03 cc of the resulting serum injected intracerebrally into Swiss mice. Each fowl was again bled on the fifteenth day and its serum tested for neutralizing antibodies.

The St Louis encephalitis virus was successfully transmitted by this technic to fowls by nine species (three genera) of mosquitoes, of which *Culex tarsalis* is apparently most important. Survival of the virus for more than a few days was also shown to occur in

1 Hammon, W. M. and Reeves, W. C. Laboratory Transmission of St Louis Encephalitis Virus by Three Genera of Mosquitoes. *J. Exper. Med.* 78: 241 (Oct.) 1943.

2 Hammon, W. M., Reeves, W. C., Brookman, B., Izumi, E. M., and Gjullin, C. M. Mosquitoes and Encephalitis in the Yakima Valley, Washington. *J. Infect. Dis.* 70: 263, 267, 278 (May-June) 1942.

3 Hammon, W. M., Izumi, E. M., Gray, J. A., Evans, J. C., Bang, F. B., and Izumi, E. M. A Large Scale Serum Neutralization Survey of Certain Vertebrates as Part of an Epidemiological Study of Encephalitis of the Western Equine and St Louis Types. *J. Immunol.* 44: 75 (May) 1942.

four other species. With *Culex tarsalis* the power of infection develops after an extrinsic incubation period of four days and persists for at least twenty days. With *Theobaldia moranata* the minimum and maximum periods were eight and twenty-two days, respectively, with *Culex coronatus*, eight and ten days, and with *Aedes lateralis*, four and eight days.

From these and other data Hammon concludes that *Culex tarsalis*, *Culex pipiens* and several less common species of mosquitoes assume a major role in the spread of encephalitis virus in our Western states. Other presumably minor methods of spread are, of course, not excluded.

### THIAMINE DEFICIENCY IN HYPERTHYROIDISM

Experimental or spontaneous hyperthyroidism increases the rate of cell metabolism and thus leads to a higher requirement of essential factors involved in the breakdown and resynthesis of metabolites. Among these factors the important role of thiamine is well established. The phosphorylated form of thiamine, diphosphothiamine or cocarboxylase, serves as prosthetic group for the enzymes concerned with the oxidation, carboxylation, decarboxylation, dismutation and condensation of pyruvic acid. Pyruvic acid is an obligatory intermediary in the normal pathway of carbohydrate breakdown and probably in the interconversion of protein, fat and carbohydrate. Conditions that lead to increased cellular metabolism and therefore to increased requirements for essential factors tend obviously to produce a relative deficiency of thiamine.

In 1937, when methods became available for the determination of thiamine in the tissues, Drill<sup>1</sup> confirmed this concept of thiamine deficiency. The livers and kidneys of rats receiving 100 mg of desiccated thyroid gland daily contained less thiamine than those of normal controls, even when the hyperthyroid animals were given 500 micrograms of thiamine daily in addition to the basic diet. This work was confirmed further by Peters and Rossiter,<sup>2</sup> who found that the cocarboxylase content of the tissues of hyperthyroid rats was intermediate between that of normal animals and that of animals frankly deficient in thiamine.

Although this relative deficiency seldom produces the complete picture observed in experimental deficiency of thiamine, it is important in the production of the variegated symptomatology of experimental and clinical hyperthyroidism. Before the isolation of thiamine, Cowgill and his group<sup>3</sup> observed that normal dogs fed a yeast free diet developed anorexia and loss

of weight after thirty-two days, whereas thyroxine treated dogs on the same diet developed the same symptoms after only seventeen days. In both groups of animals anorexia and loss of weight could be prevented or corrected by the addition of vitamin B complex to the diet. These experiments were repeated by Sure and Buchanan<sup>4</sup> in 1937 with synthetic thiamine. They observed that the administration of 30 to 100 micrograms of thiamine in rats counteracted the loss of weight caused by so high a daily dose as 0.2 mg of thyroxine. Anorexia and loss of weight are not the only symptoms in hyperthyroidism caused or accentuated by the associated thiamine deficiency. This deficiency was shown to be responsible for other common symptoms in experimental hyperthyroidism. Abeln and his associates<sup>5</sup> in 1930, using yeast, and Drill and Hays<sup>6</sup> in 1942, using synthetic thiamine, showed that these factors prevent the loss in liver glycogen produced in rats and dogs by the administration of thyroid or thyroxine. A high vitamin B diet in thyroxine treated dogs delays the appearance of liver damage as determined by the bromsulphalein test. Also the pulse rate and the temperature in experimental thyrotoxicosis are influenced by the amount of thiamine in the diet.<sup>6</sup>

There is a striking resemblance between some of the clinical features of hyperthyroidism and thiamine deficiency. Anorexia, diarrhea, constipation, hypochlorhydria and achlorhydria, tachycardia, enlargement of the heart, dyspnea, palpitation, edema, fatigue, muscular pains, lowered muscular strength, neurasthenia, neuritis and disturbances in carbohydrate metabolism frequently occur in both conditions. Hence the administration of a high vitamin B diet and thiamine became a common practice in many clinics devoted to the care of those with disturbances of the thyroid. Subjective improvement associated with gain in weight, increased appetite and decrease in tachycardia has been reported by Frazier and Ravdin<sup>7</sup> in the preoperative treatment of hyperthyroidism after the administration of 1 to 15 mg of thiamine daily. Means and his group<sup>8</sup> have observed a similar beneficial effect of thiamine in the medical treatment of hyperthyroidism. However, definite proof for the occurrence of thiamine deficiency in hyperthyroid patients has only recently been provided by the work of Williams and his co-workers.<sup>9</sup> Pyruvic acid is poorly utilized in thiamine deficiency, this forms an accepted basis for the

4 Sure Barnett and Buchanan K S. Antithyrogenic Action of Crystalline Vitamin B<sub>1</sub>. *J Nutrition* 13: 513 (May) 1937.

5 Abeln I, Knuchel M and Spiehl W. Ernährung und Schilddrüsenwirkung über die Bedeutung der Vitamine für den Verlauf der experimentellen Hyperthyreose. *Biochem Ztschr* 228: 189, 1930.

6 Drill V A and Hays H W. Studies on the Relation of the Liver Function, Pulse Rate and Temperature of Hyperthyroid Dogs to Vitamin B<sub>1</sub> and Yeast. *Am J Physiol* 136: 762 (July) 1942.

7 Frazier W D and Ravdin I S. The Use of Vitamin B<sub>1</sub> in the Preoperative Treatment of the Hyperthyroid Patient. *Surgery* 1: 689 (Nov.) 1938.

8 Means J H, Hertz Saul and Ierman Jacob. Nutritional Factors in Graves Disease. *Ann Int Med* 11: 429 (Sept) 1917.

9 Williams R H, Fagan Enrique, Robin on Paul, Ayer S P and Dutoit Charles. Alterations in Biologic Oxidation in Thyrotoxicosis. I. Thiamine Metabolism. *Arch Int Med* 72: 53 (Sept) 1943.

1 Drill A V. The Effect of Experimental Hyperthyroidism in the Vitamin B<sub>1</sub> Content of Some Rat Tissues. *Am J Physiol* 122: 486 (May) 1938.

2 Peters R A and Rossiter, R J. Thyroid and Vitamin B<sub>1</sub>. *Biochem J* 33: 1140 (July) 1939.

3 Himwich H E, Goldfarb W and Cowgill G R. Studies in the Physiology of Vitamins. Effect of Thyroid Administration on Anorexia (Characteristic of Lack of Undifferentiated Vitamin B). *Am J Physiol* 99: 689 (Feb) 1932.

clinical demonstration of deficiency of thiamine. Almost all of a group of 40 thyrotoxic subjects exhibited high pyruvic acid blood levels. During a period of four hours following the intravenous injection of 50 Gm of dextrose or 5 Gm of sodium pyruvate, the pyruvic acid which appeared in the blood was less quickly disposed of in thyrotoxic patients than in normal controls. This decreased utilization of pyruvic acid was associated with a low blood level of free and phosphorylated thiamine. Pyruvic acid utilization became normal following administration of diphosphothiamine.

As many vitamins and similar essential factors have been shown to be involved in enzyme systems governing biologic oxidations, one might expect a multiple deficiency of these factors in conditions in which prolonged increased metabolic activity is a feature, such as hyperthyroidism. That this is true was shown by Drill and Overman,<sup>10</sup> who demonstrated in experimental hyperthyroidism that some deficiency symptoms did not disappear completely after administration of thiamine alone but that they did disappear on addition of pantothenic acid and pyridoxine.

The importance of these observations is self evident not only for more adequate treatment of thyrotoxic patients but also for a better understanding of the mechanisms underlying the variety of disturbances associated with hyperthyroidism.

## Current Comment

### ASPIRATION STUDIES ON THE LIVER IN ACUTE HEPATITIS

The results of the studies of the liver in acute hepatitis or infectious jaundice by means of aspiration biopsy made by Roholm and Iversen<sup>1</sup> have been confirmed and the work extended by Dible, McMichael and Sherlock.<sup>2</sup> Biopsies of the liver were done in 56 cases of acute hepatitis including, besides the epidemic, instances of hepatitis following arsenotherapy and the injection of human serum. Differences were not apparent in the microscopic changes in the liver in the cases examined. The aspirations were made with a 2 mm bore cannula inserted transpleurally into the right lobe of the liver. This method is not without danger from hemorrhage, especially when jaundice is present. The essential lesions in the liver were degenerative, necrotic and autolytic changes in the liver cells, especially in the centers of the lobules, with leukocytic infiltration and histiocytic proliferation in the periportal tissues. These are the basic lesions. They may be more or less limited or diffuse with loss of the lobular patterns. The process may terminate in complete restitution, in acute or subacute necrosis

("atrophy"), in mild fibrosis or in cirrhosis. There was no evidence of bile stasis from plugging of the ducts in the papilla of Vater, as claimed to be the case in "catarrhal jaundice" in the old sense. The fact that the lesions in the liver are similar in epidemic or infectious hepatitis and in hepatitis following arsenotherapy or injection of human serum or plasma does not necessarily mean a common causation for these processes. While the cause of epidemic hepatitis remains unknown, its infectious and communicable nature can hardly be questioned. The results of the Danish and British studies of biopsies of the liver appear to establish clearly the effects on the liver in epidemic hepatitis. In view of the nature of these effects and their possible consequences, special attention must be given to the prevention of the disease. Its natural spread seems to depend mainly on contact

### RAPID ACCLIMATIZATION TO WORK IN HOT CLIMATES

During the winter season Robinson and his co-workers<sup>1</sup> at the Fatigue Laboratory of Harvard University carried out experiments in which five men walked on a motor driven treadmill from one to one and a half hours a day in a room in which desert conditions were simulated. The purpose of these observations was to determine the rate and degree of adjustment to hot climates. An artificially heated room where the temperature was about 104 F and the humidity 23 per cent, was employed. The men walked on a motor driven treadmill at a rate of 3½ miles an hour on a grade of 5.6 per cent (one walked on a grade of 4 per cent). During all experiments the men wore standard Army summer clothing. Pulse rates were determined by palpation, rectal temperatures by clinical thermometers and skin temperatures by four thermocouples respectively located on the chest, back, thigh and upper arm. The rate of water loss was determined by weighing in the nude before and after work. Oxygen intake was determined once for each experiment by collecting and measuring the expired air and analyzing samples in the Haldane apparatus. All but the one man who walked on the lower grade approached heat exhaustion in the early experiments, this being manifest by high skin temperatures, rectal temperatures of 103 to 104 F and heart rates averaging 178 beats per minute during the last twenty minutes of work. The daily walks were continued for twenty-three days. The comparable heart rates of the men declined from the average of 178 at the beginning to 155 on the seventh day. The average skin temperature of the men at the end of the work experiments declined from 98.4 to 96.5 F and of the rectal temperature from 103.4 to 101.7 F during the same period. About 80 per cent of improvement noted was found to have occurred in the first seven days of exposure. In 3 of the 5 subjects in the study, furthermore, the efficiency in the standard hot room experiments declined only slightly as late as two to three weeks after stopping the exposure to acclimatization. It is noteworthy, the Boston investigators comment, that acclimatization

<sup>10</sup> Drill, V. A., and Overman, Richard. Increased Requirement of Pantothenic Acid and Vitamin B<sub>6</sub> During Experimental Hyperthyroidism. *Am. J. Physiol.* **135**: 474 (Jan.) 1942.

<sup>1</sup> Roholm, K., and Iversen, P. Changes in the Liver in Acute Epidemic Hepatitis (Catarrhal Jaundice) Based on 38 Aspiration Biopsies. *Acta path. et microbiol. Scandinav.* **16**: 427, 1939. Problems of Infectious Jaundice, editorial, *J. A. M. A.* **122**: 1184 (Aug. 21) 1943.

<sup>2</sup> Dible, J. H., McMichael, John, and Sherlock, S. P. V. Pathology of Acute Hepatitis. Aspiration Studies of Epidemic, Arsenotherapy and Serum Jaundice, *Lancet* **2**: 402 (Oct. 2) 1943.

<sup>1</sup> Robinson, S., Turrell, E. S., Belding, H. S. and Horvath, S. M. *Am. J. Physiol.* **140**: 168 (Nov.) 1943.

occurs so rapidly, that such a short period (one to one and a half hours) of daily periods of work in the heat are needed to produce acclimatization, that adjustment to heat is retained for such a long time after exposure has ceased and that the acclimatization is so complete. These observations are of immediate practical importance to the armed forces and to industry. Men who are already in good physical condition can be expected to work effectively within a few days after they start in a hot climate or they can be prepared for such work by a few relatively short daily exposures in artificially heated rooms. Additional experiments, these investigators point out, are needed in order to determine whether it may not be possible to achieve even more rapid acclimatization by shorter, harder, more frequent work periods in heat or by prolonging the daily periods of such work.

#### **HYPERSENSITIVITY FROM INHALATION OF ATOMIZED FLUID ANTIGENS**

Inhalations of finely atomized specific antiserum have been suggested for the prevention and treatment of influenza. A possible hazard of this experimental procedure has just been recorded by Hopps and Moulton.<sup>1</sup> Their report is based on tests made with five antigens (nonhomologous) on guinea pigs and rabbits. The animals were placed in a closed chamber and exposed for twenty minutes to finely atomized particles of the various serums. By the third of the three weekly exposures many mild reactions were observed. By the fifth week of such treatment allergic reactions were severe. Several of the sensitized animals died in the chamber during exposure to the atomized specific antigen. Since serious allergic reactions and fatal anaphylactic shock have occurred in animals from a procedure which has been suggested for human beings, further human studies should be pursued with great caution. Routine use of aerosols of this nature is not now desirable.

#### **FATAL ACCIDENTS FROM "DORYL"**

Deaths have recently been reported following the parenteral use of a crystalline preparation intended only for ophthalmologic use. "Doryl" (carbamylcholine chloride) is a synthetic derivative of choline, available in the form of the chloride salt as a parasympathomimetic agent. It is available as a solution in ampules for intramuscular injection and as crystals for use in preparing solutions for the eye. Because the crystals also have been marketed in ampules, errors have been made in preparing these crystals for injection rather than using the available ampule solution for intramuscular use. The deaths which followed injection were due to the fact that the concentration was several hundred times greater than it should have been. After the first death the firm's attention was drawn to the confusion existing because of two different forms in ampules. Changes apparently were made in the labeling, and the ampule containing the crystalline form

was changed to a screw-cap vial, a type of package seldom if ever employed for preparations for parenteral use. In spite of these changes at least two deaths have occurred. The firm has now asked all hospital pharmacies and drug wholesalers to return for exchange all packages of Doryl substance shipped prior to Oct 1, 1943, irrespective of whether the goods on hand are of the ampule or of the newer screw-cap vial package type. Physicians should examine carefully their own supplies to prevent further accidents.

#### **GRADUATE CONTINUATION COURSES FOR PRACTICING PHYSICIANS**

In accordance with its plan of supplying advance information concerning graduate continuation courses, the Council on Medical Education and Hospitals presents lists of such courses elsewhere in this issue. The lists include courses in a wide variety of subjects offered at some time during the period Jan 1, 1944 to June 30, 1944. This material has proved useful to physicians seeking opportunity for postgraduate work. Physicians called on to assume new responsibilities because of the war and physicians who are returning to practice may find here listed courses which will be of help to them. Since many of the classes are necessarily limited, those who contemplate enrolling in any of these courses are urged to communicate as early as possible with the proper executive officer. Institutions offering continuation courses are invited to announce such courses in these semiannual lists compiled by the Council on Medical Education and Hospitals.

#### **STREPTOTRICHIN—ANTIBACTERIAL SUB- STANCE FROM A SOIL FUNGUS**

Many forms of actinomycetes or ray fungi, widely distributed organisms, produce antibiotic substances of varying nature and action. Of these substances streptotrichin has been found to be the least toxic and to have antibacterial powers. It is a metabolic waste product of a soil fungus (*Actinomyces lavendulae*) from cultures of which it can be obtained in aqueous solution.<sup>1</sup> Waksman and his associates have demonstrated that a salt free purified streptotrichin has selective bacteriostatic effect on gram negative as well as gram positive bacteria, including *Bacterium shigae*. They have shown also that streptotrichin acts on *Brucella abortus* in vivo,<sup>2</sup> in chicken embryo and in guinea pigs. In guinea pigs the effect suggested that streptotrichin might prove to be of value in the treatment of brucella infections. In view of its low toxicity and of its action in vivo on pathogenic bacteria, Waksman places streptotrichin as the fourth in order of discovery of antibiotic substances with possibilities of practical application, of which penicillin so far is the most striking example. The other two substances in this group are pyocynase and tyrothricin. Further developments in the investigation of antibiotic substances will be of great interest.

1 Waksman S A. Production and Activity of Streptotrichin. *J Biol Chem* 166: 269 (Sept) 1943.

2 Metzger H J, Waksman S A and Pugh L H. In vivo Activity of Streptotrichin Against *Brucella abortus*. *Proc Soc Exper Biol & Med* 51: 251 (Nov) 1943.

1 Hopps H C and Moulton Stanley. Active Hypersensitivity from Inhalation of Finely Atomized Fluid Antigens. *Proc Soc Exper Biol & Med* to be published.



# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## TROPICAL DISEASES IN RETURNING MILITARY PERSONNEL

[NOTE—The publication of this statement has been requested by the Subcommittee on Tropical Diseases of the National Research Council. The statement has the approval of the Division of Medical Sciences, National Research Council, and of the Surgeons General of the Army, Navy and Public Health Service.—ED.]

The military forces of the United States operating in tropical and subtropical areas are exposed to a number of diseases which occur only in those areas or are much more prevalent there than in this country. Some of these diseases will be brought back to this country in returning military personnel and may be seen by civilian practitioners of medicine either in persons infected abroad or in persons to whom the diseases have spread from the original cases. It is important that physicians be familiar with the diseases which may be imported, and that they be on the alert to diagnose and treat them correctly and to prevent their spread.

### MALARIA

Malaria is the most important of these diseases. In most tropical regions *Falciparum malaria*,<sup>1</sup> the severe form of the disease, predominates. *Vivax malaria* is also common. *Malariae malaria* is relatively rare, and *ovale malaria* is very rare. Neither quinine nor atabine prevents malarial infection. Suppressant treatment, formerly incorrectly termed 'drug prophylaxis,' will usually prevent clinical symptoms and keep infected persons on their feet as long as they continue such treatment, but many of them come down with clinical malaria within a few weeks after stopping treatment. Such cases are more likely to be caused by *Plasmodium vivax* than by *Plasmodium falciparum*. *Vivax malaria* is prone to relapse several times even after supposedly adequate courses of treatment. Some military and civilian personnel, returning to this country by air, become infected while stopping in highly malarious areas en route. These persons have their first attack of malaria, usually *falciparum* infection, after arriving in this country. The symptoms may be obscure and the disease not suspected, and coma or even death may ensue before the diagnosis is made.

Malaria should be suspected in every person returning from the tropics or subtropics. The disease may simulate almost any acute or chronic abdominal condition, upper respiratory or pulmonary conditions, meningitis, encephalitis, coma from other causes, or primary or secondary anemia. Blood examination should be made as soon as the patient is seen, using both thin and thick smears in order to afford the best chance of finding parasites. Species identification should be made by a competent technician, and the

disease should not be excluded until several blood examinations have been made at intervals of six to twelve hours. Vigorous treatment must be instituted promptly to avoid fatalities and to diminish the incidence of relapses.

It is possible that local outbreaks of malaria may occur in this country, starting from relapsing cases acquired abroad. The United States Public Health Service recognizes this possibility, is already cooperating with certain states in intensive anti-mosquito programs and is prepared to act vigorously if epidemics occur. Physicians can cooperate in avoiding such occurrences by the early diagnosis and reporting of cases, by adequate treatment and by preventing access of mosquitoes to infected patients. Attention is directed to Circular Letter 153 from the Office of the Surgeon General of the Army, dealing with the treatment of malaria. It was published in THE JOURNAL September 25, pages 205-208.

Individuals without clinical malaria but in whose blood malarial parasites are found should be treated immediately or kept under careful observation.

### DYSENTERY

Bacillary dysentery is usually an acute disease but may become chronic or give rise to carriers. Although the use of sulfonamide drugs will undoubtedly diminish the probability of chronic or carrier conditions, a history of the disease in military personnel should lead the physician to keep it in mind. The cause of chronic diarrhea or any vague abdominal symptoms should be investigated bacteriologically. Transient or chronic carriers of dysentery bacilli are usually present among the contacts of cases. Cultures should be taken from cases and contacts, preferably by the rectal swab technique, and persons found positive should receive sulfonamide treatment in order to avoid the development of active symptoms or further spread of the infection.

Amoebic dysentery, or amoebiasis, is much more likely than bacillary dysentery to become chronic or to recur in acute or subacute episodes. It may result in liver abscess even without previous noticeable symptoms. Possibly strains of *Endamoeba histolytica* from the tropics are more pathogenic than those from temperate zones. The incubation period may be very long, or infections acquired in the tropics may produce no symptoms in the initial patient but may be responsible for family or community epidemics under conditions of bad sanitation or contamination of water supplies. Clinically amoebiasis should be suspected in any person returned from the tropics who complains of blood in the stools, alternating diarrhea and constipation or vague abdominal symptoms. Diagnosis, however, must be made by a technician competent to differentiate *Endamoeba histolytica* from the other intestinal protozoa and from body cells.

<sup>1</sup> In the interest of more accurate diagnosis and better treatment, physicians are urged to use the etiologic terminology in differentiating the four malaria infections of man as follows: *falciparum malaria* (instead of *tertiana*), *vivax malaria* (instead of *tertiana*), *malariae malaria* (instead of *tertiana*), and *ovale malaria* (instead of *tertiana*).

## FILARIASIS

Filariasis, caused by *Wuchereria bancrofti*, the lymphatic filarial worm of man, is prevalent in many parts of the tropics, particularly in certain islands of the Southwest Pacific. It is transmitted by a number of species of mosquitoes, the most important of which are probably *Culex quinquefasciatus* and *Culex pipiens*, the common night biting mosquitoes of both hemispheres. The incubation period of the disease is usually six months or longer, and its first manifestation is acute lymphangitis or lymphadenitis before the worms become mature and before the larvae appear in the blood. It is not known whether the lymphangitis is caused by the worms themselves or by a secondary hemolytic streptococcus infection. There is no specific treatment for the worm, but sulfonamides sometimes relieve the lymphangitis, at least temporarily.

Cases of this infection have been acquired by military personnel. In the absence of an effective chemotherapeutic agent infected individuals may be discharged from military service and have subsequent attacks of lymphangitis. Or microfilariae may be found in the blood after several months or years even without the ultimate development of elephantiasis or other obstructive manifestations. Other infected individuals may be discharged from military service during the incubation period and come under civilian medical care during their first attack of lymphangitis. The possibility of the establishment of endemic foci in this country must be kept in mind, but this is improbable because a high local incidence of infection and many

mosquitoes are necessary for this to occur. The only endemic area in the United States, that around Charleston, S. C., has apparently disappeared with the improvement in mosquito control.

## OTHER DISEASES

The other diseases which may possibly be brought into the continental United States by returning military personnel are visceral and cutaneous leishmaniasis, schistosomiasis, the filarial worms *Loa loa* and *Onchocerca*, African trypanosomiasis, leprosy, relapsing fever and various fungous diseases of the skin. The probability that new endemic areas of any of these diseases will become established in the United States is very slight. They should, however, be recognized clinically and etiologically by the medical profession.

## RECOMMENDATIONS

It is recommended that physicians and health departments prepare themselves for the diagnosis, treatment and control of disease brought back by returning military personnel. Physicians can cooperate by providing themselves with a modern textbook on tropical medicine, by keeping these diseases in mind and by reporting them to public health authorities as soon as a diagnosis is made. State and local medical societies can aid by devoting programs to this field. Health departments can cooperate by obtaining special instruction in tropical medicine and parasitology for their laboratory personnel and epidemiologists, and by keeping local practitioners informed of new developments or hazards.

## CIVILIAN DEFENSE

## MANUAL ON RESCUE TECHNIC

"A Technical Manual for the Rescue Service" was recently issued by the rescue section of the medical division of the Office of Civilian Defense, Washington, D. C., in which methods of rescuing persons trapped in buildings demolished by high explosive bombs or in wreckage caused by other types of disasters are described.

The manual provides a guide for the organization of the rescue service, its operation in disaster and plans for training. It is explained that the rescue service in the U. S. Citizens Defense Corps is a specialized service primarily developed for the rescue of persons from demolished buildings in which fire is under control or no fire has occurred. Since the great conflagrations caused by incendiary bombs require the entire personnel and equipment of the fire service, firemen cannot be spared to dig into ruins for persons buried in debris, the introduction points out.

Most of the manual is devoted to a detailed presentation of actual rescue techniques, describing how buildings collapse, the various stages of rescue, methods of locating casualties and how to reach them. Directions are given for clearance of debris, for trenching and tunneling through ruins of buildings and for shoring and demolition. A chapter describes the use of ladders, ropes and lashings. Other chapters present specific instructions on rescue in the presence of common gases such as utility gases, sewer gas and refrigerants, and on the special methods necessary in rescuing persons from areas in which war gases have been used.

Explicit instructions are given concerning equipment for rescue squads and for individual members of squads. There are chapters on respiratory protective equipment, lighting, gas detection and ventilating equipment and the special working equipment needed for rescue work, including oxyacetylene cutting apparatus.

Emphasis is placed on the training of rescue personnel in the emergency field care of the injured. It is pointed out that

rescue workers are usually the first to reach trapped casualties and that they must know how to render essential first aid. The medical division has just issued a manual entitled "Field Care and Transportation of the Injured" (THE JOURNAL, December 4, p. 911) for the training of rescue workers, ambulance drivers and attendants, stretcher bearers and nonmedical members of mobile medical teams.

CHANGES IN STAFF OF THE MEDICAL  
DIVISION OFFICE OF CIVILIAN  
DEFENSE

Dr. Courtney M. Smith, assistant regional medical officer in the ninth civilian defense region, recently stationed in Seattle, has been promoted to be regional medical officer with headquarters in San Francisco. He succeeds Dr. Fred T. Goad, senior surgeon, U. S. Public Health Service, who has been made district director, U. S. Public Health Service District No. 8, with headquarters in Denver. Prior to his appointment in the medical division of the Office of Civilian Defense, Dr. Smith was assistant health commissioner of Alaska. He holds the rank of surgeon in the U. S. Public Health Service Reserve. Dr. Arthur J. Lomas, deputy state chief of Emergency Medical Service for Maryland, Baltimore, has been assigned as regional medical officer for the third civilian defense region, which includes Maryland, Pennsylvania and Virginia. Dr. Lomas succeeds Dr. Mark V. Ziegler, senior surgeon, U. S. Public Health Service who has been assigned to the U. S. Maritime Commission. Dr. Lomas has the rank of surgeon in the U. S. Public Health Service Reserve. Dr. Benjamin F. Miller, assistant professor of medicine, University of Chicago School of Medicine, Chicago, was recently commissioned in the U. S. Public Health Service and assigned to the Washington staff of the medical division on October 1 as assistant chief of the scientific research and development section. Ward L. Mould, surgeon, U. S. Public Health Ser-

vice Reserve, who has been assigned to the staff of the medical division, Office of Civilian Defense, since September 1941, has returned to the U S Public Health Service. Dr Mould served in various capacities in the medical division, most recently as medical chief of the industrial plant unit. He has been assigned temporarily as assistant to the director, U S Public Health

District No 1, with headquarters in New York City. Victor H Vogel, surgeon, U S Public Health Service Reserve, administrative officer of the blood plasma unit of the medical division since its establishment early in 1942, has been transferred to the staff of the U S Public Health Service Hospital in Lexington, Ky.

## ARMY

### SELECTION OF CASES FOR ELECTIVE OPERATION FOR PREINDUCTION DISABILITY

Circular Letter No 190 of the Office of the Surgeon General is concerned with the selection of cases for elective operation for preinduction disability. It was issued on November 17 to all medical officers of the United States Army and is to be substituted for S G O Circular Letter No 167 of Nov 30, 1942. The suggestions which follow are now recommended as routine in the army medical service.

1 In order to achieve maximum utilization of manpower it is desirable to perform elective operations for the correction of preinducted disabilities, but careful consideration must be given to the selection of individuals with these defects.

2 Elective surgery should be considered only for individuals with conditions which experience has shown may be readily corrected and who thereby can be restored to full military duty within a relatively short period of time. On the other hand, operations should not be considered in individuals with defects which would require prolonged hospitalization or in which the liability of recurrence or failure is great. Some examples of these preinduction defects which should not be considered for operation are herniated nucleus pulposus, recurrent pilonidal sinus with extensive involvement and scar formation, and internal derangements of the knee except those with intact crucial and lateral ligaments, good thigh musculature and no arthritic changes. No person with a preinduction disability should be considered for an elective operation unless the person gives particular promise of being of future value to the Army both from a mental and from a physical aspect.

### THE REAM GENERAL HOSPITAL

The U S Army took over from the Army Air Force on September 10 the Regional Station Hospital, formerly the Breakers Hotel, of Palm Beach, Fla., and on October 1 this hospital was officially designated as the Ream General Hospital. The location of the hospital is excellent for convalescent rehabilitation. It is situated directly on the Atlantic Ocean, with beach areas for games, exercise and sun bathing. There is also a large outdoor salt water swimming pool. The operating rooms, laboratories, physical therapy and other general hospital clinics are equipped with the most modern appliances. At the present time all types of cases are treated—wounds received or diseases contracted in the theater of operations. However, for the future this hospital has been designated by the Office of the Surgeon General to specialize in maxillofacial plastic surgery, ophthalmic surgery and neurosurgery.

The Ream General Hospital was named for Major William R Ream, first flight surgeon to qualify as an airplane pilot and first flight surgeon to lose his life in a plane crash in World War I.

The medical officers on the staff at present are as follows:

Col Charles C Demmer, Belmont, N Y, commanding officer  
Lieut Col Norman L Cutler, Newark, Del, chief of ophthalmology section  
Lieut Col Charles H Fair, Greenville, S C, chief of surgical service  
Major Sam W Banks, Chicago, assistant, surgical service (orthopedic)  
Major Truman G Blocker Jr, Austin, Texas, assistant, surgical service  
Major Joshua C Droker, Dorchester, Mass, surgical service (ENT)  
Major Paul F Fletcher, Lenox, Miss, assistant, surgical service  
Major Isadore W Ginsburg, Linwood, Pa, assistant, medical service (cardiology)  
Major Augustus McCravy, assistant, surgical service  
Major Daniel J Preston, Wilmington, Del, assistant, surgical service  
Major Herman Selinski, New York, assistant, medical service (neuro psychiatry)  
Major Herman Semenov, Beverly Hills, Calif, chief, ENT section

Major Joseph E Schaefer, assistant, surgical service  
Major Joseph H Shaffer, Detroit, chief of medical service  
Capt Thomas F Coates Jr, Tazewell, Va, assistant, medical service  
Capt John A Gormly, Providence, R I, assistant, medical service  
Capt William W Jack, Grand Rapids, Mich, assistant, surgical service  
Capt Orville N Jones, Portland Ore, assistant, surgical service  
Capt Stephen Kiss, Woodhaven, N Y, assistant, medical service  
Capt Edwin J Medden, Seneca Falls, N Y, assistant, surgical service  
Capt William Serber, Philadelphia, chief of roentgenology service  
Capt Clyde T Smith, Philadelphia, attending surgeon  
1st Lieut Alfred R Berkeley Jr, Roanoke, Va, assistant, medical service  
1st Lieut Richard W Burger, Cokeburg, Pa, assistant, medical service  
1st Lieut Carl E Lischer, Webster Groves, Mo, assistant, surgical service  
1st Lieut Anthony C Reiger, Southeast Rapids, Mich, assistant, surgical service (physical therapy)  
1st Lieut Leonard Stone, Staten Island, N Y, assistant medical service  
Capt Mary A Muldoon, A N C, Germantown, Pa, chief nurse

### A M A EMPLOYEE AWARDED LEGION OF MERIT

Master Sergt John A Kovacs was a member of the staff of the Council on Pharmacy and Chemistry before going into the army. He is now serving at Headquarters in the North African Theater of Operations and was recently awarded the Legion of Merit "for exceptionally meritorious conduct in the performance of outstanding services." The official citation continues: "Sergeant Kovacs organized and administered without adequate assistance an efficient administrative system in the Office of the Surgeon, North African Theater of Operations, which was highly successful. With an infinite capacity for detail and with initiative, resourcefulness and leadership beyond all expectation, he made function the complex administration necessary for theater medical service. Throughout this entire time he maintained all required records, prepared necessary books and gathered data utilized in plans and operations for the Tunisian campaign. His outstanding devotion to duty and his superior performance materially contributed to the medical service in North Africa and set a high example for others. Entered service from Chicago, Illinois."

### CHIEF OF NEUROPSYCHIATRY AT AMERICAN BASE HOSPITAL IN NORTH AFRICA

Lieut Joseph Zimmerman, formerly of Brooklyn, has been appointed chief of neuropsychiatry at the American base hospital in North Africa. Dr Zimmerman went to Africa with one of the first medical detachments of the Army and was assigned to headquarters in Algiers, where he has served until his most recent assignment. Dr Zimmerman graduated from Syracuse University College of Medicine in 1936 and served his internship at the North Eastern Hospital in Philadelphia. He entered the service in December 1942.

### MAJOR GEN JOHN M WILLIS TRANSFERRED

Major Gen John M Willis, who has been commanding officer at Camp Grant, Ill, since October 1941, has been transferred to command all medical and hospital services of the army throughout the Ninth Service Command, comprising the states of California, Nevada, Utah, Oregon, Washington, Idaho, Arizona and Montana. Because of the presence in that wide area of certain huge army medical establishments, the new assignment is considered to be of unusual importance. With headquarters at Fort Douglas, Utah, General Willis will have direct

supervision of such institutions as Fitzsimons General Hospital, Denver, and the Letterman General Hospital, San Francisco. General Willis graduated from George Washington University School of Medicine, Washington, D. C., in 1909 and has been a medical officer of the regular army since 1911.

## EMERGENCY SURGERY OF THE EXTREMITIES

Circular Letter No. 189 of the Office of the Surgeon General is concerned with emergency surgery of the extremities. It was issued on November 17 to all medical officers of the United States Army. The suggestions which follow are therefore recommended as routine in the army medical service.

1. Compound fractures and wounds of the extremities are still being treated with closure of the wounds and without thorough debridement. On a recent inspection trip 3 patients were observed who had recently undergone guillotine amputation of the lower extremity for gas gangrene, 2 after wound closure and the third following incomplete debridement. Other patients have suffered extensive infection under similar circum-

stances. Compound fractures and other wounds will have debridement as soon as the patient's condition permits, and wounds will be left open with light packing. It is strictly forbidden that any compound fracture or extensive wound of the extremities be treated with closure of the wound.

2. Confusion exists relative to the principles of emergency amputation. For example, given a hypothetical case of a hopelessly damaged leg near the ankle joint, the proper treatment is neither an open (guillotine) nor a closed amputation in the middle third of the leg. The proper emergency amputation in this type of case is an open (guillotine) amputation at or immediately above the level of the injury. Amputation for trauma will be a circular open (guillotine) amputation at the lowest possible level followed by the application of skin traction. It is strictly forbidden that such amputation be done higher than necessary or that the stump be closed. (See S. G. O. Circular Letter No. 91, 26 April 1943.)

Commanding officers of all general and station hospitals will be held responsible for the abandonment of the improper procedures described above and for the necessary instruction and compliance with these directives.

## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

### HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan. 1, 1944 or later.

(Continuation of list in THE JOURNAL, December 11, p. 975)

#### CALIFORNIA

Barlow Sanatorium, Los Angeles. Capacity, 100; admissions, 165. Dr. Howard W. Bosworth, Medical Director (resident—tuberculosis—July).  
Orthopaedic Hospital, Los Angeles. Capacity, 75; admissions, 1,876. Miss Mildred Riese, Superintendent (resident—orthopedics—October).  
St. Luke's Hospital, San Francisco. Capacity, 225; admissions, 6,548. Dr. Howard H. Johnson, Medical Director (resident—medicine surgery—July).

#### DELAWARE

St. Francis Hospital, Wilmington. Capacity, 137; admissions, 1,847. Sr. M. Illuminata, Superintendent (intern).

#### DISTRICT OF COLUMBIA

Garfield Memorial Hospital, Washington. Capacity, 452; admissions, 10,197. Dr. Francis J. Eisenman, Superintendent (residents—obstetrics, medicine, surgery—April, July).

#### FLORIDA

St. Luke's Hospital, Jacksonville. Capacity, 210; admissions, 6,462. Mr. W. E. Arnold, Executive Director (intern—March).

#### INDIANA

St. Joseph's Hospital, South Bend. Capacity, 192; admissions, 4,494. Sister Mary Ellen, Superintendent (interns—January, July).

#### IOWA

Broadlawn Polk County Public Hospital, Des Moines. Capacity, 49; admissions, 352. Mr. T. P. Sharpnack, Administrator (intern—March).

#### MARYLAND

South Baltimore General Hospital, Baltimore. Capacity, 170; admissions, 3,755. Mr. William A. Dawson, Administrator (2 interns).

#### MASSACHUSETTS

Boston Floating Hospital, Boston. Capacity, 50; admissions, 866. Mr. Frank E. Wing, Director (3 assistant residents—pediatrics—July).

Carney Hospital, Boston. Capacity, 268; admissions, 5,619. Sister Mary Paul, Superintendent (3 interns).

Haverhill Municipal Hospital (Hale), Haverhill. Capacity, 198; admissions, 4,487. Mr. William W. Savage, Director (intern—March).

Malden Hospital, Malden. Capacity, 271; admissions, 4,984. Dr. Donald M. Morrill, Medical Director (resident—mixed—July).

#### MISSOURI

Homer G. Phillips Hospital, St. Louis. Capacity, 753; admissions, 10,686. Dr. Wallace B. Christian, Medical Superintendent (2 assistant residents—April).

#### NEW JERSEY

Elizabeth General Hospital and Dispensary, Elizabeth. Capacity, 250; admissions, 5,523. Mr. W. Malcolm MacLeod, Superintendent (interns—March, July).

Hospital of St. Barnabas and for Women and Children, Newark. Capacity, 252; admissions, 6,048. Mr. John G. Martin, Superintendent (intern—April, June, August, September).

St. Joseph's Hospital, Paterson. Capacity, 468; admissions, 7,835. Sister Anna Rita, R.N., Superintendent (8 interns).

Weehawken North Hudson Hospital, Weehawken. Capacity, 191; admissions, 3,549. Dr. J. Lawrence Evans, Administrator (3 interns—May).

#### NEW YORK

Jewish Memorial Hospital, New York City. Capacity, 217; admissions, 4,994. Mr. Louis Miller, Superintendent (intern—January, February, March, April, July).

#### OHIO

Toledo Hospital, Toledo. Capacity, 320; admissions, 7,236. Mr. Wilson L. Benfer, Superintendent (2 interns—February, April—resident—July).

Harding Sanatorium, Worthington. Capacity, 59; admissions, 396. Dr. George T. Harding, Medical Director (resident—Psychiatry—Graduate College Medical Evans).

#### OKLAHOMA

St. John's Hospital, Tulsa. Capacity, 300; admissions, 7,800. Sister M. Rosahndra, R.N., Superintendent (3 interns—March).

#### PENNSYLVANIA

Hospital of the Woman's Medical College of Pennsylvania, Philadelphia. Capacity, 200; admissions, 3,532. Dr. F. S. Fetterman, Medical Director (3 interns—April).

Memorial Hospital, Philadelphia. Capacity, 118; admissions, 2,635. Mr. Harry J. Rodgers, Superintendent (intern).

St. Christopher's Hospital for Children, Philadelphia. Capacity, 82; admissions, 1,877. Miss Mabel Barr, Administrator (3 assistant residents—pediatrics—July).

#### SOUTH CAROLINA

Greenville General Hospital, Greenville. Capacity, 315; admissions, 7,007. Mr. J. B. Norman, Superintendent (intern).

#### TEXAS

All Saints Episcopal Hospital, Fort Worth. Capacity, 100; admissions, 3,230. Dr. T. C. Terrell, Medical Director (resident—mixed—July).

#### WEST VIRGINIA

Wheeling Hospital, Wheeling. Capacity, 256; admissions, 4,587. Sister Mary Ruth, R.N., Superintendent (2 interns—January—mixed resident—July).

#### WISCONSIN

Luther Hospital, Eau Claire. Capacity, 176; admissions, 3,888. Mr. N. E. Hanshus, Manager (intern).

St. Francis Hospital, LaCrosse. Capacity, 292; admissions, 5,518. Sister M. Fridoline, Superintendent (intern).

St. Mary's Hospital, Madison. Capacity, 225; admissions, 6,657. Sister M. Bernadette, R.N., Superintendent (interns).

Misericordia Hospital, Milwaukee. Capacity, 183; admissions, 4,811. Sister M. Seven Dolor, Superintendent (intern—May).

## MISCELLANEOUS

SOME RESTRICTIONS REMOVED ON THE  
MANUFACTURE AND DISTRIBUTION  
OF X-RAY EQUIPMENT

The War Production Board issued on November 29 Limitation Order L-206 as amended. A complete revision of the former Order L-206 (issued in October 1942) whereby controls over the manufacture and distribution of x-ray equipment are relaxed, it is designed to provide adequate equipment for civilian use without the paper work formerly required by special authorization of civilian purchase orders and by the filing of production and shipping schedules. In general, military orders are now being filled on schedule.

The chief provisions of the amended order are as follows:

1 Shipments of medical x-ray equipment for civilian use are placed on a quota basis. Annual shipments of each manufacturer are limited to 75 per cent by dollar value of the average annual shipments made during 1937, 1938 and 1939. Quotas apply only to shipments within the United States, to its possessions and territories and to Canada.

2 Medical x-ray equipment for the United States and Canadian military services and for export under lend lease and OEW (now part of the Foreign Economic Administration) is not included in the quota. Industrial x-ray equipment is also outside the quota.

3 Former restrictions on models and types of specified x-ray equipment are removed from the order through deletion of schedule A.

4 Monthly reports of shipments by dollar value are to be made by letter. Production and shipping schedules (form PD-774) and authorization applications (form PD-556) need no longer be filed.

5 Coverage of the order remains unchanged. X-ray equipment, as defined, includes only power units, radiographic, fluoroscopic and therapy tables, photofluorographic units, cassette changers, and tube stands. It does not include parts, accessories or appliances or rebuilt and second hand equipment.

## PUBLIC HEALTH UNDER HITLER

In the August 28 *Transocean* the scientific correspondent Bruno Werner writes: More than 1,000 foreign medical doctors from thirty-four different states are studying in Berlin at the end of the fourth year of war. They are not medical students but fully fledged doctors, many of them famous in their home countries and several even with international reputations. They have been attracted to Berlin by German achievements in the field of medicine. Many of them are interested in the German methods of combating infant mortality, the results of which were recently published. Another field they are studying intensely is that of German methods of care for mothers in childbirth, which have practically abolished puerperal fever. Many of these foreign physicians working in Berlin were commissioned by their respective governments and are also interested in matters pertaining to youth and child welfare as well as hereditary biology. The specialists with whom I had occasion to talk expressed surprise that during the seven years from 1936 to 1943 one million more children were born in Germany than could be expected in 1933. Another fact which surprised them was that a close study of the birth rate showed that the number of German families with three children during these seven years had increased by 54 per cent and that of families with four children by as much as 62 per cent. The large influx of medical men was also caused by the development of surgical methods in Germany as a result of the war. For instance, the improvement of the electron microscope with its revolutionary results in surgery has brought to Berlin a number of specialists from France, the southeastern European countries and Scandinavia.

According to *Le Nouvelliste de Lyon* of August 25, 97 cases of poliomyelitis have till now been registered, of which 35 are in Montluçon itself and 62 in the neighboring communes belonging to the Montluçon arrondissement, namely 23 children under 6, 21 children from 6 to 13, 32 youths from 13 to 21 and 21 adults.

Sixteen deaths have occurred, especially among youths and adults. Mademoiselle Possy, a medical officer and head of the Montluçon health department, immediately organized a serotherapy center at the municipal laboratory where 12 liters of blood was collected from about 60 former poliomyelitic patients from this 4,000 centiliters of serum could be obtained. Moreover the Pasteur Institute, the Toulouse health department and Dr. Debre sent serum at the outbreak of the epidemic. Dr. Bons has opened a special ward at the Montluçon Municipal Hospital accommodating 69 patients. Two hundred and forty-six former patients answered the broadcast appeal of the Secours national, of which 148 will be sent to Paris, 31 to Lyons, 13 to Montpellier, 9 to Bordeaux and 8 to Toulouse, where blood collecting centers have been opened on lines similar to those of the Montluçon center, where 37 ex-patients will also be sent from various departments.

The Berne correspondent of *Aftonbladet* of August 23 reports that in an article entitled "Unborn Children" the German health leader, Conti, says that the population of Berlin will die out in three generations if the birth rate continues to decline as it is doing at present.

*Le Petit Parisien* (North Zone) of August 1 states that Parisians are complaining this year of a new kind of offensive, for which fleas and lice are responsible. This invasion is worthy of the full attention of the health authorities, for it is well known that lice are a means of spreading infection, particularly exanthematic typhus. It is true that up till now there has been no epidemic but at the most a few isolated cases. Nevertheless a strict watch must be kept, all suspects must be isolated and delousing and disinfecting posts must be set working full blast both in Paris and in the suburbs.

*Suodem Sosialdemokratit* of September 19 states that two thousand foreign doctors from thirty-four different countries are now working in Berlin, some of them famous all over the world.

The September 22 *Journal officiel* published a law according to which midwives are included in the Order of Doctors. They form in each department a "college" which has corporative functions similar to those of the "college" of doctors.

According to DNB of September 23 the fuhrer has awarded the Knight's Cross of the War Merit Cross with Swords to Prof. Dr. Handloser, chief of the army medical services, in recognition of his services in the development and operation of the medical services of the armed forces.

According to Rome Radio (home service in Italian) of September 22, in conformity with the regulations concerning the uniform of the militarized personnel of the Red Cross, officers of the Red Cross organizations, doctors and chemists are to carry revolvers in their belts. Naturally, when such personnel are ordered to go out without arms, they may retain them in their houses.

Radio Vichy of September 30 reports that the initial courses for medical students have been canceled in schools which are at present open, with the exception of the Nantes and preparatory schools. Candidates who were about to take these initial courses will be able to put their names down only for one of the following faculties: Paris, Montpellier, Nancy, Strasbourg (evacuated to Clermont), Lyons, Bordeaux, Lille, Marseilles, Toulouse and Nantes. To avoid crowding in certain faculties, the number of candidates permitted to follow these courses will be decided by the Ministry for National Education. As regards the "mixed" Faculty of Medicine and Pharmacy at Lyons, the dean invited candidates to send, before October 6, an application form in which they state in order of preference three establishments they would like to attend. In the event of their wishing to change their order of preference, every care will be taken to meet their request if possible.

## Medical News

(PHYSICIANS WILL CONFIR A FAVOR IN STANDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Patent Rights Awarded to Alumni Research Foundation.**—Dr Alonzo J Neufeld, assistant clinical professor of orthopedics, College of Medical Evangelists, Loma Linda-Los Angeles, has made a legal transfer of all his rights in the appliance of the Neufeld pin to the recently created Alumni Research Foundation of the college (THE JOURNAL, October 9, p 364). Dr Neufeld's one stipulation is that all monies received shall be applied to research work in the field of orthopedic surgery. Dr Neufeld devised the Neufeld pin some years ago in the course of his clinical work. He has always kept the proceeds from the pin in a separate fund dedicated to research.

**Memorial Fund for Research in Pathology.**—The A Herman Zeiler Memorial Fund will be created under a resolution adopted at a meeting of the medical executive committee of the Cedars of Lebanon Hospital, Los Angeles, November 9, in honor of the late Dr Zeiler, who was director of the laboratories, member of the medical executive committee and chief of staff of the hospital. The fund will be established by assessment from the members of the staff of the hospital and by contributions from colleagues and friends and will be used for research in pathology under the administration of the research committee of the hospital. The resolution also provides that a portrait of Dr Zeiler be prepared to hang in the hospital. Dr Zeiler died July 16.

**Annual Course in Ophthalmology and Otolaryngology.**—The Research Study Club of Los Angeles will conduct its thirteenth annual midwinter postgraduate clinical convention in ophthalmology and otolaryngology January 17-29. Speakers will include:

Dr Isidore Friesner New York  
Dr James Watson White New York  
Dr Thomas E Carmody Denver  
Dr Frederick T Hill Waterville Maine  
Dr Dean M Lierle Iowa City  
Dr Arthur W Proetz St Louis  
Dr Robert F Ridpath Philadelphia  
Dr Leroy A Schall Boston  
Dr John J Shea, Memphis  
Dr Georgiana M Dorak Theobald Oak Park Ill

A special course in "Applied Anatomy and Cadaver Surgery of the Head and Neck" will be held January 28-February 1 with Drs Simon Jesberg, associate clinical professor of surgery (otology, rhinology and laryngology), University of Southern California School of Medicine, Los Angeles, and Samuel A Crooks, associate professor of anatomy, Loma Linda College of Medical Evangelists, as the instructors.

### DISTRICT OF COLUMBIA

**Soldier's Death from Rabies First in Forty Years.**—The first human fatality from rabies in Washington in nearly forty years was announced November 29 by the district health department. Sgt Harold L Whitman, on duty at the Army War College, died November 27 as the result of rabies contracted last August when he was bitten by a stray dog on the college grounds. The dog was later found to be infected. Sergeant Whitman was given the Pasteur treatment at the Walter Reed General Hospital and after several weeks was returned to duty. On November 23 he became nervous and apprehensive newspapers reported and was admitted again to Walter Reed General Hospital. Death occurred shortly before midnight November 27. In a statement to the press, Dr James G Cumming, director of the bureau of preventable disease for the district health department, stated that the size of the bite militated against the effectiveness of the Pasteur treatment.

### ILLINOIS

**Southern Illinois Medical Officers.**—Dr Ralph S Sabine, Murphysboro, was named president of the Southern Illinois Medical Association at its meeting in Anna November 5. Other officers include Drs Lewis F Barger, Golconda and Charles D Nobles, Anna, vice presidents, and Willis I Lewis, Herrin, who was elected secretary-treasurer for the fifth consecutive time.

### Chicago

**Personal.**—Dr Max Thorek was presented with the Mexican Order of the Aztec Eagle at a dinner on December 2 in recognition of his contributions to medicine and surgery.

**Dr Hektoen Re-elected Chairman of Cancer Committee.**—At the annual meeting of the Chicago Cancer Committee, Inc., held December 6 at the Institute of Medicine of Chicago, Dr Ludvig Hektoen was re-elected chairman. Dr Hektoen is executive director of the National Advisory Cancer Council and has been chairman of the Chicago Cancer Committee since its organization in 1941.

**Citizen Fellowships Awarded to Laymen.**—The Institute of Medicine of Chicago at its twenty-eighth annual meeting in the Palmer House, December 7, awarded citizen fellowships to Mr Charles B Goodspeed, president of the board of Presbyterian Hospital, Sidney L Schwarz, director of the executive committee of the board of trustees of Michael Reese Hospital and Miss Gwethalyn Jones, who among other philanthropies established the Thomas D Jones Memorial Clinic Building for the Children's Memorial Hospital. The three guests of honor were cited for their meritorious contributions to the health and welfare of the community. Frederick B Noyes, DDS, gave the presidential address, on "Personal Recollections of a Leader, Greene Vardiman Black His Development and Influence."

### INDIANA

**Advisory Health Council Named.**—The Jackson County Health Council has been organized to serve as an advisory unit to the Jackson County Health Department, newspapers reported on October 22. The new council will assist in coordinating efforts of local health and social agencies. Dr Louis Henry Osterman, Seymour, was named chairman of the group.

**Fatal Case of Cadmium Poisoning.**—One worker died within four days after a prolonged exposure to high concentration of cadmium fumes in an Indiana plant, according to *Industrial Hygiene*. The deceased worker undertook a job of "flanging" 2 inch cadmium plated stainless steel pipe. To produce a flange, the pipe was heated with a blow torch until the pipe became a cherry red. Soon after beginning the operation the employees complained about irritation of the nose and throat as well as the thick blue smoke present in the workers' environment. Within four hours 2 employees were violently ill and were taken home. Vomiting, chest pains and shortness of breath were the chief symptoms at this time. The chest symptoms of 1 worker increased and within four days this worker died of a severe chest involvement.

### IOWA

**Five Day Treatment of Syphilis Begins in Three Centers.**—Three centers have been established in Iowa for the start of the first decentralized program of five day treatment of syphilis in the state. The centers are at Broadlawn Polk County Public Hospital, Des Moines, where the treatment has been carried on since 1939, University Hospitals, Iowa City, and St Joseph Mercy Hospital Sioux City. Treatment of both men and women is to be effected in cooperation with practicing physicians and health officers, who may refer for treatment patients with early cases of infectious syphilis (under two years' duration) or those infected with gonorrhea. On completion of treatment all patients will be returned to the referring physician with recommendations for continued observation. The state department of health will furnish transportation to the centers for indigent patients. No charge will be made for any service, and no distinction will be made as to race or financial status. Similar centers have been established in Omaha, St Louis, Chicago, Indianapolis and Denver.

### KENTUCKY

**Physician Named Director of Near East Foundation.**—Dr Wilson F Dodd, medical director of the Berea College, Berea has been appointed medical director of the Near East Foundation in Greece. According to the *Berea Citizen*, Dr Dodd was to take passage sometime in October for Cairo, Egypt, where he will remain until Greece is open for rehabilitation work.

**Personal.**—Dr Stefanie Young formerly of Hartford, Conn., has been appointed college physician at Eastern Kentucky State Teachers College, Richmond succeeding Dr Henry C Jasper, who had been acting college physician since the resignation of Dr Jacob D Farris. Major David W Barrow, M C, A U S, received first prize for scientific exhibits during the meeting of the Southern Medical Association in Cincinnati in November. Major Barrow's work was a chart



and graph exhibit illustrating the results of a violent explosion involving some 200 men, more than 50 of whom were killed or injured

**Socialized Medicine Will Force Members to Close Offices**—The Christian County Medical Society recently adopted resolutions stating that members would be asked to close their offices and cease to practice if congress passed the bill the medical group charges would socialize medicine, according to the *Louisville Courier-Journal*, November 7. The newspaper further states that the society charged the proposed legislation would "make the surgeon general of the United States a medical dictator over the medical services of 93 per cent of our people," giving him powers that would be "absolute, as much so as a Nazi dictator." Closing of doctors' offices in Christian County, the resolution stated, would show the public "that we mean not to have national socialism in the United States."

#### MICHIGAN

**New President of W K Kellogg Foundation**—Emory W Morris, treasurer, assistant secretary and general director of the W K Kellogg Foundation since 1940, was elected president of the foundation's board of trustees at the recent annual election of officers in Battle Creek. He succeeds George B Darling, Dr P H, who resigned as president and comptroller of the foundation to join the National Research Council, Washington, D C (*THE JOURNAL*, November 27, p 849).

#### MINNESOTA

**License Revoked**—On November 5 the Minnesota State Board of Medical Examiners revoked the license to practice in the state of Dr Gustav D Eisengraeber, Minneapolis, on the charge of "procuring, aiding and abetting a criminal abortion." On November 2 Dr Eisengraeber was given a suspended sentence of up to ten years in the state penitentiary and placed on probation for five years. According to the *Bulletin* of the Hennepin County Medical Society, Dr Eisengraeber previously had pleaded guilty to a charge of first degree manslaughter resulting from the death of a woman following an illegal operation.

**Imprisoned for Illegal Shipments of Abortion Paste**—Mrs Anne M Jenks, White Bear Lake, was sentenced to nine months' imprisonment in the Women's Reformatory at Shakopee and fined \$200 for violating the Federal Food, Drug and Cosmetic act. Mrs Jenks was indicted by a federal grand jury in St Paul, June 29, on twenty counts for alleged violations of the law. On January 19 she had been permanently enjoined from shipping in interstate commerce a drug labeled "Intrauterine Paste" (*THE JOURNAL*, March 6, p 775) or "Dependon Products Paste," manufactured and sold by Mrs Jenks at White Bear Lake. The injunction followed a lengthy trial in which the government called 46 witnesses, 39 of whom were physicians. Six of the witnesses were confessed criminal abortionists. The court, in its findings, held that the paste "is unsafe and dangerous to health and has caused fatalities and serious injury." The court also found, as a matter of law, that the paste was misbranded and that the labeling was false and misleading. At the conclusion of the injunction suit Mrs Jenks was fined \$250 for contempt of court and her husband, W S Jenks, was fined \$500 for a similar offense growing out of the shipment of the paste to a Missouri physician after the court had issued a temporary injunction on Oct 31, 1942.

#### MONTANA

**Election of State Medical Board**—At a recent meeting of the Montana State Board of Medical Examiners in Helena Dr Allen R Foss, Missoula, was elected president, Dr Cedric H Nelson, Billings, vice president and Dr Otto G Klein, Helena, secretary. Other members of the board are Drs Earl S Porter, Lewistown, and John H Garberson, Miles City.

#### NEW JERSEY

**License Revoked**—The New Jersey State Board of Medical Examiners recently revoked the license to practice medicine and surgery of Dr Louis George D'Elia, Secaucus, following his conviction of a violation of a federal narcotic law.

**Drive to Reduce Whooping Cough**—In an effort to reduce whooping cough in New Jersey, the state has made available a vaccine to sixty centers in the state to help combat the disease. Newspapers report that whooping cough caused 45 deaths in New Jersey last year, 43 among children less than 5 years in age. In all, 12,461 cases were reported during the year. The preventive vaccine, now available at the sixty centers throughout the state, may be obtained for children and adults by physicians, hospitals and local health boards.

#### NEW YORK

**Course for Orthoptic Technicians**—The Rochester Orthoptic Center, approved by the Monroe County Medical Society, announces a course for orthoptic technicians. Additional information may be obtained from Mrs Margaret Lundeau, 31 North Goodman Street, Rochester.

**Graduate Lectures**—Dr Barton F Hauenstein, Buffalo, will discuss "The Present and Postwar Importance of the Dysenteries" in a graduate lecture before the Broome County Medical Society at Binghamton, January 11, and Dr Harry Most, New York, "The Importance of Early Diagnosis and Treatment of Falciparum Malaria," February 8. Dr Clayton W Greene, Buffalo, will lecture before the Greene County Medical Society, December 23, Catskill, on "What Can We Do for Angina Pectoris and Coronary Occlusion?" Dr Leon H Griggs, Syracuse, discussed "Industrial Dermatoses" before the Jefferson County Medical Society, Watertown, December 9. These graduate lectures are sponsored jointly by the state medical society and the state department of health.

#### New York City

**License Restored**—On November 13 the license to practice medicine in New York of Dr Morris Sternberg, Brooklyn, was ordered reinstated by the order of the commissioner of education. Dr Sternberg's license had been suspended by a vote of the board of regents in November 1941 for a period of six months.

**Mental Hygiene Committee Creates Rehabilitation Division**—The National Committee for Mental Hygiene has established a division of rehabilitation under the direction of Dr Thomas A C Rennie, associate professor of psychiatry at Cornell University Medical College. The new division will act as a point of clearance in the field of rehabilitation and a source of advice to those responsible for the federal rehabilitation program, according to *Mental Hygiene*.

**Rules Amended for Communicable Diseases**—At a meeting November 16 the city department of health adopted some changes in its regulations governing the isolation of persons affected with communicable diseases. Places occupied by patients with scarlet fever, diphtheria and acute anterior poliomyelitis will no longer be placarded. The isolation period in the uncomplicated case of scarlet fever in a person 16 years of age or over has been reduced to fourteen days from the day of onset, the present twenty-one day period of isolation being retained for persons under 16 years of age except during the months of June through October, when the isolation period will also be only fourteen days. In the future whenever in the household of a case of scarlet fever another illness occurs commonly due to *Streptococcus hemolyticus*, the latter patient will be required to comply with the provisions for scarlet fever. In cases of acute anterior poliomyelitis all stools shall be disinfected immediately, in accordance with recent reports emphasizing that the virus can be recovered from the stools of patients with the disease.

**Advisory Committee Named for Health Education Bureau**—An advisory committee of physicians, educators and publicists has been created to assist the health education bureau of the city department of health. The department aims to expand its health education program into new phases, such as cancer control, and the prevention of rheumatic heart disease and home accidents. The new committee will advise on these projects. Dr Donald B Armstrong, third vice president of the Metropolitan Life Insurance Company, is chairman of the new group, which includes the following members:

Bailey B Burritt, chairman of the executive council of the Community Service Society.

Dr Iago Galdston, executive secretary of the Committee on Medical Information of the New York Academy of Medicine.

Dr Joseph Golomb, chairman of the public health committee of the Bronx County Medical Society.

Leon Lovine, assistant director of education of the Columbia Broadcasting System.

Dr Edwin P Maynard Jr, Brooklyn, chairman of the New York Heart Association.

Dr Harry S Mustard, professor of preventive medicine of the De Lamar Institute of Public Health, Columbia University College of Physicians and Surgeons.

Frank J O'Brien, associate superintendent of schools.

Donald Payne, vice president of Young & Rubicam, advertising agency.

Dr Charles A Perera, chairman of the special committee on publicity education and illegal practice of medicine of the New York County Medical Society.

Paul F Stricker, executive vice president of the Greater New York Safety Council.

Mrs Katherine Z W Whipple, health education secretary of the New York Tuberculosis and Health Association.

Dr Charles C Wilson, professor of health and physical education of Columbus University Teachers College.

## OHIO

**Annual Meeting**—The Ohio State Medical Association will hold its annual meeting in Columbus May 24 instead of May 9-11 as previously announced.

**Dr Howard Dittick Named Editorial Director of Clinic Foundation**—Dr Howard Dittick, editor in chief of the *Bulletin of the Academy of Medicine of Cleveland* has been appointed editorial director of the Cleveland Clinic Foundation. Dr Dittick retired from practice December 1 and will take over his new work January 1. He will continue his work as an attending physician to the student health service at Western Reserve University and as directing editor of *Current Researches in Anesthesia and Analgesia*. In his new activities he will have charge of editorial work, exhibits, museums, library, and art and photographic departments. He will also be secretary of the Frank E. Bunts Educational Institute. Dr Dittick graduated at the University of Toronto Faculty of Medicine, Ontario, in 1900. He formerly served on the staff of Western Reserve University School of Medicine. He has been president of the Cleveland Medical Examiners Society and trustee and director of the Museum of Historical and Cultural Medicine of the Cleveland Medical Library Association. The Academy of Medicine recently presented its distinguished service award for 1943 to Dr Dittick for his long service to the academy.

**Surgical Fellowship Fund Honors Physicians**—The board of trustees of the Cleveland Clinic Foundation has given a fund of \$50,000 to Western Reserve University School of Medicine, Cleveland, the income to be devoted to surgical fellowships for accredited postgraduate students chosen by the medical school faculty. The fund is named for Drs Frank E. Bunts, George Crile and William E. Lower, who founded the Cleveland Clinic in 1921. According to the *Voice of Reserve* the trustees will add to the fund from time to time. The trustees also contemplate a grant for postgraduate fellowships in medicine to be named in honor of Dr John Phillips, chief of the division of medicine of the clinic who died in the Cleveland Clinic Disaster of May 1929. The announcements were made during a dinner commemorating the one hundredth anniversary of Western Reserve University School of Medicine (THE JOURNAL, October 16, p. 430), at which honorary degrees were awarded to Drs George H. Whipple, Rochester, N. Y., and Reginald Fitz, Boston, who were given degrees of doctor of science, and to Frederick C. Waite, Ph.D., and Dr William T. Corlett, Cleveland, the degrees of doctor of humanities and Dr. Ronald H. Sollmann, dean of the medical school, doctor of laws.

## OKLAHOMA

**Dr Fletcher Chosen to Teach Surgical Diagnosis**—Dr Archibald G. Fletcher, Philadelphia, has been employed to teach surgical diagnosis in the state during 1944 and 1945. He will conduct the fourth postgraduate course for physicians to be offered under the auspices of the Oklahoma State Medical Association with financial assistance from the Commonwealth Fund of New York and the state department of health. The course will open in the northeastern section of the state in February. During the past year Dr Fletcher has been with the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania. He formerly served with the American Presbyterian Mission, Taiyuan, Chosen, and will remain in the United States for the duration.

## OREGON

**University News**—On December 22 Col. Charles K. Berle, M. C. U. S. Army, commanding officer of Barnes General Hospital, Vancouver, Wash., will deliver the commencement address at the University of Oregon Medical School, Portland. Sixty-three graduates will receive their diplomas in the second class to be graduated in 1943. Dr. Knox H. Finley has been appointed clinical professor and head of the division of psychiatry at the medical school to succeed Dr. Henry H. Dixon, who has been commissioned a lieutenant commander in the navy. Dr. John H. Benward has been named assistant medical director of the Doernbecher Children's Hospital Unit to succeed Dr. Paul V. Woolley, Jr., who has been assigned to Bethesda, Md., as a lieutenant in the navy.

## WASHINGTON

**Work Starts on Doctors Hospital**—Ground was broken, November 13, for the new Doctors Hospital, Seattle, to be constructed at a cost of more than \$800,000 and to provide for 200 patients. The new building will consist of two floors,

with basement and sub-basement space. The first floor will have facilities for maternity patients, and the second floor will contain five operating rooms and two wings of rooms for 80 patients. The plan for Doctors Hospital started about ten years ago when a committee of the King County Medical Society authorized the establishment of a nonprofit corporation and bureau to provide medical service to subscribers at a monthly rate. More than \$200,000 in funds of the organization, accumulated in the ten year period but not subject to use except for the public good, will go toward the financing of the new institution, \$600,000 to be received from the federal government.

## ALASKA

**Tuberculosis Hospitals Proposed**—Tentative plans have been announced in the newspapers concerning the construction of two tuberculosis hospitals in Alaska for the treatment of both white and native patients. One would be located in Juneau and the other at either Nome or Fairbanks, the latter to be for Eskimos. Both would have accommodations for at least 200 beds and cost between 4 and 5 million dollars. Newspapers reported that the Division of Territories and Island Possessions of the U. S. Department of the Interior has agreed to sponsor the project, but operation of the hospital will be a federal agency experienced in this work. According to the *Juneau Empire*, November 4, the proposed plan stemmed from the approximately 2,500 cases of tuberculosis in the Territory of Alaska and the fact that there are less than 100 beds available for the treatment of both white persons and natives.

## HAWAII

**Dr Wayson Retires from Active Service**—Dr. James T. Wayson, physician on the board of leper hospitals, Honolulu, and former general health officer of the territory of Hawaii, has retired from active service. Dr. Wayson was born in Port Townsend, Wash., in 1870. After he graduated at the University of California Medical School, San Francisco, in 1891 he was surgeon in the U. S. Cutter Service from 1892 to 1895, when he became attending physician to the Kalaheo Hospital for Lepers in Honolulu. He was a member of the board of health of Hawaii from 1905 to 1909, city and county physician to Honolulu from 1911 to 1918 and general health officer of Hawaii from 1918 to 1931. In 1932 Dr. Wayson was instrumental in setting up a separate board of hospitals and settlement to administer the leprosy phase of public health. He held the position of board physician from the time of its inception until his recent retirement.

## GENERAL

**Special Society Election**—Officers of the Central Society for Clinical Research, chosen at its recent annual meeting in Chicago include Drs. Cecil J. Watson, Minneapolis, president; Willis M. Fowler, Iowa City, Iowa, vice president; and Carl V. Moore, St. Louis, secretary-treasurer.

**American Board of Obstetrics and Gynecology**—The next written examination and review of case histories (part I) for all candidates of the American Board of Obstetrics and Gynecology will be held in various cities of the United States and Canada on February 12 (THE JOURNAL, June 19, p. 554). The part II examination will be held at Pittsburgh, June 9-14. Notice of the exact time and place of examination will be sent all candidates well in advance of the examination date. Candidates in military or naval service are requested to keep the secretary's office informed of any changes in address. If a candidate in service finds it impossible to proceed with the examinations of the board, deferment without time penalty will be granted under a waiver of our published regulations applying to civilian candidates. Additional information and application blanks may be obtained from Dr. Paul Titus, secretary, 1015 Highland Building, Pittsburgh 6.

**Federal Funds for Relocation of Physicians**—In the Senate an amendment was adopted to the bill proposed by Senator Russell, Georgia, providing an additional appropriation of \$345,000 for the United States Public Health Service to enable it to enter into agreements with private practicing physicians and dentists under which in consideration of the payment to them of a relocation allowance of not to exceed \$250 a month for three months plus the actual cost of travel and transportation of the physician or dentist and his family and household effects to a critical area in need of medical or dental care, such physicians or dentists will agree to move to and engage in practice in such area for a period of not less than one year. No action can be taken by the Public Health Service under this authorization except on application of a municipality, county, or other local subdivision of government duly approved by the

state health department having jurisdiction over the local subdivision. Furthermore, no contract may be made with any physician or dentist unless he "shall be admitted to practice by the state authority having jurisdiction of such new location." Each applicant subdivision must contribute \$100 to the total cost of the relocation allowance, travel and transportation costs of each physician or dentist and his family obtained by the applicant.

### LATIN AMERICA

**Health Activities in Latin America**—On November 4 the U S Department of State concluded negotiations with the republic of Uruguay preparatory to the establishment of a cooperative program to promote health and sanitation in Uruguay. As in other Central and South American republics in which similar programs are in operation, the Institute of Inter-American Affairs will furnish a group of physicians to be known as the field party to collaborate with the national health department in carrying out the program. Dr. Pascal F. Lucchesi, Montevideo, will be chief of the new field party.

**Course on Administration and Organization of Hospitals**—The first regional institute for hospital administrators will be held in Mexico City, January 16-29, under the auspices of the Pan American Sanitary Bureau and the Inter-American Association of Hospitals in cooperation with many other agencies. The Pan American Airways is offering a 25 per cent reduction in transportation to delegates of the congress. Among those participating in the institute will be:

Hon. George S. Messersmith, Ambassador from United States, American Embassy, Mexico, subject not announced.  
Mr. Felix Lamela, hospital consultant, Pan American Sanitary Bureau, Washington, D. C., Instruction to Students.  
Dr. Vane M. Hoge, chief, hospital facilities section, Bureau of State Services, U S Public Health Service, Washington, Surveying, Planning and Construction of Hospitals in a Community.  
Dr. Norberto Treviño, Jefe de la Oficina de Estudios de la Secretaría de Salubridad y Asistencia de Mexico, Work Developed by the Study Commission in Relation to Mexico's Hospital Construction Program.  
Arq. Jose Villagran Garcia, supervisor de Proyectos y Construcciones de Hospitales de la Secretaría de Salubridad y Asistencia, Mexico, Mexican Hospital Architecture.  
Dr. Federico Gomez, director del Hospital del Niño de Mexico, Organization and Management of the Hospital del Niño of Mexico.  
Dr. Donato Alarcon, director del Sanatorio para Enfermos Tuberculosos de Huipulco, Organization and Management of Tuberculosis Hospitals and Sanatoria.  
Dr. Malcolm T. MacEachern, associate director, American College of Surgeons, Chicago Clinical Records and Hospital Statistics.  
Dr. Arthur C. Bachmeyer, associate dean, Division of Biological Sciences, University of Chicago, Hospital Contributions to Professional Education.  
Dr. Robert H. Bishop Jr., president, American College of Hospital Administrators, Chicago, Specializations of the Graduate Nurse.  
Dr. Mario Garcia Montreil, Postgraduate Studies in Nursing in Mexico.  
Mr. Fred A. McNamara, chief, Business Management Section, Budget Bureau, Washington, Economics in the Hospital.  
Dr. Demofilo Gonzalez, Jefe de la Consulta Externa del Hospital del Niño, Mexico, Organization of the Outpatient Department.  
Dr. Carlos Gomez del Campo, Jefe del Depto. de Fisioterapia del Hospital Central Militar, Organization of the X-Ray and Physiotherapy Department.  
Dr. Luis Gutiérrez Villegas, Jefe de Laboratorios del Hospital del Niño, Organization of the Clinical Laboratory.  
Dr. Alberto Mejia, Medicinas Y Drogas—Distribucion Y Manejo.  
Mr. Walter Dashiell, senior sanitary engineer, Caribbean Unit, Pan American Sanitary Bureau, Guatemala Sanitary Engineering.  
Mr. Luis Villaseñor, superintendente del Hospital del Niño, Mexico, Physical Plant and Maintenance.  
Dr. George C. Dunham, assistant coordinator, Office of the Coordinator of Inter-American Affairs, Washington, Military Hygiene.  
Dr. Alfonso Cabrera, director del Hospital Central Militar de la Secretaría de la Defensa Nacional, Mexico, Organization of Hospital Militar.  
Dr. George Baehr, chief medical officer, Office of Civilian Defense, Washington, Hospitals During the War and Postwar Periods.  
Dr. Ramon del Villar, Military Hygiene in Mexico.  
Drs. Manuel Martinez Baez, subsecretario de Salubridad y Asistencia and Warren F. Diaper, assistant to the surgeon general, U S Public Health Service, Washington, Hospitals in the Public Health Program (a symposium).  
Mrs. Elena Rincon, director of Medical Social Service, Hospital Infantil, Mexico, Medical Social Service and the Hospital.  
Miss Edith Baker, principal consultant, Medicosocial Service, Children's Bureau, Washington Medical Social Service in the Community.  
Dr. Salvador Zubiran, consultor y supervisor Tecnico de Hospitales de Mexico, is director of the institute and Dr. Gustavo Baz, secretario de Salubridad y Asistencia, is president of the executive committee.

**Care of Rubber Workers**—In Honduras it has been decided to extend the medical care of rubber workers for another six months, the only change being that the Rubber Development Corporation will no longer be responsible for provision of lodging and food for medical aides employed by the service.

**Venereal Disease**—A venereal disease program was recently launched in Tegucigalpa, Honduras. A clinic will occupy space in the health center building now being constructed there.

**New Construction**—A public health center has been opened in Choluteca, Honduras, and one in Trujillo. Construction is

going forward on a health center and ministry of health building in Paraguay. A new center has started operation in Encarnacion and one is under construction in Villarrica, Paraguay.

**Personal**—Dr. Thomas Fort Sellers, special consultant to the Institute of Inter-American Affairs, left Atlanta, Ga., on November 9 for Bogota, Colombia, where he will study the present organization of the National Institute of Hygiene in Colombia and prepare a report thereon for submission to the minister of labor, health and social welfare of the Colombian government.

**Malaria**—An epidemic of malaria occurred in Tegucigalpa, Honduras. A search for the source of breeding of malaria bearing mosquitoes revealed an extensive area in the La Granja section of Tegucigalpa. A malaria survey was made in the Hernandarias region of the upper Parana River recently in connection with the plan of the Paraguayan government to locate a resettlement colony there. Brazil plans to increase its production of pyrethrum, which is used to "bomb" malaria carrying mosquitoes and other insects.

**Tuberculosis**—The office of the coordinator of Inter-American Affairs announced that the Inter-American republics are intensifying their campaigns against tuberculosis, which is second only to malaria as a "killer" in Spanish America. Special agencies have been created to cooperate with the Institute of Inter-American Affairs, and hospitals, health centers and dispensaries are being constructed to expand the anti-tuberculosis programs. Mobile x-ray units are being used and health personnel is being trained especially for the work. In many areas existing facilities for the treatment and prevention of malaria are being used for antituberculosis work, pending the construction of health centers. In Honduras the cooperating Servicio Cooperativo Interamericano de Salud Publica has established a new tuberculosis dispensary at Tegucigalpa and is building other sanatoriums. A visiting nurse service has been created and clinics organized to serve as diagnostic units. El Salvador's national department of health maintains tuberculosis dispensaries at San Salvador and Santa Ana, with additional control work carried out in health centers established by the Salvadorean Servicio Cooperativo. A mobile x-ray unit is making a systematic survey of tuberculosis in a large area of the central American republic, with full time graduate nurses supplementing the work by running down cases and sources of infection. Nicaragua has a special administrative division for tuberculosis work, with nurses' training as one of its most important objectives, in cooperation with the Servicio Cooperativo. Additional control measures for Nicaragua will include x-ray equipment at the National Health Department's clinic in Managua, a 12 bed tuberculosis pavilion at the San Pablo Hospital in Bluefields, a 50 bed pavilion attached to the Managua General Hospital and a smaller one at the San Juan de Dios Hospital at Granada. A public health education project to control the disease has been launched. Bolivia, Colombia and Ecuador are making progress in reducing the death rate from tuberculosis through the cooperative efforts of the Institute of Inter-American Affairs and the cooperating Servicio in those countries. In Bolivia the Servicio Cooperativo is formulating a program for tuberculosis control on a nationwide scale. Work has been started in Colombia with intensive campaigns against the disease in Buenaventura, Isthma and other communities, while Ecuador's Servicio Cooperativo is building a 300 bed hospital at Guayaquil. Chile and Peru likewise have drawn up plans for tuberculosis hospitals.

**Public Health**—A new children's clinic has been established in Guatemala to train Guatemalan nurses to be sent to other parts of the country as a public health measure. It is expected that their activities, when trained, will assist in the reduction of the infant mortality rate in Guatemala.

### CORRECTION

**Freedom from Infection Around Pin Sites**—In the review of "Manual of Fractures Treatment by External Skeletal Fixation," by C. M. Shaar, Captain, Medical Corps, U S Navy, and Frank P. Kreuz Jr., Lieutenant Commander, Medical Corps, U S Navy, published in THE JOURNAL November 27, page 871, the statement appears that the authors have had infection from pins in 157 consecutive cases. The word "not" was unfortunately omitted. The authors have not had infection from pins in 157 consecutive cases.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Nov. 6 1943

#### Reforms in Medical Education

In a letter to the London *Times* Lord Moran, president of the Royal College of Physicians, states that a committee of the college has been engaged in a survey of medical education and is concerned because we are always adding to the curriculum while nothing is ever taken away. Impossible demands are made on the student's time, he is bewildered by hours of listening. The habit of reflection is stamped out by a ceaseless drill of memorizing facts, so that even if he has a disposition to think for himself he is hurried out of it. Recently two committees of the college have issued reports which seek to foster a new way of looking at things. A committee on social and preventive medicine recommends the immediate setting up of professional and lay committees within the medical schools to strengthen the 'almoner's department' for the proper understanding of the patient's needs rather than of his means. The failure of many clinical staffs to consult the almoner about their patients is a prevailing defect. It should be part of every clinical examination to search closely into the influences of social and economic factors, and hospital physicians and surgeons should set aside an hour for interviewing relatives and talking about the patient's illness. Hospitals should have a 'humanity department' to arrange for a more sympathetic reception of patients and their families, better facilities for lodging the relatives of dying patients and improved bed accommodations so that no patient shall be allowed to die in an open ward. The course of public health in the medical schools should concentrate on social and preventive medicine and bring the student into close contact with the appropriate organizations in the community.

A committee on psychologic medicine refers to the shortcomings in psychiatric training. Newly qualified doctors should be trained to deal with common psychiatric problems. Study of normal psychology should precede the period of clinical teaching. At the beginning of the first clinical year there should be an introductory course on the psychiatric aspects of clinical medicine. There should be a systematic course on psychiatry throughout the clinical period in which psychiatric outpatients, psychiatric centers, visits to mental institutions, child guidance clinics and pediatric outpatient departments should play a part. Psychiatry and preventive medicine are beginning to find common ground in social study. Skilled assessment of the home and working conditions is frequently necessary. A clinician attached to the department of preventive medicine should therefore be appointed as supervisor of social studies to work in cooperation with all clinical departments.

#### The Health of Nurses

A committee of King Edward's Hospital Fund for London under the chairmanship of Sir Charlton Briscoe, has drawn up a memorandum of minimum standards for care of the health of hospital nurses. It is recommended that a physician should be appointed for the nursing staff whose responsibilities should not be limited to treatment of the sick but relate primarily to maintaining a good standard of health. Hospitals should require a detailed medical certificate with full family history from a nursing candidate's own doctor. A medical examination including x-ray examination of the chest and hemoglobin estimation should take place before or on admission. This should be repeated within six months of admission to the preliminary training school, at the end of the first year and annually there-

after. Records of these examinations and of the nurse's weight, taken quarterly, should be kept by the physician. No candidate should be accepted for training unless she has been vaccinated against smallpox and immunized against diphtheria. (At present this practice is observed only in one fourth of the training schools.)

Important recommendations are made with regard to diet, accommodations and hours of duty. Nurses should have three good meals a day besides tea. Each nurse should if possible have a room to herself with a floor area of at least 100 square feet. Baths and lavatories should be provided in the ratio of one to five or six nurses. A ninety-six hour fortnight on duty should be the maximum. The practice of allowing girls under 18 years of age to nurse patients with tuberculosis and other unsuitable conditions is deplored.

A complaint is made in some quarters of difficulties encountered by the nurse who reports herself sick, and there seems to be a general feeling among nurses that it takes courage to report sick unless she had a high temperature or some other unmistakable sign or symptom. The committee feels that it is a short sighted and mistaken policy not to make certain that even minor ailments receive early attention. Nurses should be encouraged to report as soon as they feel unwell. All nurses off duty should receive immediate medical care and should not be allowed to return to duty until passed as fit by a physician. A sickbay should be set aside for the nursing staff.

#### Good Health of the Population in Wartime

The remarkable fact that on the whole the health of our people has improved, notwithstanding the restrictions of the greatest of all wars, is again borne out by the latest reports. In an address to the Provisional Council for Mental Health the minister of health, Mr. Ernest Brown, stated that the stress of the war had not led to any increase in the more serious mental disorders. Admissions to mental hospitals have been substantially below the prewar average. The most probable explanation is the improvement in employment due to the war. Mental disorders, except schizophrenia, generally occur in middle and later life, and money worries are one of the principal stresses which lead to the breakdown of unstable persons. We all have many anxieties in this war, but unemployment is not one of them. Our experience confirms that of the Spanish civil war, in which war stresses did not increase the incidence of psychoses. There has been an increase, however, the extent of which cannot yet be measured, in the incidence of neuroses. A problem confronting us is the care of service men and women discharged from mental units and neurologic centers. Some scheme of after-care must be provided for those who need it, so that they will not become a burden to themselves and to the community. Skilled help must be given them in their struggle to become adjusted to civilian life and to get the kind of work for which they are suited. The Provisional National Council for Mental Health has been asked by the government to cooperate with the Mental After-Care Association in organizing a scheme to provide after care in the patient's own home after discharge from the hospital.

In his interim report for 1942 Dr. W. A. Daley, county of London medical officer shows that the health of Londoners during the third year of the war was satisfactory. The public health services, which the heavy bombing of London in 1940 and 1941 never succeeded in seriously disorganizing were able to deal with any difficulties created by the occasional raids of 1942. The figures of births and deaths were generally speaking favorable. In 1942 there were 40,654 births compared with 33,944 in 1941 and there were fewer deaths from all causes, 36,057 compared to 43,537 in 1941. There was also a reduction almost to the immediate prewar level in the death rate of infants. Maternal mortality—2.51 per thousand live births—was

lower than the figure for 1941, which was 305. On the other hand there was the usual war increase in tuberculosis 5,540 cases compared to 5,252 in 1941. But there was a substantial reduction in the number of deaths from tuberculosis, 2,447 against 2,895 in 1941. Routine medical inspection showed that the health of school children was well maintained. An investigation into the value of giving children capsules containing vitamins A, B, C and D did not show any improvement in general health. This is evidence that their diet already contained a satisfactory supply of these vitamins.

### PALESTINE

(From Our Regular Correspondent)

Oct 15, 1943

#### Infectious Hepatitis in Palestine

An instructive report has been given by Dr. Max Leffkowitz concerning infectious hepatitis in Palestine during the years 1941-1943. In his report Leffkowitz stated that the endemic occurrence of infectious hepatitis in this country has long been a generally accepted fact. As soon as the cold season sets in (October-November), almost invariably the number of cases begins to increase. Toward the end of 1941 a particularly severe outbreak was recorded. The social importance of the disease will be gathered from the morbidity statistics of the Jewish Workers' Sick Fund. With its more than 180,000 members, it can be considered representative of the whole civilian population in Palestine. From January 1941 to March 1943, 5,380 people fell sick with jaundice. This figure includes 3,887 cases during the epidemic period which started in July 1942. The statistics available, however, based on reported cases give only minimum data, and the morbidity rate can be estimated on a conservative basis as 4 per cent for the whole period.

A few cases in which hepatitis runs its course without the accompaniment of jaundice are a common occurrence. But as the source of data concerning this "hepatitis sine ictero"—a not very clearly outlined syndrome—are the private observations of a number of general practitioners, their number can only be estimated, so it must be supposed that for every 10 cases with jaundice 1 occurs without that symptom.

The incubation period of the jaundice, according to observations during the last epidemic, was twenty-one to thirty-one days. The danger of infection was apparently greatest in the first week after the outbreak of the disease. The average duration of the jaundice was twelve to fourteen days. Milder and more severe cases, lasting for four and more months, have been observed. Generally, jaundice disappeared without residue. Sometimes a sensitiveness in the region of the liver and urobilinuria were present for years after the acute illness. Immunity obviously takes place after the first attack of the jaundice, since recurrences have never been reported.

Clinically, no differentiation between the endemic and the sporadic type has so far been possible. As to the mode of transmission, all the evidence is in favor of direct contact, but there may also be communication through the agency of healthy carriers or abortive cases, probably by means of droplet infection. The infection usually develops where large crowds are gathering, particularly in the communal settlements and in the children's houses attached to them.

A special disposition toward jaundice was found among new immigrants, independent of age and sex. Children were more affected only when living in special children's houses. The disease took a more severe course during pregnancy, causing miscarriages and even deaths. Thus during the course of an epidemic in a country settlement, among 1,600 people 120 were attacked (7.5 per cent), while 7 of 8 pregnant women present there at that time contracted the infection, which in 4 led to abortion.

#### New Cutaneous Test in Bacillary Dysentery (Flexner)

At a meeting in Jerusalem in August, F. Dreyfuss and J. Gurevitch gave a short outline of their work with serologic examination and a cutaneous test in bacillary dysentery (Flexner). They discussed the difficulties usually encountered in diagnosis of bacillary dysentery, especially in chronic cases, in which cultures of the stools are rarely positive. After reviewing the controversial opinions of several authorities on serologic tests as an aid in laboratory diagnosis of bacillary dysentery and in detection of carriers, they deal with their own experience in this field, assuming a titer of Flexner agglutination 1:100 as suggestive of a previous infection. In order to improve the diagnostic results they have devised a test of cutaneous sensitivity to *Bacterium flexneri* vaccine, which is performed by injecting 0.1 cc. of a vaccine containing 50,000 organisms per cubic centimeter into the skin. An infiltration and swelling accompanied by intense reddening of the skin in a diameter of 3 to 4 cm. or more after twelve to twenty-four hours is considered as a positive response and seems to indicate an infection by *B. flexneri*.

Both methods have been applied in 69 cases, including controls, together with the usual means of laboratory and clinical examination. The test was studied in definite cases of acute bacillary dysentery when its results were positive, whereas the controls gave negative results. Both diagnostic methods have, in their opinion, proved their usefulness.

#### The Development of Gametocytes from Extraerythrocytic Forms in *Plasmodium gallinaceum*

S. Adler and J. Tchernomoretz, from the Department of Parasitology, Hebrew University, Jerusalem, reported in the September issue of the *Journal of the Palestine Jewish Medical Association* on the development of gametocytes from extraerythrocytic forms in *Plasmodium gallinaceum*. Adult fowls were given 150 mg. of quinine hydrochloride daily after inoculation with *Plasmodium gallinaceum* by the bites of *Aedes aegypti*. When the red cells showed a sufficient infection with small nonpigmented parasites the quinine was stopped. Thus the extraerythrocytic forms were the only possible source of these parasites in the red cells.

As the result of studies of the development of the parasites in the red cells after the cessation of quinine administration the authors stated that after twenty-seven and one-half hours the young gametocytes could be recognized and their maximum size is completed before the first cycle of erythrocytic schizogony. The extraerythrocytic forms therefore produce merozoites, which invade red cells and develop directly into gametocytes.

#### The Polish Golden Cross for Merit for Prof. I. J. Kligler

Prof. I. J. Kligler, head of the Department of Hygiene of the Hebrew University, was recently decorated with the Polish Golden Cross for Merit. The award has been made in recognition of Professor Kligler's services to Polish refugees in supplying them with typhus vaccine prepared in his department.

### Marriages

ALBERT FRAWLEY JACKSON JR., Lutaw, Ala., to Miss Maurice Brown of Fort Worth, Texas, in October.

FRANCIS A. LIFBERMAN, Allentown, Pa., to Miss Kathryn R. Ryan at Catasauqua, October 30.

THOMAS VIRGIL MATTHEWS to Miss Eleanor Adele Rhodes, both of Atlanta, Ga., October 9.

FRANK R. KING, Greenriver, Utah, to Miss Eldarene Settlemier of Duchesne, August 22.

ARTHUR N. KITFENION to Mrs. Elsie Jefferys, both of Aurora, Ill., October 12.



## Deaths

**Thomas Andrew Storey** \* Atlanta, Ga., Harvard Medical School, Boston, 1905, assistant professor of hygiene at the Stanford University, from 1902 to 1906, professor and director of hygiene and physical education from 1926 to 1929 and general director of the school of hygiene and physical education from 1929 to 1940, organized the department of hygiene, associate professor of physical instruction and training from 1906 to 1910, professor of physical instruction and hygiene from 1910 to 1913 and professor of hygiene from 1913 to 1926 at the College of the City of New York, served as president, Northern California Public Health Association, fellow of the American Association for the Advancement of Science, American Academy of Physical Education, American Public Health Association and the American Physical Education Association, member of the American Physiological Society, Society of Experimental Biology and Medicine and the San Francisco Academy of Medicine, president of the Society of Directors of Physical Education in Colleges, 1908-1909, and the American Student Health Association from 1925 to 1927, member of the hygiene reference board of the Life Extension Institute, state inspector of physical training with military training commission, Albany, from 1917 to 1921, secretary general of the fourth International Congress on School Hygiene and editor of its proceedings, chairman of the National Conference on College Hygiene in 1931, executive secretary of the U S Inter-Departmental Social Hygiene Board, Washington, D C, from 1918 to 1921, since 1940 special consultant, American Social Hygiene Association, author of the New York state program and syllabus on physical training in 1926 awarded the Luther Halsey Gulick Medal "for distinguished service in physical education and allied fields", died in the Crawford W Long Hospital October 27, aged 68, of coronary thrombosis and arteriosclerosis

**Lyman Brooke Tibbets** \* Washington, D C, George Washington University School of Medicine, Washington, 1921, specialist certified by the American Board of Otolaryngology, clinical instructor in otolaryngology at his alma mater, associate surgeon, Episcopal Eye, Ear and Throat Hospital, visiting otolaryngologist, Glenn Dale Sanatorium, Glenn Dale, Md., Gallinger Municipal and the George Washington University hospitals, member of the medical council and otolaryngologist, Sibley Memorial Hospital, where he died suddenly September 19, aged 49, of cerebral hemorrhage

**Martin Luther Arthur**, Patoka, Ind., Medical College of Indiana, Indianapolis, 1898, member of the Indiana State Medical Association, a captain in the medical corps of the U S Army during World War I on the staffs of the Gibson General Hospital, Princeton, and the Protestant Deaconess Hospital, Evansville, president of the Patoka National Bank, died October 20, aged 67, of ruptured aortic aneurysm

**Charles Augustus Atwood**, Taunton, Mass., Harvard Medical School, Boston, 1883, member of the Massachusetts Medical Society, medical examiner in the first Bristol district, member of the staff of the Morton Hospital and a consultant of the Taunton State Hospital, died October 10, aged 82, following an operation on the prostate gland

**Ned Alvin Balding** \* Lincoln, Ill., St Louis University School of Medicine, 1912, past president of the Logan County Medical Society, served during World War I, on the staffs of the Evangelical Deaconess and St Clara's hospitals, died suddenly October 6, aged 57

**Frank L Barnes** \* Houston, Texas, College of Physicians and Surgeons, Baltimore, 1896, a member of the founders group of the American Board of Surgery, member of the Southern Surgical Association and the American Association for the Surgery of Trauma, fellow of the American College of Surgeons, veteran of the Spanish-American War, visiting surgeon, St Joseph's Infirmary, died October 2, aged 71, of coronary occlusion

**Edwin George Henry Beck**, Atlanta, Ga., University of Michigan Homeopathic Medical School, Ann Arbor, 1903, died October 8, aged 65

**Victor Biddle**, Steubenville, Ohio, College of Physicians and Surgeons, Baltimore, 1909, member of the Ohio State Medical Association, served during World War I, on the staff of the Ohio Valley Hospital, died October 3, aged 68, of angina pectoris

**Albert Sven Bjornson**, Denver, University of Denver Medical Department, 1886, died in a Grand Junction, Colo., hospital October 6, aged 93, of a fractured hip received when struck by an automobile last July

**William Waldo Blackman**, Brooklyn, New York Homeopathic Medical College, New York, 1877, medical director of the Prospect Heights Hospital, vice chairman, board of trustees, New York Medical College, died October 20, aged 87, of chronic myocarditis

**Thomas Cleveland Brewer**, Dallas, Texas, Southern Methodist University Medical Department, Dallas, 1912, on the staff of St Paul's Hospital, died October 11, aged 55, of cerebral hemorrhage

**Edward Lyman Brown** \* Bloomington, Ill., Northwestern University Medical School, Chicago, 1894, for many years a member of the board of education, died October 10, aged 79, of heart disease

**Thomas Edward Brown**, Brooklyn, University of the City of New York Medical Department, New York, 1890, died October 8, aged 75, of carcinoma of the stomach

**Youra Spence Brown**, Halls, Tenn., Emory University School of Medicine, Atlanta, Ga., 1917, served overseas during World War I, died in the Baptist Memorial Hospital, Memphis, October 6, aged 51, of coronary thrombosis

**Arthur Earnest Burkhardt** \* Tipton, Ind., Indiana University School of Medicine, Indianapolis, 1908, a member of the examining board of the Selective Service of Tipton County, part owner of the Emergency Hospital, on the staff of the Mercy Hospital, Elwood, where he died October 19, aged 67, of coronary occlusion and acute pulmonary edema

**Robert Golden Carlin**, New York City, Jefferson Medical College of Philadelphia, 1902, member of the Medical Society of the State of New York, a captain in the medical corps of the U S Army during World War I, member of the executive committee, alumni association of Jefferson Medical College, consulting surgeon, Downtown Hospital, surgeon, Midtown Hospital, where he died October 3, aged 65, of cerebral hemorrhage

**Jonas Whittier Carlisle** \* Robinson, Ill., Chicago Physio-Medical College, 1897, for many years a member of the grade and high school boards of education, chairman of the board of health, charter member of the Rotary Club, died in the Robinson Hospital October 8, aged 75, of uremia following an operation for acute intestinal obstruction

**Louis Peter Casper**, Louisville, Ky., University of Louisville Medical Department, 1904, member of the Kentucky State Medical Association, on the staff of SS Mary and Elizabeth Hospital, where he died October 12, aged 61, of acute dilatation of the heart

**George Cerio**, Middletown, R I., Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1891, died in the Newport Hospital October 28, aged 77

**Thomas Horace Cheatham** \* Fort Worth, Texas, University of Tennessee Medical Department, Nashville, 1903, chief examiner for the Selective Service Board number 6, died October 11, aged 69, of coronary occlusion

**Thomas Vincent Connolly** \* Paterson, N J, Georgetown University School of Medicine, Washington, D C, 1913, specialist certified by the American Board of Otolaryngology, fellow of the American College of Surgeons, served during World War I a member of the fire and police commission, chief otolaryngologist, St Joseph's Hospital, where he died October 21, aged 53, of embolism following an operation

**Aurelien Constantineau**, Woonsocket R I., School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1895, member of the Rhode Island Medical Society, on the staff of the Woonsocket Hospital, died October 13, aged 73, of myasthenia gravis

**Harold Monford Cox**, Indianapolis, Indiana University School of Medicine, Indianapolis 1921 served during World War I member of the Indiana State Medical Association, on the staff of St Vincent's Hospital, where he died October 14, aged 51 of cerebral hemorrhage

**Vance Monroe Cox** \* Bristol, Va., University of Nashville (Tenn.) Medical Department 1909 served as medical examiner for the induction center at Abingdon on the staff of the King's Mountain Memorial Hospital died in the Johnston Memorial Hospital, Abingdon, October 15, aged 63 of heart disease



**W O'Connor Cox**, St. Paul, Va., University College of Medicine, Richmond, 1912, director of St. Paul National Bank; died October 20, aged 58, of angina pectoris

**William Eldridge Crain**, Swedesboro, N. J., University of Toronto Faculty of Medicine, 1894, member of the Medical Society of New Jersey, past president of the Gloucester County Medical Society, died October 1, aged 71, of angina pectoris

**Humphrey W. Curtis**, Hilton Village, Va., Medical College of Virginia, Richmond, 1901, died in the Elizabeth Buxton Hospital, Newport News, October 19, aged 66

**William Henry Cushing**, Southington, Conn., Bellevue Hospital Medical College, New York, 1892, for many years school physician and health officer, served on the board of education and as president of the board of water commissioners, on the staffs of the Meriden Hospital, Meriden, and the Bradley Memorial Hospital, died in St. Mary's Hospital, Waterbury, October 1, aged 74, of sarcoma of the bladder

**Theodore Diller**, Pittsburgh, University of Pennsylvania Department of Medicine, Philadelphia, 1886, formerly associate professor of neurology at the University of Pittsburgh School of Medicine, member of the Medical Society of the State of Pennsylvania and the American Neurological Association, for many years on the staff of St. Francis Hospital, where he died October 6, aged 80, of heart disease and pneumonia

**William Bernard Donahay**, Washington, D. C., Georgetown University School of Medicine, Washington, 1927, on the staff of the Providence Hospital, where he died October 2, aged 41, of uremia

**Francis Marion Dwight**, Wedgfield, S. C., University of Maryland School of Medicine, Baltimore, 1889, member of the South Carolina Medical Association, died October 17, aged 82

**B. Franklin Eikenberry**, Peru, Ind., the Hahnemann Medical College and Hospital, Chicago, 1896, member of the Indiana State Medical Association, past president of the Miami County Tuberculosis Society, a member of the Rotary Club, served on the staff of the Dukes-Miami County Memorial Hospital, died October 23, aged 73, of carcinoma of the bladder with metastases

**McPherson Gregorie Elliott**, Beaufort, S. C., Medical College of the State of South Carolina, Charleston, 1898, formerly associated with the U. S. Public Health Service, died October 3, aged 71

**Zenas Horace Ellis**, New York, University of Vermont College of Medicine, Burlington, 1920, member of the Medical Society of the State of New York and the American Academy of Ophthalmology and Otolaryngology, specialist certified by the American Board of Ophthalmology, formerly instructor in anatomy at his alma mater, died in the Doctors Hospital, October 20, aged 48, of ruptured esophageal varix

**John Meeks Firmin** Ⓢ Findlay, Ohio, University of Wooster Medical Department, Cleveland, 1897, served overseas during World War I, chief of staff, Findlay Hospital, died October 4, aged 70, of acute myocarditis

**Matthew Fishman**, Brooklyn, Eclectic Medical College, Cincinnati, 1920, died October 12, aged 50

**Lewis Fox Frissell** Ⓢ New York, Columbia University College of Physicians and Surgeons, New York, 1900, professor of clinical medicine at his alma mater, fellow of the American College of Physicians, consulting physician, North County Community Hospital, Glen Cove, N. Y., and St. Luke's Hospital, a director of the Fifth Avenue Bank, died in the Doctors Hospital, October 24, aged 71, of cerebral hemorrhage

**Henry J. Johnston**, Tontogany, Ohio, Toledo Medical College, 1900, member of the Ohio State Medical Association, a member of the board of health of Wood County, a trustee of the Bowling Green State University, surgeon for the Baltimore and Ohio Railroad, on the staff of the Toledo Hospital, where he died October 30, aged 67, of coronary thrombosis

**Charles Bowden Jones**, Summerhill, Pa., Medico-Chirurgical College of Philadelphia, 1906, member of the Medical Society of the State of Pennsylvania, for many years adviser of the local board of health and member of the Summerhill Borough Council, served as a member and president of the school board, died in the Conemaugh Valley Memorial Hospital, Johnstown, October 9, aged 68, of coronary occlusion

**Major Osceola Jones**, Brooklyn, Howard University College of Medicine, Washington, D. C., 1929, member of the Medical Society of the State of New York, died October 8, aged 43

**John Hays Lee**, Cannelton, Ind., Kentucky School of Medicine, Louisville, 1885, member of the Indiana State Medical Association, died in St. Anthony's Hospital, Terre Haute, October 27, aged 86

**Gordon Lindsay**, Freeport, N. Y., Columbia University College of Physicians and Surgeons, New York, 1905, also a pharmacist, on the staffs of the Nassau Hospital, Mineola, and the Meadowbrook Hospital, Hempstead, died October 19, aged 68, of melanosisarcoma

**William Armstrong Lindsay** Ⓢ Niles, Ohio, Ohio Medical University, Columbus, 1898, on the staff of the Warren City Hospital, Warren, died in the Youngstown Hospital, North Side Unit, October 24, aged 69, of carcinoma

**Arthur Singleton Love**, Ballinger, Texas, University of Texas School of Medicine, Galveston, 1897, part owner of the Halley and Love Sanitarium, where he died October 12, aged 71, of uremia

**William Johnson Manning**, Washington, D. C., National University Medical Department, Washington, 1903, for many years medical officer of the government printing office, major, medical corps, U. S. Army, during World War I, died in St. James Hospital, Newark, October 27, aged 73, of diabetes mellitus, myocardial degeneration and arteriosclerosis

**Nelvin Merritt Moore**, Rock Island, Ill., Rush Medical College, Chicago, 1895, died October 24, aged 74, of angina pectoris

**Charles Robert Nelson**, Jamestown, Kan., Kansas City (Mo.) Hahnemann Medical College, 1904, member of the Kansas Medical Society, served as health officer of Washington County and coroner of Wood County, formerly on the staff of St. Joseph's Hospital, Concordia, died October 16, aged 65, of Parkinson's disease

**James Deering Nutting**, Hallowell, Maine, Baltimore University School of Medicine, 1903, member of the Maine Medical Association, served as chairman of the school board and trustee of the Hubbard Free Library, died in the Maine General Hospital, Portland, October 24, aged 68, of heart disease

**Oscar Burton Ormsby** Ⓢ Murphysboro, Ill., St. Louis College of Physicians and Surgeons, 1897, president of the Murphysboro park commission, member of the Rotary Club and chamber of commerce, on the staff of St. Andrew's Hospital, where he died October 24, aged 67, of cerebral hemorrhage

**Walter Harburt Paine**, Sealy, Texas (licensed in Texas under the Act of 1907), served on the staffs of the Burns and Lutheran hospitals, died October 14, aged 78, of myocardial degeneration

**John Thomas Peyton**, White House, Tenn., University of Tennessee Medical Department, Nashville, 1888, died October 5, aged 86

**Fred William Phillips**, River Rouge, Mich., Detroit College of Medicine, 1913, member of the Michigan State Medical Society, on the visiting staffs of the Providence and Delray General hospitals, Detroit, and the Wyandotte General Hospital, Wyandotte, where he died October 23, aged 60

**Philip Russell Polk**, Morgan City, Miss., Chattanooga (Tenn.) Medical College, 1901, served during World War I, died October 11, aged 64

**Elisha Pender Porter**, Brooklyn, Columbia University College of Physicians and Surgeons, New York, 1900, served on the staff of the Swedish Hospital, died October 23, aged 68, of a self-inflicted bullet wound

**William Newton Pringle**, Johnstown, Pa., Western Pennsylvania Medical College, Pittsburgh, 1889, member of the Medical Society of the State of Pennsylvania, for many years on the staff of the Conemaugh Valley Memorial Hospital, died October 20, aged 87

**John G. Puryear**, Mayfield, Ky., Kentucky School of Medicine, Louisville, 1903, served in France during World War I, died October 22, aged 67

**Conner Ouerbacher Reed** Ⓢ Bellingham Wash. Mamm Medical College, Cincinnati 1904, served during World War I, colonel, medical reserve corps, U. S. Army, not on active duty, served as a member of the board of health and board of education of Bellingham, formerly county coroner, on the staffs of St. Luke's Hospital and St. Joseph's Hospital, where he died October 9, aged 62, of heart disease.

**Omar Hollingsworth Rees** ♂ Knightstown, Ind Medical College of Indiana, Indianapolis, 1900, on the staff of the Henry County Hospital, Newcastle, died October 24, aged 76 of coronary occlusion

**James Jefferson Reitz**, Walnutport, Pa, Hahnemann Medical College and Hospital of Philadelphia, 1903, also a minister, died October 28, aged 83, of coronary disease

**Barton D Rhodes**, Riverside, Ga, Georgia College of Eclectic Medicine and Surgery, Atlanta, 1906, died October 6, aged 64

**Calvin M Rice**, Ravenna, Ohio, Western Reserve University Medical Department, Cleveland, 1881, died in the Robinson Memorial Hospital October 24, aged 86, of cerebral hemorrhage and pulmonary thrombosis

**Simplicio Righi** New York Regia Università degli Studi di Bologna, Facoltà di Medicina e Chirurgia, Italy, 1897, died in St Vincent's Hospital October 16, aged 73, of tumor of the bladder

**Charles William Ryan** Battle Creek Mich University of Michigan Homeopathic Medical School, Ann Arbor, 1896, veteran of the Spanish-American War, formerly mayor, died October 15, aged 70

**Roland Eugene Schoen**, Beaver Dam Wis Rush Medical College Chicago 1903 served as health officer of Beaver Dam and adjoining townships elected the first chief of staff at St Joseph's Hospital where he died October 9 aged 65 of cardiovascular renal disease

**William E Schoonover**, Springfield, Ohio, Fulte Medical College Homeopathic, Cincinnati 1885, died October 9 aged 85

**Frank Carpenter Shaut**, Savona N Y Syracuse University School of Medicine 1905, since 1927 health officer of the village of Savona on the staff of the Bath Memorial Hospital, Bath, died October 14, aged 65 of heart disease

**Walter Taylor Sheets**, Salt Lake City Columbia University College of Physicians and Surgeons, New York, 1926 formerly on the staff of the Dr W H Groves Latter-Day Saints Hospital, served on the staffs of various Veterans Administration facilities, died in Washington, D C, October 18 aged 40, of coronary heart disease with thrombosis

**Richard Cotton Shepherd** ♂ Scranton Pa, Jefferson Medical College of Philadelphia, 1906 chief medical inspector for the city school district, died October 30 aged 65

**MacCormick Smetters**, Waverly Ill Bennett College of Eclectic Medicine and Surgery, Chicago, 1898, Rush Medical College, Chicago, 1900 member of the Medical Association of Montana, died in St John's Hospital, Springfield, October 19, aged 66, of carcinoma of the prostate with metastases and secondary anemia

**Charles Francis Snow**, Adamson, Okla, College of Physicians and Surgeons, Dallas, Texas, 1906, died at Beaumont, Texas, in October, aged 69, of coronary occlusion

**Jesse Greene Storie**, Grundy, Va, Tennessee Medical College, Knoxville, Tenn, 1898 member of the Medical Society of Virginia, died October 20, aged 75, of pneumonia

**James Preston Stubblefield**, St Louis, Hospital College of Medicine, Louisville, Ky, 1906, for many years a minister died October 25, aged 88 of uremia and chronic nephritis

**Thomas J Taylor**, Rentz, Ga, University of Georgia Medical Department, Augusta, 1894, died August 26, aged 74

**Clara Louise Hunt Thompson**, Boston College of Physicians and Surgeons Boston, 1915 member of the Massachusetts Medical Society, served on the staff of the New England Hospital for Women and Children, died September 15 aged 72, of heart disease

**Charles Willis Tidball** ♂ Independence, Iowa Jefferson Medical College of Philadelphia 1913, served during World War I, for six years a member of the board of education on the staff of the Peoples Hospital where he died September 24 aged 55 of coronary occlusion

**Robert Bruce Tilley**, Plato Mo University of Missouri School of Medicine, Columbia, 1899, member of the Missouri

State Medical Association, died in the Louise G Wallace Hospital, Lebanon, October 12, aged 70, of pneumonia

**Benjamin Torrens**, New York, College of Physicians and Surgeons, New York, 1893, on the staff of the New York Polyclinic Medical School and Hospital, died October 23, aged 71

**John Edward Vassallo**, Malden, Mass, College of Physicians and Surgeons, Boston, 1917, died August 27, aged 63

**Fortunato Vitanza** ♂ Philadelphia, Regia Università degli Studi di Roma, Facoltà di Medicina e Chirurgia, Italy, 1907, on the staff of the Lankenau Hospital, where he died October 30 aged 63, of cerebral hemorrhage

**Charles E Wallace**, New Sharon, Iowa, Miami Medical College, Cincinnati, 1884, member of the Iowa State Medical Society a member of the school board and postmaster, died September 24, aged 85, of cerebral thrombosis

**Frank J Williams**, Butte, Mont, Chicago College of Medicine and Surgery, 1908, member of the Medical Association of Montana, city physician, on the staff of St James Hospital, died October 22, aged 59, of coronary thrombosis

**Sam H Williamson** ♂ Harrah, Okla, Memphis (Tenn) Hospital Medical College, 1904, died in Oklahoma City September 14 aged 64

**Anna R Grace Flanders Wilson**, Morristown, N J, New York Medical College and Hospital for Women Homeopathic, New York, 1899, died September 13, aged 66, of static pneumonia, chronic myocarditis, myelitis and paraplegia

**William Lester Wilson**, Santa Cruz, Calif, Medical College of Indiana, Indianapolis 1887, died in the Santa Cruz Hospital October 14 aged 82

**Eugene J Wolff**, Waukomis, Okla, Missouri Medical College, St Louis, 1894, member of the Oklahoma State Medical Association past president of the Garfield County Medical Society, died in the Enid General Hospital, Enid, October 30, aged 74, of coronary thrombosis

**Harry Wells Woodward**, Washington, D C Hahnemann Medical College and Hospital of Philadelphia, 1891, died in the Garfield Memorial Hospital October 11, aged 75, of injuries received when struck by a taxicab

**Wade Woodward**, Decatur, Ga, University of Georgia Medical Department, Augusta, 1899, died September 26, aged 75, of heart disease

**Asa Wright**, San Antonio, Texas, University of Oklahoma School of Medicine Oklahoma City, 1913, veteran of the Spanish-American War, died October 23 aged 70 as the result of a fall

**Eugene Cushman Wylie**, ♂ Boston, Harvard Medical School, Boston 1895, an Affiliate Fellow of the American Medical Association for many years a member of the staff of the Children's Hospital died September 15 aged 71

**Harry M Yancey**, Mays Lick, Ky, Medical College of Ohio, Cincinnati, 1896 served in the medical corps of the U S Army during World War I died in the Hayswood Hospital, Maysville September 17, aged 71, of cardiovascular disease and hypertension

**Francis Albert Young**, Montgomery, Texas Kentucky School of Medicine Louisville 1891, member of the State Medical Association of Texas, at one time county health officer died September 3, aged 90 of heart disease

## KILLED IN ACTION

**Fay Broughton Begor**, Tahawus N Y McGill University Faculty of Medicine, Montreal, Que, Canada 1941 diplomate of the National Board of Medical Examiners interned at the Montreal General Hospital commissioned a lieutenant (jg) in the medical corps of the U S Naval Reserve on July 22 1942 and began extended active duty Sept 1 1942 decorated posthumously with the medal of the Purple Heart died in the South Pacific area September 9 aged 26 of multiple wounds and gas bacillus gangrene received in action



LIEUT (jg) FAY B BEGOR (MC),  
USNR, 1916-1943

## Correspondence

### EPIDEMIC JAUNDICE

*To the Editor*—According to the observations of Dietrich (*Deutsche med Wchnschr* 68 1 [Jan 2] 1942), catarrhal icterus and epidemic hepatitis are probably identical diseases of virus origin and, although their course is usually benign, they may lead to cirrhosis or to acute yellow atrophy of the liver. In almost every war in the last hundred and fifty years epidemics of jaundice have been observed among soldiers. In the present as in previous wars it has been noted that this form of jaundice occurs chiefly during the fall and early winter months. An editorial in *THE JOURNAL* (November 6, p 636) comments on apparently the same variety of epidemic jaundice observed among troops by Cameron and by Van Rooyen and Gordon. The disease is characterized by abdominal discomfort, an irregular type of fever, jaundice, clay colored stools, absence of leukocytosis and recovery. Animal inoculation experiments are negative.

At this moment and in this connection I think it is important to recall that, during a period of ten weeks commencing the middle of December 1919, 16 patients were admitted to Bellevue Hospital suffering from a variety of acute hemorrhagic jaundice (Symmers, Douglas *Epidemic Acute Hemorrhagic Jaundice of Toxic Origin*, *THE JOURNAL*, April 24, 1920, p 1153). Of this number 9 died—a mortality of 56.2 per cent. In 6 cases necropsies were done. Clinically and anatomically the disease presented features which, on the one hand, were similar to those of yellow fever and spirochetal jaundice and, on the other, to acute yellow atrophy of the liver. At the time it was a subject of remark that patients with so-called catarrhal jaundice were admitted to Bellevue Hospital during the period of the epidemic in numbers noticeably in excess of the routine experience of previous years, and the possibility was discussed that at least some of them were suffering from a mild form of the epidemic disease.

In 8 of the 16 cases blood from living patients was stained in films for spirochetes, but not one was found. Appropriate quantities of fresh blood or urine, or both, depending on the stage of the disease, were injected into guinea pigs in a further effort to determine the relationship of the disease, if any, to infective or spirochetal jaundice. The results were negative. Culture mediums inoculated with blood remained sterile, tests for heavy metals were negative, and no spirochetes could be demonstrated in sections of the liver and kidney impregnated according to the older method of Levaditi. Clinically the disease was divisible into two groups of cases. One group was characterized by jaundice of the conjunctivas preceded by lassitude and digestive disturbances. In the course of a few days jaundice became intense and was accompanied by hemorrhages—epistaxis, hematemesis, melena, hemorrhagic vesicles about the lips and chin and linear or splotchlike extravasations in the skin and visible mucous membranes, those in the skin corresponding to scratch marks, the pressure of bed clothing and other trivial injuries. By this time the patient was languid, drowsy or stuporous or irritable and restless, sometimes irrational. Moderate irregular fever was the rule, and the stools were clay colored. The majority of the patients complained of pains in different localities, and even though stupor was pronounced, signs of tenderness could be elicited by pressure on various parts of the body. In 2 cases epigastric pain and tenderness and vomiting together with jaundice and clay colored stools seemed to point to obstructive disease of the biliary drainage system, and the abdomen was opened, but no obstacle was found to the escape of bile from the common duct. Post mortem, in addition to jaundice and hemorrhages, the disease was attended by cloudy swelling, by dissociation of the parenchyma cells of the liver and foci of

necrosis, and by cloudy swelling or necrosis of the tubular epithelium of the kidneys. The second group was marked by wild delirium and rapid death. Postmortem examination showed hemorrhagic and necrotic changes in the liver indistinguishable from those of acute yellow atrophy.

From experience at Bellevue Hospital I am led to the conclusion that there is a form of epidemic hemorrhagic jaundice in which the mortality is high and there is no spirochetal infection, although virus infection cannot be denied and probably exists, and that the disease belongs in the same group as the so-called acute catarrhal jaundice and the epidemic hepatitis observed in more recent years by Dietrich and others in army hospitals.

DOUGLAS SYMMERS, M.D., New York  
General Director of Laboratories, Department  
of Hospitals, City of New York

### EPIDEMIC HEPATITIS

*To the Editor*—The editorial on epidemic hepatitis in *THE JOURNAL*, November 6, was of considerable interest to me. At Yale the records show that we have had three epidemics of jaundice in the past twenty-two years, the largest, of 119 cases, being in the academic year 1921-22, with 59 cases in 1935-36 and 89 cases in 1938-39. In the 1921-22 epidemic 63 cases had their onset within a fifteen day period in November. In 1935-36 22 cases occurred in January and February and 25 in April and May, and in 1938-39 40 cases occurred in the months of January and February 1939. In the intervening years the incidence has varied between 4 in 1942-43, when our student body was depleted, to 42, with an average of 22 cases a year and a median of 21.

A report of the 1921-22 epidemic was published by Hiscock and Rogers in *THE JOURNAL*, Feb 18, 1922. There are great similarities between the disease which we attempted to describe and the clinical picture of epidemic hepatitis as recorded in the editorial referred to. We differ, however, in one respect, for the tender eyeballs and pain on movement which Cameron says are lacking we found in 20 per cent, and subsequent observation has led me to be suspicious of eventual development of jaundice in patients presenting these symptoms. It is often not true, but it has been a guide often enough to keep the suspicion alive.

Our cases in general were milder. The period of hospitalization was shorter and the boys seemed to recover successfully even though the icterus had not disappeared completely when they were discharged. There are variations in the severity of the disease in our group, and in the 1938-39 group a number were able to continue at class throughout their illness. These men had usually had very mild febrile and gastrointestinal symptoms a few days before and came in only after jaundice had developed, when they were apparently starting to feel better.

Those severely involved are pretty sick for a few days, with fevers up to 102 or 103 F, usually becoming normal in three to five days. It is possible, and has happened a number of times, for a man to be discharged from the infirmary with the diagnosis of "grip," go about his business for a day or so, apparently well, and then start having anorexia and nausea and be sent back to the infirmary with jaundice. Such cases have occurred, with the patient sick at home with the initial febrile attack and sent back here as recovered, only to develop the jaundice symptoms after arrival. In the severer cases vomiting, sometimes persistent, is more common than it would appear to be in Cameron's cases.

Frequently the initial febrile period is unaccompanied by any respiratory symptoms or signs. Many patients, however, have some evidence of a respiratory infection at or before the onset of fever or of the gastrointestinal symptoms. We have thought that frequently there was an upswing in the jaundice cases in

periods when colds were particularly prevalent. This seems to be true to this extent. In the years of jaundice epidemics respiratory infection is also unusually prevalent at the same time. The reverse is not true, however, and many months of high incidence of respiratory infection show nothing more than an occasional sporadic case of jaundice.

In epidemic times there are undoubtedly cases of the same malady without icterus. They seemed to be more prevalent as an epidemic period was waning. In all probability there are such cases sporadically, but they are much more difficult if not impossible, to recognize. There is a definite suggestion of similarity to infantile paralysis in these abortive cases and also in the continued occurrence of sporadic cases with epidemic conditions breaking out at times for reasons which remain obscure.

In the endemic stage cases appear at long intervals and without any demonstrable relation to previous cases.

The length of the incubation period as stated in the editorial is much longer than the period we thought we found in 1921, namely from three to nineteen days, averaging about a week. Our evidence may not be conclusive, but that was the way it looked to us at the time.

ORVILLE F. ROGERS, M.D.,  
Yale University Department of Health  
New Haven, Conn.

#### POSTURE DURING EXAMINATION OF RAPID HEART

To the Editor —In the November 13 issue of THE JOURNAL, page 693 there appears a clinical observation on the rapid heart by Dr L. S. Luton of St. Louis. In this communication Dr. Luton points out that he has been able to reduce the cardiac rate in cases of paroxysmal tachycardia by asking the subject to bend forward to at least a 90 degree angle.

I have also been using this procedure of stimulating the vagus by increasing intrathoracic pressure. Due credit for this observation should be given to Dr. Raymond L. Gregory of the Department of Internal Medicine of the University of Texas School of Medicine at Galveston. He mentioned in his lectures that an attack of paroxysmal tachycardia is frequently stopped completely or noticeably slowed when a patient bends over to tie a shoelace or other such act which involves a comparable change in position.

LOUIS L. FRIEDMAN, M.D., New Orleans  
Medical Resident, L. S. U. Medical School  
Division, Charity Hospital

To the Editor —I am in receipt of the copy of a letter sent you by Dr. Louis L. Friedman, medical resident, Louisiana State University Medical School, concerning my article "Posture During Examination of Rapid Heart" in the November 13 issue of THE JOURNAL, in which he calls attention to the use of "bending" by Dr. R. L. Gregory of his school to stop a paroxysmal tachycardia attack (treatment).

In my article I specifically excluded this observation as follows: "While this procedure [bending] has been used along with a great many others to influence an attack of paroxysmal tachycardia, a survey did not disclose mention of the use of a 90 degree bend for the specific purpose of slowing the heart as an aid in its examination."

The purpose of my note was to invite the use of "bending" in the examination (not treatment) of rapid hearts of all kinds. Dorland's Medical Dictionary, edition 19, 1941, describes Erben's reflex as "a slowing down of the pulse upon bending head and trunk strongly forward, said to indicate vagal excitability." Stedman's Medical Dictionary edition 12 under Erben's phenomenon says "In neurasthenia, if patient squats or bends over for several slow heart beats occur."

L. S. LUTON, M.D., St. Louis

#### HYPERTENSION IN THE MILITARY SERVICE

To the Editor —In the editorial (THE JOURNAL, November 13, p. 702) titled "Hypertension in Military Service," excessive variability of the normal blood pressure was defined as a heralding sign of subsequent hypertension. It was emphasized that persons who show a transient rise in pressure when exposed to the emotional stress of a physical examination must be regarded as likely candidates for the disease.

Although this assertion may be true for young adults, there is mounting evidence to indicate that "vascular hyperreactors" is a common finding among normal persons over the age of 40. In a recent report on the cold pressor response of 200 normal men between the ages of 40 and 69 years (AM HEART J 26:398 [Sept.] 1943) I presented data which strongly suggest that the reactivity of the blood pressure normally increases appreciably with age. An increase in the response of the blood pressure with succeeding decades was observed in "hyporeactors" as well as in "hyperreactors." The incidence of hyperreaction moreover increased with age from 24.2 per cent in the fifth decade to 50.1 per cent in the seventh decade.

These observations indicate that a normal person may show little fluctuation in blood pressure in youth and considerable variability in blood pressure in middle age. Raab, using the stimulus of carbon dioxide inhalation, was among the first to note that the vasopressor response of normal subjects increases with age (Ztschr. f. klin. Med. 118:618, 1931). This rise in response he attributed to a corresponding increase in irritability of the cerebromedullary vasoconstrictor centers with advance of age.

In a study soon to be reported it will be shown that approximately 40 per cent of persons over 40 years of age whose pressures on first examination are below 140/85 are hyperreactors to the cold pressor test. Consequently the theory that such reactivity of the blood pressure per se is a precursor of permanent hypertension must be rejected for this age group. This conclusion appears all the more justified when it is considered that Hines's studies indicate that an initial blood pressure below 140/85 generally means that hypertension will not develop subsequently (THE JOURNAL, July 27, 1940, p. 271).

HENRY I. RUSSEK, M.D.,  
U. S. Marine Hospital,  
Staten Island, N. Y.

#### AMPUTATED LIMBS AS SOURCE FOR NERVE GRAFT

To the Editor —The use of preserved cadaver nerve grafts has been suggested for bridging the gaps left in nerves following trauma or the excision of neuromas (Klemme, R. M., Woolsey, R. D. and de Rezende, N. I. Autopsy Nerve Grafts in Peripheral Nerve Surgery, THE JOURNAL October 16, p. 393). Cadaver material may not always be readily available, and there might be medicolegal repercussions to making special incisions to obtain the grafts. It has occurred to me that a more convenient source of nerve material would be from amputated extremities. Supracondylar amputation of the lower extremity is frequently carried out for dry gangrene or other noninfected lesions of the foot, and good sized pieces of nerve could be obtained and placed in preservative right in the operating room. This would obviate the necessity of "begging" pathologists and relatives for the tissue.

CONRAD R. LAY, M.D.,  
Division of General Surgery,  
Henry Ford Hospital  
Detroit

# GRADUATE CONTINUATION COURSES FOR PRACTICING PHYSICIANS

COMPILED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS  
FOR THE PERIOD JAN 1, 1944 TO JUNE 30, 1944

*Graduate Continuation Courses for Practicing Physicians—Jan 1, 1944–June 30, 1944*

Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
ANATOMY			
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 105th Street, New York N Y	Arranged 60 hrs—Surgical	Applied Anatomy Upper Extremities, including Shoulder, Girdle, Axillae and Manne	Surgical—\$115
	40 hrs—Orthopedic	Applied Anatomy Lower Extremities	Orthopedic— 90
	Arranged 60 hrs—Surgical		Surgical— 115
	40 hrs—Orthopedic		Orthopedic— 90
New York Medical College at William Waldo Blackman Laboratory of Anatomy	Arranged 100 hrs	Thorax, including Axillae and Pectoral Region	260
	Arranged 160 hrs	Surgical Anatomy Head and Neck	275
	Arranged 160 hrs—Either sex 190 hrs—Both sexes	Abdomen, including Pelvis and Pudendum	160 hrs 295 190 hrs 370
Columbia University New York Post Graduate Medical School 303 East 20th Street, New York 3 N Y	Arranged 12 sessions	Surgical Anatomy as Applied to Thoracic Surgery (Cadaver)	125
	Arranged 6 sessions	Surgical Anatomy as Applied to Colon and Rectal Surgery (Cadaver)	75
	Arranged or more 12 sessions	Dissection and Surgical Anatomy	175
	Arranged 4 weeks	Surgical Anatomy as Applied to Operative Gynecology (Cadaver)	200
ANESTHESIA			
College of Medical Evangelists, Boyle and Michigan Avenue Los Angeles	March 25-April 24 Part time	Anesthesiology	10
Cook County Graduate School of Medicine, 427 South Honore Street, Chicago 12 Illinois	Arranged 1 week	Continuous Caudal Anesthesia for Obstetrics	
Harvard Medical School, 25 Shattuck Street, Boston Mass	Arranged Monthly	Clinical Anesthesia	50
Long Island College of Medicine Kings County Hospital 1313 Bedford Ave., Brooklyn, N Y	Spring 22 sessions	Regional anesthesia	75
Columbia University New York Post Graduate Medical School 303 East 20th Street, New York 3 N Y	2 weeks, full time, throughout the year	Anesthesia	100
New York Polyclinic Medical School and Hospital, 345 West 50th Street, New York 19, N Y	Arranged 12 sessions	Regional Anesthesia	75
	3 months full time, Jan 2 April 1	Regional and Spinal Anesthesia	300
Philadelphia Lying In Hospital, 8th and Spruce Streets Philadelphia, Pa	1 week—offered weekly	Continuous Caudal Analgesia	Arranged
BACTERIOLOGY			
Columbia University New York Post Graduate Medical School 303 East 20th Street, New York 3 N Y	Arranged 1 month	Clinical Bacteriology and Serology	50
	1 month, Spring Part time	Bacteriological Service in Medicine and Surgery	35
	1 month, Winter and Spring Full time	Practical Technic of Medical Bacteriology	100
CARCINOMA			
National Cancer Institute, Bethesda, Md At various hospitals throughout the United States	Arranged	Diagnosis and Treatment of Cancer	None
Tufts College Medical School, 30 Bennet Street, Boston Mass	Arranged Through out the year	Cancer	Arranged
INDUSTRIAL MEDICINE			
Columbia University New York Post Graduate Medical School 303 East 20th Street, New York 3, N Y	April 10 14 Full time	Industrial Medicine	35
MEDICINE			
Allergy			
Tufts College Medical School, 30 Bennet Street, Boston Mass	May 15 20	Allergy	25
Columbia University New York Post Graduate Medical School, 303 East 20th Street, New York 3, N Y	Jan 3, 2 months	Allergy	20
	Once weekly	Allergy	150
	March 13 31, 3 weeks Full time	Allergy	
Vaughan Graham Clinic, 201 West Franklin Street Richmond Va	1 year Semiannually by arrangement	Training in Allergy	None
Arthritis			
Columbia University New York Post Graduate Medical School 303 East 20th Street, New York 3, N Y	May 15 Full time	Arthritis and Allied Rheumatic Disorders	75
	Jan 3 2 months once weekly	Arthritis and Allied Rheumatic Disorders	25

Graduate (Continuation) Courses for Practicing Physicians—Jan 1, 1941—June 30, 1944—Continued

Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
<b>Cardiology</b>			
College of Medical Examiners, Boyle and Michigan Avenues, Los Angeles, Calif.	Jan 1 <sup>st</sup> March 6, 12 hr period per week	Cardiology	\$ 24
Tufts College Medical School, 80 Bennett Street, Boston, Mass.	May 1	Cardiology	25
Long Island College of Medicine, 29 Henry Street, Brooklyn, N. Y. at Jewish Hospital	Spring, 5 weeks part time	Electrocardiography and Clinical Cardiology	20
Long Island College of Medicine, 29 Henry Street, Brooklyn, N. Y. at Israel Zion Hospital	Spring, 4 sessions once weekly	Clinical Cardiology	10
Columbia University Faculty of Medicine, 60 West 168th Street, New York, N. Y. at Mt. Sinai Hospital	Feb. 1 April 16, 12 weeks Once a week	Advanced Course in Diseases of the Heart	50
	April 3 June 11, Part time	Comprehensive Course in Cardiovascular Diseases	60
Columbia University Faculty of Medicine, 60 West 168th Street, New York, N. Y. at Montefiore Hospital	Feb. 17 May 2, Part time	Clinical Cardiology	50
Columbia University, New York Post Graduate Medical School, 303 East 20th Street, New York 3, N. Y.	April 17 '41	Cardiology	30
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 105th Street, New York, N. Y.	Arranged, 70 hours	Cardiology	100
University of Pennsylvania Graduate School of Medicine, 27 Medical Laboratories, Philadelphia, Pa.	Arranged, 1 day 30 hours	Electrocardiography and Cardiac Roentgenology	60
<b>Cystoscopy</b>			
Cook County Graduate School of Medicine, 427 South Honore Street, Chicago 17, Illinois	Ten days, Offered every 2 weeks	Practical Course	
<b>Diabetes</b>			
Harvard Medical School, 2, Shattuck Street, Boston at New England Deaconess Hospital	Arranged, Offered continuously	Diabetes	
Tufts College Medical School, 80 Bennett Street, Boston, Mass.	Jan. 17 '42	Diabetes	25
Columbia University, New York Post Graduate Medical School, 303 East 20th Street, New York 3, N. Y.	May 15-19	Diabetes Mellitus, Nephritis and Hypertension	30
University of Pennsylvania Graduate School of Medicine, 27 Medical Laboratories, Philadelphia, Pa.	Arranged, 24 weeks, 70 hours	Diabetes Mellitus	150
<b>Dermatology and Syphilology</b>			
Harvard Medical School, 2, Shattuck Street, Boston, Mass. at Massachusetts General Hospital	Arranged	Dermatology Elective, Skin Ward Work	Arranged
	Arranged, 2 months	Clinical Mycology	50
	Spring, 1 month	Occupational Dermatoses	40
	Arranged, 1 year	Dermatology and Syphilology	300
Tufts College Medical School, 80 Bennett Street, Boston, Mass.	Jan. 17 '22 May 15 '20	Dermatology Dermatology	25 25
New York City Department of Health, 17, Worth Street, New York, N. Y.	Arranged	Dermatology and Syphilology	
Columbia University, New York Post Graduate Medical School, 303 East 20th Street, New York 3, N. Y.	6 weeks or 3 months Part time through out the year	Clinical Dermatology and Syphilology	6 wks 40 3 mos 75
	6 weeks or 3 months Part time through out the year	Practical Instruction in the Diagnosis and Management of Syphilis	6 wks 40 3 mos 75
	6 weeks or 3 months Part time through out the year	Diagnosis and Treatment of Syphilis	6 wks 25 3 mos 40
	6 weeks or 3 months Part time through out the year	Practical Instruction in Physical Therapy as Applied to Diseases of the Skin	6 wks 40 3 mos 75
	3 months, 6 months 1 year, Part time throughout the year	Practical Instruction in the Pathological Histology of Diseases of the Skin	3 mos 75 6 mos 125 1 yr 175
	6 weeks or 3 months Part time through out the year	Practical Instruction in Mycology and Animal Parasitology as Related to Diseases of the Skin	6 wks 40 3 mos 75
	6 weeks or 3 months Part time through out the year	Practical Instruction in Minor Dermatological Surgery	6 wks 40 3 mos 75
	Feb. 7 April 10	Exanthemata and Certain Contagious Diseases	25
	Jan. 6-Feb. 10 Part time	History of Dermatology	10
	May 8-13	Seminar in Practical Dermatology and Syphilology	35
	Feb. 3 March 9 Part time	Industrial Dermatology	10
	6 weeks or 3 months Part time	Dermatology and Syphilology Clinics	6 wks 50 3 mos 75
<b>Dietetics</b>			
Tufts College Medical School, 80 Bennett Street, Boston, Mass.	Arranged, Through out the year	Dietetics	Arranged
<b>Electrocardiography</b>			
Michael Reese Hospital, 29th and Ellis Avenue, Chicago 16, Ill.	Feb. 17 May 4 Part time	Electrocardiographic Interpretation	25
Tufts College Medical School, 80 Bennett Street, Boston, Mass.	Jan. 24-26 May 8-12	Advanced Electrocardiography	20 25
	Feb. 4 April 1, Once a week	Advanced Course in Clinical Electrocardiography	25
Columbia University Faculty of Medicine, 630 West 168th Street, New York, N. Y. at Mt. Sinai Hospital	May 22 '40 Full time	Electrocardiography	50
Columbia University, New York Post Graduate Medical School, 303 East 20th Street, New York 3, N. Y.	Arranged, 15 hours	Electrocardiography	100
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 105th Street, New York, N. Y.			



*Graduate Continuation Courses for Practicing Physicians—Jan 1, 1944—June 30, 1944—Continued*

Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
<b>Endocrinology</b>			
College of Medical Evangelists, Boyle and Michigan Avenues, Los Angeles, Calif	Jan 14 April 1 12 hr period per week	Endocrinology	\$ 24
Tufts College Medical School, 30 Bennet Street, Boston, Mass	Spring 5 days	Endocrinology	25
Columbia University New York Post-Graduate Medical School, 303 East 20th Street New York 3, N Y	Jan 3 2 months Spring	Diseases of the Thyroid and other Endocrine Glands and Nutrition	35
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 105th Street, New York, N Y	Arranged 30 hours	Endocrinology	100
<b>Electroencephalography</b>			
University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories, Philadelphia, Pa	Arranged 6 Thurs days 36 hours	Electroencephalography	150
<b>Gastroenterology</b>			
University of Chicago School of Medicine, 58th and Ellis Avenue, Chicago, Ill	2 weeks	Gastroscopy	100
Columbia University Faculty of Medicine, 630 West 168th Street, New York, N Y at Mt Sinai Hospital	April 3 June 21 Part time	Comprehensive course	60
Columbia University New York Post Graduate Medical School, 303 East 20th Street, New York 3 N Y	Jan 3 2 months once weekly	Gastroenterology	35
	Jan 5-March 29 12 sessions	Surgery of the Gastrointestinal Tract	150
	March 6-10 Full time	Gastroenterology	35
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 105th Street, New York, N Y	Arranged 1 month	Gastroenterology	100
New York Polyclinic Medical School and Hospital, 345 West 50th Street, New York, N Y	3 months, Winter, Spring	Clinical Gastroenterology	50
University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories, Philadelphia, Pa	16 weeks, 500 hours, Throughout the year	Clinical Gastroenterology	400
<b>Hematology</b>			
Columbia University Faculty of Medicine 630 West 168th Street, New York, N Y at Mt Sinai Hospital	March 20-May 11 Part time	Advanced Clinical Hematology	-
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 105th Street, New York, N Y	Arranged 30 hours	Physical Diagnosis and Hematology	100
<b>Hypertension and Nephritis</b>			
Long Island College of Medicine, 1313 Bedford Avenue Brooklyn 2, N Y at Jewish Hospital	Spring 8 sessions, once weekly	Hypertension and Nephritis	10
<b>Infantile Paralysis</b>			
Georgia Warm Springs Foundation, Warm Springs, Ga	January and April One week	Poliomyelitis during Acute and Convalescent Periods	25
<b>Medicine, General</b>			
College of Medical Evangelists, Boyle and Michigan Avenues, Los Angeles, Calif	Winter 3 weeks, 6 lectures	Varicose Veins	12
Cook County Graduate School of Medicine, 427 South Honore Street, Chicago 12, Ill	To be announced in January	Medicine	
Tulane University School of Medicine, 1430 Tulane Avenue New Orleans, La	March	Medicine	
Maine Medical Association (Address Dr F R. Carter, South Portland)	Arranged	Home Study Course	
Tufts College Medical School, 30 Bennet Street, Boston Mass	May 1 27 Full time	Internal Medicine	50
New York State Department of Health, 130 Worth Avenue New York, N Y	2 months, Winter and Spring One lecture every fortnight	General Medicine	
Columbia University Faculty of Medicine 630 West 168th Street, New York 3, N Y	April 24 28 Full time	Peripheral Vascular Diseases	30
Columbia University Faculty of Medicine, 630 West 168th Street, New York, N Y at Mt Sinai Hospital	Jan 31 March 25 Part time	General Bedside Therapy	
	May 8 12 Full time	Recent Developments in Diagnostic Procedure	30
	Jan 3 2 months, daily, full time	Seminar in Internal Medicine	200
	Jan 3 2 months, once weekly	Clinical Interpretations of Laboratory Data	20
	Jan 3 2 months, once weekly	Problems in Diagnosis	35
	Jan 3 2 months, once weekly	Diseases of the Liver and Biliary Tract	20
	Jan 3 2 months, once weekly	Diabetes Mellitus, Nephritis and Hypertension	35
	Jan 3 2 months, part time	Psychological Aspects of Internal Medicine	20
	Jan 3 2 months, once weekly	Peripheral Vascular Diseases	25
	June 12 23 5 days, 10 days	Symposium on Medicine	5 days 20 10 days 50
Columbia University New York Post Graduate Medical School 303 East 20th Street, New York 3, N Y	June 5-9 Full time	Pathological Physiology Functional and Chemical Aspects of Medicine	35 100
	Arranged, 1 month (Also 3 years course for degree)	Medicine	
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue and 105th Street, New York, N Y	Jan 1 March 31 April 1 June 30 Full time, 6 weeks or 3 months	Course for General Practitioners	6 wks, 100 3 mos 100

Graduate Continuation Courses for Practicing Physicians—Jan 1, 1944—June 30, 1944—Continued

Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
<b>Medicine General—Continued</b>			
Oklahoma State Medical Association, 210 Plaza Court Oklahoma City	Arranged 1 evening a week for 10 weeks	Internal Medicine	\$ 6
Philadelphia County Medical Society 701 South 21st Street Philadelphia Pa	Early in 1944 Annual Postgraduate Institute	Medicine	5
Marquette University School of Medicine Milwaukee, Wis	Arranged Through out the year	Medical and Surgical Diagnosis	
<b>Preventive Medicine</b>			
Harvard Medical School, 25 Shattuck Street Boston Mass	{ Winter 4 months Winter 1 months	Introduction to Epidemiology Advanced Epidemiology	Arranged Arranged
<b>Psychiatry and Neurology</b>			
College of Medical Franciscans, Boyle and Michigan Avenues Los Angeles Calif	April 8-June 10	Medical Psychology	20
Catholic University of America, Washington D C at Child Center	February-June	Clinical Psychiatry	150
Catholic University of America, Washington, D C at St Elizabeth's Hospital	Annually Two semesters	Brain Pathology	300
Institute for Psychoanalysis 43 East Ohio Street Chicago 10 Illinois	Jan 4-March 21	Psychiatric Case Demonstrations	10
University of Chicago (University College) 18 South Michigan Ave, Chicago	Jan 5-March 22	Personality Development in Childhood and Adolescence	30
Michael Reese Hospital 29th and Ellis Avenue Chicago Illinois	June, 5 days	The Rorschach Test in Milder Mental Disorders	35
The Menninger Clinic Topeka, Kansas	1 year Daily	Psychoanalytic Instruction	Arranged
Topeka Institute for Psychoanalysis, Topeka Kansas	{ Arranged 12 weeks part time Offered continuously	Short Courses Application of Psychoanalysis to the Study of Psychiatric Problems and of the Psychoses	\$10-\$100 a month Arranged
Harvard Medical School 25 Shattuck Street Boston, Mass	{ Arranged Arranged	Research in Neuropathy Elective Research on the Cerebrospinal Fluid Psychiatry General Course or Special Fields	Arranged Arranged
American Institute for Psychoanalysis, 240 Central Park South New York N Y at New York Medical College	Jan 7-March 10 Weekly seminars	Continuous Case Seminar	12 50
	Feb 3-April 30 12 weekly lectures	Integration of Personality in Psychoanalysis	12
	Feb 1-April 4 10 weekly lectures	Psychoanalysis and Personnel Relationships	10
	Jan 3-March 6 10 weekly seminars	Psychiatry and Psychoanalysis	15
	Jan 6-April 13 15 weekly seminars	Readings in Freud	20
	Jan 4-March 7 10 weekly seminars	Sex and Neurosis	12 50
	March 20-May 22 10 weekly seminars	Technic of Dream Interpretation	12 50
Columbia University Faculty of Medicine 640 West 168th Street New York N Y	Arranged	Demonstrations in Neuropathology	
Columbia University New York Post-Graduate Medical School 303 East 20th Street New York 3 N Y	Jan-May 1 month or longer, part time	Clinical Neurology	50
	Feb 2-April 26 Part time	Psychoanalysis in General Medicine	35
	Feb 2-May 17 16 sessions, once weekly	Review of Fundamentals of Neurology and Psychiatry	75
	March 6-10 March 3-7	Neurology and Psychiatry in Childhood Neurological Diagnosis and Treatment in General Practice	35 35
New York Medical College, Flower and Fifth Avenue Hospitals Fifth Avenue at 104th Street New York N Y	Spring 10 hours	Seminar on Sex and Neuroses	20
University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories Philadelphia, Pa	Arranged 8 weeks 240 hours	Clinical Psychiatry	160
	Arranged 10 weeks, 250 hours	Clinicobiologic Neurology and Psychiatry	100
<b>Tuberculosis</b>			
California Tuberculosis Association 40 Second Street San Francisco Calif	{ Arranged 1 week Arranged 1 day to 1 week	Intensive Course Diseases of the Chest	None None
Mississippi State Sanatorium, Sanatorium Miss	Arranged 2 weeks or more	Clinical Medicine and Chest Diseases	None
Columbia University New York Post Graduate Medical School 303 East 20th Street New York N Y	Spring 2 months once a week part time	Acute and Chronic Diseases of the Chest	30
New York Medical College Flower and Fifth Avenue Hospitals, 6th Avenue at 104th Street New York N Y	Arranged 1 month	Clinical Pulmonary Diseases	100
State Tuberculosis Sanatorium Sanatorium Texas	14 days Through out the year	Diseases of the Chest	None
<b>Venereal Disease Control</b>			
United States Public Health Service Hot Springs National Park Arkansas	4 weeks Repeated at intervals	Management and Control of Venereal Diseases	None
New York City Department of Health 125 Worth Street New York N Y	Optional Through out the year	Diagnosis and Treatment of Venereal Diseases	None
Institute for the Control of Syphilis University of Pennsylvania Hospital 3400 Spruce Street Philadelphia Pa	Arranged 6 sessions of 4 hours	Basic Training Course in Venereal Disease Control	30
	Arranged 15 days	Venereal Disease Control for Public Health Officers	None
	Arranged 10 days for Army medical officers	Intensive Training Course in Venereal Disease Control	None

## Graduate Continuation Courses for Practicing Physicians—Jan 1, 1944–June 30, 1944—Continued

Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
<b>MILITARY MEDICINE</b>			
Bureau of Medicine and Surgery, Navy Department, Washington, D C	9 weeks—throughout year	Basic Instruction	None
	3 to 6 months—throughout year	X Ray	None
	8 weeks, periodically	Venereal Disease Control	\$100
	1 year, periodically	Urology	None
	3 weeks—throughout year	Tropical Medicine	17.00
	2 to 6 months—throughout year	Surgery—General, Maxillofacial, Neuro, Oral, Orthopedic, Plastic and Reconstructive Thoracic, Traumatic and Genitourinary	None
	6 months—throughout year	Anesthesia	None
	8 weeks—throughout year	Aviation Medical Examiner	None
	3 to 4 weeks—throughout year	Blood Plasma	None
	1 month—throughout the year	Chemical Warfare	None
	3 to 6 months—throughout year	Deep Diving	None
	6 months—throughout year	Epidemiology and Laboratory Procedures	None
	5 months—throughout year	Flight Surgeon	None
	3 months—throughout year	General Medicine	None
	12 weeks—periodically	Industrial Hygiene	200
	3 to 6 months—throughout year	Internal Medicine	None
	2 to 4 months—throughout year	Malariaology	None
	6 months—throughout year	Naval Aviator	None
	9 months—throughout year	Obstetrics and Gynecology	None
	6 months—throughout year	Ophthalmology and Otolaryngology	None
	3 months—throughout year	Parachute Jumping	None
	1 to 5 months—throughout year	Pathology	None
	6 months—throughout year	Physical and Fever Therapy	None
	2 to 9 months—throughout year	Psychiatry	None
<b>OBSTETRICS AND GYNECOLOGY</b>			
Cook County Graduate School of Medicine, 427 South Honore Street, Chicago 12, Ill	Feb 21 2 weeks Feb 7 2 weeks	Obstetrics Gynecology	
University of Illinois College of Medicine, 1833 West Polk Street Chicago, Ill	Arranged 2 weeks	Obstetrics and Pediatrics	
Chicago Maternity Center, 1336 Newberry Avenue, Chicago, Ill	January and May 4 months	Practical Obstetrics	10
Louisiana State University School of Medicine, 1542 Tulane Avenue New Orleans, La	Spring 2 weeks full time	Obstetrics	None
Tulane University of Louisiana School of Medicine, 1430 Tulane Avenue, New Orleans, La	Arranged April	Obstetrics and Gynecology	
Maine Medical Association (Address Dr F R Carter, South Portland)	Arranged	Home Study Course	None
Harvard Medical School, 25 Shattuck Street, Boston, Mass	Monthly 10 exercises	Gonorrhea in Women	20
	1 month or more June 1 month or more	Clinical Obstetrics Gynecology	15 70
Columbia University Faculty of Medicine 630 West 168th Street, New York 32, N Y at Margaret Hague Maternity Hospital	1 month Monthly	Obstetrics, Observation Course	100
Columbia University New York Post Graduate Medical School, 303 East 20th Street New York 3 N Y	Arranged 10 or 15 sessions, part time throughout the year	Diagnosis and Office Treatment	10 sessions 40 15 sessions 60
	Arranged 15 sessions, part time, throughout the year	Cystoscopy and Endoscopy	70
	April 10 15, June 5 10 Full time	Symposium on Recent Advances in Gynecology	60
	Arranged 8 weeks, part time, 24 sessions	Gynecological Endocrinology	100
	Arranged Part time Jan 3, April 3	Gynecological Pathology Seminar in Gynecology	Arranged 1 mo 15 2 mos 25 3 mos 300
	1, 2 or 3 months, full time	Applied Anatomy of Pelvis and Abdomen	250
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 105th Street, New York, N Y	Arranged 160 hours	Obstetrics and Gynecology	200
New York Polytechnic Medical School and Hospital, 345 West 50th Street, New York 19, N Y	Spring 2 months, full time		
<b>PATHOLOGY</b>			
Harvard Medical School, 25 Shattuck Street, Boston Mass	1 month Monthly and weekly January through May	Pathology of Obstetrics and Gynecology	1 mo 125
Columbia University Faculty of Medicine, 630 West 168th Street, New York 32, N Y at Mt Sinai Hospital	Feb 1 April 12 Part time	General and Special Pathology	45
	April 19 June 24 Part time	Surgical Pathology	40
	Jan 18 April 27 2 sessions weekly	Surgical Pathology	150
Columbia University New York Post Graduate Medical School, 303 East 20th Street, New York 3, N Y	April 12 May 26 Part time	Gross and Microscopic Pathology	0
	March 1 27 Part time	Pathology of the Blood and Blood Forming Organs	70

Graduate Continuation Courses for Practicing Physicians—Jan 1, 1944–June 30, 1944—Continued

Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
<b>Pathology—Continued</b>			
New York Eye and Ear Infirmary 218 Second Avenue New York N Y	January-March 3 months	Histopathology of the Eye	\$85
New York Polyclinic Medical School and Hospital 315 West 50th Street, New York 19 N Y	Arranged	Pathology and Bacteriology	Arranged
<b>PEDIATRICS</b>			
University of Illinois College of Medicine 1833 West Polk Street Chicago Ill	Arranged 2 weeks	Obstetrics and Pediatrics	None
Tulane University of Louisiana School of Medicine 1470 Tulane Avenue New Orleans	Jan 24-27 May	Pediatrics	
Maine Medical Association (Address Dr I R Carter South Portland)	Arranged	Home Study Course	None
Tufts College Medical School 30 Bennet Street Boston Mass	Jan 3-29	Pediatrics	50
Long Island College of Medicine 350 Henry Street Brooklyn N Y at Bath 11 Hospital	Spring 10 sessions twice weekly	Diseases of Children	10
Long Island College of Medicine 350 Henry Street Brooklyn N Y at Long Island College Hospital	Spring 8 sessions once weekly	Endocrine Diseases in Children	10
Columbia University New York Post Graduate Medical School 303 East 20th Street New York 3 N Y	March 13-18 full time	Symposium on Recent Advances in Pediatrics	35
New York Polyclinic Medical School and Hospital 315 West 50th Street New York 19 N Y	Arranged 4 weeks part time	Pediatrics	50
<b>PHYSICAL THERAPY</b>			
Northwestern University Medical School 603 East Chicago Avenue Chicago Ill	12 weeks for Latin American students 1 to 3 month courses arranged for Army, Navy and Civilian Physicians	Physiotherapy	Civilians 200 Others None
Columbia University New York Post Graduate Medical School 303 East 20th Street New York 3 N Y	March 10-23 full time	Physical Therapy	35
New York Polyclinic Medical School and Hospital 315 West 50th Street New York 19 N Y	Winter-Spring 4 weeks part time	Physical Therapy	100
<b>PUBLIC HEALTH</b>			
Albany Medical College 47 New Scotland Avenue Albany N Y	Arranged 1 year	Extension Course in Public Health Qualifying for Grade II Health Officer	30
State of New York Department of Health Albany N Y	6 months field training in school of public health offered continuously	Public Health	
<b>RADIOLOGY</b>			
Cook County Graduate School of Medicine 427 South Honore Street, Chicago 12 Ill	Weekly	Courses in X-Ray Interpretation Fluoroscopy and Deep X-Ray Therapy	
Harvard Medical School 26 Shattuck Street Boston Mass	{ One month Monthly One month Monthly	General Roentgenology (3 courses offered at various hospitals) Roentgenology in Diseases of the Eye Ear and Accessory Sinuses	50 100 35
Tufts College Medical School 30 Bennet Street Boston Mass	Jan 10-17	Radiology	25
Long Island College of Medicine 350 Henry Street Brooklyn N Y	Spring 8 sessions, once weekly	Cardiovascular Roentgenology	10
Columbia University Faculty of Medicine 630 West 168th Street New York 32 N Y at Montefiore Hospital	Jan 11 Feb 29 March 13 May 1 part time	Roentgenology of the Gastrointestinal Tract	35
Columbia University Faculty of Medicine 630 West 168th Street New York 32 N Y at Presbyterian Hospital	Jan 12 Sixteen one hour lectures	Radiological Physics	Practicing physicians 50 Hospital residents 15
New York Eye and Ear Infirmary 218 Second Avenue New York N Y	Arranged 6 weeks, monthly	Ophthalmic and Otolitic Roentgenology	40
New York Medical College Flower and Fifth Avenue Hospitals 5th Avenue at 106th Street New York N Y	Arranged 2 months	Radiology	150
New York Polyclinic Medical School and Hospital 315 West 50th Street New York 19 N Y	{ 6 weeks or 3 months offered monthly 6 weeks or 3 months Monthly	Practical Roentgenological Interpretation and Technic Diagnostic Roentgenology and Radiotherapy	6 wks 150 3 mos 300 6 wks 150 3 mos 300
<b>SURGERY</b>			
Long Island College of Medicine 350 Henry Street Brooklyn N Y	Spring 10 sessions, once weekly	Fractures	10
Cook County Graduate School of Medicine 427 South Honore Street Chicago 12 Ill	To be announced in January	Fractures	
<b>Gastroscopy</b>			
Columbia University Faculty of Medicine 630 West 168th Street New York 32 N Y at Presbyterian Hospital	Arranged 2 months	Gastroscopy	200
Columbia University New York Post Graduate Medical School 303 East 20th Street New York 3 N Y	Arranged Spring	Gastroscopy	75
New York Medical College Flower and Fifth Avenue Hospitals 5th Avenue at 106th Street New York N Y	Arranged 10 sessions (or more)	Gastroscopy	100
<b>Ophthalmology</b>			
Children's Memorial Hospital 707 Fullerton Avenue Chicago 14 Ill	Winter-Spring 6 days	Neuro-Muscular Anomalies of the Eyes from Neurologic Viewpoint	50
Cook County Graduate School of Medicine 427 South Honore Street Chicago 12 Ill	Arranged	Clinical Course	
University of Illinois College of Medicine 1833 West Polk Street Chicago Ill	Winter-Spring 9 months part time	Ophthalmology	150
Tufts College Medical School 30 Bennet Street Boston Mass	Arranged 3 mornings a week for 1 month	Ophthalmology	50
Long Island College of Medicine 350 Henry Street Brooklyn N Y	Spring 6 sessions daily	Basic and Clinical Ophthalmology	20

## Graduate Continuation Courses for Practicing Physicians—Jan 1, 1944—June 30, 1944—Continued

Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
<b>Ophthalmology—Continued</b>			
New York Eye and Ear Infirmary, 218 Second Avenue, New York N. Y.	Arranged 1 month, offered monthly	External Diseases of the Eyes	\$ 40
	Arranged 1 month, offered monthly	Ophthalmoscopy	40
	January, April 3 months	Refraction	100
	Arranged 1 month, offered monthly	Anomalies of the Ocular Muscles	40
	Spring 1 week	Intensive Refresher Course in Ophthalmology and Otolaryngology	50
	Winter 6 months	Ophthalmology and Otolaryngology	900
	Arranged 1 month, offered monthly	Perimetry	40
	Arranged 1 month, offered monthly	Operative Surgery of the Eye	75
	Arranged 1 month, offered monthly	Slit Lamp Course	50
	Arranged 1 month or more, offered monthly	Bacteriology of the Eye	40
	Arranged 1 month, offered monthly	Ocular Therapy	40
	Arranged 2 months	Physiological Optics	65
	Arranged 1 month, offered monthly	Plastic Eye Surgery	75
	Arranged 1 to 3 months, part time, offered monthly	General Course	1 mo. 40 3 mos. 100
Columbia University Faculty of Medicine, 630 West 168th Street, New York 32 N. Y. at Montefiore Hospital	Feb 3 March 20 Part time	Ophthalmoscopy	25
Columbia University New York Post Graduate Medical School and Hospital 303 East 20th Street New York 3 N. Y.	Arranged 15 sessions, part time	Embryology, Histology and Pathology of the Eye	75
	March 6-11 Full time	Motor Anomalies of the Eye	60
	March 20-25 Part time	Surgery of the Eye	75
	March 27-31	Slit Lamp Diagnosis	35
	March 15-17	Anomalies of the Ocular Muscles	50
New York Polyclinic Medical School and Hospital, 345 West 50th Street, New York 19, N. Y.	Winter, Spring 6 weeks, part time	Refraction	100
	Winter, Spring 6 weeks, part time	Clinical Eye Course	50
	Winter, Spring 3 months, part time	Clinical and Operative Course (Cadaver) Refraction	275
	Arranged 8 weeks 1.0 hours	Ocular Refraction	270
University of Pennsylvania Graduate School of Medicine, 257 Medical Laboratories, Philadelphia, Pa.	Arranged 8 weeks, 16 hours	Ophthalmic Histology and Pathology	200
<b>Ophthalmology and Otolaryngology</b>			
Research Study Club of Los Angeles (Address Dr. Harold T. Whalman 727 West 7th Street Los Angeles Calif.)	Jan 17-25	Annual Mid Winter Civilian Post graduate Course	50
	Arranged	Special Course in Applied Anatomy and Cadaver Surgery of Head and Neck	25 50
Gill Memorial Eye, Ear and Throat Hospital 711 South Jefferson Street, Roanoke Va.	April 9 18th Annual Spring Graduate Course	Ophthalmology and Otolaryngology	50
<b>Otolaryngology</b>			
Cook County Graduate School of Medicine, 427 South Honore Street, Chicago 12 Ill.	Arranged	Special and Clinical Courses	
University of Illinois College of Medicine, 1853 West Polk Street Chicago, Ill.	Winter, Spring 9 months	Otolaryngology	300
	Winter 5 days, full time	Refresher Course	50
Indiana University Medical Center, Indianapolis Ind.	Spring 2 weeks	Otolaryngology	150
Harvard Medical School 25 Shattuck Street Boston Mass.	Arranged 5 exercises	Technic of Submucous Resection of the Nasal Septum	75
	1 month Monthly	Clinical Otolaryngology	50
Tufts College Medical School, 30 Bennet Street, Boston Mass.	Monthly 3 or 5 mornings a week	Otolaryngology	30 or 50
Columbia University New York Post Graduate Medical School and Hospital, 303 East 20th Street New York 3, N. Y.	Arranged 4 weeks or more part time, throughout the year	Diagnostic Procedures	1 section 30 2 sections 50
	Arranged Jan June	Surgical Anatomy as Applied to Otolaryngology (Cadaver)	Arranged
	Arranged Jan June	Surgical Anatomy as Applied to Rhinology and Laryngology (Cadaver)	Arranged
	Arranged 15 sessions or more	Dissection of the Head and Neck Embryology Histology and Pathology of the Ear Nose and Throat	Arranged
	1 month Monthly	Clinical Otolaryngology	40
New York Eye and Ear Infirmary, 218 Second Avenue, New York, N. Y.	1 month Monthly	Operative Surgery of the Ear and Nasal Accessory Sinuses (Cadaver)	110
	4 weeks Monthly	Anatomy of the Ear	45
	1 month or more Monthly	Bacteriology of the Ear	40
	January May 2 or 6 weeks, offered monthly	Broncho Esophagology	250
	Arranged 80 hours	Applied Anatomy of Ear Nose and Throat	165
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 105th Street, New York, N. Y.	Winter, Spring 3 months, full time	Clinical and Operative Refraction	600
	Winter, Spring 6 weeks full time	Clinical Course	100
New York Polyclinic Medical School and Hospital, 345 West 50th Street, New York 19, N. Y.	Winter Spring 6 weeks part time	Clinical Course	75
	Winter Spring 6 weeks part time	Advanced Otolaryngology	150
	Winter, Spring 2 months		

## Graduate Continuation Courses for Practicing Physicians—Jan 1, 1914—June 30, 1944—Continued

Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
<b>Otolaryngology—Continued</b>			
University of Pennsylvania Graduate School of Medicine 337 Medical Laboratories Philadelphia, Pa	Arranged 8, hours	Broncho laryngology, Gastroscopy and Laryngeal Surgery	\$2.00
	Arranged 0 hours	Otologic Operations (Cadaver)	100
	Arranged 0 hours	Rhinolaryngologic Operations (Cadaver)	1.00
<b>Orthopedic Surgery</b>			
Harvard Medical School 6, Shattuck Street Boston Mass	1 month Monthly	Clinical Orthopedic Surgery	60
Tufts College Medical School 70 Bennet Street Boston Mass	Feb 28-March 4	Diseases of the Bone and Joints	25
Columbia University New York Post Graduate Medical School and Hospital 303 East 20th Street New York 3 N Y	Jan 21-Feb 4 Full time	Seminar	00
	April 24 29 Full time	Orthopedics in General Practice	35
	May 1 June 1	Functional Anatomy in Relation to Orthopedics	40
<b>Plastic Surgery</b>			
New York Polyclinic Medical School and Hospital 24 West 30th Street New York 10 N Y	Winter Spring 4 weeks full time	Plastic Reporative Surgery	2.00
<b>Proctology</b>			
College of Medical Evangelists Boyle and Michigan Avenues Los Angeles, Calif	Winter 1 month 10 periods 2 hr each, 2 each week	Proctology	40
Tufts College Medical School 70 Bennet Street Boston Mass	April 24 29 May 1 '36	Proctology Proctology	2.00 2 wks \$3.00 4 wks 100
Long Island College of Medicine 300 Henry Street Brooklyn N Y	Spring 1 weeks	Proctology	2.00
New York Polyclinic Medical School and Hospital 345 West 30th Street, New York 10 N Y	Spring 6 weeks part time	Proctology and Gastroenterology	100
	Winter Spring 6 weeks part time	Proctology Gastroenterology and Allied Subjects with Operative Proctology (Cadaver)	200
	Winter Spring 10 sessions	Operative Proctology (Cadaver)	100
	Winter Spring 6 weeks part time	Clinical Proctology, Medical and Operative	75
<b>Surgery</b>			
Cook County Graduate School of Medicine 427 South Honore Street Chicago 12 Ill	2 weeks throughout the year	Surgery	
Tulane University of Louisiana School of Medicine 1430 Tulane Avenue, New Orleans La	Feb 21 '36	Surgery	
Maine Medical Association (Address Dr F R Carter South Portland)	Arranged	Home Study Course	None
Harvard Medical School 6 Shattuck Street Boston Mass	Spring 1 month part time	Surgery for Children	50
Tufts College Medical School 70 Bennet Street Boston Mass	Spring 2 weeks	Surgery	150
Columbia University New York Post Graduate Medical School 303 East 20th Street New York 3 N Y	Jan 5-March 29 12 sessions, 4 hours each once weekly	Surgery of the Gastrointestinal Tract	150
	Arranged 8 sessions part time	Blood Transfusion Blood and Plasma Bank	3.00
	Jan June 12 sessions part time	Surgical Anatomy as Applied to Thoracic Surgery (Cadaver)	12.00
	Arranged 5 sessions part time Jan June	Surgical Anatomy as Applied to Colon and Rectal Surgery (Cadaver)	75
	Jan June 12 sessions or more, part time	Dissection and Surgical Anatomy	125
New York Medical College Flower and Fifth Avenue Hospitals 10th Avenue at 10th Street New York N Y	Arranged 52 hours	Surgical Technique	375
	Arranged 30 hours	Peritoneoscopy	75
New York Polyclinic Medical School and Hospital 345 West 30th Street New York 10 N Y	Winter Spring 3 months full time	Combined Surgical Course	3.00
	Winter Spring 6 weeks full time	Operative Clinic and Lecture Course	100
<b>Traumatic Surgery</b>			
College of Medical Evangelists Boyle and Michigan Avenues Los Angeles Calif	March 10 May 12 1 2 hour period a week	Traumatic Surgery	20
Cook County Graduate School of Medicine 427 South Honore Street Chicago 12 Ill	To be announced in January	Traumatic Surgery	—
Columbia University New York Post Graduate Medical School 303 East 20th Street, New York 3 N Y	March 13 18 June 20-July 1 6 days, full time	Diagnosis and Treatment of Trauma	35
	May 1 12 Full time	Seminar	00
<b>Urology</b>			
College of Medical Evangelists Boyle and Michigan Avenues Los Angeles Calif	March 17 April 25 1 period a week	Urology	12
Cook County Graduate School of Medicine 427 South Honore Street Chicago 12 Ill	2 weeks 1 month Offered every 2 weeks	Urology	—
Long Island College of Medicine 300 Henry Street Brooklyn N Y	1 month or more Part time monthly	Urology	2.00
Columbia University New York Post Graduate Medical School 303 East 20th Street, New York 3 N Y	Feb 7 19 May 15-27 Part time	Urological Diagnosis in General Practice	40
	Jan 17 21 March 6-10 May 27 '36	Recent Advances in Urology	60
University of Pennsylvania Graduate School of Medicine 27 Medical Laboratories Philadelphia Pa	Arranged 6 weeks 16 hours	Cystoscopy Chromoureteroscropy and Pyelography	300
<b>VARIOUS COURSES</b>			
Maine Medical Association (Address Dr F R Carter South Portland)	Arranged 1 to 2 months	Short Course in Medicine Minor Surgery etc.	None



## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL*, Dec 11, page 991

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Jan 17 19 *Part III* Various centers, January Sec, Dr J S Rodman, 225 S 15th St, Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY *Oral Part II* Chicago June 12 16 Final date for filing application is March 12 Sec, Dr Paul M Wood, 745 Fifth Ave, New York

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written*, Various large cities, May 8 *Oral* Chicago, June 9 10 Final date for filing application is April 1 Sec, Dr C Guy Lane, 416 Marlboro St, Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Part II* May or June Sec, Dr Paul Titus, 1015 Highland Bldg, Pittsburgh 6, Pa

AMERICAN BOARD OF OPHTHALMOLOGY Chicago, October Sec, Dr John Green, 6830 Waterman Ave, St Louis

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Written and Oral Part II* Chicago Jan 21 22 Sec, Dr Guy A Caldwell, 3503 Prytania St, New Orleans, La

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Los Angeles Feb 2 5 Sec, Dr Dean M Lierle, University Hospitals, Iowa City, Ia

AMERICAN BOARD OF PEDIATRICS *Written* Locally, Feb 4 *Oral* Philadelphia, March 25 26 and San Francisco, May 6 7 Sec, Dr C A Aldrich 707 Fullerton Ave, Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *Oral* Locally, Dec 20 21 Sec, Dr Walter Freeman, 1028 Connecticut Ave NW Washington, D C

AMERICAN BOARD OF SURGERY *Written Part I* March 10 Final date for filing application is Jan 1 Sec, Dr J Stewart Rodman 225 S 15th St Philadelphia

AMERICAN BOARD OF UROLOGY *Oral* Chicago Feb 15 17 Sec Dr Gilbert J Thomas, 1409 Willow St, Minneapolis

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Federal Income Taxes Fees for Attorneys' Services Which Temporarily Enabled Continuance of Illegal Practice an "Ordinary and Necessary Expense of Carrying on Trade or Business"**—Heiminger practiced dentistry in absentia by mail. Apparently without seeing his so-called patients he undertook to make and supply false teeth. The post office department found in appropriate proceedings that his methods were fraudulent and an order denying him the use of the mails was issued. Subsequently he sued the postmaster general in the district court for the District of Columbia, which enjoined the postmaster from enforcing the fraud order. On appeal the circuit court of appeals for the District of Columbia reversed the judgment of the district court and the fraud order of the post office department was sustained. In the defense of his business in the proceedings before the post office department and in the district and appellate courts Heiminger incurred and paid several thousand dollars for attorneys' fees and expenses. The net effect of the services rendered by the attorneys was to prevent the enforcement of the fraud order during 1937 and 1938, during which years Heiminger continued in business and received large gross incomes. In computing his federal income tax Heiminger sought to deduct from his gross income for 1937 and for 1938, as an ordinary and necessary expense of

carrying on that business, the attorneys' fees and expenses of the literature

In this respect the internal revenue code, section 23, provides, in part, as follows

"In computing net income there shall be allowed as deductions

"(a) Expenses

"(1) In general

"All the ordinary and necessary expenses paid or incurred during the taxable year in carrying on any trade or business"

The commissioner of internal revenue disallowed the deduction, and the board of tax appeals affirmed the determination of the commissioner. Heiminger then appealed to the circuit court of appeals, seventh circuit.

The question is, said the circuit court of appeals, whether or not such expenses are deductible as ordinary and necessary expenses in carrying on Heiminger's business within the meaning of the section quoted in the footnote. What is an ordinary expense is discussed by Mr Justice Cardozo in *Welch v Helvering*, 290 U S 111, 54 S Ct 8, 78 L Ed 212, as follows

Ordinary in this context does not mean that the payments must be habitual or normal in the sense that the same taxpayer will have to make them often. A lawsuit affecting the safety of a business may happen once in a lifetime. The counsel fees may be so heavy that repetition is unlikely. None the less, the expense is an ordinary one because we know from experience that payments for such a purpose, whether the amount is large or small, are the common and accepted means of defense against attack.

By this standard, we think it plain that the expense in this case was ordinary. It was such an expense as related strictly to the life of the business. Not only, however, the court continued, must the expense be ordinary, it must also be necessary. In *Kornhauser v United States*, 276 U S 145, 48 S Ct 219, 72 L Ed 505, Mr Justice Sutherland, in discussing the allowance, as a deduction, of attorneys' fees as a business expense, said

where a suit or action against a taxpayer is directly connected with or, as otherwise stated, proximately resulted from, his business, the expense incurred is a business expense within the meaning of the act.

We think that where an expense is incurred which saves the life of a business, even for a time, it is, in the light of the foregoing interpretation, not only a business expense but a necessary business expense. Without the expenditure there would have been no income in this case because there would have been no business. The business depended on the expense incurred in the litigation. Obviously, therefore, the expense was both ordinary and necessary. If the expense in this case was not an ordinary and necessary expense to the "carrying on" of the business, we are unable to understand the English language. Without this expense there would have been no business. Without the business there would have been no income. Without the income there would have been no tax. To say that this expense is not ordinary and necessary is to say that that which gives life is not ordinary and necessary.

The judgment of the board of tax appeals affirming the commissioner's determination was accordingly reversed and the expenses of the attorneys' fees was allowed to be deducted from the gross income of Heiminger during the two years in question.—*Heiminger v Commissioner of Internal Revenue*, 133 F (2d) 567 (1943)

## Society Proceedings

### COMING MEETINGS

Annual Forum on Allergy, St Louis Jan 22 23 Dr Jonathan Forman, 394 East Town St Columbus Ohio

Society of Surgeons of New Jersey, Atlantic City January 29 Dr Walter B Mount, 21 Plymouth St Montclair, N J, Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 14 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American J Digestive Diseases, Fort Wayne, Ind 10 319-364 (Sept) 1943

- \*Chronic Peptic Ulceration of Esophagus F I Clever—p 319  
Leiomyosarcoma of Stomach Precluding 4 Cases A Bassler—p 342  
Proteinuria and Proteinuria in Diarrheal Disease of Infants  
E R Neter and R H Farrar—p 344  
Colloidal Gold Reaction of Blood Serum in Hepatic and Other Diseases  
P H Neth and E K Loew—p 348  
Primary Constipation Treatment D C Ditmore—p 356

**Chronic Peptic Ulceration of Esophagus**—Clever reports 10 cases of peptic ulcer of the esophagus that were observed at the Toronto General Hospital. Five of the patients were men and 5 were women. Their ages varied between 30 and 79. The condition is not rare. It presents a definite clinical picture and positive roentgenologic aspects. It is nearly always associated with a congenitally short esophagus and a diaphragmatic hernia which permits regurgitation of the acid contents of the stomach into the esophagus. In 1 case the acid secretion of ectopic gastric mucosa was the probable cause in the development of esophageal ulcer. Peptic ulcer of the esophagus responds to adequate treatment. When roentgenoscopy fails to show a diaphragmatic hernia and a short esophagus but biopsy shows an ectopic gastric mucosa the treatment of the ulcer is the same as for gastric and duodenal ulcer, but when roentgenoscopy reveals a diaphragmatic hernia and a short esophagus the esophageal ulcer will be in contact with the acid contents of the stomach at certain times. Fluids and semisolids should be taken at two or three hour intervals. Hot or cold fluids should be avoided. Solids generally cause discomfort and pain. The patient is more comfortable in the sitting posture. Tincture of belladonna should be given fifteen to twenty minutes before each feeding. A tablespoon of liquid petrolatum should be taken before each meal. Feeding by duodenal tube is very satisfactory. Six or seven feedings of milk, orange juice, liver extract, corn syrup and ascorbic acid should be given in twenty-four hours. Dilatation of the esophagus must be resorted to if the patient presents difficulty in swallowing after three weeks of duodenal feeding.

#### American Journal of Diseases of Children, Chicago 66 349-470 (Oct) 1943

- Long Term Prevention of Tooth Decay Among Diabetic Children J D Boyd—p 349  
\*Ingestion of Fluoride and Dental Caries Quantitative Relations Based on Food and Water Requirements of Children One to Twelve Years Old F J McClure—p 362  
Pancreatic Function and Disease in Early Life II Effect of Secretion on Pancreatic Function of Infants and Children Charlotte L Maddock, S Farber and H Schwachman—p 370  
Effects of Disease on Nutrition I Absorption Storage and Utilization of Vitamin A in Presence of Disease S Spector C F McKhann and Emily R Meserve—p 376  
Effect of Adolescence on Basal Metabolism of Normal Children R C Lewis Anna Marie Duval and A Iliff—p 396  
Pancreatic Function and Disease in Early Life III Methods of Analyzing Pancreatic Enzyme Activity H Schwachman S Farber and Charlotte L Maddock—p 418

**Ingestion of Fluoride and Dental Caries**—McClure calls attention to the recent discovery of the inhibitory effect of trace quantities of fluorine in drinking water on dental caries in children and young adults. The addition of fluorine to children's diets during the first seven or eight years of life offers great promise of reducing the prevalence of dental caries. One part per million concentration of fluorine in drinking water is regarded as a permissible level. An estimated quantity of water borne fluorine equal to approximately 0.5 to 1 mg of fluorine

daily present in the average diet from the first to the eighth year of life appears to be instrumental in reducing dental caries to a great degree. This small quantity of additional fluorine ingested during the comparatively few years of formative tooth life presents no health hazard. In certain communities the drinking water may contain fluorine naturally in a quantity equal to 1 part of fluorine per million. In these places a supplement of dietary fluorine would be undesirable. There is under consideration also the advisability of a direct fluorination of drinking water so as to provide an optimum quantity of fluorine for improved dental health. Only in communities in which the water supplies are either fluorine free or contain suboptimal amounts need serious consideration be given to the possible use of a supplement of fluorine in children's diets. Calculations of the quantity of supplemental fluorine required must take into account fluorine present naturally in the local water supply.

#### American Journal of Medical Sciences, Philadelphia 206 421-560 (Oct) 1943

- Intradermal Test for Susceptibility to and Immunization Against Whooping Cough Using Agglutino-gen from Phase I Haemophilus Pertussis L W Hlodorski Harriet M Ielton, A Bondi and A C McGuinness—p 421  
\*Thyrototoxicosis as Sole Cause of Heart Failure W B Likoff and S A Levine—p 425  
Control of Polycythemia Vera by Venesection L E Hines and W C Darnall—p 434  
Objective Methods to Determine Speed of Blood Flow and Their Results (Fluorescein and Acetylene) K Lange and L J Boyd—p 438  
Congenital Heart Block Study of 2 Cases in Healthy Adults T C Jileski and E T Morrison—p 449  
Syphilitic Aneurysm of Celiac Artery T C Laipply—p 453  
Localized Agnogenic (of Unknown Origin) Xanthomatosis of Spleen with Splenomegaly and Anemia M L Dreyfuss and Ella H Fishberg—p 458  
\*Clinical Observations on Effect of 3,3 Methylene Bis (4 H<sub>2</sub>droxycoumarin) L R Wasserman and D Stats—p 466  
Hematuria and Hematuria Report of Case L A Golden—p 474  
\*Carbon Dioxide by Inhalation as Expectorant A L Banyai and A V Cradden—p 479  
Mazzini Slide Flocculation Test Sensitivity of Its Antigen M Oosting and Virginia Watson—p 486  
Further Experience with Purfuryl Trimethyl Ammonium Iodide (Furmethide) in Treatment of Urinary Retention Due to Bladder Atony S H Beaser J H Lipton and M D Altschule—p 490  
Rapid Removal of Excess Joint Fluid by Acid Salts Experiments with Traumatic Hydrarthrosis of Knee Joint L Felner—p 498  
Effect of Ergotamine Tartrate and Neosynephrin HCL on Work Capacity of Human Muscle G C Kotalik G L Maison and C Pfeiffer—p 503  
Cardiac Arrest by Action of Potassium C A Finch and J F Marchand—p 507

**Thyrototoxicosis as Sole Cause of Heart Failure**—Likoff and Levine analyzed all cases of thyrototoxicosis in which a subtotal thyroidectomy was performed at the Peter Bent Brigham Hospital between 1923 and 1941 inclusive. Among 409 cases there were 78 cases of thyrototoxicosis with some additional form of organic heart disease. In the "noncardiac" group (331 cases) there were 8 with severe and 13 with moderate heart failure (63 per cent). These 21 cases offer evidence that thyrototoxicosis alone may cause heart failure even when the blood pressure, the coronary arteries and the valves are normal. None of these patients showed evidence of organic heart disease after an average period of five years (the longest was ten years). There were 4 deaths during this period, all from carcinoma. All the other patients were essentially well. The congestive failure was more likely to occur in the female sex, with increasing age, when the thyrotoxic state lasted longer, and when auricular fibrillation was present. No satisfactory explanation was found for the heart failure. It is suggested that vitamin B deficiency may play a contributory part. The similarity between symptoms and physical findings in mitral stenosis and thyrototoxicosis may lead to errors in diagnosis for even left auricular dilatation is found in the latter condition on x-ray examination. Masked thyrototoxicosis is being overlooked as a cause of heart failure, an error which is costly because the condition is curable.

**Effect of Dicumarol**—Wasserman and Stats demonstrated in laboratory animals a prolongation of the clotting time and a reduction in prothrombin activity of the blood from administration of dicumarol. Large or repeated toxic doses produced

widespread hemorrhage and in some animals death. The drug administered orally to 71 adult patients in repeated doses produced a definite fall (after a twenty-four to seventy-two hour latent period) in the prothrombin content and a prolongation of the coagulation time of the blood in most instances. There is a great variability in the degree of response to this drug. A definite fixed dosage schedule cannot be made. Because of the variable response and latent period the drug has not always been useful in the therapy of arterial thrombosis or embolism, arteriotomy or major pulmonary embolism. Because of the danger of hemorrhage, the drug has not proved useful during or shortly after operative procedures or for patients with lesions from which bleeding might occur. Transfusions of fresh blood do not arrest the hemorrhagic tendency due to dicumarol. Several instances have been observed in which embolism, thrombosis or progression of existing venous thrombosis have occurred despite a low blood prothrombin induced by dicumarol. Symptomatic improvement in the 10 cases of occlusive peripheral vascular disease was not observed during a three month period while the prothrombin remained depressed as a result of dicumarol administration. It is possible that dicumarol affects blood coagulation not only by lowering the prothrombin content but through other mechanisms. Further trial is required before the effects of this drug in peripheral venous thrombosis and in pulmonary infarction can be determined. Dicumarol should not be administered if the prothrombin index is less than 50 per cent.

**Carbon Dioxide by Inhalation as Expectorant**—Banyai and Cadden studied the clinical use of carbon dioxide inhalations in tuberculous patients. A mixture of 10 per cent carbon dioxide and 90 per cent oxygen administered by the closed method through a mask, or by the open method through a glass tube, is well tolerated. The relief obtained is noticed subjectively and objectively. Spells of strenuous, exhausting coughing are prevented and thereby rest is secured for the patient and particularly for the lungs, an unproductive cough is transformed into a useful one, directly after inhalation the amount of expectorated sputum is increased and its character changed from a heavy, thick and tenacious type into a thinner, serous and more watery kind, the use of expectorant drugs and narcotics can be reduced. The effectiveness of carbon dioxide is attributable to the facts that (1) it is a powerful respiratory stimulant and it induces increased inspiratory movements of the thorax, which in turn cause a stretching and dilatation of the bronchial tubes, (2) it stimulates the myoelectric structures of the lung and leads to a forceful peristaltic movement of the bronchi, (3) it liquefies mucopurulent inflammatory exudate that stagnates in the bronchial tract. The treatment is indicated whenever there is an accumulation and retention of inflammatory exudate in the bronchial tract and its evacuation—in spite of strenuous cough—is inadequate. The treatment should not be given to patients who have had recent pulmonary hemorrhage, to those with severe emphysema, when extensive pulmonary fibrosis is present without atelectasis, bronchiectasis or mucopurulent retention in the air passages, to patients with acute plastic pleurisy and pleurisy with effusion, to hypertensive patients, and when the cause of cough is outside the lungs.

### Archives of Neurology and Psychiatry, Chicago

50 381-498 (Oct.) 1943

- Conduction of Cortical Impulses and Motor Management of Convulsive Seizures. P. F. A. Hofer and J. L. Pool—p. 381  
Effects of Morphine on Learned Adaptive Responses and Experimental Neuroses in Cats. A. Wikler and J. H. Masserman—p. 401  
Growth Asymmetry Due to Lesions of Postcentral Cerebral Cortex. W. Penfield and J. S. M. Robertson—p. 405  
Prognosis of Multiple Sclerosis. H. D. McIntyre and A. P. McIntyre—p. 431  
Muscular Tension in Psychiatric Patients. Pressure Measurements on Handwriting as Indicator. J. Ruesch and J. E. Finesinger—p. 439  
Prevention of Hemorrhages in Brain in Experimental Electric Shock. G. Heilbrunn—p. 450  
Localized Sweating as Part of Localized Convulsive Seizure. P. C. Bucy and K. H. Pribram—p. 456  
Syndromes of Pontile Tegmentum. Foix's Syndrome, Report of 3 Cases. W. Freeman, H. H. Ammerman and M. Stanley—p. 462  
The Scuttle Butt Afloat. Study in Group Psychology. A. J. Roos—p. 472

### North Carolina Medical Journal, Winston-Salem

4 421-456 (Oct.) 1943

- Primary Atypical Pneumonia, Etiology Unknown. W. R. Berryhill, E. McG. Hedgpeth, W. G. Morgan, R. E. Stone and Ruby A. Smith—p. 421  
Local Use of Sulfadiazine, Tyrothricin, Penicillin and Radon in Otolaryngology. S. J. Crowe and A. T. Ward—p. 431  
Some Epidemiologic Aspects of Poliomyelitis, with Report of 15 Cases. L. D. Hagaman—p. 435  
Method of Intravenous Iodine Medication for Rapid Preparation of Patients with Diffuse Toxic Goiter for Operation. A. G. Brenizer—p. 439

### Public Health Reports, Washington, D. C.

58 1429-1456 (Sept. 24) 1943

- Experimental Chemotherapy of Burns and Shock. IV. Production of Traumatic Shock in Mice. V. Therapy with Mouse Serum and Sodium Salts. S. M. Rosenthal—p. 1429  
Notes on Pathology of Experimental Trinitrotoluene Poisoning. R. D. Lillie—p. 1436

58 1457-1496 (Oct. 1) 1943

- Tuberculosis Mortality in United States, 1939-1941. J. Yerushalmy, H. E. Hilleboe and C. E. Palmer—p. 1457

### Surgery, St. Louis

14 487-644 (Oct.) 1943

- Consideration of Present Status of Shock Problem. "Problems on Shocks." A. Blalock—p. 487  
Effect of Infusions of Bovine Serum Albumin in Experimental Shock. J. C. Dunphy and J. G. Gibson, II—p. 509  
Venous Pressures in Patients with Varicose Veins. H. S. Mayerson, C. H. Long and E. J. Giles—p. 519  
Study of Healing of Abdominal Operative Wounds Following Closure of Perforated Ulcers of Stomach and Duodenum. R. H. Meade Jr.—p. 526  
\*Sulfathiazole in Chronic Osteomyelitis. J. W. Toumey—p. 531  
Solitary Eccentric (Cortical) Abscess in Bone. R. C. Brown and R. K. Ghormley—p. 541  
Fascia Lata Regeneration. Preliminary Report. J. C. Foshee—p. 554  
Sulfathiazole Toxic Nephrosis and Kidney Decapsulation. C. A. Watenberg and R. C. Coleman Jr.—p. 570  
Abdominal Puncture as Diagnostic Aid. C. M. Henry and C. F. Vale—p. 574  
Influence of Duodenal Content on Intragastric Acidity. Experimental Study. A. Kesavalu and F. C. Mann—p. 578  
Destructive Angiocystic Disease of Pancreas. W. W. Babcock, M. E. Sano and S. B. Gibson—p. 588  
Association of Carcinoma in Body and Tail of Pancreas with Multiple Venous Thrombi. W. E. Kenney—p. 600  
Ligation of Superior Mesenteric Vein. E. Schnug—p. 610  
\*Treatment of Acute Empyema by Continuous Tidal Irrigation. E. J. Poth and Mary E. Mathes—p. 617  
Perforation of Cervical Esophagus with Mediastinitis. K. D. Grace and T. M. Irwin—p. 631  
Simplified Suture Testing Apparatus. C. Dennis—p. 640

**Sulfathiazole in Chronic Osteomyelitis**—Toumey reports 13 cases of osteomyelitis in which chemotherapy was employed at the Lahey Clinic. Healing took place promptly in 10 of the 13 cases, while in 2 chemotherapy could not be used because of reaction to the drug. According to the recommended treatment, a course of chemotherapy and bed rest in the hospital is employed for one week before operation, 90 grains (6 Gm.) of sulfathiazole is given in twenty-four hours. The operative procedure consists in saucerization, local application of from 2 to 15 Gm. of sulfathiazole in the wound, according to the size of the wound, primary closure without drainage, all wound levels being dusted with sulfathiazole, and plaster immobilization, including the joint above and below the site of the lesion. Postoperative chemotherapy consists in oral administration of sulfathiazole for a period of at least two weeks. In 7 cases saucerization was done. Five healed promptly and two did not. Both refractory cases showed sensitivity to sulfathiazole. In 5 other cases saucerization was not done because of actively draining sinuses without gross evidence of bone infection. All these healed promptly with primary closure.

**Continuous Tidal Irrigation in Acute Empyema**—According to Poth and Mathes the aim of the treatment of acute empyema is twofold: preservation of life and prevention of the development of a chronic disease. This aim is realized by the proper application of any procedure which will give early, free and efficient drainage to the cavity, prevent paradoxical respiratory movements of the mediastinal structures and allow the lung to reexpand to fill the cavity and obliterate the dead space. The authors present a scheme for tidal drainage. So-called unresolved pneumonia is usually unrecognized empy-

ema X-ray examinations should be made. The presence of a scoliosis following pneumonia with the convexity toward the affected side is highly suggestive of empyema. The positive diagnosis must rest on the aspiration of pus. At the time of making a diagnostic puncture one should be prepared to remove as much pus as possible. Pus under pressure should not be left in contact with a puncture wound. The combined aspiration of pus and injection of air serve several functions: (1) It relieves pressure, (2) it decreases the surface area bathed by pus and so reduces toxic absorption, (3) it reduces the required frequency of aspiration in the event that thoracotomy is delayed because the slowly absorbed air compensates for the reaccumulation of pus, (4) it keeps the cavity partly distended and lessens the likelihood of early pocket formation, (5) it permits accurate X-ray visualization of the extent and nature of the cavity, and (6) it occasionally results in a cure of the empyema. When the decision has been made that drainage is necessary, when the pus has become thick and fibrinous and when it has not been possible to demonstrate the presence of acid fast organisms, simple tube thoracotomy is done. A location anterior to the posterior axillary line between the fifth and eighth ribs is the site of choice for tube thoracotomy. Fifty-five consecutive cases of postpneumonic empyema were treated during a period of six years. Two year follow-up studies have been obtained in 54 of the cases. There have been no recurrences and in no instances has a chronic empyema developed. Two deaths occurred in infants aged 9 and 18 months respectively.

### Texas State Journal of Medicine, Fort Worth

39 275-322 (Sept.) 1943

- Classification of Bone Tumors G. T. Caldwell—p. 282  
X-Ray Treatment of Bone Tumors C. I. Martin—p. 285  
Diagnosis in Primary Bone Tumors W. B. Carrell—p. 289  
Indications for Surgery in Bone Tumors B. L. Coley—p. 290  
Management of Cardiac Arrhythmias A. W. Harris—p. 293  
Treatment of Osteomyelitis G. W. N. Eggers and M. D. Knight—p. 297  
Leber's Disease Report of 4 Cases in One Family C. S. Alexander—p. 301  
The Doctor and the Postwar World W. B. Russ—p. 305  
Suggested Procedures for Control of Typhus Fever G. W. Cox—p. 305

**Leber's Disease in Family**—Leber's disease is defined as a hereditary bilateral primary optic atrophy. It is transmitted by heredity, almost entirely by the female, who is usually unaffected, although it may rarely be transmitted by the male directly or indirectly through the daughters. It may be seen in successive generations, it usually skips one or more generations. The disease frequently affects more than one person in a family, and males more frequently than females. Literature records one postmortem microscopic examination of the optic nerve made by Reichsteiner in 1932. This author found atrophy of the ganglion cells and nerve fiber layer of the retina and atrophy of the optic nerve limited to the papillomacular bundle with other parts of the nerve normal. The medullary sheaths were almost all destroyed. There was an increase in the glia and atrophy of the finer connective tissue partitions of the nerve. Alexander observed 4 cases of Leber's disease in a family of 5 children. The incidence between the sexes was equal. In the 2 girls the onset of the disease was at 5 years of age whereas usually first symptoms occur at puberty. One patient presented an associated nystagmus, this is unusual in cases of Leber's disease could be found. In 2 patients the onset of the disease was at about the fifth year and no improvement was noted. The onset of the disease is usually between puberty and 30 years of age. The chief symptom is great diminution in vision with central scotoma. Complete blindness does not occur. Prognosis is poor, but improvement sometimes occurs. Treatment is of no benefit.

### Wisconsin Medical Journal, Madison

42 1005-1112 (Oct.) 1943

- Pattern R. M. Hurten—p. 1025  
Erythroblastosis Fetalis and Its Relationship to Transfusion Reactions and Accidents T. A. Leonard—p. 1034  
Management of Toxemia in Last Trimester of Pregnancy W. S. Bumgarner—p. 1037  
Heart Disease and Pregnancy J. Jensen—p. 1043  
Resuscitation of Newborn Infant W. C. Keetzel—p. 1047  
Treatment of Burns A. A. Schaefer—p. 1052

### FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Journal of Radiology, London

16 287-322 (Oct.) 1943

- Occupational Disease of Lungs in Boiler Scalers L. Dunner—p. 287  
Isodose Surfaces W. V. Mayneord—p. 291  
Classification of Laryngeal Cancer from Radiotherapeutic Viewpoint M. Federman—p. 298  
Technic of Radium Treatment of Intrinsic Cancer of Larynx M. Federman and W. V. Mayneord—p. 301  
Radiologic Appearances in Development of Coal Miners' Pneumococcosis E. A. Aslett, T. W. Davies and T. I. Jenkins—p. 308  
Dose Contour Finder for Symmetrical and Unsymmetrical Radiation Beams P. H. Flanders—p. 314  
X-Ray Treatment of Carcinoma of Esophagus D. W. Smithers—p. 317

**Occupational Disease in Boiler Scalers**—Pulmonary lesions in boiler scalers are due to the dust inhaled during scaling. A boiler scaler has not only to remove the scale precipitated on the walls of the boiler but also to clean the flue. Every boiler scaler is exposed to the dust of both the flue and the scale. Dunner describes pulmonary lesions of 12 boiler scalers whose ages ranged from 15 to 70 years. The symptoms bear no relation to the time spent in this work. There were scalers who had worked seventeen to forty-five years before they felt compelled to see their doctor for chest trouble. The symptoms are not characteristic, they are like those of chronic bronchitis or emphysema, but it is noteworthy that severe pains in the chest or dyspnea made some scalers give up their work. A small hemoptysis was noted in 2 cases. The sputum should be examined thoroughly for tubercle bacilli at certain intervals, since tuberculosis may complicate every dust disease of the lungs. As regards the roentgenologic aspects, the author differentiates three types. In the first type there is uniform mottling all over the lungs, in the second type there exist aggregates in addition to the mottling, in the third type fibrosis predominates. The author recommends routine clinical and X-ray examinations of boiler scalers at regular intervals. They should be granted the same rights for compensation as other workers exposed to pneumoconiosis.

### Lancet, London

2 373-400 (Sept. 25) 1943

- \*Limb Compression in Tube Shelter Disaster E. G. L. Bywaters—p. 373  
\*Local Therapy of War Wounds II With Sulfasuxidine R. J. V. Pulvertaft and D. H. MacKenzie—p. 379  
Experimental Alloxan Diabetes in Rat J. S. Dunn and N. G. B. McLetchie—p. 384  
Tuberculosis at Children's Hospital Analysis of Cases—p. 387

**Limb Compression in Shelter Disaster**—Bywaters reports that among 60 injured survivors of a shelter disaster 12 showed signs of muscle damage. One died of other injuries soon after release, 1 developed a high grade uremia but ultimately recovered, the remaining 10 showed every grade of injury from severe muscle damage to skin erythema only, and all recovered. The course was similar to that of the "crush syndrome"—ischemic muscle necrosis following burial beneath debris as the result of aerial bombardment—but less severe, perhaps because of the short time of compression (one and one-half to two and one-half hours). Quantitative estimation of myohemoglobin, creatine and potassium excretion gave a basis for the calculation of the amount of muscle damaged, this was the best guide to the severity of the lesion and ran parallel to the duration of albuminuria and to the local plasma loss as calculated from (a) hemoconcentration, (b) Crooke and Morris's figures for dye distribution and (c) limb swelling. No conclusions can be drawn as to the efficacy of alkali therapy. The fact that 5 patients whose urine was rapidly made alkaline showed no renal failure whereas 1 patient subject to exactly the same trauma of a similar duration and extent, but without alkalization, subsequently developed uremia is no complete proof of the efficacy of alkali.

**Local Succinylsulfathiazole Therapy of War Wounds**—According to Pulvertaft and MacKenzie, succinylsulfathiazole when taken by mouth is to a small extent broken down to sulfathiazole in the intestinal tract. Its use is indicated in

colonic surgery and in abdominal gunshot wounds. Previous workers claimed that succinylsulfathiazole is split by bacteria to yield free sulfathiazole. It therefore seemed possible that external application might provide a continuous potential source of free sulfathiazole, the rate of breakdown being roughly proportional to the severity of the infection. The rate of absorption and degree of breakdown were compared with those of sulfanilamide and sulfathiazole. It was found that the breakdown of succinylsulfathiazole into free sulfathiazole in ordinary

—including plasma, cerebrospinal fluid and fluid from is too small to produce a dangerous blood concentration. The breakdown is increased by use of temperature. Sulfathiazole applied locally in the form of a 20 percent hydrous wool fat cream appeared to limit quickly and effectively the gram-positive flora, control suppurations and accelerate healing. No toxic or irritant properties were noted. Absorption was less than 1 mg. per hundred cubic centimeters of blood. The cream was heated to 40 C. and then applied to wounds with a syringe used as a grease gun. The "reservoir" potentialities of succinylsulfathiazole are a unique feature. If the drug is used intraperitoneally, the hydrous wool fat cream should not be used, as it acts as a foreign body. Probably a microcrystalline form would be best. The authors present the results obtained in 8 cases.

### Helvet Physiol & Pharmacol Acta, Basel

1 1-112 (No 1) 1943 Partial Index

"Tegmental Reaction" and Its Physiologic Significance S. Burgi —p. 3

\*Night Blindness and Vitamin A A. Fleisch and J. Posternak —p. 23

Relations of Hypothalamus to Respiratory Metabolism W. Bloch —p. 53

Central Mechanism of Respiratory Reflexes of Vagal Origin I. Localization of Inspiratory Center O. A. M. Wyss and M. Croisier —p. 89

Relation Between Organ Metabolism and Age of Rats W. Schuler —p. 105

**Night Blindness and Vitamin A**—Fleisch and Posternak studied visual adaptation to obscurity with the adaptometer of Engelking and Hartung in 89 Lausanne school children aged between 9 and 12 years. The investigations were made during the early part of 1942 at a time when, because of rationing, the vitamin A content of the diet was probably inferior to that prevalent before the war. At the first examination the threshold of perception was higher than at subsequent examinations, which must be attributed to the fact that the children were not familiar with the apparatus. The second, third and fourth measurements furnished mean constants. Previous to the fourth examination half of the children received, in addition to the vitamins contained in their diet, 159,000 international units of vitamin A divided over fifteen days. Such a dose of vitamin A will cure night blindness due to vitamin A deficiency. This large dose of vitamin A did not modify the visual adaptation of the children. Those who received the vitamin A supplement had an average adaptation curve which was identical with that of those who had not received vitamin A. The authors conclude that during the months from February to May 1942 Lausanne school children had no night blindness and no vitamin A deficiency. This favorable result differs greatly from observations made in other countries, where high percentages of night blindness were detected.

### Prensa Médica Argentina, Buenos Aires

30 1313-1356 (July 21) 1943 Partial Index

Globular Volume, Globular Concentration and Hemoglobin in Children D. Fuks —p. 1313

Rectosigmoidal Cancer Colectomy R. Finocchietto —p. 1337

\*Peptic Ulcer of Esophagus C. Bonorino Udaondo, V. D. Alotto and J. Nasio —p. 1342

**Peptic Ulcer of Esophagus**—According to Bonorino Udaondo and his collaborators peptic ulcer of the esophagus is rare. Many cases reported in the literature are cases of ulcerous esophagitis erroneously diagnosed. The clinical symptoms and endoscopic findings of the two diseases are similar. Sternal and xiphoid pain which radiates to the interscapular region is the most frequent symptom of peptic esophageal ulcer. The pain can be elicited by pressure on the lower pole of the spleen. It appears either immediately after swallowing of solid

food or with the late rhythm of pain of a gastric ulcer. Dysphagia develops in some cases and is of diagnostic value. In rare cases it is of a paroxysmal type. Regurgitation of food particles streaked with blood and blood in the feces are frequently encountered. Acute hemorrhages from the mouth indicate a grave prognosis. Clinical diagnosis is confirmed by roentgenography and by endoscopy. The esophageal peptic ulcer is easily demonstrated when it is located on the anterior aspect of the lower third of the esophagus. The ulcer is made manifest in the roentgenogram as loss of tissue or as a niche. The ulcer can be visualized by endoscopy. It is covered by an exudate, does not infiltrate its base and does not narrow the lumen of the esophagus. Perforation and hemorrhage are frequent complications. The author reports a case of esophageal ulcer with a biopsy which revealed metaplastic tissue with cells of the gastric fundus. Similar cases have been reported in the literature. They point to the pathogenic role of aberrant gastric mucosa in the various segments of the esophagus.

### Revista de la Asoc. Méd. Argentina, Buenos Aires

57 281-342 (June 15) 1943 Partial Index

\*Changes of Electrocardiogram of Allergic Origin M. Pantolini —p. 286

Asthma and Pregnancy J. J. Crottogini and A. Giampietro —p. 293

**Electrocardiogram of Allergic Origin**—Pantolini studied electrocardiograms of 3 adult patients during an allergic shock caused by ingestion of food to which they had been allergic for many years. The patients suffered in childhood either from asthma or from migraine. The electrocardiogram of 1 patient showed sinus tachycardia in the course of which a sinus block with a complete stop of heart action for one instant occurred. Bradycardia (50 to 60 per minute) and a change of the PR interval (eighteen hundredths of a second) were observed in the second patient. The electrocardiogram of this patient showed, when the allergic shock was over, a heart frequency of 80 beats per minute and a PR interval of fourteen hundredths of a second. The electrocardiogram of the third patient showed paroxysmal tachycardia which disappeared after subsidence of the shock. Allergic substances stimulate either or both the sympathetic and the vagal system. Recurrence of attacks was prevented by elimination of the allergic food.

57 471-522 (July 30) 1943 Partial Index

\*Ayerza's Disease Modern Conception M. R. Castex and E. L. Capdehourat —p. 474

Metastatic Abscess of Prostate with Staphylococci R. Ercole and C. E. Lichesortu —p. 503

**Ayerza's Disease**—According to Castex and Capdehourat, Ayerza's disease presents three stages of chronic bronchitis, of bronchopulmonary and of cardiac involvement. Chronic bronchitis is caused by a toxic infection, trauma of the bronchial mucosa from inhalation of gases, dusts and chemical substances, unfavorable climatic and temperature changes, alcoholism and any disease which lowers the resistance of the bronchial mucosa. The disease begins in youth or in early adult life. It may be present with or without dilatation of the bronchial tree and peribronchial sclerosis. The general involvement of the alveolar bronchioles is manifested in bronchograms as a "tree in winter" without any foliage due to lack of filling of the alveolar bronchioles with the contrast mass. The disease progresses to the second and third stages in persons organically predisposed. Sclerosis of the pulmonary artery and chronic pulmonary emphysema with some degree of rigidity of the thorax develop during the second stage. Insufficient oxygenation of the blood in the pulmonary alveoli leads to general hypoxemia and to hypercapnia. Acute (black) cyanosis in this period is due mainly to hypoxemia, which is also the cause of dyspnea, polyglobulia and increased hemoglobin in the blood. Chronic hypercapnia is the cause of the diminished stimulation of the center of respiration, torpor, somnolence, dilatation and paralysis of the peripheral capillaries and increased alkali reserve. The hemodynamic disturbances and clinical symptoms of the second stage are associated with signs and symptoms which show progressive dilatation and hypertrophy of the right side of the heart. Myocardial insufficiency, predominantly of the right chamber, develops in the third stage, during which the cyanosis is excessive. The therapy during

the first stage is directed toward the chronic bronchitis. Inhalations of a spray of sulfamylamide solution are of value. Inhalations and subcutaneous injection of a mixture of oxygen and carbon dioxide and respiratory gymnastics are of value in the second stage. The therapy of the third, the cardiac stage of the disease is directed toward alleviation of cardiac insufficiency.

### Revista Medica de Chile, Santiago

71 615-712 (July) 1943 Partial Index

Acute Coronary Occlusion F Rojas Villegas and I Lagos Pinto —p 615

Bromsulphalein Test in Clinical Practice H Alessandri H Ducea and E Moysa —p 625

Treatment of Prostatic Carcinoma by Bilateral Extracapsular Orchiectomy and Administration of Diethylstilbestrol Dipropionate I Ibarra Loring and A Marchant —p 639

**Coronary Occlusion**—Rojas Villegas and Lagos Pinto analyzed the data on 50 patients presenting clinical and electrocardiographic features of acute coronary occlusion. The condition was most common in the fourth decade of life and was predominant in males. The incidence was higher among persons exposed to constant intellectual and emotional stress. Heredity and tobacco seem to play a significant part as etiologic factors. Precordial pain with characteristic irradiation was the most frequent symptom. The occurrence of severe shock in the acute coronary occlusion was regularly associated with a poor prognosis, being present in all patients who died. Age was also an important factor in determining the ultimate outcome, all deaths occurring in patients over 50 years of age.

**Bromsulphalein Test**—For the evaluation of liver function in normal and pathologic conditions, Alessandri and his collaborators compared the bromsulphalein test with the cephalin cholesterol flocculation and the sodium benzoate test. In 10 normal persons thirty minutes after the intravenous injection of 5 mg of bromsulphalein per kilogram of body weight, values lower than 10 per cent of the dye were detected in the serum. Retention above 10 per cent should be considered as due to abnormal liver function. Twenty-five patients with clinical diagnosis of cirrhosis of the liver were studied. In 22 serum bilirubin was higher than normal. Twenty-four exhibited an abnormal degree of bromsulphalein retention. Cephalin cholesterol flocculation was positive in 19. The sodium benzoate test was abnormal in 15. The Takata-Ara reaction was positive in 17. In 3 patients with liver damage as evidenced by hepatomegaly, hyperbilirinemia and positive cephalin cholesterol flocculation, the bromsulphalein test gave normal values. In all cases of cardiac insufficiency there was pathologic retention of bromsulphalein. The test was normal in localized pathologic conditions such as liver carcinoma and liver abscess and in cases of lead, manganese and arsenic intoxication. The combined use of the tests studied should offer in clinical practice the best evaluation of the degree of liver damage.

### Revista Medica de Rosario, Rosario

33 491-596 (June) 1943 Partial Index

Lymphomatosis J P Picena —p 528

\*I Agglutinin M Balaguer —p 564

**I Agglutinin**—Balaguer has performed, in the course of the last three years, more than three thousand blood transfusions. He observed the phenomenon of autoagglutination in 4 cases. The blood of the first 2 patients agglutinated that of 18 donors of all blood groups including blood of universal donors. It disappeared from the blood serum in twenty-four hours. Two patients had acute and chronic insufficiency of the liver respectively. Sedimentation rate of red cells was greatly increased. Autoagglutination was intense. The blood agglutinated without control blood serum, with control blood serum of the group 2 and still more intensely with control blood serum of the group 3. The centrifugated serum agglutinated the erythrocytes of all group types including that of universal donors. Agglutination increased in the blood preparations which were kept on ambient temperature and still more in those which were kept in the ice box for fifteen minutes at a temperature of 2 C. It diminished in blood smears heated to a temperature of 37 C. or kept in an incubator at a temperature of 37 C. The blood serum of these patients agglutinated the

erythrocytes of the blood of the groups A and AB in a dilution of 1 to 256 and those of the groups O and B in dilutions of 1 to 128 and 1 to 16. Simonin's test of saturation of the agglutinins in 1 cc of blood serum with repeated centrifugation of the serum after successive agglutinations from addition of one drop of the serum gave the following results. Agglutination stopped after five drops of the serum were added to blood of the group B seven drops of the serum to blood of the group O, ten drops to blood of the group AB and eleven drops to blood of the group A. The authors believe that normal blood contains I agglutininogen but not I agglutinin which is the cause of autoagglutinations. In cases of either chronic or acute liver insufficiency the structure eliminates I agglutinins. The latter are destroyed within twenty-four hours in preserved blood serum. The effects of I agglutinins are selective for the various types of erythrocytes. Agglutination increases in a cold temperature and diminishes with a temperature of about 37 C. The presence of I agglutinins in the blood is a constant symptom of liver insufficiency, especially in advanced and severe cases. Transfusion is therefore contraindicated in the advanced stages of liver insufficiency. Serologic tests should be performed in benign cases of liver insufficiency before transfusion is given, to determine whether or not I agglutinins are present.

### Archiv fur Kinderheilkunde, Stuttgart

125 113-160 (March 24) 1942 Partial Index

Problem of Acute Coronary Circulatory Disturbance During Infancy P von Koss —p 124

\*Keratomalacia and Vitamin A Content of Food of Infants H Goll —p 144

Demonstration of Meningococci in Skin G Bonell —p 153

**Keratomalacia and Vitamin A Content of Food of Infants**—Goll reports a case of keratomalacia. The infant, aged 10 weeks, had been fed milk from the family cow. The vitamin A content of the milk of this cow was suspected to be low, because she had received no green feed for months (end of April). Examination of the milk revealed that the vitamin A content was at the lower limit of normality. Thus, although the child had received comparatively small amounts of vitamin A it received not less than many other nurslings who do not develop keratomalacia. That the ocular lesion was keratomalacia was definitely proved by the clinical aspects, by epithelial smears from the cornea and conjunctiva, by the vitamin A deficiency of blood and urine and by the prompt response of the lesion to the administration of a vitamin A preparation. The author cites various possible factors which might explain why, on practically identical diets, some infants develop keratomalacia and others do not. The author believes that there are individual differences in vitamin A requirements and in the susceptibility to lesions brought on by deficient diets. A local predisposition of the eye might play a part.

125 161-208 (April 24) 1942 Partial Index

Modern Treatment of Gonorrheal Vulvovaginitis in Children H Lohe —p 161

\*The 1937 Poliomyelitis Epidemic in Zurich with Particular Consideration of Early Symptoms and Treatment W Abegg —p 166

Familial Occurrence of Congenital Myxedema R Pfaffenbichler —p 185

Significance of Vomiting in Diphtheria A Beer —p 189

Cardiac Conduction Disturbances in Scarlet Fever A Beer —p 194

**Epidemic of Poliomyelitis in Zurich**—Abegg reports observations on 167 cases of poliomyelitis observed in the course of the 1937 epidemic in Zurich, Switzerland. The treatment consisted chiefly in the administration of serum and of blood transfusions. The serum consisted of a mixture of convalescent and so called contact serum. The efficacy was not entirely convincing. Of the 167 patients, 62.3 per cent recovered, 19.2 per cent were improved, 8.9 per cent were not improved and 9.58 per cent died. Of the 16 patients who died, 7 were moribund at the time of hospitalization. Follow-up revealed that in 10.8 per cent of the patients the paralysis was so severe that they will be severely handicapped for life. No other defects remained besides the paralysis. The severe meningitic symptoms produced neither impairment of intelligence nor signs of parkinsonism. The character changes suggested by the parents of some of the children were more the result of relaxation in discipline due to pity than to organic change.



**Der deutsche Militärarzt, Berlin****7 541-604 (Sept.) 1942 Partial Index**

- \*Experiences with Atabrine and Calcium in Treatment of Typhus P van Meerendonk—p 541  
Muscular Symptoms Following Trichinosis and Suitability for Military Service G B Gruber—p 542  
Suggestion Regarding Therapy of Serum Disease E Leitritz—p 548  
Acetylsulfanilamide in Treatment of Trichomir K Oberhoff—p 548  
Spirillosis of Oral Cavity H A Gins—p 553  
Difficulties and Changes in Treatment of Infected Gun Shot Fractures W Ruckert—p 560  
Indications for Amputation on Battle Field H Hellner—p 570  
Improved Apparatus for Dip Infusion at Main Dressing Station P Brandenburger—p 576  
Necessity of Early Care for Injuries of Nose and Sinuses J Berendes—p 579

**Atabrine and Calcium in Typhus**—Although atabrine treatment of typhus as described by van Meerendonk in an earlier report had reduced the mortality of patients between 30 and 45 years of age by about one third, observations in 225 cases revealed that it had not given the favorable effects that had been expected from it. He believed that a severe impairment of the vascular and capillary system was responsible for the hemorrhagic exanthem as well as for the encephalitis. The more intensive yellow coloration of the skin of typhus patients treated with atabrine, as compared with that of malaria patients given the same treatment, is a further indication of vascular and capillary impairment. Van Meerendonk assumed that calcium deficiency existed in the blood of typhus patients and therefore decided on an intensive calcium therapy. The severest cases in the age group between 20 and 40 years responded to calcium therapy with prompt defervescence, the mortality was zero. Severe cerebral symptoms and impairment of hearing ceased to occur, the rash disappeared earlier and did not become hemorrhagic, yellow staining was reduced. Estimation of the calcium content of the blood of typhus patients revealed values as low as 6 mg per hundred cubic centimeters. Patients treated with calcium did not exhibit the abnormally low blood pressures. The incidence of bronchopneumonia diminished. The combined atabrine and calcium therapy was employed in the following manner. The patient was given a 0.1 Gm tablet of atabrine three times daily and from 10 to 20 cc of a 20 per cent solution of calcium gluconate, or, if this was not available, the same amount of a 10 per cent solution of calcium chloride. In severe cases, up to 40 cc of these solutions were given daily. Atabrine can be discontinued at the end of seven days or at the time of defervescence, if this occurs sooner. Calcium therapy should be continued for some days after the cessation of fever. The author reaches the conclusion that atabrine acts on the causal organism of typhus, while calcium influences the organic changes.

**Munchener medizinische Wochenschrift, Munich****89 391-414 (May 1) 1942 Partial Index**

- \*Experiences of Specialists in War and Peace Time with Injuries of Facial Portion of Skull F Specht—p 391  
Diagnosis of Typhus by Microscopic Examination of Roseola A Dietrich—p 395  
Archlike Decline of RST Interval H Ritter—p 395  
Vitamin A Storage in Infants H Goll and L Fuchs—p 397  
General Practitioner and Synthetic Vitamins E Trävel—p 400

**Injuries of Facial Portion of Skull**—Specht emphasizes that the facial portion of the skull encloses a complex cavity which is of considerable functional importance. The rhinologists should make the diagnosis and decide on the treatment. Intracranial complications and septic conditions may result from nasal infection in normal circumstances and even more frequently after injuries. Early prevention of adhesions and obstruction of the accessory cavities is of the greatest importance. Recovery in severe cases of osteomyelitis originating from accessory cavities may be obtained by radical surgical intervention. Immediate correction is more simple and less dangerous. Internal healing may be obtained only by rhinologic methods. Involvement of adjacent or of more distant organs should be kept in mind. Basal skull fractures with ear involvement are frequent. There are also less common paths of infection such as the subperiosteal abscess of the temporal bone or of the zygomatic arch resulting from suppuration of the middle

ear. Whether or not the injured will get the correct treatment depends on competent organization, which, however, need not be of vital importance provided the physician who is first called to attend the injured will consult with all the specialists concerned as soon as possible.

**Wiener klinische Wochenschrift, Vienna****55 41-60 (Jan 16) 1942 Partial Index**

- Indication for Surgical Treatment of Chronic Constipation Permanent Results H Finsterer—p 42  
\*Therapeutic Effect of Injections of Duodotyrosine Preparations H Pieber and H Seyfried—p 46  
Importance of Rapidity of Sedimentation of Blood Corpuscles in Tuberculosis H Pondecker—p 49  
Intravenous Nonspecific Immune Therapy of Rheumatic Diseases R Hoschek—p 51

**Duodotyrosine Preparations for Hyperthyroidism**—Pieber and Seyfried report their experiences with intramuscular and intravenous injections of duodotyrosine preparations in 20 cases of hyperthyroidism. Mild cases, particularly in the young, reacted exceedingly well. Peroral duodotyrosine therapy has been tried with satisfactory results. One should not miss the optimum time at which to perform the operation in the more severe cases of hyperthyroidism. Conservative treatment with duodotyrosine preparations gives satisfactory results, so that surgical intervention may be omitted in a considerable portion of the cases. Duodotyrosine therapy is an excellent preparatory treatment to surgical intervention. It has the advantage over Plummer's iodine therapy in that it may be stopped at any point. No untoward reactions will occur if the surgical intervention is postponed for some reason. Satisfactory results may be expected from the injections of duodotyrosine in cases in which the Plummer treatment was ineffective or in which symptoms were caused by the delay of the surgical intervention. Good subjective results were obtained in climacteric hyperthyroidism and in cases associated with severe hypertension and generalized arteriosclerosis. Twenty to 100 mg of the substance injected daily for from two to four weeks will produce no subjective reactions.

**55 121-140 (Feb 13) 1942 Partial Index**

- Cutaneous Phenomena in Chronic Leukosis and Lymphogranulomatosis (Paltauf Sternberg) H Fuhs—p 121  
Therapy of Sterility A I Amreich—p 125  
\*Testosterone Therapy of Peripheral Circulatory Disturbances W Ernst—p 131

**Testosterone Therapy of Peripheral Circulatory Disturbances**—Ernst treated 29 patients with peripheral circulatory disturbances with testosterone propionate. The patients were from 40 to 70 years of age, 55 years on an average. The peripheral circulatory disturbances were organic in 15 cases and functional in 14. The clinical picture of intermittent claudication was present in 9 cases and that of angina pectoris in 11. Hypertension, hypotension, hyperthyroidism, anemia and hypertrophy of the prostate were associated conditions. Intramuscular injections of 10 mg of testosterone were made every second or third day for one or two weeks, followed by injections of 5 mg at the same intervals. In cases of severe intermittent claudication or with threatened gangrene a single initial dose of 25 mg was injected and the dose was later reduced to 10 and 5 mg. Injections of 5 mg were continued twice or three times weekly for three to four weeks after improvement had been obtained. The average amount of testosterone propionate administered varied from 45 to 155 mg, being 76.4 mg on an average. There were no toxic reactions. Bluish discoloration or extreme pallor of the skin disappeared and the color of the skin was restored to normal. Trophic ulcers healed. Subnormal local skin temperature returned to normal. Heart action improved. The typical sudden pains became less severe and less frequent and finally disappeared. The turgor of the skin became firm. There was a strong subjective sensation of heat in the extremities. Tinnitus aurium and vertigo disappeared. Treatment of peripheral circulatory disturbances with testosterone propionate is recommended particularly in cases in which the improvement of the physical and psychic state is of equal importance to that of the circulatory disturbances.

## Book Notices

**Advances in Pediatrics Volume I** Edited by Adolph C. De Sanctis  
11p New York Post Graduate Medical School and Hospital Columbia  
University New York Cloth Price \$1.00 1p 30¢ with illustrations  
New York Interscience Publishers Inc 1942

This is the first of a series of volumes offered as reviews of specialties in medicine. The present volume includes articles on toxoplasmosis by Albert B. Sabin, virus diseases by H. I. Hodes, chemotherapy by B. W. Carey, electroencephalography by N. Q. Brill, the role of vitamin K in hemorrhage in the newborn period by H. G. Poncher, persistent ductus arteriosus and its surgical treatment by Robert F. Gross, the premature infant by Abraham Tow, tuberculosis by W. E. Nelson, endocrinology by M. B. Gordon and a final chapter dealing with a variety of subjects by the editor of the volume, A. G. De Sanctis and G. E. Pittman. Each of the sections is accompanied by a bibliography of references to recent periodical literature. The authors are men of recognized competence in the fields that they discuss. For the pediatrician who wishes to be abreast of problems of current interest the book may be well recommended.

**The Pharmacopoeia and the Physician. A Series of Articles on the Use in Therapy of Pharmacopoeial Substances Which Appeared in The Journal of the American Medical Association. Second Series. Fabrikoid.** Price \$1.00 Pp 360 Chicago American Medical Association 1943

The articles included in this book have been published from time to time in THE JOURNAL. A previous series was published in the period 1936 through 1938. The popularity of that series of articles led to the production of the present volume which is made available in handy form on thin paper. The articles are among the most practical of all the available contributions in therapy. Such chapters as those by Marvin on the therapy of dropsy, by Brenniemann on pediatric emergencies and by Stillians on the therapy of pruritus are for example, immediately useful to every general practitioner in his work. The article on epilepsy discusses the possibilities of control by a wide variety of recently developed drugs and techniques. Similarly the Rackemann contribution on asthma will be immediately helpful to the physician who must see to it that patients with this chronic disturbing condition are kept comfortable. The demand for this work has been so great that it is being widely circulated by the cooperation of the Board of Trustees of the U. S. Pharmacopoeia. A translation is also being made available in Spanish.

**Banting as an Artist** By A. I. Jackson. With a memoir by Frederick W. W. Hilpwell. Paper Price \$1. Pp 37 with illustrations. Boston Bruce Humphries Inc. Toronto Ryerson Press 1943

In preparation for this booklet an attempt was made to discover every piece of Sir Frederick Banting's art work in Canada, the United States, Great Britain and elsewhere and to make a reference to it. Following a brief sketch of the life of Banting, the author presents a critical note on his work as an artist. Banting was especially devoted to the scenery of Canada, but his sketch book accompanied him throughout the world. The book includes a catalogue of his paintings with the area where the painting was made and the name of the present owner. There are also lists of his drawings and wood carvings. Many of the paintings are owned by physicians, but the vast majority are still in the possession of Lady Banting.

**Unit Medical Records in Hospital and Clinic** By Dorothy L. Kurtz. Cloth Price \$2. Pp 110 with 8 illustrations. New York Columbia University Press 1943

In recent years the competent medical record librarian has become a professional of no mean attainments. Credit for the development rests principally on the leaders in the field themselves. Creditable publications consequently have come with ever increasing frequency from the record librarians. This book falls in that group. It does not pretend to present information on all aspects of the work of the medical record librarian but it does give much valuable information on the purposes and proper management of the so-called unit medical record—the patient's record both in the hospital and in the outpatient department. It will contribute materially to the work of medical record librarians and consequently to the medical profession.

**O. Iechebnom deystvii antiretikulyarnoy tsitotoksicheskoy syvorotki 'ATsS'** Sbornik tezisev dokladov zaslushannykh na konferentsii 12-14 Iyulia 1942 goda pod redaktsiei I. so vsstupitelnoy statiei akad. A. A. Bogomolets. [On the Therapeutic Action of the Antireticular Cytotoxic Serum 'ATsS'. Abstracts of Reports Delivered at the Conference on the 12th-14th of July 1942 with an introductory article by the editor A. A. Bogomolets.] Cloth 1p 168 Ufa Izdatie Akademi Naul USSR 1942

This small volume contains reports on the therapeutic effect of the antireticular cytotoxic serum. The new therapeutic agent, the result of years of research by Prof. A. A. Bogomolets, is based on the conception that the connective tissue of an organism contains a number of hitherto uninvestigated physiologic functions. The aim of the antireticular cytotoxic serum is to stimulate these functions and to intensify active immunity.

The serum is produced by the immunization of horses with the cells of the spleen and bone marrow taken from a human corpse. The determination of the amount of cytotoxins in the serum obtained is important. It was found that the amount of cytotoxins in the serum of the immunized animal can be determined by applying a modification of the reaction of complement fixation (the reaction of Bordet-Gengou), that is, by using an antigen for the reaction of complement fixation, the same antigen as is used for the immunization of the animal. To determine the strength of the serum it is necessary to find out in what dilutions it still gives a complete fixation of the complement. Therapeutic serums are those which give a complement fixation in a dilution of not less than 1:100. The serum is injected subcutaneously in an isotonic solution in the dilution of 1:10. The stimulating dose of the diluted serum equals 0.3-1.0 cm. Small doses of cytotoxic serum have a stimulating effect, whereas large doses have an inhibitory effect. The reactivity of the physiologic system of connective tissue can be determined by a number of tests, such as (1) the dermal test with trypan blue, (2) blood morphology, (3) the sedimentation speed of erythrocytes, (4) the titer of the complement, (5) the opsonic index and (6) the phagocytic activity of the leukocytes. On the basis of more than 2,500 clinical cases presented at the conference, a favorable effect was established in cases of war trauma and in (1) the delayed healing of fractures, sluggish and infected wounds, generalized purulent infection, frostbites and burns of the second and third degree and infected injuries of the eye, (2) a number of infectious diseases such as spotted typhus, puerperal and gynecologic sepsis, rheumatism, unresolved pneumonia and abscess of the lung, (3) traumatic and infectious diseases of the central and peripheral nervous system and a number of psychoses, and (4) diseases due to trophic disturbances of the tissue, such as ulcer of the stomach, ozena and eczema. Of the 1,500 cases of various wounds and injuries in which one would expect the most striking effect of the serum only 60 per cent gave 'positive results' while 40 per cent gave 'negative results.' With the exception of the report on ozena, most of the results rather deal in generalities. The theoretical basis for this new therapy appears to be well thought out and to contain an intriguing biologic concept. The clinical results are not altogether convincing. All that can be said for the present is that the work is interesting and original. The volume is in Russian with abstracts in English.

**What the Citizen Should Know About Wartime Medicine** By Joseph R. Darnall, M.D. Lieutenant Colonel Medical Corps United States Army and V. I. Cooper. Cloth Price \$2.50 Pp 237 with 11 illustrations by André Jandot. New York W. W. Norton & Company Inc 1942

The present world war placed on the medical profession a burden beyond any that has ever before been its responsibility. Few people really understand the immensity and the complexity of the task of the Army Medical Department. Hence the book of Lieut. Col. J. R. Darnall is especially valuable in explaining the machinery for the examination of selectees, the organization and function of the medical departments of both the Army and the Navy and the work of these departments in the theater of military operations, in the home area and in the combat zone. Especially interesting is the chapter entitled 'Medicine Takes to the Air,' dealing with phases of medical care during war that did not exist in previous wars. Most useful to the average reader are the sections on communicable diseases and other infectious diseases which are especially a military problem. The book is supplemented by a well chosen bibliography.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### THYROIDECTOMY FOR ADOLESCENT HYPERTHYROIDISM

To the Editor—I have heard an authority on thyroid disease state that the thyroid gland should never be removed from a girl between 12 and 16 years of age for hyperthyroidism. Is this the general consensus?

M D, Iowa

ANSWER—Two main arguments form the basis of the opinion expressed by a few authorities that thyroidectomy is an undesirable procedure for the treatment of adolescent hyperthyroidism. 1. Thyroidectomy would lead to postoperative myxedema and pseudocretinism in an age period of physical growth and mental development. 2. Hyperthyroidism at this age would tend toward spontaneous and permanent remission. However, these contentions never have been supported by clinical facts and remain on a purely theoretical basis. Well controlled studies of the subject have shown that, as a rule, postoperative myxedema does not occur in these cases and growth and development of the children on whom thyroidectomy is performed proceeds in an entirely normal manner. In many cases conservative treatment will fail to control the condition, and hyperthyroidism will either persist or recur after a period of time. The delay in surgical intervention in hyperthyroidism of adolescence has led to the development of disturbances in behavior and psyche with the consequent harmful effects during the formative adolescent period. From an extensive review of the literature concerning the pros and cons of thyroidectomy in adolescent hyperthyroidism and from the analysis of their own carefully controlled data, Black and Webster concluded that all children under 18 years of age having hyperthyroidism should be subjected to subtotal thyroidectomy at the earliest moment compatible with adequate preparation. This attitude represents the consensus on the subject. References

Black, J. B., Jr., and Webster, Bruce. Hyperthyroidism in the Adolescent. *J. Clin. Endocrinol.* 1: 859 (Nov.) 1941.  
Greene, E. I., and Mora, J. M. Thyroidectomy for Thyrotoxicosis in the Young. *Surg., Gynec. & Obst.* 53: 375 (Sept.) 1931.  
Welti, H. Surgical Treatment of Toxic Diffuse Goiter of Children. *Mém. Acad. de chir.* 63: 1229 (Nov. 17) 1937.

### PENICILLIUM AND PENICILLIN

To the Editor—What substance chiefly is used on which to grow the mold from which penicillin is now secured for medicinal purposes? I understand that the mold in Roquefort cheese is related botanically to the mold from which penicillin now is chiefly extracted. Is the Roquefort cheese mold especially rich in penicillin? Is the domestic cheese now being used in dressings for infected open wounds because of the rapid mold growth?

Alexander C. Howe, M.D., Brooklyn

ANSWER—*Penicillium notatum* is grown on various liquid mediums for the purpose of producing penicillin. The common medium is composed of corn steep liquor, containing lactose or dextrose and a number of essential salts. Some strain of *Penicillium notatum* may be isolated from Roquefort cheese, but not all strains of *Penicillium* are capable of producing penicillin. The active antibacterial agent is developed by the mold during its growth in liquid medium. It is not present in large quantities in the mold itself. Before the question could be answered more specifically it would be necessary to isolate strains of the mold from cheese and test them for their capacity to produce active penicillin.

### BACK SUPPORTS AND TRUSSES NOT INDICATED FOR NORMAL WORKERS

To the Editor—In the last few months I have had a suggestion that a canvas back support and/or a truss be routinely furnished to all workmen engaged in laborious lifting as a preventive measure against development of inguinal hernia and back strains or sprains. My opinion is against this. I would appreciate your point of view.

S. Robert Thau, M.D., New York

ANSWER—Laboring men do not need a canvas back support to prevent back strains or sprains. As a matter of fact, such supports will probably induce muscle atrophy and will not protect against injuries. Such supports also inhibit the workman in performing the normal duties of his occupation, because he does not have the freedom of motion he would have without any support. A truss will not prevent a hernia. Inguinal hernias are congenital in origin and will probably develop in spite of a truss. In this case likewise a truss to prevent hernia would have an inhibitory effect on a man's occupation.

### JAUNDICE ASSOCIATED WITH MENSTRUATION

To the Editor—A white unmarried woman aged 34 has noted jaundice, which, as nearly as can be ascertained, had its onset at about the time of puberty. It first appears about two weeks before menstruation, reaches a peak about two or three days before the period, subsides rather rapidly after its onset, and goes through the same course the next month. It is definitely more severe at one period than at another but is always present, sometimes in slight degree. There are no food idiosyncrasies, and fats and "heavy" vegetables are well tolerated. Stools are never clay colored, and belching and flatus are not a problem. Chronic constipation is relieved by liquid petrolatum. The previous history is noncontributory. The family history reveals diabetes in the maternal grandmother, aunt, uncle and cousin. With some periods there appears a chronic cystic mastitis, the onset of the enlargement of the cysts corresponding rather closely with the onset of the jaundice, and there is some relationship between the severity of the jaundice and the amount of mastitis present. The appetite becomes keen at the midmenstrual period, which corresponds to the onset of the jaundice and lasts for approximately one week. She says she cannot satisfy her appetite at this time. The menstrual periods are irregular, thirty-four to forty days, lasting four to five days and of moderate flow. Cramps and pain are not usual, except that when the periods are late there is a tendency toward distressing cramps. The later the flow, the more severe the jaundice, mastitis and cramps. On physical examination one week before menstruation the patient appears well developed and well nourished but not obese. The scleras present an orange-yellow icterus. The skin, normally rosy, is now sallow. The breasts have multiple palpable tender nodules along the medial and inferior borders bilaterally. The abdomen, liver and spleen are of usual size. All other findings are essentially negative. There were 4,930,000 red cells, hemoglobin was 14.2 Gm. Fragility test gave initial hemolysis of 0.44 per cent and complete hemolysis 0.40 per cent. The urine test for urobilinogen was positive in a dilution of 1 to 10 and 1 to 20, negative at 1 to 30. The icterus index was 15-21. The direct Van den Bergh was negative indirect, 2.9 mg per hundred cubic centimeters. No cholecystogram was made. Search of available literature does not reveal any similar cases. Is such a syndrome recognized? Has any work been done on it?

M.D., Wisconsin

ANSWER—This is a unique syndrome. Lichtman (Diseases of the Liver, Philadelphia, Lea & Febiger, 1942, p. 643) says that Senator has noticed jaundice repeated with each menstrual period in certain individuals.

The case probably represents some functional disturbance and it deserves further study to determine whether this functional disturbance is in the biliary tract (presumably a transient obstruction due to dyskinesia with spasm of the sphincter of Oddi) or whether it is a functional disturbance of the hepatic parenchyma. For this reason whatever tests are done should be done during the height of the jaundice and should be repeated in the free interval. The contrast between the findings at the two periods would be significant. The tests already done (presumably performed at the height of the jaundice) are inconclusive. They at least make a hemolytic mechanism improbable.

In addition to the tests already mentioned there should be cholecystograms, cholesterol and cholesterol ester determinations in the blood, cephalin flocculation tests (Hangar) and alkaline phosphatase determinations in the blood. Possibly also galactose tolerance tests and benzoic acid (hippuric acid) tests might be of help. It is reported that liver function shows diminution by the benzoic acid test during the first day of menstruation (Heilig, Robert, and Kantiengar, *N. L. Ann. Int. Med.* 16: 538 [March] 1942).

### PERMANENTLY ENLARGED BREASTS FROM PREGNANCY

To the Editor—A woman aged 30 had an enlargement of her breasts during her first pregnancy. She was unable to nurse the baby, and the breasts remained enlarged. Now during the second pregnancy the breasts enlarge further. Is there any way of stopping their growth?

M.D., New York

ANSWER—Apparently the forces which make for the development of mammary tissue include both the estrogenic and progestational hormones of the ovaries and certain of the pituitary secretions. The only known way to reduce these stimuli would therefore be either extirpation or partial destruction of these glands, presumably by surgery or irradiation. Such methods could not be considered in clinical medicine. The alternative is, of course, plastic surgery, which would have to be delayed until after the approaching lactation period has ceased.

### INHERITANCE OF LEFT HANDEDNESS

To the Editor—Which hand will the offspring use when both parents are left handed (the relative percentage)? When there is one right handed and one left handed parent?

M.D., Alabama

ANSWER—The causes of right and left handedness are not clearly understood. Some studies suggest hereditary factors operating in some families, but the extent to which they do so is unknown. If both parents are left handed approximately 45 per cent of children are left handed. If only one parent is left handed about 12 per cent of children use the left hand. These statements are not based on large series but probably they are not grossly incorrect.

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## SIGNIFICANCE OF VISUAL DEFECTS IN WAR PRODUCTION EFFORT

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HAMMOND, IND.

Visual defects as they concerned the war production effort prior to 1943 were mainly those within industry. As the demand for guns, tanks, planes, ammunition and ships grew, it was reflected in an increasing demand for special tempered steel, chemicals, precision parts, armor plate and alloys. More had to be produced by each machine unit, fewer mistakes were allowable, less waste of material was permitted, more sensitive inspecting was called for. A direct correlation was found in graphs showing the relationship between accuracy and visual perfection and between lost time accidents and defects in visual performance. Here and there over the country it became imperative to conduct a visual survey of whole industries in which vision played an important part in all units of production. In other industries it became imperative to conduct sectional visual studies of special key employees—such as sorters, inspectors, crane operators and fine-part assemblers. This quickened effort to evaluate the part played by eyes in war production brought realization that visual skills are of utmost importance not only in selection of men for the armed forces but in placement and selection of men and women in the war industries.

The detailed data previously discovered necessary in evaluation of an employee's visual ability was built into the preemployment and preplacement pattern, namely, determination of the minimum visual standards for the job and adherence to them. These standards were simple groupings of the basic visual findings according to the visual demands of job groups and included (1) uncorrected acuity for distant and for near vision, (2) acuity with the glasses habitually worn, i.e. work acuity, (3) muscle balance for distant and for near vision, (4) stereopsis and (5) color appreciation. To these basic findings, which designated a minimum amount of information, were added such special tests of near vision (e.g., determination of the near point of accommodation and of convergence), as might be needed in selecting eyes for exceedingly intricate work done within 12 inches from the eye.

These visual tests, which are simple and yet so much more complete and more accurate than had previously been considered needful, had been studied statistically in 1940. They were reflected in certain percentages and graphs worked out both for men already on the pay rolls of industry and for applicants seeking jobs in industry. As is shown in the accompanying graph,

the percentage of defects of acuity, muscle balance, stereopsis and color vision were almost the same within industry as they were outside of industry i.e. in the labor market of that day. This labor market of course reflected the type of civilian reserve from which industry had to draw to increase its pay rolls. In a recently completed study of a war industry the same labor pool or civilian reserve, was analyzed as of 1943 as well as the level of defects within industry as of 1943, and the results were compared with those of 1940.

The picture revealed as of today is indeed a startling one. Its significance in terms of the war production effort is of immediate concern. First, what every one has sensed and what has often been stated as true without factual data to substantiate it has now been proved. Industry is indeed scraping the bottom of the barrel! In further analyzing the graph one finds that the percentages of visual defects given in table 1 were found in the civilian labor pool, or among the applicants, in 1940 and in 1943.

In 1940 and in 1943 the employees already on the pay roll showed the percentages given in table 2.

The percentage of defects among those who had already slipped by the admission tests and were at work early in 1943 has risen slightly, but, most serious of all, the percentages of defects in the unaided eyes of the slowly dwindling stream of civilian applicants has doubled. This per se would not be so ominous if the percentage of defects among persons wearing their work correction was not also up, and almost to an equal degree. This means that not only has the task of further improving visual efficiency within industry become greater but the need of visual rehabilitation among the civilians of 1943 is very great. Salvaging of human eyes will become an even greater task in 1944 and 1945.

This problem immediately presents itself to the three groups that are most directly concerned. First, management, needing greater visual perfection in its increasingly complicated production skills, must be more vigilant than ever in the use of screening tests for its applicants. There are now many jobs where a person with a wooden leg or one arm can turn out top work. But the jobs where he does not need to see well are indeed becoming rare. In some industries management is searching the highways and the byways for persons to take over its new and idle machines. In other industries it is searching for labor to staff its gigantic new production lines. It is at this point that war production turns to the second group directly concerned, the highly trained experts who can help to salvage the eyes of those men and women, the third group, who are waiting at the gates and otherwise will be rejected.

In order to appreciate fully this gigantic problem one must recognize many new factors but one especially,

that in order really to salvage this most precious human commodity—vision for today's urgent need—it is necessary to find new, speedy and directly controllable methods of conservation. Formerly an indifferent "Go see some one about your eyes and come back—if you can pass the vision test, maybe we'll have a job for you" was the statement of the employment office. Now in many vital industries it is essential to find out immediately, often actually inside the plant, whether the man with 20/100 vision in each eye can have his vision brought to normal with glasses or the woman with 20/200 vision in the right eye and 20/20 in the left has an amblyopic right eye, optic nerve atrophy or macular retinitis. The latter can do her type of work with one eye, but has she a progressively ocular disease that will in due time affect her other eye? As the age level of applicants rises except for women and minority groups, the vigilance of the refractionist and the responsibilities of both the management and the ophthalmologist increase.

Men and women applying for war work form the group directly concerned. They come from among the ordinary civilians, the citizens of the home communi-



Visual defects of employees and applicants in 1940 and 1943. The percentage of each defect was found to be higher among persons over 40 than among those under 40.

ties, many of whom have never worked in industry. They have worked in stores and homes and supplied the many services of modern existence, or they have not worked at all. In fact, they can truly be said to constitute the rank and file of the practice of any ophthalmologist in city or village. They therefore reflect the whole range of ophthalmic diseases and troubles encountered in office practice.

The consulting ophthalmologist working with the industries he is responsible for has now to supervise with extreme vigilance the entire industrial eye program: treatment of eye injuries, eye protection plans, job standard evaluations and rehabilitation procedures. He must study the applicants turned over to a refractionist for routine correction through failure in the screening tests. As the age level rises and the Mannings become operative he has also to search for glaucoma, for early degenerative retinal diseases, for early lenticular changes and for early hypertensive signs in the fundi. Many of the applicants are totally unaware that anything is wrong, many have never had any sort of ocular examination, the vision of many can be saved. However, all this is only a small part of the problem which has been laid so suddenly at the ophthalmologist's

door. His vigilance must further extend itself. It must be carried into his private practice; he must assist local medical societies in setting up proper educational programs on the radio and in the newspapers, wherein people are urged to make sure that all is well with their eyes for their country's sake as well as for their own.

These facts lead to but one conclusion, namely that physicians in general have an exceedingly important

TABLE 1—Visual Defects in Civilian Labor Pool or Among Applicants

	1940	1943
Acuity unaided (naked eye)	18	34 (almost double!)
Working acuity (with whatever correction was worn)	14	23
Depth perception	18	26
Color appreciation	4	5
Muscle balance	16	23

and a direct responsibility in the war production effort. This responsibility is twofold. First, they must walk boldly out of their "ivory towers" and go directly to industry and offer their services. They must do this with an honest determination to be open minded and realistic. They must try not to let old stereotyped ways of doing things (even if these ways are good) interfere with their willingness to learn new ways, and quickly, if the occasion calls for them. This is a war, and it is their war. Management, labor, the farmer, the housewife and the 18 year old have learned new ways of doing things, and they have not always been pleasant ways. So too physicians need badly to loosen up their tight collar of hesitations and worrisome fears and get to work on the problems that only they are trained to solve, even if the new but necessary ways are unpleasant. To illustrate, I shall take an actual example—one industry and one day's group of 35 applicants who had been found to have substandard visual acuity in their original screening tests. These 35 represent according to statistics the average number of defects in acuity found for about every hundred persons "screened," namely about 35 per cent. The results of refraction were as follows: Of the 35, 18 who would otherwise have been left in class B were brought to normal with proper glasses and put into class A, 10 who would otherwise have been rejected conclusively were brought to normal with glasses and put into class A, and, 7

TABLE 2—Visual Defects Among Employees

	1940	1943
Acuity unaided	21	26
Working acuity	12	18
Depth perception	16	28
Color vision	5	5
Muscle imbalance	22	24

were rejected because of disease (for example, optic nerve atrophy, cataract, macular hemorrhage and old perforating injury of the eye).

In this particular war plant the visual standards had to be high because of the nature of the work—class A having 20/30 vision or better in both eyes. In terms of the war need, 28 of 35 applicants were salvaged immediately and put to work at class A jobs. Ten of these would undoubtedly have been lost entirely to this particular plant, at which they were applying, if they had simply been told to go get their eyes fixed. There

are still too many jobs open where nobody bothers about whether or not the applicant sees well. Eighteen of these applicants would have been denied class A jobs and management in this plant, needing top visually qualified workers most urgently, would not have been able to use these 18 men except as sweepers and janitors and in similar capacities. In this instance of course the ophthalmologist was working close to the day by day problems of the industry and was therefore actually responsible for equipping 28 of 35 men. This is the salvage figure for one day for one industry. Figured by the month it means an average of 800 to 850 men and women given a chance to work by being equipped to meet the requirements. Such salvaging should occur day after day, month after month in industry after industry, and it demonstrates how ophthalmologists can face their first responsibility by going forth to meet the needs of industry inside its gates.

The second great responsibility of the ophthalmologist is to make effective a newly conceived approach to the daily office routine and private practice. This is reflected by exercise of the utmost vigilance in

1 Correcting refractive errors for the job, asking wives and 17 year olds who are now working exactly what they are doing and prescribing accordingly

2 Using his previous knowledge, or acquiring what more he may need, so as to give orthoptic training for occupational objectives. For instance, the small-parts assembly girl whose previous close work consisted in reading the latest best seller or sewing on buttons now does close work for eight to ten consecutive hours six days a week. She has an exophoria that gives her great discomfort and makes for many mistakes because of the blur produced. She can probably be fully rehabilitated by orthoptic exercises and good general medical treatment. A low hemoglobin content, a low basal metabolic rate, infected tonsils and abscessed teeth are luxuries in war time.

3 Searching for incipient glaucoma, removing cataracts, discovering the real causative factor in a contact dermatitis of the lids (bran, oil, paint, chemicals), curing a stubborn chronic staphylococcal conjunctivitis which causes extreme annoyance in the glare of an inspector's spotlight, taking care of patients with foreign bodies, flash burns and other injuries quickly (ahead of private patients), sending workers with minor injuries back to work as soon as possible, keeping a sharp lookout for scattered cases of epidemic keratoconjunctivitis, and protecting the industrial worker by isolating the occasional infected school child or housewife, who might otherwise be the source of trouble for an entire plant.

4 Teaching parents how a neglected squint can keep Willie from flying a plane or perhaps being able to choose freely later in life a technical occupation in which binocular vision is essential. The ophthalmologist should take time and use pressure in "selling" what is in his honest opinion the right thing to be done.

These itemized particulars of course form only a part of the full picture with which every busy ophthalmologist is daily occupied. The objectives have had to become streamlined in order to meet the challenge of a nation of workers. There are few if any "drones" left in the hive, and their human counterparts had perhaps best be left sitting in reception rooms until the last.

Ophthalmologists do not need much more than an honest desire to learn something of industry's needs in the sphere of visual problems and a willingness to try to do things in new ways, new places and under new circumstances in order to take their proper and most important place on the home front. Visual defects are of real significance in the war production effort.

112 Rimbich Street

## ABSTRACT OF DISCUSSION

DR H GINN GARDINER, Chicago. This is a graphic representation of what spells the success or failure of many such programs. There can be found here probably one of the greatest rehabilitation programs that has been brought forth during the war.

DR T L FERRY, Boston. Dr Kuhn mentioned "determination of minimal visual standards for a given occupation." That is not easily obtained nor is it an exact determination, as the individual with superior mental ability could undoubtedly perform the required work with a lower visual standard than one with a less agile mind, provided, of course, asthenopia did not arise. It would serve a useful purpose if with every type of work a really scientific minimal visual standard should be established on a scientific basis. It is satisfying to note that this is being done. These tests of the individual workers do need to be as simple as possible so that they can be done accurately and rapidly without assuming that the applicant who is being tested is above average mentality. Dr Kuhn's reference to color appreciation rather than tests for color blindness is well worded. Some who are not color blind still have faulty color appreciation, as evidenced by those who at first show evidence of color blindness in their test for military service and who, with some study of color appreciation, in turn appear to prove that they have attained adequate color vision for even the highly specialized branches of the armed forces. The optimistic point of view of Dr Kuhn is noteworthy. Her reference to the important need of visual rehabilitation shows that many visual disturbances she has noted are to a certain extent, at least, not hopeless. To stress prevention of eye injury is a matter of great importance in this consideration as well. One type of condition that has come to my attention forcefully has been injury to the eye from spun glass. This patient has a small spill of spun glass  $\frac{1}{4}$  inch of an inch in diameter and  $\frac{1}{4}$  of an inch long projecting through the cornea into the anterior chamber within the pupillary area. Although it is flexible, experiments show that such a glass spill will puncture the lens capsule before it bends. The information from the industrial manager is that this accident was due to the fact that the young employee did not follow directions in handling this material. Thus education in all mechanical means in preventing blindness is the answer to one phase of the problem.

DR MORRIS DAVIDSON, New York. Dr Kuhn's plea for an industrial orientation of ophthalmology is timely and desirable. The "almost double" incidence of uncorrected visual acuity defects in table 1, of which four fifths were found correctible to almost normal, the lack of parallelism with the incidence of corrected visual acuity, particularly if qualified by "with whatever correction was worn," may simply mean that the civilian population is not receiving the same eye care in 1943 that it did in 1940. That depth perception shows less deterioration in table 1, and muscle balance less deterioration in table 2, would also suggest the same explanation. There is no doubt that there is a serious problem urgently calling for a solution. The problem is the organization of effective eye care for the industrial population. We need first a program of special training for such work, which should provide for departments of industrial ophthalmology in all graduate schools of ophthalmology and for the development of a standard technic of examination and a standard organization of ophthalmic care in industry. Educational work with industrial management is also needed to make it realize that visual defects undoubtedly account for a considerable proportion of accidents and that "carelessness," to which 50 per cent of accidents are attributed, is also partly the result of undiscovered visual defects among the industrial workers. Industrial plants with tens of thousands of employees do not realize the necessity of employing full time ophthalmologists to look after the workers' eyes properly. Until we have perfected our facilities for the training of more ophthalmologists, we may take advantage of the abundance of optometrists and incorporate them into the organization of industrial eye care as technical assistants to ophthalmologists in charge.



DR HEDWIG S. KUHN, Hammond, Ind. Dr. Terry's mention of the difficulty of exact determination of minimal visual standards for a given occupation is quite true, but we do not need to start with exact determinations. We can greatly assist in placement if we do such simple things as eliminate all persons who lack depth perception from the lists of prospective crane operators, power machinists, tractor drivers and the like. The factor of superior mental ability is always the margin of safety, but that would not be enough safety to avoid trouble in putting a color blind person on a dangerous job depending on color discrimination. These rough groups of the primary visual skills can at least be a first step forward in developing the truly scientific minimal visual standards. Dr. Terry speaks of Dr. Davidson going to the root of the entire problem in indicating the lack of instruction that physicians have prior to practice and the lack of instruction in industrial ophthalmology in graduate schools.

## HUMAN INFECTION WITH VENEZUELAN EQUINE ENCEPHALOMYELITIS VIRUS

A REPORT ON EIGHT CASES OF INFECTION  
ACQUIRED IN THE LABORATORY

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AND  
HILARY KOPROWSKI, M.D.  
NEW YORK

The importance of the viruses of western<sup>1</sup> and of eastern equine encephalomyelitis<sup>2</sup> in the causation of human disease is now well established.

Meyer,<sup>3</sup> shortly after the discovery of the western equine virus in 1930, described the occurrence of encephalitis in 3 persons who had cared for sick horses and he voiced the suspicion that human infections with this virus may occur.

In 1938 Eklund and Blumstein,<sup>4</sup> investigating the occurrence of 6 human cases of encephalitis in Minnesota, found neutralizing antibodies to the western virus in the blood serum in 1 of 3 cases tested, and in the same year Howitt<sup>5</sup> isolated the virus from the brain in a human case of encephalitis.

In 1941 the largest epidemic of encephalitis ever recorded occurred in and around North Dakota,<sup>6</sup> which alone had 1,080 cases with ninety-six deaths, and the causative agent was shown to be the western equine virus.

An outbreak of human encephalitis, proved to be due to the eastern virus,<sup>7</sup> occurred in Massachusetts in

1938<sup>8</sup> and resulted in eight deaths among the 30 cases reported (Feemster<sup>9</sup> refers to 38 cases).

The third member of the trilogy of equine encephalomyelitis viruses, immunologically distinct from the other two, is the virus of Venezuelan equine encephalomyelitis<sup>10</sup>. This virus appears to have received very little attention from veterinary or medical investigators, and the available information is meager and limited in scope. As far as we are aware, no instances of human infection with this virus have been reported from Venezuela or contiguous areas.

While this manuscript was in preparation, the report of Casals, Curnen and Thomas<sup>11</sup> describing 2 cases of human infection, both mild and acquired in the laboratory, reached our hands. It is our purpose in the present communication to describe 8 human cases of laboratory infection with the Venezuelan virus in which the clinical course of the disease varied from a comparatively mild illness to a severe infection with manifestations of central nervous system involvement. All 8 cases were proved immunologically to be due to the Venezuelan virus, and in 6 the virus was recovered

### EPIDEMIOLOGY

During the course of investigations on the causation of encephalitis following vaccination against yellow fever<sup>12</sup> it became desirable to make comparative studies on certain neurotropic viruses, and for this purpose an isolation section was temporarily established in the Yellow Fever Research Laboratory. It is located on the second floor of the building to segregate it from the laboratories (third floor) devoted entirely to yellow fever investigations. The section is quartered in a single large room, one portion of which contains the usual basic laboratory apparatus and supplies and the rest provides space for mice. It began to function in September 1941, the original personnel consisting of two physicians, E. H. L. and H. K., two technical assistants, G. D. and L. P. da S., and two animal caretakers and general utility men, C. P. O. and another person, A. F., who, at the time the laboratory infections reported here occurred was away on vacation, remained well and is therefore not considered further. J. D. B., technician, joined this group in September 1942, and J. S. R., animal caretaker, was added in January 1943.

To keep the foreign viruses within the confines of the isolation section, a number of precautions were taken. No employee other than the section's personnel was permitted to enter, under threat of immediate dismissal. All the viruses worked with were passaged, desiccated and stored in locked steel boxes in the section. No animal received in the section was permitted to leave alive, and all dead animals, cage refuse, floor sweepings and so on were collected in special receptacles. These containers with their contents were immersed in tanks of cresol solution for a minimum of one-half hour, but usually several hours, were withdrawn and allowed to drain, and the refuse was then incinerated. Mouse boxes were disinfected by similar

From the Laboratory of the Yellow Fever Research Service, Rio de Janeiro, Brazil.

The work on which these observations are based was carried out under the auspices of the Serviço de Estudos e Pesquisas sobre a Febre Amarela (Yellow Fever Research Service), which is maintained jointly by the Ministry of Education and Health of Brazil and the International Health Division of the Rockefeller Foundation.

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immersion and then scrubbed with soap and water. All glassware and instruments were boiled in covered enamelware containers which, when cool were doused liberally with cresol solution before delivery to the sterilization room. Tables and work benches were routinely washed with cresol solution at the beginning and end of each day's work and before and after use during the day. All manipulations of infectious material were done over cresol soaked towels spread on the table or bench.

During the past two years, ten different neurotropic viruses have been worked with at one time or another and the precautions outlined appear to have been adequate.

On Aug 18, 1942 a strain of the Venezuelan equine encephalomyelitis virus was received from Dr. Raymond Cunha of the Instituto de Biologia Animal, Rio de Janeiro, who originally obtained it from Beck and Wickoff.<sup>13</sup> The virus was immediately passaged, and up to June 26, 1943 it had been worked with on fifty-two separate occasions chiefly passages to secure source material for experiments and for animal immunization. On June 26, 1943, the fifty-third occasion, 120 suckling mice were inoculated according to the technique used many times before to serve as infected individuals in an experiment on contact infection. The noteworthy feature of this experiment which distinguished it from all previous ones, lay in the unusually high frequency with which, for various reasons, the contaminated mouse boxes were handled. About 80 per cent of the inoculated animals died within 36 to 48 hours and the majority were partially eaten by the mothers. Since the virus is present in the brain in high concentration and persists in the blood up to the time of death, there is every reason to believe that the wood shavings and dust in the boxes were heavily contaminated by the blood and carcasses of the partially devoured animals. The mice in each box were inspected two or more times daily to transfer sick animals to other boxes, to detect signs of illness in noninoculated contacts and to remove dead animals. Because of the small size of the experimental mice, it was necessary to comb through the shavings with forceps to find them. Such agitation of the contents of the boxes raised a fine and, in sunlight, perceptible cloud of dust, to which the examiners were exposed for an appreciable period at least twice daily.

The first human infection appeared on June 30 in J. S. This person was a technician in the ornithology section, was well trained in the handling of yellow fever virus and had been permitted the facilities of the isolation section for inoculation of birds with the eastern equine encephalomyelitis virus. He had worked with the eastern equine virus on numerous occasions from Feb 26, 1943 until June 26, 1943. On the latter date he handled for the first time a preparation of the Venezuelan virus and inoculated a number of birds. The nature of the experiment required him to spend several hours daily in the isolation section for the succeeding several days. He was therefore subjected for a considerable period of time to the same environmental conditions as the permanent staff of the isolation section, 2 persons who assisted him in the bird inoculations were exposed to the virus on that occasion, did not enter the section again and did not become ill.

The second case of illness appeared on July 1 and was followed by 3 more on July 2, the sixth appeared on July 5. Only 3 members of the section's personnel

escaped infection—A. F., who at the time of the experiment was on vacation and H. K. and E. H. L. both of whom, owing to the press of other work, entered the section only intermittently and for relatively brief intervals.

The experiment was repeated on a larger scale on July 10, and this time both H. K. and E. H. L. examined the mice and effected the necessary switches of animals between boxes. H. K. became ill on July 13, E. H. L. on July 14.

The occurrence of the cases in two groups, each after an experiment of the type described, points to the presence in each experiment of a common source of infection. This source, for the reasons mentioned is strongly suspected to have been the contaminated dust in the mouse boxes, and we are inclined to believe that the infections were acquired by the respiratory route.

Since Casals<sup>11</sup> and we have found the virus present in throat washings, it is not impossible that infection can be transferred through the medium of infected droplets. In the present series G. D. (patient 6) may conceivably have acquired his infection in such a manner, since he became ill 72 to 120 hours after patients 1-5, in all of whom the disease had its onset within 48 to 96 hours after the first exposure to contaminated dust.

Patients 7 and 8 likewise became ill 36 to 48 hours after their first exposure in the second experiment. With a virus as infectious as the Venezuelan equine virus it appears reasonable that a short incubation period dating from the experiment, is more probable than a long one, which would have to be assumed if these persons acquired their infection from any of the first groups of patients, the possibility that the latter occurred, however, cannot be ruled out.

#### REPORT OF CASES

CASE 1—J. S., a white man aged 30, a technician, as explained, was not permanently attached to the staff of the isolation section. About 3:30 p. m. on June 30, 1943 he began to feel cold and noted that his arms were covered with gooseflesh and that his face felt hot. Before leaving the laboratory at 4:30 p. m. he expressed the belief that he was coming down with an attack of grip because he then had a generalized body ache and a beginning frontal headache. During the evening the body pains increased in intensity and were stated to be especially severe over the shoulders, lumbar region and backs of the legs. The headache became almost unbearable. He felt continually nauseated and vomited several times during the night. Despite the use of several blankets he was unable to relieve his feeling of chilliness; he sweated profusely but did not shiver. No medication was taken.

He awoke on July 1, after having had little sleep, feeling much worse than on the preceding day. He states that the muscle pains were so severe and the malaise so pronounced that every movement was made only with considerable effort. The headache persisted in undiminished intensity. No symptoms of respiratory infection were present. He reported for duty as usual but, because he appeared quite ill, was sent home and urged to consult a physician. He went to bed, and acetylsalicylic acid and acetophenetidin 0.5 Gm. of each every four hours were prescribed by his physician. Because of his fever and thirst he drank large amounts of fruit juices and water despite the nausea which left him without desire for other foods. In the late afternoon, although still weak he felt somewhat improved chiefly because the muscle pains had decreased considerably and his headache had diminished slightly. The nausea continued however and during the night he vomited two or three times. Profuse night sweats were again present and he spent a restless night.

July 2 the patient continued with his medication and on the whole felt much better. However, his neck and shoulders were sore and he moved his head as infrequently as possible because

<sup>13</sup> Beck, C. E. and Wickoff, R. W. G. *Venezuelan Equine Encephalomyelitis*. Science 88: 530 (Dec. 2) 1938.

of the exacerbation of the headache such movements produced. The muscular pains were almost gone, and the nausea had disappeared. He still felt weak and had no desire for food. He believes he also had some elevation in temperature because his face and body felt extremely hot, and he was unable to satisfy his thirst. No symptoms of respiratory infection were present.

On July 3 he reported for duty, stating that aside from feeling weak he felt much improved and capable of working the half day (Saturday). It was observed that he held his head rigidly and avoided lateral movements, on questioning he denied the presence of rigidity and explained the position as one of "defense to prevent exacerbations of the headache induced by the smallest movements" (*defesa para não exacerbar a cefaleia que se torna acusada aos menores movimentos*). This was regarded with suspicion, but, since he stated that he felt so much improved that he had stopped medication and appeared cheerful and mentally alert, he was permitted to work. During the next three days he continued to hold his head somewhat stiffly. The headache persisted, but in mild, bearable form. His strength returned rapidly, he became fatigued less quickly, and on July 7 he felt that he had recovered, since the headache was gone and he moved his head freely. By July 9 his strength and appetite were back to normal.

CASE 2—C P O, a white man aged 34, an animal caretaker and general utility man, began to be ill at 6 p m on July 1, 1943, when he had a sudden violent chill. Attacks of shivering and chattering of the teeth, lasting about one minute, occurred at five to ten minute intervals for the next hour. Shortly after 7 p m he took one tablet (0.325 Gm) of acetylsalicylic acid and about 100 cc of a hot infusion of garlic and went to bed but could not sleep. Between 9 and 10 p m a severe headache localized between the eyes, set in, and he began to complain of photophobia. He felt hot, perspired freely and was unable to sleep most of the night because of the headache. About 4 or 5 a m he began to complain of generalized muscle aches and pains, especially severe in the lower part of the legs.

July 2 he awoke late in the morning with a strong photophobia, intense body aches and an almost unbearable headache. He felt so tired and weak that he remained in bed the whole day, but because of the headache he was able to sleep only intermittently and for short intervals. He felt hot but did not perspire, nor was the fluid intake any greater than normal. No food was taken during the day. Nausea was absent. He states that no symptoms of respiratory infection were present.

He awoke on July 3, after sleeping fitfully during the night to find that the photophobia had disappeared and that the headache and body aches had diminished appreciably, pain in the calf muscles was still strong, however, so that he walked as little as possible and avoided climbing stairs. He went to the laboratory but, because of asthenia and leg pains, performed all his routine tasks, as far as feasible, while seated. Toward the middle of the afternoon the muscle pains and the headache diminished in intensity and he felt much better. He was without appetite and ate nothing the entire day. He slept well the whole night.

On July 4 he awoke completely free from his headache. Slight pains in the calf muscles were still present, but very mild and during the afternoon practically disappeared. He still felt weak and had no appetite, although he felt hungry. He slept soundly that night. On July 5 he felt much improved and had no complaints except that he still felt weak and tired easily. He ate well for the first time since the onset of illness. During the next few days the asthenia disappeared and he was able to work as usual.

CASE 3—J S R, a Negro aged 28, an animal caretaker and general utility man, was well until about 10 a m on July 2, 1943, when he suddenly felt cold and dizzy. Shortly thereafter he developed a frontal headache, which by 2 p m was so severe that he was barely able to continue with his work. His temperature at noon was 100.4 F, at 2 p m 101.4 F. With the appearance of the headache he began to feel dizzy at frequent intervals. By 4:30 p m his headache was so severe that in order to escape sudden exacerbations in its intensity, produced by sudden movements or jarring of the body, he walked slowly and carefully. His temperature at this time was 102.2 F.

He arrived home at 5 p m and complained that his head felt so heavy that it seemed ready to fall off his body and that his legs were so weak he could hardly stand. He felt cold and shivered, although his body was hot. Food was refused and he went to bed at 6:30 p m after taking two tablets of veganin (each tablet contains codeine phosphate 0.01 Gm, acetylsalicylic acid 0.25 Gm and acetophenetidin 0.25 Gm). He slept poorly and was troubled with a profuse night sweat.

He awoke on July 3 feeling about the same as on the preceding day and remained at home. Veganin medication was continued, two tablets being taken every four hours. He felt weak, the headache continued with unabated severity, and sudden movements of the head produced vertigo and a slight nausea. Despite a distaste for food, he forced himself to eat. Muscle aches and pains were absent and there were no symptoms of upper respiratory tract infection. He slept well during the night, perspiring, but not as much as on the previous night. The chilly sensations had disappeared.

During the next three days the night sweats and the headache (still frontal) diminished and on July 7, when he returned to the laboratory, had disappeared. His appetite improved and his strength returned gradually, and by July 12 he felt that he was back to normal.

CASE 4—J D B, a white man aged 34, a laboratory technician, awoke on July 2, 1943 with a frontal headache and pains in the calf muscles of both legs but did not feel too sick to work all day in the laboratory. No other symptoms were present. He slept well and on July 3 went to the laboratory as usual and worked until noon (Saturday). The headache and leg pains were still present and still as strong as on the preceding day. Toward noon his shoulders and back began to ache, and he felt so weak that he went to bed as soon as he arrived home. He had no appetite and ate practically nothing all day. His condition remained essentially the same on July 4, when he again worked half the day (Sunday). On July 5 the muscle pains were gone and only a mild headache was present. The anorexia persisted. He worked all day and felt much improved. On July 6 his headache disappeared, his appetite returned and aside from the asthenia, he had no complaints.

CASE 5—L P da S, a white man aged 29, a laboratory technician, about 2 p m on July 2, 1943 began to feel tired and complained of aches in the back and the legs, he attributed this to the fact that he had worked rapidly and intensively all the morning without pause. Later in the afternoon he developed a bothersome frontal headache, malaise and a generalized body ache. He left the laboratory at the usual hour, 4:30 p m, and in the belief that he was in the initial stages of grip he stopped at a drugstore, where he received an intramuscular injection of one ampule each of "Gripion" (quinine chlorhydrate, urethane, sodium nucleinate and cacodylates of sodium, strychnine and guaiacol) and of vitamin C. On arrival at home he took a cup of tea and one tablet of "Melhoral" (butanoic-o-oxbenzoic acid 0.5 Gm and caffeine 0.05 Gm) and went to bed. His face was hot and flushed, and his whole body felt warm. The headache had now become severe and he complained of photophobia and of pain behind the eyeballs. He was restless and slept little all night.

On July 3 he was so weak that it was with great difficulty that he got out of bed and dressed himself. The headache and muscle pains of the lower back and legs persisted in undiminished intensity. No symptoms of upper respiratory tract infection were present. The feverish feeling was now replaced by a continuous sensation of cold. He reported at the laboratory at the usual hour but his general appearance, especially the ashen color of his face, was so alarming that he was immediately sent home. He was urged to call in a physician but did not do so. On arrival home he took a cup of tea and a piece of bread, the only food taken all day. In the late afternoon his headache ameliorated somewhat but the muscle pains continued with unabated severity. He slept well that night and the next day, July 4, he found the headache and muscle pains gone. He was so weak that he remained in bed all day and ate but little.

On July 5 he felt much better and was able to work all day. He was pale and weak and had little desire for food. By July 8 he considered himself to be as well as before his recent illness.

CASE 6—G D, a white man aged 29, a laboratory technician began to be ill on July 5, 1943, when at about 10 a m he developed a headache, and muscular aches and prisms appeared in the lumbar region and in the arms and legs. At 11 a m he found his temperature was 100.6 F and he took one tablet (0.325 Gm) of acetylsalicylic acid. His symptoms were relieved from about noon to 1 p m but around 2 p m returned with increased intensity. His head felt as though a heavy weight had been placed on it and ached over the centroparietal regions. Strong photophobia appeared late in the afternoon. At 5:30 p m he had a chill, after which he felt continually cold although covered with blankets. Because of the severe head ache, muscle prisms and chilly sensation he slept but little. The chilly sensation disappeared toward morning.

July 6 the headache and body prisms persisted with the same intensity. He felt so weak that he remained in bed until evening, attempts to arise at noon were attended by nausea and vertigo. Very little food was taken during the day. Toward evening he felt somewhat better—the headache became bearable, the photophobia disappeared and the muscle prisms, now much decreased in severity, were present only over the shoulders and in the thighs. He slept quite well and on July 7 he awoke feeling so much improved that he reported for work at the laboratory. He still felt tired and had no appetite but was cheerful because his headache had disappeared and the muscle prisms were so mild as not to be bothersome. A generalized headache appeared and disappeared several times during the day however, but was so ephemeral that no attention was paid it.

During the next three days his strength and appetite returned to normal. Periodic headaches, always slight, were stated to occur on July 8 and 9 and disappeared entirely July 10.

CASE 7—H K, a white man aged 27, a physician, whose illness had its onset July 13, 1943 about 10 p m, had a sudden violent chill, which was followed by several attacks of shivering 15 to 20 minutes apart and 1 to 2 minutes in duration. At midnight he took 0.4 Gm of aminopyrine and went to bed. He complained of tachycardia and slight dyspnea was restless and was unable to sleep most of the night. About 5 a m July 14 a dull ache appeared over the occiput and during the next three hours became severe and radiated to the sides of the head. He ate a meager breakfast and went to the laboratory. About 8:30 a m sharp muscle pains appeared in the lumbar region. At 9:30 a m one tablet of veganin was taken. Some amelioration of the headache and backache was obtained until about 11 a m, when both returned with greater intensity and he began to feel drowsy. After a specimen of blood and a throat washing were taken, he went home to bed. At 2 p m his temperature was 101.8 F, the pulse rate 120 and the headache almost unbearable. He took another tablet of veganin, without relief. His drowsiness increased and photophobia appeared. He began to feel hot, and at 5 p m his temperature was 103.6 F, pulse rate 128. About 6 p m he began to perspire profusely and felt some relief from his symptoms. At 8 p m his temperature was 101.0 F. Shortly thereafter he was seen by a physician. Physical examination revealed nothing aside from a slightly reddened pharynx and a tachycardia. The neurologic examination was completely negative. Acetyl-p-amido phenyl salicylate 0.65 Gm three times daily was prescribed.

At 7 a m July 15 his temperature was 102.6 F and pulse rate 108. The headache was now frontal and still severe, and the photophobia was accentuated. There was no change in the muscle pains. No signs of upper respiratory infection were noted. He was drowsy but did not sleep much. Desire for food was absent, but he drank large amounts of fruit juices and mineral water. At noon his temperature was 101.8 F, pulse rate 100, and the pains in the back were less severe. At 7 p m the temperature was 101.8 F, pulse rate 108 and he felt somewhat improved. He slept well all night and again perspired heavily.

On July 16 he felt much better. The drowsiness, photophobia and backache had disappeared. The headache, mild in the morning, was practically gone by evening. His temperature during the day was between 99.4 and 99.6 F. July 17 although weak he was in good spirits, alert and able to eat. All his

symptoms had disappeared. His temperature during the day was between 98.0 and 98.4 F. Medication was discontinued.

On July 18 he suffered a relapse. His temperature at 7 a m was 100.8 F and severe frontal headache, low back pain, photophobia and intense pain over the right mastoid were present. Acetyl-amido p phenyl salicylate medication was resumed. At noon his temperature was 101.2 F and at 5 p m it was 99.4 F. Except for the headache, all his symptoms disappeared by late evening, and he was able to sleep all night.

July 19 his temperature returned to normal. Only a mild frontal headache was present, and this persisted until July 23. Between July 19 and July 23 his strength returned and his appetite improved, and on July 24 he resumed his duties at the laboratory.

At the present time he has a slight intention tremor of the hands, which is gradually disappearing and an annoying insomnia which does not permit him to sleep after 4 or 5 a m regardless of the amount of sleep obtained before that time.

CASE 8—E H L, a white man aged 35, a physician became ill on July 14, 1943, when a slight generalized malaise appeared during the morning and persisted unchanged throughout the day. About 3 p m he developed a mild generalized headache. On July 15 he awoke with a severe frontal headache sharply localized between the eyes (for the next ten days the headache persisted in this area and was always so sharply circumscribed that he could almost delineate the area of ache). Body aches and prisms were present and in the shoulders and lower back were severe. A slight pharyngeal irritation was present. In the belief that his symptoms were due to a developing grip he began to take large quantities of fluid. By 10 a m he felt so ill and weak that he left the laboratory and went to bed. His temperature was 103 F. Acetylsalicylic acid 0.65 Gm was taken every three hours with but little effect on the muscular pains and none on the headache. A persistent nausea was present and aside from the breakfast, he ate nothing. During the night the severity of the headache increased to the point where it was almost unbearable and he was unable to sleep most of the night.

The next day, July 16, he went to the laboratory as usual. He noted that his face was hot and flushed, although he continually felt cold. The temperature was 102.5 F. Attacks of nausea occurred at frequent intervals and he had no desire to eat. Several times during the day he was forced to interrupt his work momentarily because of sudden transient attacks of vertigo. Photophobia was absent. Muscle pains were strong. He felt tired and weak and he had to rest frequently. He was also drowsy but attributed this and his fatigue to the lack of sleep the previous night. In an effort to ameliorate the headache, which by evening had become excruciating, he switched to Anacin (acetophenetidin, quinine sulfate and caffeine) two tablets (0.65 Gm) every three hours. He retired at 7 p m but because of the headache slept very little, even though he was tired and drowsy. The next day, Saturday July 17, he went to the laboratory although he felt so tired and weak that every movement demanded considerable effort. Medication during the night having had no effect on the headache he discontinued it. The muscle pains were less severe in the back and shoulders but were worse in the legs, especially the calf muscles. The nausea disappeared, but the anorexia persisted. In the laboratory he felt so ill that he was unable to do any active work but depended entirely on the technical staff to do it under his supervision. At 1 p m, after partaking of a little toast and weak tea he went to bed and slept soundly for twenty-two hours.

He awoke on July 18 much refreshed but very weak. He was entirely free from muscle pains and the headache, which had diminished considerably, was bearable during the day its intensity decreased gradually, but it did not disappear. He remained seated most of the day and was comfortable as long as no activity was attempted since he fatigued quickly. The anorexia continued but he forced himself to eat a little. At 5 p m he returned to bed and slept soundly through the night.

July 19 he arose to find that he had only a slight headache. He was alert was in good spirits and worked all day although he still felt weak. His appetite began to return. On July 20 his condition was about the same.

On July 21 he awoke feeling well physically but with a vague sense of uneasiness and apprehension. He ate his usual breakfast and went to the laboratory. About 10 a. m. he began to feel cold, and within half an hour severe aches appeared in the legs, back and shoulders. His head felt heavy, he was sleepy, and at noon the headache, which for the past three days had been minimal, returned in its full excruciating intensity and again was localized between the eyes. Nausea and vertigo appeared with the headache, and he was unable to eat his lunch. By 2 p. m. he was so ill that he was taken home. His temperature was 103.5 F. His face had an ashen gray pallor, and he had a persistent sensation of chilliness, especially in the hands and feet, even when covered with blankets. He complained of a pounding heart, slightly labored breathing and photophobia. He was irritable, responded to questions brusquely, refused to tolerate any one in his room and demanded to be left in peace. After his room was darkened he almost immediately went to sleep and remained in a somnolent state all that day. At 7 p. m. he vomited a large amount of bile stained mucus and again went to sleep. He slept almost continuously day and night for five days but was easily aroused when spoken to or by unusual outside noises. During the course of conversations he remained awake for whatever length of time was required and then went back to sleep. At no time was there any evidence of mental confusion, he himself was aware of his somnolent state and even observed that his breathing seemed irregular and that he sighed frequently. When awake he usually complained most bitterly of his headache and of pains in his back and legs. During the five days of somnolence his temperature ranged from 101.5 to 103 F and he subsisted only on tea and toast, the sight or smell of any other food induced nausea.

On July 26, twelve days after the onset of the first symptoms and after five days of somnolence, he awoke cheerful, alert and exultant that his headache was gone. The muscle pains were also gone, and except for a soreness in the shoulders and back he felt comfortable and ate a hearty breakfast. His temperature was 99.8 F. A weight loss of 5 Kg. had occurred during the twelve days of illness.

On July 27 he resumed his work at the laboratory and was able to work all day, although he became so fatigued that he had to rest frequently. In the course of the next week his strength and appetite gradually returned. As in case 7 insomnia and a fine intention tremor are present as sequelae but are gradually disappearing.

#### ISOLATION OF A FILTRABLE AGENT FROM SIX PATIENTS

The entire personnel of the isolation section had been bled on July 3, at the time the first infections occurred, and the serums were stored in the refrigerator.

When patient 7 became ill he was bled on July 14 the second day of illness, and his serum as well as the July 3 serum specimens from patients 1, 2, 4, 5 and 6 were inoculated into mice. Patient 8 was bled on July 15, and the serum was injected into mice the same day.

Each serum was injected intracerebrally in 0.03 cc amounts into 12 albino Swiss mice of 21 to 23 days of age. None of the mice inoculated with serum from patient 6 showed any detectable signs of illness during a 14 day observation period and were discarded, since this serum was taken 2 days before the onset of symptoms, demonstrable circulating virus probably was not present in his blood. This finds some support in the fact that the serum of patient 8, taken on the second day of illness, contained so little virus that only 1 mouse behaved suspiciously 72 hours after inoculation, this mouse was killed, and the virus was recovered from its brain by passage. The remaining 11 mice showed no visible evidence of illness during a 21 day observation period. The majority of the mice inoculated with serum from patients 1, 2, 4, 5 and 7 however, were found dead or dying 48 hours after inoculation.

The sick mice were killed and their brains were removed, weighed and made into a 10 per cent suspension in nutrient broth containing 10 per cent of normal sheep serum. The supernatants obtained after centrifugation for 15 minutes at 1,500 revolutions per minute in an international electric centrifuge equipped with an angle head were drawn off and inoculated intracerebrally in 0.03 cc amounts into groups of 12 mice. Bacteriologic cultures made by inoculating 1.0 cc amounts of the supernatants into tubes of broth and deep agar (Veillon's medium) and streaking blood agar plates were sterile at the end of seven days. Mice sick at the second passage were killed and the brains were removed and made into a 20 per cent suspension in 10 per cent normal sheep serum broth and centrifuged as before. The supernatants were ampuled in 0.5 cc amounts and desiccated from the frozen state over sulfuric acid.<sup>14</sup>

A throat washing in nutrient broth was collected from patient 7 on the second day of illness and was immediately inoculated intranasally in 0.05 cc amounts into 12 mice. Four days after inoculation all the animals were excitable and appeared sick. Four of the mice were killed. The lungs were examined and found to be normal on gross inspection. The brains were therefore removed and made into a 20 per cent suspension in serum broth, and the supernatant obtained after centrifugation was desiccated as before. The next day 6 mice were found dead, on examination the lungs of these and of the remaining 2 sick animals showed no consolidation or abscesses.

As bacteriologic cultures made of the seven infectious agents were consistently negative, these agents were considered to be viruses, most probably one of those worked with in the laboratory. To narrow down the field of possible offenders, so that final identification could be accomplished with an economy of time, labor and money, two approaches, viz. filtrability of the agents and their pathogenicity in animals, were used. Depending on whether the infectivity of the filtrates was abolished, reduced or unaffected as compared with unfiltered preparations, certain of the viruses in the laboratory could be excluded from consideration. In addition, the pathogenic activity of the virus in guinea pigs and/or rabbits, or its failure to infect either, would permit definitive exclusion of certain viruses.

One ampule of each of the seven strains was rehydrated with broth and the contents were inoculated intracerebrally into mice. The next day, when signs of illness were present in most of the animals, the brains were removed, made to a  $10^{-1.0}$  suspension in sheep serum broth and centrifuged as described. The supernatants were drawn off, diluted to  $10^{-2.0}$  with serum broth, and a 20 cc aliquot was filtered through a Seitz EK pad previously prepared by passing 20 cc of serum broth through it.

Serial tenfold dilutions of each of the seven filtrates were made and inoculated intracerebrally in 0.03 cc amounts into mice, four for each dilution. The hundredfold dilutions of the filtrates ( $10^{-4.0}$  dilution of the original brains) were inoculated into pairs of guinea pigs and rabbits, one of the pair receiving the inoculum by the cerebral route, the other by the intraperitoneal route, 0.2 cc was injected intracerebrally into both guinea pigs and rabbits, and 0.5 and 1.0 cc were injected intraperitoneally into guinea pigs and rabbits respectively.

14 Lennette, E. H., and Iox, J. P. Anticorpos neutralizantes para a amostra teste do virus de encefalomyelite equina em equideos no Brasil. Mem. Inst. Oswaldo Cruz 38: 85-92 (Feb.) 1943.



The 50 per cent mouse mortality end point titer<sup>1</sup> of the seven filtrates varied from  $10^{-5}$  to  $10^{-7}$  (based on the dilution of the original brain). These titers practically identical with those obtained with crude suspensions of infected mouse brain, indicate that the infectious agents passed the filters without significant loss of infectivity; the ability to pass through an ITC filter pad suggests a very small particle size. Aerobic and anaerobic cultures of the filtrates failed to show any bacterial growth during 10 days' incubation.

On the basis of the 50 per cent intracerebral mouse mortality end point titer of the filtrates and the volume injected, guinea pigs and rabbits received from 195,000 to 1,950,000 mouse minimum lethal doses intracerebrally, intraperitoneally guinea pigs received from 487,500 to 4,875,000 mouse minimal lethal doses and rabbits received from 975,000 to 9,750,000 mouse minimal lethal doses. Following intracerebral inoculation fever appeared in 12 to 24 hours and was followed by weakness, tremors, paralysis and death, guinea pigs died in from 48 to 108 hours and rabbits in from 60 to 132 hours, the averages being 80 and 93 hours respectively. The onset, development and progression of the disease were essentially alike in the two animals. The course of infection after intraperitoneal inoculation was similar to that seen after intercerebral inoculation except that physical evidence of infection was slower in appearing and the time to death was longer, guinea pigs died in from 84 to 240 hours and rabbits in from 60 to 204 hours, the respective averages being 132 and 138 hours.

The chart presents the pertinent data on the course of the infection in guinea pigs inoculated with the viruses recovered from patients 4 and 7, the results are highly typical of those in the other test pigs and, except for the time factor, closely resemble those obtained in rabbits.

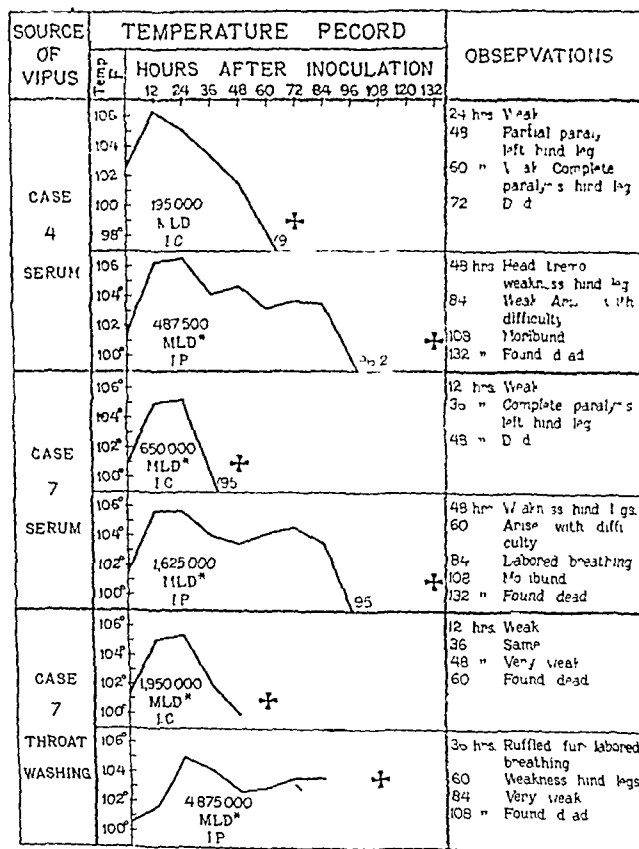
The rapidity with which these infectious agents, even in very high dilution, killed mice, and their high infectivity for guinea pigs and rabbits strongly suggested that we were dealing with a member of the equine encephalomyelitis group, because of the remarkable pathogenicity for rabbits, the Venezuelan virus was considered to be the most probable of the three.<sup>16</sup>

#### IDENTIFICATION OF THE INFECTIOUS AGENTS AS VENEZUELAN EQUINE ENCEPHALOMYELITIS VIRUS

Based on the presumptive evidence that the infectious agents recovered from 6 patients were identical with the Venezuelan equine virus, neutralization tests were done with known Venezuelan equine encephalomyelitis rabbit immune serum and the seven viruses.

Infectious mouse brain desiccates of each virus were rehydrated and passed intracerebrally into mice. Forty-

eight hours later sick mice were killed and the brains were removed, cultured and stored overnight in the freezing compartment of the refrigerator. The following day five bacteriologically sterile brains of each virus lot were weighed ground to a 20 per cent suspension in 10 per cent normal sheep serum broth and centrifuged at 1,500 revolutions per minute for 15 minutes in an international electric centrifuge equipped with an angle head. A series of falling tenfold dilutions was made from the supernatant by serial transfer of 0.5 cc amounts into 4.5 cc of serum broth. To 0.2 cc of undiluted rabbit serum normal or immune was added 0.2 cc of the desired virus dilution, the tubes were well shaken and the contents were inoculated into mice at once. Each mixture was injected subcutaneously in 0.03 cc amounts into a group of 6 mice 3 days of



Pathogenicity for guinea pigs of filtrable agents isolated from patients 4 and 7 + minimum lethal doses expressed as total number of 50 per cent intracerebral mouse mortality doses contained in the volume of inoculum administered

age 1<sup>17</sup> Table 1 shows the results of the test. The mortality ratios are given to show the number of mice which died or survived following inoculation of any serum-virus mixture and to furnish the data on which the 50 per cent mouse mortality end point titer of the viruses in the presence of normal and of immune serum was computed. The degree to which the immune serum was able to neutralize a virus is shown, under the heading "effective virus titer," by the differences in the logarithms for the lethal dilution end points of the virus in the presence of normal and of immune serum, the logarithmic differences in titer are expressed arithmetically in the last column as the number of 50 per cent mouse mortality doses of virus neutralized. It

17 The rationale and technique of this test will be presented in a forthcoming paper.

15 Reed L. J. and Muench H. A Simple Method of Estimating 50 per Cent End Points. *Am J Hyg* 27: 493-497 (May) 1938.  
16 Webster and Wright consider the rabbit unless massive doses are used to be much less susceptible (+) than the guinea pig (++) to the eastern virus while Mitchell and Walker (Canad J Comp Med 5: 314 [Nov] 1941) report rabbits refractory to intracerebral inoculation of the western virus. Kubes and Rios<sup>10</sup> found that rabbits were very susceptible to the Venezuelan virus and succumbed in from 72 to 96 hours after intracerebral inoculation. Levine Mathis and Sautter (Bull Soc Path exot 34: 115 [May July] 1941) have also remarked on the high virulence of this virus for rabbits. Our routine procedure for immunization of rabbits against the eastern and western equine encephalomyelitis viruses is to administer intraperitoneally the whole of an uncentrifuged suspension consisting of one or two infectious mouse brains ground up in 10 cc of isotonic solution of sodium chloride. The large majority of animals resist this dose of virus. With the Venezuelan virus however, centrifuged virus supernatants diluted to  $10^{-8}$  while smaller doses fail to immunize or produce a very poor immune response. We have succeeded in immunizing only 2 of 20 rabbits with living virus and now routinely use virus inactivated with 1 per cent formal.



will be observed that from 79,000 to over 50,000,000 minimum lethal doses of virus, depending on the strain, were neutralized

Since the Venezuelan equine virus rabbit immune serum had been previously tested by an identical technic and proved devoid of demonstrable neutralizing antibodies for the eastern and western viruses, its high

All 8 patients were bled on July 31 to obtain a convalescent phase serum specimen, the interval from onset of symptoms to bleeding, therefore, ranged from 17 to 31 days. In those cases in which virus had been isolated from the acute phase blood specimen, recourse was had to a preinfection serum specimen taken from 2 to 13 days before onset of the illness.

TABLE 1—Results of Neutralization Tests with Venezuelan Equine Encephalomyelitis Rabbit Immune Serum and Viruses Recovered from Six Patients

Virus Strain Tested		Type of Rabbit Serum * Used	Mortality Ratio † in Three Day Old Mice Inoculated Subcutaneously with Serum Plus Virus Diluted										Effective Virus Titer	Number of 50% Mouse Mortality Doses of Virus Neutralized
Origin	Source		10 <sup>-1</sup>	10 <sup>-2</sup>	10 <sup>-3</sup>	10 <sup>-4</sup>	10 <sup>-5</sup>	10 <sup>-6</sup>	10 <sup>-7</sup>	10 <sup>-8</sup>	10 <sup>-9</sup>	10 <sup>-10</sup>		
Case 1	Serum	Normal V L E Immune	6/6	6/6	2/6	0/6	6/6 0/6	6/6 0/6	6/6 0/6	6/6	3/6	0/6	10 <sup>-8.0</sup> 10 <sup>-2.8</sup>	1 885 000
Case 2	Serum	Normal V I E Immune	6/6	6/6	0/6	0/6	6/6 0/4	6/6 0/6	6/6 0/6	6/6	1/6	0/6	10 <sup>-8.6</sup> 10 <sup>-1.3</sup>	1 259,000
Case 4	Serum	Normal V E E Immune	6/6	4/6‡	4/6‡	4/6‡	6/6 0/6	6/6 0/6	6/6 0/6	6/6	0/6	0/6	10 <sup>-8.5</sup> 10 <sup>-3.6</sup>	79 430‡
Case 5	Serum	Normal V E E Immune	6/6	2/6	0/6	0/6	6/6 0/5	6/6 0/6	6/6 0/6	6/6	4/4	0/6	10 <sup>-9.5</sup> 10 <sup>-1.8</sup>	50 120 000
Case 7	Serum	Normal V L I Immune	6/6	3/6	3/6	4/6	6/6 0/5	6/6 0/6	6/6 0/6	6/6	4/6	0/6	10 <sup>-9.3</sup> 10 <sup>-3.4</sup>	794 300
Case 7	Throat washing	Normal V L E Immune	6/6	6/6	4/6	2/6	6/6 0/6	6/6 0/6	6/6 0/6	6/6	4/4	6/6	10 <sup>-10.5</sup> or > 10 <sup>-2</sup>	10 000 000
Case 8	Serum	Normal V E E Immune	6/6	6/6	2/6	1/6	6/6 0/6	6/6 0/6	6/6 0/6	6/6	6/6	6/6	10 <sup>-10.3</sup> or > 10 <sup>-0.0</sup>	39 810 000

\* The normal and the immune serums were obtained from the same rabbit prior to and after immunization with Venezuelan equine encephalomyelitis virus. Both were tested and proved free from antibodies to the eastern and western equine encephalomyelitis viruses.

† The mortality ratio is expressed by a fraction in which the numerator indicates the number of mice which died and the denominator the number of mice which were inoculated (less those destroyed by the mother of the litter).

‡ The majority of the deaths in these dilutions were suspected to be nonspecific, however, since the animals died within the usual interval the deaths are considered as due to specific infection. It is possible, therefore, that the neutralizing potency of this serum is much greater than indicated.

TABLE 2—Results of Neutralization Tests with Venezuelan Equine Encephalomyelitis Virus and Serums Obtained from Eight Patients Before and After Illness

Serum Specimen			Mortality Ratio * in Three Day Old Mice Inoculated Subcutaneously with Serum Plus Virus Diluted										Effective Virus Titer	Number of 50% Mouse Mortality Doses of Virus Neutralized
Origin	Day Obtained		10 <sup>-1</sup>	10 <sup>-2</sup>	10 <sup>-3</sup>	10 <sup>-4</sup>	10 <sup>-5</sup>	10 <sup>-6</sup>	10 <sup>-7</sup>	10 <sup>-8</sup>	10 <sup>-9</sup>	10 <sup>-10</sup>		
Case 1	Preinfection	11 days	6/6	0/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	1/6	0/6	10 <sup>-9.0</sup> 10 <sup>-1.1</sup>	31 600 000
	Postinfection	31 days	6/6	0/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	6/6	0/6	10 <sup>-9.0</sup> 10 <sup>-1.8</sup>	50 120,000
Case 2	Preinfection	12 days	6/6	2/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	6/6	0/6	10 <sup>-9.0</sup> 10 <sup>-2.0</sup>	15 850 000
	Postinfection	30 days	6/6	2/6	2/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	3/6	1/6	10 <sup>-9.0</sup> 10 <sup>-2.0</sup>	100 000 000
Case 3	Preinfection	13 days	6/6	2/6	2/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	6/6	0/4	10 <sup>-9.0</sup> 10 <sup>-1.0</sup>	7 943 000
	Postinfection	29 days	6/6	0/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	6/6	0/6	10 <sup>-9.5</sup> 10 <sup>-2.0</sup>	63,100 000
Case 4	Preinfection	13 days	6/6	0/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	6/6	0/6	10 <sup>-9.0</sup> 10 <sup>-1.8</sup>	100 000 000
	Postinfection	29 days	6/6	0/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	6/6	0/6	10 <sup>-9.0</sup> 10 <sup>-1.8</sup>	63,100 000
Case 5	Preinfection	13 days	6/6	6/6	1/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	6/6	1/6	10 <sup>-9.0</sup> 10 <sup>-1.8</sup>	63,100 000
	Postinfection	29 days	6/6	2/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	6/6	1/6	10 <sup>-9.0</sup> 10 <sup>-1.8</sup>	63,100 000
Case 6	Preinfection	2 days	6/6	2/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	6/6	0/6	10 <sup>-9.0</sup> 10 <sup>-1.8</sup>	63,100 000
	Postinfection	20 days	6/6	2/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	6/6	0/6	10 <sup>-9.0</sup> 10 <sup>-1.8</sup>	63,100 000
Case 7	Preinfection	10 days	6/6	1/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	6/6	0/6	10 <sup>-9.0</sup> 10 <sup>-1.8</sup>	63,100 000
	Postinfection	18 days	6/6	1/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	6/6	0/6	10 <sup>-9.0</sup> 10 <sup>-1.8</sup>	63,100 000
Case 8	Preinfection	11 days	6/6	0/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	4/6	1/6	10 <sup>-9.0</sup> 10 <sup>-1.8</sup>	79 430 000
	Postinfection	17 days	6/6	0/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	4/6	1/6	10 <sup>-9.0</sup> 10 <sup>-1.8</sup>	79 430 000

\* The mortality ratio is expressed by a fraction in which the numerator indicates the number of mice which died and the denominator the number of mice which were inoculated (less those destroyed by the mother of the litter).

neutralizing capacity for the seven human viruses was regarded as specific, and these were therefore considered to be identical with the Venezuelan virus.

DEVELOPMENT IN PATIENTS OF NEUTRALIZING ANTIBODIES AGAINST THE VENEZUELAN EQUINE ENCEPHALOMYELITIS VIRUS

In addition to the isolation from 6 of the patients of a virus identified as that of the Venezuelan type further proof that the illnesses were caused by this virus was adduced by demonstrating that neutralizing antibodies for this virus appeared in the blood during convalescence.

A 20 per cent suspension in serum broth was made of 5 brains freshly removed from mice infected with known Venezuelan equine encephalomyelitis virus. This suspension was centrifuged and serial dilutions of the supernatant were made and mixed with undiluted serum and inoculated subcutaneously into 3 day old mice, the entire procedure following that described in the preceding section.

The results of the test are shown in table 2. It will be observed that the titer of the virus in the presence of serum taken prior to illness ranged from 10<sup>-9.0</sup> to 10<sup>-9.6</sup> which is the usual titration end point of the virus in menstrua devoid of neutralizing or inactivat-

ing capacities. In the presence of the convalescent serum, however, the titer of the virus was definitely reduced, as can be seen from the mortality ratios and from the logarithm of the virus dilution calculated to represent the titration end point. The difference between the titration end points represents the amount of virus neutralized expressed in terms of minimum lethal dose in the last column of the table. In every case more than 99.99 per cent of the infectious activity of the virus was neutralized as can readily be seen from the mortality ratios obtained for each pair of serums.

The appearance during convalescence of neutralizing antibodies in such high concentration that they were capable of inactivating from approximately 8,000,000 to 100,000,000 minimum lethal doses of the Venezuelan equine encephalomyelitis virus, coupled with the fact that in 6 patients the specific virus was recovered during illness leaves no doubt that the human infections were due to this agent.

#### COMMENT

A striking feature of the cases reported here was the abruptness with which symptoms appeared and the rapidity with which they attained the peak of their severity. Except for the unusually severe headaches there was nothing characteristic about the symptoms and most of the patients believed that they had an attack of grip or influenza, but cough, coryza, lacrimation, pharyngitis (except in case 8), laryngitis or other evidence of respiratory infection did not appear.

Common to all the cases was fever (subjective or objective), severe body aches and pains especially intense in the calf muscles of the legs, and an almost unbearable persistent headache, unrelieved by the usual drugs and unanimously described as the worst in the patient's experience. Of 6 of the 8 patients the headache was frontal from its onset and remained thus localized throughout the course of the illness.

Compared with the 2 cases reported by Casals and his associates,<sup>11</sup> the course of the disease in all these patients was considerably more severe, even though definite differences in the severity of illness were present between the mildest and the severest cases. Cases 2 and 4 were the least severe, 3 and 6 next, and in 1, 5, 7 and 8 the illness was so severe as to give cause for alarm. All the patients were drowsy to a variable degree, but, owing to the inability of most of them to sleep because of the intense headache, its significance is difficult to assess. True somnolence appeared only in case 8. In cases 7 and 8 there was a period of remission with definite amelioration of the symptoms.

As shown in this communication and by Casals, the ability of the Venezuelan equine encephalomyelitis virus to infect man is beyond question. The apparent absence in Venezuela of human infections, frank or inapparent, is therefore puzzling, especially since encephalomyelitis has been prevalent in horses since at least 1936.<sup>18</sup> Because of the lack of information on the extent to which the Venezuelan and eastern equine viruses are disseminated among the human population residing in areas where these viruses are enzootic a comparison of the relative infectivity and virulence for man of the three equine viruses is impossible. It may be worth noting, however, that no fatalities occurred among the 10 cases of laboratory infection produced by the Ven-

ezuelan virus, which is the most virulent for laboratory animals of the three equine encephalomyelitis viruses, while the western virus, the least virulent for laboratory animals, has caused two deaths among the 4 cases of laboratory infection recorded,<sup>19</sup> and the eastern virus has produced one nonfatal laboratory infection.<sup>20</sup>

There is an impressive body of epidemiologic evidence to show that the western equine virus is arthropod borne and potential mosquito vectors have been reported for both the eastern<sup>21</sup> and the Venezuelan<sup>22</sup> equine viruses. According to the classification of encephalitides recently proposed by Hammon, Reeves and Gray<sup>23</sup> the encephalitides due to these agents, and in addition St. Louis encephalitis (mosquito borne), Japanese B encephalitis (mosquito borne), Russian fall-winter encephalitis (mosquito borne) and Russian spring-summer encephalitis (tick borne) would be classified as the "arthropod borne virus encephalitides." This would serve to distinguish these encephalitides from those of the postvaccinal, postinfection and von Economo types and those due to rabies, trypanosomiasis and other conditions.

If, as is inescapable, it is admitted that the available evidence favors arthropod transmission of the equine viruses to the almost complete exclusion of transmission by contaminated food or water or by contact, it must be equally admitted that the abundance of evidence for the former means of transmission and its paucity for the latter are almost directly commensurate with the attention each has received. The western equine virus has been isolated from the nasal washings of horses<sup>24</sup> inoculated intracerebrally and from nasal washings of guinea pigs<sup>25</sup> inoculated intramuscularly, but according to Hammon and his associates<sup>23</sup> limited attempts to isolate the virus from nasal and throat washings, urine and feces of naturally infected human beings and horses have been unsuccessful. Against these negative results is the facility with which Casals and his associates<sup>11</sup> and we recovered the Venezuelan virus from the throat washings on the first and only attempt, so that of the 10 human cases of infection with this virus reported up to the present the specific virus has been recovered from the nasopharynx in 2. There is, therefore, every reason to believe that transmission by contact is possible, future investigations will have to assess the relative importance of the part such transmission plays in the epidemiology of human infections provoked by the equine encephalomyelitis viruses.

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TRACHEOTOMY IN BULBAR  
POLIOMYELITIS

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Most clinicians appear to doubt that tracheotomy could be useful in bulbar poliomyelitis, although Wilson<sup>1</sup> has stated that "in very carefully studied instances tracheotomy may save life." The results with 3 patients seen in the past two months have convinced me that the operation may be a very important procedure in this disease. Two were undoubtedly saved by it and the third might have been had intervention been done ten minutes earlier.

The first of these illustrates most of the points to be raised and most of the difficulties encountered.

**CASE 1**—A white man aged 36 had been admitted on Aug 26, 1943 to the Evanston Hospital with a history of fever and malaise for four days, dizziness and stiffness of the neck for two days and difficulty in swallowing for one and one-half days. Spinal puncture with findings of 70 cells per cubic centimeter made the diagnosis apparently definitely bulbar poliomyelitis. He constantly spit up foamy saliva but did fairly well for four days. Then when a feeding tube could not be easily passed he was permitted to take some gelatin and fruit juice. This he gulped, then gasped, became incoherent and disoriented and had great difficulty in breathing.

Two hours later when I saw him he was semicomatose, cyanotic and breathing spasmodically with an interrupted shallow diaphragmatic respiration. He was in the postural drainage position, the tongue had been forcibly pulled forward, and much fairly thin secretion was being aspirated. A Flagg laryngoscope was introduced with difficulty, apparently caused in part by spasm, and the pharyngeal tissues and tongue were seen to crowd together. The larynx was observed to be open, and a pool of secretion found its gravity level in the larynx and trachea, so that, unless kept completely aspirated, inspired air had to be drawn through it. With the tongue held forward, first with a laryngoscope and later with a rubber anway and with constant aspiration the patient improved for a time. After about one hour respiration nearly ceased and he became completely unconscious.

A rapid median tracheotomy was done, cutting through a large congested thyroid isthmus. Breathing stopped at this stage for about three minutes. After aspiration by catheter through the tracheotomy wound and with manual artificial respiration, shallow intermittent breathing occurred hardly faster than the automatic rate but was not kept up without manual aid. The patient was then put in a Drinker-Collins respirator. The sponge-rubber collar was held distal to the tracheotomy tube by a "black iron" bar  $\frac{1}{4}$  inch wide and  $\frac{1}{8}$  inch thick, bent 4 inches from the end at an angle of 40 degrees and fixed in place under the flange which held the collar. This was satisfactory except that removal of the inner tracheal cannula was difficult.

At 1 a m the patient was put in the respirator, at 1 30 the color was good and the pulse improved, at 1 45 he was conscious. The respirator was stopped at 3 a m for ten minutes at the patient's demand, and diaphragmatic respiration was of fair quality at first but quickly became irregular, and restlessness and cyanosis recurred. The respirator was then started and the patient rested and slept.

Secretion was profuse for several days, filling up to the lips and anterior nares, and was constantly aspirated through the tracheotomy tube, although the angle of postural drainage was maintained at 35 degrees. Fluid and electrolyte balance were maintained intravenously. Sixty thousand units of penicillin was given in thirty-six hours with no lowering of the temperature from 102 to 103 F. Thereafter a sulfadiazine level of

4 to 6 mg per hundred cubic centimeters was maintained for one week. After four days feeding was by Levine tube, with the head raised and the respirator flat for one-half hour after feeding, followed alternately by three and one-half hours of postural drainage.

Four days after being put in the respirator the patient was left out for several hours. He became incoherent and cyanotic, and the pulse was poor. After some time again in the respirator, the patient rested and slept and awoke rational. Improvement was steady thereafter. Only gradually was the interval out of the respirator lengthened, and the patient was put back at the first sign of fatigue. After the eleventh day he was not returned to the respirator. Fourteen days after admission the patient felt much better, and on the sixteenth day he was allowed to eat breakfast, although a small piece of egg came out of the tube. Twenty-one days after operation the tracheotomy tube was corked, and two days later the tube was removed. One month after admission the patient left the hospital. His costal and diaphragmatic respiration seemed normal. He swallowed with little difficulty if he ate slowly. There was some residual paresis of the right shoulder and upper arms for which Kenny treatment was continuing.

**CASE 2**—A white girl aged 12 years was seen on the third day of her bulbar poliomyelitis. She was cyanotic and restless, had a gurgling, shallow rapid respiration and was very apprehensive and uncooperative. She resisted gentle efforts at aspiration, although after this was done she improved for a few hours. When seen seven hours later she was unconscious, cyanotic and breathing out of rhythm and with great difficulty.

A rapid tracheotomy was done through the second and third tracheal rings and much thick mucus was aspirated. The patient improved slowly the first few hours but slept well after twelve hours. In twelve hours more respirations had become deep and fairly regular. Aside from occasional episodes of choking and cyanosis, improvement was rapid. She was given intravenous fluids for four days, then fed by gavage for three more. The tracheotomy tube was removed on the tenth post-operative day, and she left the hospital apparently well nineteen days after admission.

**CASE 3**—A white boy aged 16 years was seen on the third day of illness. Because of rigidity and signs of irritation a diagnosis of meningitis had been made, but this was ruled out by spinal fluid findings including 70 cells per cubic centimeter. He had a nasal voice, and much glairy secretion accumulated in the pharynx. In twenty-four hours swallowing seemed impossible and breathing was shallow and irregular, but on deep aspiration of secretion by a catheter the breathing became more regular and deeper. At 9 p m the patient was put in the respirator with moderate improvement, although his own respiratory efforts were not well in rhythm with the mechanism. At 4 o'clock the next morning he was doing poorly with only jerky, shallow efforts as if intercostals, diaphragm and respirator were opposing one another.

Tracheotomy was decided on, and the patient was half taken out of the respirator for about ten minutes preparatory to moving to an operating room 50 feet distant, where I was preparing to operate. He became restless, vomited, foaming fluid appeared at the mouth, and respiration and the heart beat ceased. A stab tracheotomy was done, and about 15 cc of thick mucoid secretion was aspirated from the trachea. The respirator was kept up for forty minutes but the patient could not be revived. He had apparently choked on his own secretion.

## COMMENT

It is probably true that most poliomyelitis patients with respiratory difficulty will recover if seen early and if well treated by postural drainage, careful aspiration and intravenous fluids during the most acute stage. But if one visualizes what may happen in the respiratory tract it would seem that tracheotomy might have great value in certain instances.

The normal secretion of saliva is from 1,000 to 1,500 cc per day and may be increased in nervous dis-

<sup>1</sup> Wilson, J L. The Use of the Respirator, J A M A 117 278 (July 26) 1941.

er-es." To this is to be added the normal or inflammatory nasal pharyngeal and perhaps bronchial secretion. If that cannot be swallowed or completely expectorated coughed out or aspirated it will find its gravity level where it may lie as a pool over and in the airway. That condition was seen with a laryngoscope in case 1. On attempted inspiration, such fluid not only impedes the passage of air but if at all viscous it may be drawn into the pulmonary area. In several such cases I have observed the respiration become shallow spasmodic and irregular and have seen this effect rapidly disappear on thorough aspiration or after tracheotomy as it did in case 2. This effect on respiration might be due to a voluntary effort of the patient to keep from drowning himself in his own secretions but since it has been observed in unconscious patients the result is probably in part a reflex effect.

To this factor must be added that of anoxia which in the 3 cases cited was severe enough to cause unconsciousness. This anoxia necessarily would adversely affect the heart and respiratory muscles and respiratory centers, as well as the nuclei of the nerves concerned in deglutition. Therefore, if there is already an involved respiratory center, or paralysis lower, involving the motor neurons of the intercostal muscles and diaphragm, the accumulating secretion may add an insuperable burden to an already faltering mechanism.

If relief cannot then be given by postural drainage including the effective face down position, and by aspiration the short-circuiting of this secretion and the aspiration of its overflow by tracheotomy would seem to be indicated. Also since mortality from this operation per se, separated from the serious conditions for which it is usually done, is a fraction of 1 per cent there would seem little reason to withhold it for the last desperate chance. Management of a tracheotomized patient in the respirator presented no great difficulties. A special device to keep the rubber collar off the mouth of the tube could easily be constructed attached to an adjustable lock on the neck flange. For such cases the tracheotomy should probably be through the second and third cartilages. In order to prevent interstitial emphysema the least amount of dissection of fascial planes should be done, packing should be snug and the negative pressure of the respirator not greatly raised.

Rest in poliomyelitis has been emphasized as a very important factor in the recovery of compromised muscle function. Again, tracheotomy of an exhausted patient, with or without the respirator is a measure that may prove of increasing value to be used, as Wilson says of the respirator, not as a last resort but to forestall the critical stage.

The use of the respirator has not often been satisfactory in the bulbar type, according to Wilson. It is possible that this has been so because forced inspiration through a pool of secretion in the airway sucked a serious amount of fluid into the lower airway. In case 1, in which the pool of secretion, which even overflowed the nostrils, was short-circuited by tracheotomy, the respirator was eminently satisfactory although the disease seemed almost entirely bulbar.

It may be questioned whether certain effects commonly ascribed to central damage may not rise from preventable anoxia and peripheral respiratory disturbance. Restlessness mental symptoms and unconsciousness which were relieved by aspiration and tracheotomy

certainly seemed to be so in some of these cases. Even the postmortem findings of cerebral edema and hemorrhage not associated with cell infiltration, as well as myocardial degeneration might arise from relative anoxia continued over a period of time. Pulmonary complications commonly called pneumonia have been held responsible for many deaths. Possibly many of these may have been secondary to atelectasis and pneumonitis associated with aspiration obstruction and immobile lung as demonstrated in experimental animals and seen in tracheobronchitis.<sup>4</sup>

During the 1943 summer and fall epidemic 39 cases of poliomyelitis have been treated at the Evanston Hospital. Eight of these were of the so-called bulbar type. There was only one death cited in case 3 compared to a mortality in this area for the same epidemic of about 87 per cent.<sup>5</sup> Although the supervision and nursing care were unusual, the good results though not statistically convincing, suggest that laryngeal care as outlined in some of the worst cases was quite important.

#### SUMMARY AND CONCLUSIONS

Emphasis in poliomyelitis with respiratory difficulty may well be shifted to the peripheral respiratory tract. Postural drainage aspiration and use of the respirator should be given a fair trial. If these are not successful tracheotomy may be employed as a life saving measure. It may prove to have increasingly wide use before the critical stage. It is easily possible to use a respirator on a patient after tracheotomy. If the airway is cleared of secretion, probably most poliomyelitis patients with respiratory difficulty can be so treated.

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<sup>4</sup> Galbraith, E. G. and Steinberg, Bernhard. The Developmental Mechanism of Pulmonary Atelectasis. *Ann. Otol. Rhin. & Laryng.* 46: 800 (Sept.) 1937. Galloway, T. C. Laryngotracheobronchial Obstructions and Their Secondary Effects. *Ohio State M. J.* 36: 851 (Aug.) 1940.

<sup>5</sup> Reports of Chicago and Cook County health departments. Oct. 15, 1943. 1,147 cases with 100 deaths.

**Diabetes**—The beginning of our modern understanding of this disease (diabetes) dates back to the opening year of the American Revolution, when Matthew Dobson, physician to the Liverpool Infirmary, discovered that the urine, which is passed in too great an abundance in this disease, contains sugar. This discovery led the way to attempts to control the disease by limiting the amount of sugar in the diet, a method which was not very successful. And so the matter stood for another hundred years, until in 1889 the experimental attack on diabetes was begun by a Russian physician, Oskar Minkowski, then a young assistant to Professor Naunyn at the University of Strasbourg. Minkowski removed the entire pancreas in a dog and discovered that severe diabetes at once developed which persisted until the animal succumbed a few weeks later. He also found the sugar content of the blood elevated. The next step was made in 1900 by Eugene L. Opie, recently professor of pathology at Cornell Medical School but at that time a young instructor in pathology at Johns Hopkins. Studying the microscopic sections of the pancreas of a little girl who had died of diabetes, Opie saw that the islands of Langerhans were so degenerated that they could not be identified. These islands of cells of a special kind had been first described in 1869 in a doctoral thesis by a young Berliner, Paul Langerhans, who later became a distinguished pathologist. No one suspected their function however until Opie noticed that they were damaged in those who had diabetes. His observation led the English physiologist Sir Edward Schafer in 1916 to postulate the theory that these special pancreatic cells produced some form of internal secretion that controlled the metabolism of sugar.—Haagensen, C. D. and Lloyd Wadham. *E. B. A. Hundred Years of Medicine*. New York: Sheridan House, Inc., 1943.

<sup>2</sup> Christian, H. A. in Osler's Practice of Medicine, ed. 14. New York: D. Appleton-Century Company, 1942, p. 624.

<sup>3</sup> Jackson, Chevalier. Tracheotomy. *Surg. Clin. North America* 15: 11 (Feb.) 1935.

NEUROPSYCHIATRIC COMPLICATIONS  
IN VICTIMS OF BOSTON'S COCOA-  
NUT GROVE DISASTER

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BOSTON

Observations on medical and physiologic aspects, neuropsychiatric complications and social service activities in the care of patients during the acute stages and immediately following the Cocoanut Grove fire disaster of Nov 28, 1942 which killed 491 patrons and injured many more, have been reported recently through several articles<sup>1</sup>

This report deals with psychiatric observations made during the first weeks and afterward on the survivors of the disaster who had been admitted to the Boston City Hospital during the night of the fire. These patients were followed up until the present time, which is a period of eleven months.

Members of the staff of the Neurological Unit of the Boston City Hospital saw some of these patients during the first week of their hospital stay. Many of the 131 patients were too disabled by their injuries to permit adequate early interview. Systematic neuro-

TABLE 1—Analysis of Material Available for Neuropsychiatric Observation

	Number of Cases
Total admissions	131
Deaths within the first two weeks	36
Patients having left the hospital within first 3 weeks	41
No report	21
Reported through questionnaire	20
Psychiatric interviews	54
With follow up	46
Without follow up	5
With patients who died later	3

psychiatric examination of all patients was requested on the eleventh day by the Burn Assignment of the Surgical Services of the Boston City Hospital. By the end of the third week all the patients who had not left the hospital by that time, numbering 54,<sup>2</sup> had been examined neuropsychiatrically (table 1). Of these, 3 patients died later and 5 patients left Massachusetts and could not be reached for reexamination. Three of these were members of the armed forces overseas. Therefore this report deals mainly with psychiatric observations on 46 patients seen in the acute stage and followed up later. In 6 of these, who had left Boston, a late follow-up report was furnished by another physician or by the patient in a written response to a psychiatric questionnaire. In addition, psychiatric questionnaires were sent to the 41 patients who had left the hospital early, before systematic routine neuropsychiatric examinations were made. Of these, 20 answered. Only 21 of the 131 patients are not subject of report. Almost

all of these 21 patients, having been discharged from the hospital within eleven days, had suffered only minor injuries.

Table 2 summarizes the psychiatric findings during the acute stages and the outcome. The table reveals that there is no essential difference of reactions or psychiatric end results between female and male patients. The following observations accordingly apply to both sexes.

ANALYSIS OF TABLE 2

*Loss of Consciousness*—Of the 46 patients 29 reported loss of consciousness of variable duration. Only one 22 year old woman (patient 50) has a retrograde amnesia long enough to remember nothing of the disaster. Her last recollection is "having a rye with coke." The next thing she remembers is talking to people in the hospital the next day. The remaining 28 all remember the start of the fire and the ensuing panic. They lost consciousness after a few minutes. Table 3 reveals that in 16 of the 29 cases the loss of consciousness measured by the duration of amnesia, lasted more than one hour. Most of them recovered awareness in the hospital toward morning of the next day. The 11 patients in whom unconsciousness lasted only a few minutes found themselves lying on the floor of the night club, frequently with bodies piled on them, and they remember being pulled out by rescue workers. In these no relapse into unconsciousness occurred, whereas some with long duration of unconsciousness had a brief lucid interval during the ambulance ride. The period of amnesia of the 1 patient who had suffered a cerebral lesion lasted several days.

The cause of the unconsciousness is still not absolutely certain. Carbon monoxide, which was found in the blood of several victims in amounts sufficient to kill, may have been the only cause, or other noxious fumes may have acted together with lack of oxygen and the intense heat created by the conflagration.

Of the 17 patients who did not lose consciousness, 11 were near exits and escaped within the first minutes. The remaining 6 had fallen early in the general stampede and were prevented from getting up again. Some reported that, while lying on the floor, they held a handkerchief before their mouth and nose to avoid inhaling fumes. Others reported that, whereas they had felt choked while standing up, they felt fresh, cool air and relief as soon as they had fallen. This suggests that the noxious agent, fumes, heat or lack of oxygen acted predominantly above floor level. The fact that most of the 29 who had lost consciousness remember going limp while standing up and, frequently, while trying to rescue others supports this explanation.

*Recollection of Events*—The outburst of flames at the start of the fire was observed by 41 of the 46 (table 2). Table 4 gives a picture of the sequence of events. Most patients reported having lost consciousness immediately after feeling choked. Accordingly, this terrifying event is remembered by the same percentage of patients who had lost consciousness as by those who remained conscious. Many fewer patients remembered being burned and trampled on since the latter events evidently occurred mainly while the patients had already lost consciousness.

*Psychiatric Outcome*—Of the 46 patients, 20 did not develop any psychiatric complications whereas 26 did. Tables 4 and 5 reveal the striking fact that of the 20 without psychiatric sequelae only 5 had not lost consciousness. Furthermore table 3 reveals that the dura-

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<sup>1</sup> Symposium on the Management of the Cocoanut Grove Burns at the Massachusetts General Hospital, Ann Surg 117:801-965 (June) 1943. Clowes, G. H. A., Jr., Lund, C. C., and Levenson, S. M. The Surface Treatment of Burns, *ibid.*, to be published. Taylor, F. H. L., Davidson, C. S., and Levenson, S. M. Abnormal Nitrogen Metabolism in Patients with Thermal Burns, *New England J. Med.*, to be published. Cannon, I. M., Wilson, M. R., and Bartlett, H. M. Participation of Medical Social Workers in Boston's Cocoanut Grove Disaster, *Bulletin of the American Association of Medical Social Workers* 16:18 (Feb) 1943.  
<sup>2</sup> Some of the initial examinations were made by Dr. H. Houston Merritt and Dr. R. D. Adams, who supplied early data.

tion of unconsciousness was prolonged more than one hour in 12 of the 15 patients who did not develop psychiatric complications whereas the reverse is true of the 13 patients with psychiatric complications. In the majority of the latter in 9 out of 13, the period of unconsciousness was only a few minutes. This suggests that unconsciousness and in particular prolonged unconsciousness was an essential factor in preventing the development of further psychiatric difficulties. The mechanism at work is perhaps comparable to the beneficial effect of shock treatment in mental disease. Here too attacks of petit mal with short periods of unconsciousness are undesirable whereas grand mal seizures with prolonged unconsciousness may bring about the setting for recovery from mental illness.

Among the patients with psychiatric complications recollections of being choked and trampled on are very frequent when compared with the numbers obtained in patients with no psychiatric complications (table 5). These events, which usually were associated with fear of imminent death were the most terrifying in the patient's memory and seem to have greatly contributed to the development of post-traumatic mental complications.

The types of psychiatric complications were consistent either with the syndrome of 'general nervousness' or with that of anxiety neurosis. Patients in the former group complained chiefly of general irritability, fatigue

TABLE 2—Comparison Between Reactions of Female and Male Patients

	Females	Males	Totals
Totals	20	20	40
No loss of consciousness	9	8	17
Loss of consciousness	17	12	29
Remembers			
Seeing flames	23	18	41
Being burned	8	6	14
Being choked	11	7	18
Being trampled	10	4	14
Nightmares			
While in hospital	9	6	15
After discharge from hospital	4	6	10
Loss of relatives or close friend	15	8	23
Neuropsychiatric outcome after 3 months			
Normal	11	9	20
Psychiatric complications total	14	11	25
General nervousness	6	5	11
Anxiety neuroses	8	6	14
Brain lesion	1	0	1
Neuropsychiatric outcome after 9 months			
Normal	17	15	32
Psychiatric complications total	8	5	13
General nervousness	2	2	4
Anxiety neuroses	6	3	9
Brain lesion	1	0	1

TABLE 3—Duration of Unconsciousness in Patients With and Without Post-Traumatic Psychiatric Complications

Duration of Unconsciousness	No Psychiatric Complications	Psychiatric Complications	Brain Lesion	Totals
Few minutes	2	9	0	11
15 minutes to 1 hour	1	1	0	2
More than 1 hour	12	8	1	16

and insomnia. In these cases change in working capacity was only moderate or absent unless work was contraindicated by their poor physical condition, as by unhealed burns. Table 2 reveals the comparatively good prognosis of this condition, as on the nine months follow-up only 4 of the 11 patients, or one third, still complained of general nervousness. The histories and

the course of disease in patients of this group are fundamentally identical and the following example is representative.

CASE 51—A musical entertainer at the Coconut Grove, aged 17 years, single, had been an exceedingly well adjusted girl prior to her injury. On the night of the disaster she was in the

TABLE 4—Comparison Between Reactions of Patients With and Without Loss of Consciousness

	No Loss of Consciousness	Loss of Consciousness
Totals	17	29
Remembers		
Seeing flames	17	24
Being burned	0	7
Being choked	7	11
Being trampled	8	6
Nightmares		
While in hospital	7	8
After discharge from hospital	7	
Loss of relatives or close friends	6	17
Neuropsychiatric outcome after 3 months		
Normal	3	13
Psychiatric complications total	12	16
General nervousness	4	7
Anxiety neuroses	8	9
Brain lesion	0	1
Neuropsychiatric outcome after 9 months		
Normal	11	21
Psychiatric complications total	6	7
General nervousness	2	2
Anxiety neuroses	4	5
Brain lesion	0	1

TABLE 5—Comparison Between Data for Patients With and Without Psychiatric Complications Three Months After Injury

	No Psychiatric Complications	Psychiatric Complications	Brain Lesion
Totals	20	25	1
No loss of consciousness	5	12	0
Loss of consciousness	15	13	1
Remembers			
Seeing flames	17	24	0
Being burned	7	7	0
Being choked	4	14	0
Being trampled	5	11	0
Nightmares			
While in hospital	5	10	0
After discharge from hospital	0	10	0
Loss of relatives or close friends	10	12	1

ladies' room when she heard people rushing around. She saw fire shoot up the stairs and while trying to get out, felt choked. She fell and people stepped on her. She then lost consciousness for a few minutes and regained awareness when a fireman pulled her out. She had suffered burns of the face, arms, back and legs with 30 per cent of the surface area burned and with the burns equally divided between second and third degree. She stayed in the hospital until May 1, 1943. During the first months she slept poorly and had several terrifying dreams about fire. She did not want to be left alone and felt that she would always live in fear of fires. After coming home she first disliked the idea of going to crowded places but later on did not mind it. She still chooses to sit near an exit. (This reaction is shown by practically all patients regardless of whether they developed psychiatric complications or not.) She felt tired for many months, and loud noises irritated her. When she heard fire sirens she kept wondering whether her relatives were safe. Nevertheless she resumed her practice of singing and playing as soon as she went home, and her interest in her profession has never abated. On the nine months follow-up she had recovered from her nervousness. She had not had any frightening dreams after coming home and felt happy to be alive. Her relatives think that her personality has not changed.

Patients with symptoms of "anxiety neurosis" complained mainly of fears and anxiety which they were unable to control and which prevented them from read-



justing to noimal activities Their prognoses were not good, as 9 of the 14, or two thirds, had hardly improved when reexamined after nine months The complaints of the patients in this group are also much alike and are represented by the following case

CASE 2—A youth of 20, a clerk, had been somewhat excitable and easily angered prior to his injury but aside from that had been well adjusted to his professional and married life On the night of the disaster he was about to leave the night club and stood near an exit waiting for his wife, who was four months pregnant He suddenly saw flames, was milled around, lost sight of his wife and soon escaped through an exit The patient suffered second degree burns of the face, neck and hands Five per cent of the total skin area was involved Shortly before leaving the hospital on Dec 15, 1942 he was told by the priest that his wife had perished in the fire Until then he had thought she had been saved He became deeply depressed and has been so ever since He went back to work in January 1943, but his working capacity has suffered He is much slower and has lost all interest in his work In his spare time he thinks of the disaster and of his wife feels that he will never be interested in another girl He cannot concentrate and starts shaking all over whenever he has a slight argument He is constantly afraid of another fire and would never dare to go to a night club again He sits down in moving pictures only if there is a seat in the last row, so that he can get out quickly He takes the same precautions in dining rooms The sound of fire engines awakens him at night with a start He had had no nightmares in the hospital, but they began one week after he came home In the following months he relived the scenes of the fire in five terrifying dreams They still occur, though rarely He had the last nightmare in September 1943 The patient was rejected by the Army in March 1943 with the diagnosis of psycho-neurosis This depresses him deeply because he had hoped to be able to forget through strenuous army life He is trying again to join the Army and intends to join the Merchant Marine if again rejected

In this as in some other cases, feelings of guilt for not having saved the companion evidently aggravate the condition Practically all patients who are suffering from psychiatric complications are under the care of their own physicians and are treated by them with sedatives and reassurance

CASE 12—A woman aged 22 suffered a permanent brain lesion Her pulmonary damage was only slight and her superficial burns were not over 3 inches in diameter and were healed in a few days This case is reported in extenso elsewhere<sup>3</sup> She arrived at the hospital in a state of confusion and psychomotor excitement, which lasted several days She has ever since exhibited the picture of visual agnosia as it is produced by occipital lobe lesions Her condition has improved, since, through compensatory mechanisms, she is now able to recognize objects, but her reading and copying are still much impaired Exposure to carbon monoxide is possibly the cause of the brain lesion

Only 1 other patient is known to have suffered a permanent brain lesion This is 1 of the 39 patients admitted at the Massachusetts General Hospital following the disaster<sup>4</sup> It is probable that cerebral injury was present in other patients who succumbed

An example of 1 of the patients who did not develop psychiatric complications is given in detail

CASE 50—A woman aged 22, a factory worker, had finished the second year of high school and has ever since worked steadily without having ever noticed symptoms of mental difficulties All she remembers of the events preceding the fire is sitting at a table and having "a rye with coke" Next thing she remembers is talking to people at the hospital early the

next morning Her girl friend, who did not lose consciousness until later, stated that they were at the ladies' room when the fire started They both rushed out and were separated by the crowd The patient suffered second degree burns of the face and hands Two per cent of the total skin area was involved She was hoarse for three weeks On psychiatric interview, two weeks after the injury, she stated that it did not bother her in the least to think of the night of the fire and that she was looking forward to going to another night club She returned to work in January 1943 completely recovered A few days later she enjoyed her next night club visit thoroughly However, when she got into an overcrowded night club a few months later she did not want to stay and she persuaded her party to go to another night club Although it does not actually trouble her to speak about the fire, she rather changes the subject on such occasions She states that it was quite a shock for her to hear that a man and a woman from her party had perished, but she does not suffer when thinking of it At no time had she any frightening dreams Neither she nor her friends have noticed any personality change except for her being even somewhat more active in her social life than previously

Nightmares (tables 2 and 5)—One third of the patients had nightmares while in the hospital, in which they relived scenes of the disaster in a more or less realistic manner They usually woke up frightened, trembling and perspiring Terrifying events, such as this conflagration was, frequently cause nightmares since the victims are startled and for some time unable

TABLE 6—Comparison Between Patients With and Without Neuropsychiatric Complications and Their Degree of Burns and Respiratory Damage

	No Psychiatric Complications	Psychi- atric Complications	Brain Lesion
Totals	20	25	1
More than 10% surface burns	4	5	0
More than 5% surface third degree burns	3	3	0
Severe respiratory damage	9	7	0

to deal with the event on a conscious level Thus, such dreams were reported by patients who later developed mental disturbances as well as by those who exhibited no other psychiatric symptoms Table 5 shows that nightmares are more likely to be had by patients with later mental complications In particular, recurring nightmares or nightmares beginning some weeks or even months after the event are of different significance They were not experienced after discharge from the hospital by any of the patients who had remained free of mental difficulties But frightening dreams persisted in 10 of the 25 patients with psychiatric complications thus indicating their continued anxiety None of the patients with general nervousness had these late nightmares, but they persisted in 10 of the 14 patients with anxiety neuroses

Effect of Bereavement on Psychiatric Outcome—One half of the patients had lost relatives or close friends in the disaster (table 2) Table 5 reveals an equal distribution of patients who had suffered bereavement and of those who had suffered no personal loss among those with and without psychiatric complications This should not occasion surprise when one realizes from frequent experiences that grief reactions severe as they may be temporarily, only rarely cause lasting psychiatric disturbance While the patients were still in the hospital, the question of which would be the best time and which the best way to tell them of their loss came up frequently It seems that no general rules can be laid down but that common sense has

3 Adler, Alexandra Disintegration and Restoration of Optic Recognition in Visual Agnosia, Arch Neurol & Psychiat, to be published  
4 Cobb, Stanley, and Lindemann, Erich Neuropsychiatric Observations, Ann Surg 117 814 824 (June) 1943

to decide this problem. For instance, it is generally known that uncertainty may be more disturbing to a patient than final knowledge of the loss. Therefore, anxious questions should be answered truthfully and sympathetically.

On the other hand, one would refrain from adding another burden such as a death notice to a patient at a time when his physical condition is precarious.

Table 6 allows a comparison of numbers of patients with and without psychiatric complications in relation to the severity of burns and respiratory involvement. It shows that there is an about equal distribution of severely affected patients among the two groups. Actually, there are relatively fewer patients severely burned and with severe respiratory damage in the group with psychiatric complications than among the patients with no post-traumatic changes. However, the difference is too small to allow any conclusions other than that the occurrence of psychiatric complications did not bear any direct relationship to the severity of burns or respiratory damage.

Twenty patients with whom personal interviews were not obtainable are not included in the statistical analysis of psychiatric observations. In answer to a psychiatric questionnaire (table 1) 9 reported mental difficulties which consisted of nervousness, insomnia, fears and anxiety, whereas 11 of them stated that they had not noticed any psychiatric changes after the disaster.

#### SUMMARY

Of the 131 patients brought to the Boston City Hospital during the night of Boston's Coconut Grove fire, neuropsychiatric examinations in the hospital and later interviews were carried out on 46 patients. Of the remaining 85 patients 39 died. Twenty answered through written questionnaires, whereas of 26 patients no follow-up was obtainable.

Of the 46 patients 20 did not manifest psychiatric complications at any time afterward, whereas 25 presented symptoms of general nervousness and anxiety neuroses lasting at least three months. Nine months after the disaster 32 of the 46 patients did not show any aberration from their pretraumatic personality, whereas 13 still suffered from general nervousness and anxiety neuroses. One patient has a lasting brain lesion with the symptoms of visual agnosia. This lesion of the occipital lobe was probably caused by exposure to carbon monoxide fumes but may also have been caused by other noxious gases or lack of sufficient oxygen supply.

Twenty-nine of the patients had become unconscious during the fire as against 17 who did not lose consciousness. The loss of consciousness was less than one hour in 13 instances and lasted from one to several hours or days in the remaining 16.

Of the 20 patients who did not develop psychiatric complications 15 had lost consciousness, which with 12 of the 15 was prolonged beyond one hour. Of the 25 patients with psychiatric complications 13 had lost consciousness. This, however, was short below one hour, in 10 of the 13 cases. Therefore unconsciousness and in particular prolonged unconsciousness, prevailed in patients who had stayed free of psychiatric complications, whereas there was no loss of consciousness or it was of very short duration in most of the patients with post-traumatic mental complications.

<sup>5</sup> The degrees of burns and of respiratory involvement are evaluated according to a table prepared by Dr. Maxwell Finland and others.

The percentage of patients who had lost relatives or close friends in the disaster was the same among those who developed psychiatric complications as it was in patients whose personality did not manifest post-traumatic changes. Severe and light degrees of burns and of respiratory involvement were distributed in about equal percentages among patients with and without psychiatric complications.

## DISTRIBUTION OF EPIDEMIC KERATOCONJUNCTIVITIS IN THE UNITED STATES

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Keratoconjunctivitis is not a new disease. It was described by Stellwag von Carion<sup>1</sup> and by Fuchs<sup>2</sup> in 1889 and since that time severe and extensive outbreaks have been reported by Wright,<sup>3</sup> Herbert,<sup>4</sup> Kirkpatrick<sup>5</sup> and Kirwan<sup>6</sup> from India, Viswalingam<sup>7</sup> from Malaya and Mulock Houwer<sup>8</sup> from Java. Epidemics have occurred in China, Japan, Tasmania, Germany, the Balkans and England. No race is exempt, and no particular occupation is either predisposing or responsible for it.

The attention of the medical men of the United States was called to the potential economic loss of man power hours by Rieke,<sup>9</sup> Holmes<sup>10</sup>, Hogan and Crawford<sup>11</sup> and others.

The particular phase of the subject to which this communication is addressed is the distribution of epidemic keratoconjunctivitis in the United States.

An inspection of the accompanying map will show that in the continental United States there have been only four large outbreaks, in Portland, Ore., Rieke saw several hundred, in Seattle Dawson reported hundreds of cases, in the San Francisco Bay area several thousand patients were treated by Nutting, Cordes, Hogan and Crawford and others, and in Schenectady, in the capital district of Albany, N. Y., thousands of patients were afflicted.

L. C. Hobson<sup>12</sup> saw 16 patients all living in a Veterans Administration hospital in southern California, an isolated nonoccupational group. His paper was important not only because it was early but also because it established the basic fact that his patients were not industrial workers.

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Citations not directly referred to are from written communications to the author.

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<sup>2</sup> Fuchs, E. Keratitis punctata superficialis. *Wien klin. Wchnschr.* 2: 837-841, 1889.

<sup>3</sup> Wright, R. E. Superficial Punctate Keratitis. XIII. Concilium Ophthalmologicum Hollandia 1: 338, 1929. Superficial Punctate Keratitis. *Brit J. Ophthalm.* 14: 257-291 and 595, 1930.

<sup>4</sup> Herbert, H. Superficial Punctate Keratitis Associated with an Encapsulated Bacillus. *Ophthalm. Rev.* 20: 339-345, 1901.

<sup>5</sup> Kirkpatrick, H. An Epidemic of Macular Keratitis. *Brit J. Ophthalm.* 4: 16-20, 1920.

<sup>6</sup> Kirwan, E. O. G. Epidemic Superficial Punctate Keratitis in Bengal. *Proc. All India Ophthalm. Soc.* 3: 1, 1933.

<sup>7</sup> Viswalingam, A. Epidemic Superficial Punctate Keratitis in Malaya. An Account Based on Observations of Superficial Punctate Keratitis Which Occurred in Selangor. One of the Federated Malay States from 1935 to 1938. *Brit. J. Ophthalm.* 25: 313-324, 1941.

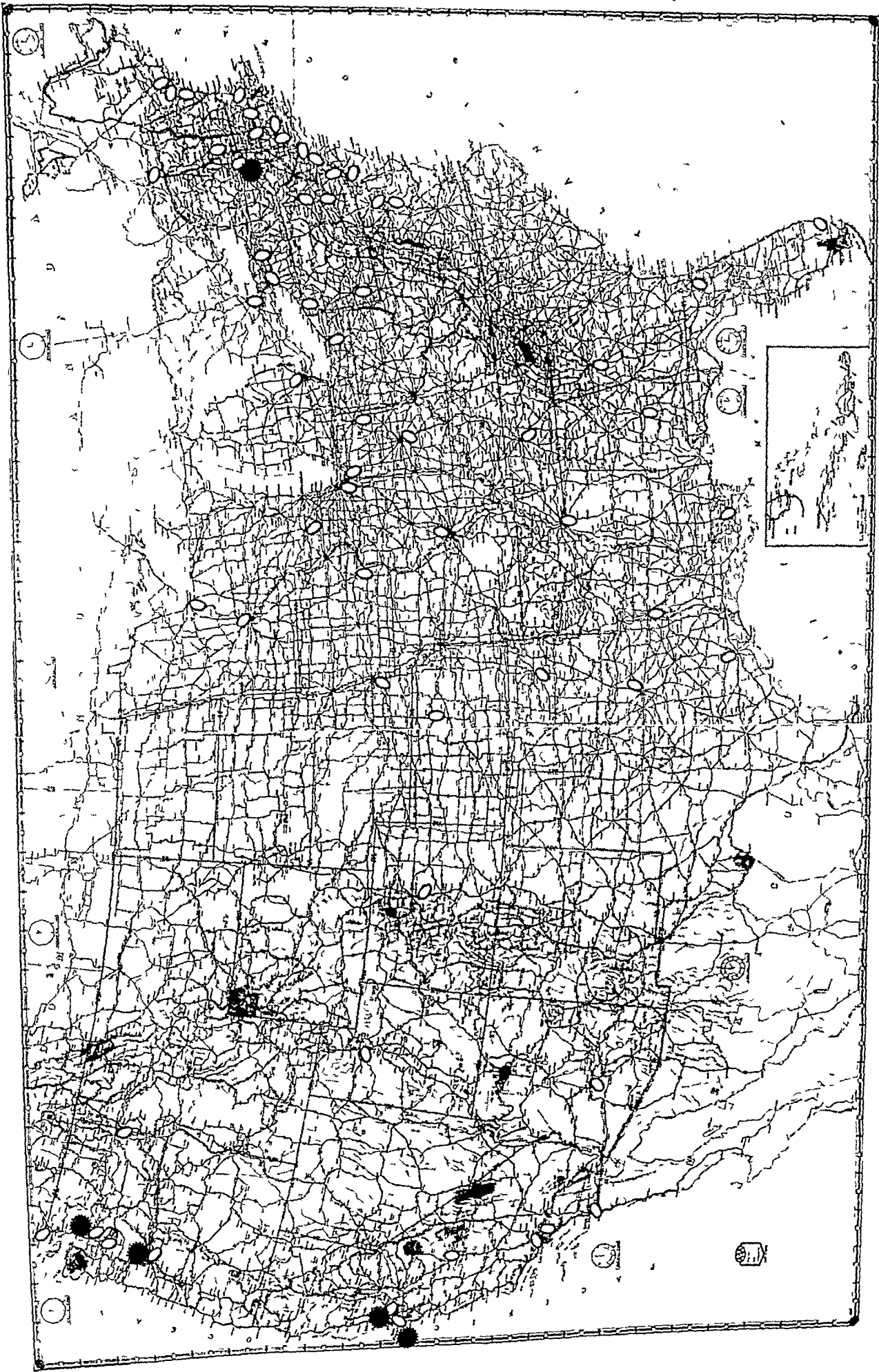
<sup>8</sup> Mulock Houwer, A. W. Keratitis nummularis (Dimmer). *Nederl. tijdschr. geneesk.* 82: 4152-4156 (Aug. 27), 1938.

<sup>9</sup> Rieke, F. E. Epidemic Conjunctivitis of Presumed Virus Causation. *J. A. M. A.* 115: 942 (July 18), 1942.

<sup>10</sup> Holmes, W. J. Epidemic Infectious Conjunctivitis. *Hawaii M. J.* 1: 11-12 (Nov.), 1941.

<sup>11</sup> Hogan, M. J. and Crawford, G. W. Epidemic Keratoconjunctivitis. *Am. J. Ophthalm.* 25: 1059 (Sept.), 1942. *War Med.* 2: 984-994 (Nov.), 1942.

<sup>12</sup> Hobson, I. C. Acute Epidemic Superficial Punctate Keratitis. *Am. J. Ophthalm.* 21: 1153-1155 (Oct.), 1938.



Epidemic keratoconjunctivitis in the United States during the years 1941 and 1942. The black serrate circles indicate major outbreaks, the white ovals cities from which reports to the author were received.

W J Holmes in 1940 reported an epidemic in the Hawaiian Islands. Shortly thereafter Rieke began to see afflicted shipyard workers and within six weeks treated 500 men. Significant phrases in his summary bear repetition: "involved a small percentage of the exposed men," "spread rapidly over the United States." In words made famous by the eminent statesman ex-Governor Alfred E. Smith of New York "let us look at the record" compiled from letters received from observers of wide clinical experience and from published articles.

R A Fenton of Portland, Ore. writes:

Because this originated on this coast among shipyard workers here and on Puget Sound it was accepted as an industrial disease by the Oregon Industrial Accident Commission and the Washington Bureau of Labor and Industries. I suspect that more than 2,000 cases have been seen in and around Portland and we have seen a good many cases coming from other parts of the state. Many individuals who have had no contact with industrial hazards, such as welding, and are not acquainted with shipyard workers have had this disease. We are not seeing as many corneal involvements as we saw a year ago.

Reporting from Seattle, Purman Dorman includes among other statements:

The condition first started in the vicinity of Seattle about December 1941 or January 1942. In the beginning I was fortunate to see almost every bad case that occurred within the Seattle-Tacoma Ship Yard. The infection spread rapidly, the number of new cases rose from none in November 1941 to about 200 a month in January, February and March 1942. Since that time the company has given all medical care in such cases within their own yards. The number of 200 is only an estimate, but the number "peaked" within an interval of three to six months.

Most of the cases seen now are far less severe, with greatly shortened convalescence. From what I have been able to determine, with the added experience of some of my colleagues, apparently there are no permanent opacities within the stroma or on the epithelium, although the spots sometimes remain three to nine months.

F J Pinkerton of Honolulu told me that he had seen more than 450 cases, so that the Hawaiian Islands seem to have been a large focus of infection, but here again note that the majority were neither confined to industrial workers nor found in any one occupation. Pinkerton said he did not believe the disease could be classified by any qualified judge as coming under the provisions of workmen's compensation laws.

It is to be noted that there is a distinct clash of opinions between Pinkerton, who maintains that keratoconjunctivitis is not an industrial hazard, and two state commissions which claim that it is compensable. The former opinion is based on study, the latter suggests hasty conclusions or perhaps a political expedient. It is hoped that subsequent decisions will be based on facts, not prejudices or fancies. I hold with Pinkerton and others that it is not an occupational disease.

Several hundred miles from Seattle the extremely important and active San Francisco Bay area, including San Francisco, Oakland and surrounding cities and towns, was seriously affected. The epidemic has been scientifically described by Hogan and Crawford in their comprehensive article in which they demonstrate their clinical acumen in vivid portrayal of the signs and accurate description of the symptoms. Their communication is the best which has appeared and although they may have included some cases which seem to be of greater severity than those seen elsewhere their observations are comprehensive—their descriptions

sound. Special attention is drawn to their severest cases of membranous conjunctivitis and uveitis, for these cases were not duplicated in the eastern experience. For factual and bibliographic data the reader is urged to study their original thesis.

Two letters add to the interest in this geographic location, one from F C Cordes of San Francisco who writes:

In general the number of cases seen in the region of San Francisco is markedly reduced from the number seen in the original epidemic a year and a half ago. There have probably been some 250 to 300 cases during the past six months. The incidence of corneal complications is small by comparison with the original epidemic, consisting of a few punctate infiltrates in the superficial layers of the stroma of the cornea and in some instances in the epithelium.

The incidence of enlarged preauricular glands was much reduced and only occasionally was a membranous formation seen on the conjunctiva. So, all in all, the disease was much less severe, ran a shorter course and was accompanied by fewer complications.

The other from R J Nutting across the bay in Oakland, Calif., is a notable addition to the history of the California outbreak.

We first saw this condition of acute keratoconjunctivitis in the latter part of September 1941. The first patient was seen at the University of California, and in October we were seeing anywhere from 2 or 3 up to 10 patients a day.

Our first patients showed photophobia, lacrimation, different degrees of swelling of the lids, redness and thickening of the palpebral conjunctiva, and about half of the patients seen at that time had the corneal involvement commonly known as superficial punctate keratitis. In the majority of the later patients the punctate areas were mostly confined to the pupillary area, which naturally resulted in a definite loss of visual efficiency. About half of them had involvement of the preauricular glands. Other characteristic symptoms were a feeling of general malaise, slight sore throat and other symptoms of a moderate head cold. Usually there was an involvement of one eye at first and a few days later the other.

This epidemic was spread over a good cross section of the population in its first and most severe phase, which lasted from late September to the middle of November. Then there were only occasional new cases until the middle of December, when the recrudescence of the epidemic seemed to involve industrial groups such as the shipyard workers. This phase of the epidemic continuing through to the present has not been so severe as the first phase and is not so prone to result in visual impairment. The average course of the first phase was two to four weeks for the actual inflammation, of the second phase one to two weeks.

In our private practice I can conservatively say we have seen at least 500 or more patients with this disease, and at one time in the Richmond shipyards there were over 1,000 cases. The disease spread rapidly until there were at least 5,000 cases in the Bay Area.

At the present writing we are still seeing a few mild cases.

The corneal lesions cleared anywhere from a few weeks to one year. We had no complications, such as involvement of the interior of the eye or true ulceration of the cornea, and no permanent disability. Other men have reported complications but from our experience we consider these secondary to some other factor.

We saw the first patients in this area and diagnosed their disease as conjunctivitis with superficial punctate keratitis.

On account of our location on the coast, I personally feel our first patients were carriers from Hawaii and the Far East, as our first patient at the University of California lived at the International House. Age was no factor, as we had one patient 3 weeks old with this disease and another in the 80s. In our experience this disease was most prevalent in the white race.

A Ray Irvine of Los Angeles investigated his district. He writes

During the last six months the epidemic of keratoconjunctivitis that we had here previous to that time has practically disappeared. I have seen not more than a half dozen cases, only 2 of which have shown any corneal involvement in the form of a superficial punctate keratitis. These cases were mild compared with some that we saw last year.

Inquiry among men who do industrial work assures me that the cases are comparatively rare now.

While from nearby Pasadena, W H Roberts writes

This city, as you know, is largely a residential city with few factories and industries. Twenty-two cases have been reported by the ophthalmologists of the city. We see the usual run of cases of keratoconjunctivitis, but I personally have seen none of the epidemic type.

J R Walker at Fresno said there were very few cases in his vicinity.

C A Veasey of Spokane, Wash, some hundreds of miles inland from Seattle and Portland, Ore, reports only about 25 patients with the disease, some of whom migrated from the Pacific Coast.

Still farther inland, E M Neher of Salt Lake City reports very few cases.

From Denver M E Marcove writes

I have contacted many of the Denver men with regard to their experience in acute keratoconjunctivitis and have found only one man besides myself who has seen any cases. Dr D H O'Rourke says he has seen about 25 cases in the past six months. I have seen 12. The incidence has not assumed epidemic proportions in our city.

J H Judd of Omaha writes

Some of the local men have not yet reported as to their records of acute keratoconjunctivitis. We have not had more than 35 or 40 cases in this locality, and most of these were mild. Only a few showed any serious corneal involvement, and in only 3 was there any involvement of preauricular and cervical lymph glands.

Fifteen of my cases occurred in one department of a creamery company with an incidence of 1 new case a day until the company was forced to shut down for about four days because of an explosion of the refrigerating system. Since that time 20 new cases have developed. Our cases are apparently all self limited.

A C Hilding of Duluth, Minn, writes

We have not had anything out of the ordinary in this community.

F E Burch of St Paul reports practically no cases.  
S R Gifford of Chicago summarizes his experience

I have been seeing for the past five years a group of cases which I have considered as belonging in the class described as epidemic keratoconjunctivitis. There have been about 30 of these in my office practice and I cannot tell you exactly how many we have seen at the clinic, since the cases there are seen by different men and are probably not diagnosed in the same way. These cases differ somewhat from the present very acute form of the disease and within recent months I have seen only 2 of these acute cases which seem to answer the description of Hogan and Crawford.

My own opinion is that they are all cases of the same disease, but when the condition assumes the epidemic form the virus increases in virulence and produces a somewhat different picture.

E L Bulson of Fort Wayne, Ind, and C W Rutherford of Indianapolis found few in their districts. Masters at a later time could collect only a few that were typical, so that Indianapolis seems to have been spared.

L T Post and W H Luedde interrogated their colleagues in St Louis and determined that only 14 cases had been seen in that metropolis.

Swinging back to the dry clear air of Phoenix, Ariz, we hear from D F Hairbridge, who writes a long and interesting account of his experience with several cases but by no means an epidemic.

E H Cary of Dallas reports for Texas a few isolated cases.

F A Davis in Madison, Wis, has not observed any increase in the number of cases of keratoconjunctivitis.

C L LaRue of Shreveport, La, found only a limited number, as did C A Thigpen of Montgomery, Ala.

And from New Orleans C A Bahn reports that very few cases have been seen or recorded by the physicians of his community. A similar report was received from W A Cook of Tulsa, Okla.

E N Robertson of Concordia, Kan, P J Lemfelder of Iowa City, H C Ellett of Memphis, Tenn, M McT Cullom of Nashville, Tenn, N M Black of Miami, Fla, S A Richardson of Jacksonville, Fla, M F McCashin of Pittsburgh, Carlsen of Scranton, Pa, and W T Davis in Washington, D C, found no evidence of an epidemic.

Clapp reports

I desire to say that we have seen between 30 and 40 cases during the past six months. These cases have never been in the form of an epidemic nor have they been like those cases reported by Rieke on the West Coast. In fact, while the cases have been more numerous, they have not been in any particular way different from former cases of keratoconjunctivitis with the possible exception that the lesions have been seemingly more resistant to treatment.

I have also inquired at the free clinics of my colleagues and they have seen far fewer than we have.

W O LaMotte of Wilmington, Del, and E S Sherman of Newark, N J, noted only isolated, rare cases.

From the Philadelphia and Camden area, which includes immense manufacturing plants of various kinds and large shipbuilding yards, Burton Chance reports

Numerous cases have been seen in this community without, however, its being a widespread epidemic. One group at the Wills Hospital consisted of 30 odd patients, another group, of only 8 or 10, not sufficient for great stress to be laid on them. Along with swelling and redness there has been but scant discharge, in which no specific, hitherto unnamed organism was found. Not all patients had swelling and tenderness of the preauricular glands. One of the surgeons was affected but he has entirely recovered.

and J S Shipman of Camden, N J, writes

Regarding the cases of keratoconjunctivitis seen by the men in Philadelphia during the past six months, I can say that we have seen far too many but not, I think, in the proportions which I understand you have up in your section. At the Wills Hospital we had about 20 or 30 cases develop in the wards, and so far as I know only 2 of the patients had corneal involvement.

One of my associates in the clinic found the same condition in his right eye but without any definite corneal involvement.

Dr J M Wotring of Reading Pa, reports about 50 cases in that city while Dr G W Schlindwein of Erie, Pa, had none.

The New England states have been remarkably free. T L Terry of Boston has carefully checked Massachusetts and summarizes the results as follows.

To date 66 possible cases of epidemic keratoconjunctivitis have been reported by private physicians. Tabulation on the

basis of employment showed 26 nonindustrial (housewives and children) and 40 industrial (miscellaneous industrial 30, shipyards 10). The more suspicious cases were followed up, but in no case did the observer record the classic clinical symptoms, a duration of over two weeks or any epidemic characteristics.

One physician in Brockton described a case with the classic symptom duration and sequelae. This condition occurred in a housewife who had no history of contact. Neutralization tests were made.

The diagnosis was made in 2 other cases by two separate physicians but the patients did not return for follow up, the implication being that they improved rapidly tending to negate the diagnosis.

Four cases were reported at each of two plants. Investigation proved however that the conjunctival disease in one case was due to the use of a solvent and in the other to local irritation.

E. A. DeWitt of Bridgeport Conn. said that he and his colleagues had seen quite a few, E. M. Blake of New Haven Conn. very few and this was the experience of W. F. Holzer in Worcester Mass.

Parker Heath of Detroit when he spoke at the meeting of the Michigan State Medical Society, reported 50 known cases and said that probably many had not been recorded.

H. W. Cowper of Buffalo estimates that there were 200 to 300 cases in that district.

On the other hand in industrial Rochester, N. Y., A. C. Snell could uncover only a single record.

G. G. Marshall of Rutland, Vt., found no cases in his state.

H. F. Hill of Waterville, Me., S. J. Beach of Portland, Maine, and W. E. Keishner of Bath Maine, the site of the extensive shipyards, all report only a few cases.

J. A. MacMillan of Montreal writes

I got in contact with the French oculists and those who are doing the Army work and our own group and none of the men have noticed any difference whatsoever in the ordinary run of conjunctival and corneal lesions.

And from the Pacific Coast, C. E. Davies of Vancouver, B. C., reports

We have been relatively free of this condition, and as far as I am aware there is no evidence in lower British Columbia of anything that might be interpreted as of an epidemic nature.

As one approaches the region of greatest concentration in the East, one stops in Brooklyn, where J. N. Evans observes

You will be interested to know that in spite of our great shipping interests in Brooklyn and the fact that the Long Island College Hospital is on the water front, we have nevertheless, seen practically no cases of keratoconjunctivitis. The same holds true for the Brooklyn Eye and Ear Hospital. We have discussed this peculiar situation at the New York Ophthalmological Society and have thus far not found a satisfactory explanation.

I suppose there must be a few cases but not enough for the men to remark about.

In New York Conrad Berens interviewed the ophthalmologists of the various hospitals to obtain the following reports

W. G. Frey. No case of epidemic keratoconjunctivitis is in the clinic at St. Luke's Hospital.

W. B. Allen. Lately we have had quite a few cases of what we diagnosed as acute epidemic conjunctivitis but in my clinic in the Bronx Eye and Ear Infirmary we have had only one.

D. B. Kirby. Two nurses and 4 patients were treated at Bellevue Hospital.

J. M. McLean. We have seen over 20 patients with this disease and treated at least 12 with a 5 per cent aqueous solution of sodium sulfathiazole sesquihydrate. On the whole the patients so treated seemed to have a shorter and less severe course of illness than those whose eyes were irrigated with boric acid and treated with zinc sulfate. However, the series is far too small to enable one to make any definite conclusions. Some of the eyes so treated seemed to clear in as short a time as four days. In no instance did we have as dramatic results as those reported by Bruley with specific serum.

I. C. Keil. I might say that they were comparatively few over the period of the last few months. All of the four services at the Manhattan Eye Ear and Throat Hospital treated not more than 20 persons for this infection.

E. F. Krug in a letter to Berens said he had seen quite a few cases in private practice.

Arnold Knapp approached the subject by interviewing colleagues and found 209 cases the number collected by Bruley. Some of these may be duplicated in the other reports.

Sanders,<sup>13</sup> Bruley,<sup>14</sup> Berliner<sup>1</sup> and others have written articles.

And so one comes to the Eastern focus in Schenectady, N. Y. and the adjacent cities. From Troy, N. Y., F. M. Sulzmann reports 30 cases.

In Schenectady there are two large plants, the General Electric and the American Locomotive. From what I consider reliable information, about 4 per cent of the population of the community were afflicted with keratoconjunctivitis. The percentage was the same for the employees of the two plants.

The epidemic started in September 1942, spread rapidly and then almost stopped, a second wave of less intensity followed. Now there are only sporadic cases.

The involvement of eyes was on the whole much less severe than the extreme form described by Hogan and Crawford. Deep corneal invasion was rare, and iritis was seen only a few times. In some the conjunctival reaction was intense, in others slight. There was no definite relationship between the severity of reaction and the extent of corneal infiltration. With the exception of the usual apprehension of any patient with the disease, the mental and physical reactions were in the main not noteworthy or different from what is usual with a conjunctival infection. The end results are and will be for a long time under observation. The corneal infiltrates are absorbing.

#### SUMMARY

A worldwide conjunctival and corneal disease assumed epidemic proportions on the Pacific Coast and later in an inland city. The explanation of its predilection for some coastal cities in the West and its practically complete absence in similar localities in the East is something to engage the attention of the student.

Its failure to appear in any of the great army mobilization centers speaks well for the health of the men in service as well as for the high standard of sanitation in the camps.

13 Sanders Murray. Epidemic Keratoconjunctivitis. Arch. Ophth. 28: 581 (Oct.) 1942. Sanders Murray and Alexander R. C. Epidemic Keratoconjunctivitis. J. Exper. Med. 77: 71 (Jan.) 1943. Sanders Murray Gulliver F. D. Forchheimer L. L. and Alexander R. C. Epidemic Keratoconjunctivitis. J. A. M. A. 121: 250 (Jan. 23) 1943. 14 Bruley, A. E. and Sanders Murray. Treatment of Epidemic Keratoconjunctivitis. J. A. M. A. 121: 999 (March 27) 1943. 15 Berliner M. I. Epidemic Keratoconjunctivitis. Am. J. Ophth. 26: 50 (Jan.) 1943.



## CONCLUSIONS

Keratoconjunctivitis is not a new disease. It affects young and old.

There has been no epidemic in the shipyards on the Gulf of Mexico or along the Atlantic Coast, proving conclusively that it is not a shipyard disease *per se*.

During the rush of war and the overwhelming number of cases it is possible that several diseases have been included under the title epidemic keratoconjunctivitis. It is certain that more complications and greater and more extensive ocular involvements were reported from the West Coast and Hawaii than have been experienced in other parts of the country.

To infer that the epidemic spread throughout the United States is not warranted by the collected facts.

344 State Street

## ABSTRACT OF DISCUSSION

DR THOMAS D ALLEN, Chicago. Is this a new disease? Is it infectious? What should be our attitude? We in the Chicago region would agree in part with Dr Bedell. It is not new in the world, but as it exists in the United States today it is new to us. It is with us in a mildly endemic form, cropping up among most unexpected people—professors, shopmen, laborers, lawyers, stenographers, traveling men, housewives, merchants, businessmen, seldom are two in a family affected simultaneously, although in a given shop several in a group may have the disease at the same time. Any ophthalmologist who has had the disease, as I have, and has traced it to the source, as I did, would agree that it is infectious. Why it is that in some communities there seems to be a lack of immunity and in others there is no trace of the disease is a question epidemiologists are trying to solve. Dr Sanders has found an exact way of determining the presence of immune bodies in the blood of individuals but it is tedious, time consuming and expensive. In communities where it has suddenly gained access its control has been in direct proportion to the vigilance of the medical profession and the local boards of health. A few cases were seen in Chicago last summer (1942) but the medical profession did not awaken to the serious import of the situation till about Christmas. Then an intensive campaign was mapped out, with the result that we have an active committee. We are attempting to trace the source in each case. We have noted in the Hammond, Ind., region an apparent change in the character of the disorder (Dr Hedwig Kuhn reports that only about 10 per cent develop keratitis as opposed to about 65 to 80 per cent at first). Soap and water are our first line of defense. Prompt isolation and treatment have saved us from a real epidemic.

DR MICHAEL J HOGAN, San Francisco. I have been interested in the distribution of this disease, as it has a bearing on the nature of the causative agent and the method of its transfer. The results of Dr Bedell's survey lead one to attempt several conclusions. First, that the epidemic on the Pacific Coast must have been initiated by patients who acquired the disease in the Hawaiian epidemic and carried the infectious agent to the mainland. Second, that the disease first gained a foothold in shipworkers and was spread rapidly among them both by close contact and by the considerable shifts in personnel which occurred during 1940-1941. These facts would indicate that the disease, whatever its initial method of spread, was further disseminated by contact infection. From shipbuilding plants the routes by which this condition might reach nonindustrial areas would not be too difficult to trace. We have no knowledge concerning the methods of transmission of this disease from area to area, whether it is by insect or other vector, carriers or missed cases. Therefore it is more difficult to explain outbreaks in other portions of the country, such as Schenectady, while intervening areas are unaffected. I know of a number of patients with the disease who left this area to visit Chicago and New York and were certainly capable of spreading the disease. Yet the comparative incidence of the disease in these cities was low. I concur that the disease is not directly the result of lowered resistance from corneal foreign bodies, arc

flashes and a smoky atmosphere. However, one finds it hard to explain the high incidence of the disease in industrial plants, while the incidence in the general population is relatively low. The California State Industrial Accident Commission has ruled that the disability resulting from the disease is compensable in this epidemic because the incidence of the disease was higher among shipworkers than in the rest of the population. The California State Supreme Court has concurred with this finding. Many of us have disagreed with this opinion, but employers have been ordered to recompense their employees.

DR A J BEDELL, Albany, N. Y. Dr Allen's comments on the widespread distribution of the disease, how it attacks many people of various social conditions who are in no way associated with shops, his belief that the character of the disorder has changed, and his statement that there is less corneal involvement have added to our knowledge of the condition. His last expression causes us to wonder if some common diseases are not being included under the heading of epidemic keratoconjunctivitis. There can be no justification for using the term unless the cornea is involved. I approve of Dr Hogan's disagreement with the decision of the California State Supreme Court in concurring with the California Industrial Commission that the disease is compensable "simply because the incidence of the disease was higher among shipyard workers than in the rest of the population." The New York State workmen's compensation law states that "an injury means only an accidental injury arising out of or in the course of employment and such disease or infection as may naturally and unavoidably result therefrom." It would be difficult to interpret this law so as to include epidemic keratoconjunctivitis. I have heard a recent report from Detroit, where approximately only 250 cases were observed. Attention is called to my paper which has just appeared in the *New York State Journal of Medicine* (43:2049 [Nov. 1] 1943).

## TOLUENE POISONING

CAPTAIN REV. H. WILSON

MEDICAL CORPS, ARMY OF THE UNITED STATES

Toluene is a hydrocarbon  $C_6H_5CH_3$ , also known as toluol and methyl benzene. It is a colorless, highly refractive inflammable liquid obtained from tolu and other resins and from coal tar. It boils at 110.4 C and has an odor similar to that of benzene. It is insoluble in water and is miscible with alcohol, ether, chloroform, carbon disulfide and petroleum benzene. Its specific gravity is about 0.865 at 25 C. It dissolves iodine, phosphorus, sulfur and, when used in large amounts, resins and fats.

Toluene constitutes 2 to 10 per cent of commercial benzene. It is used extensively as a solvent in the rubber lacquer and munitions industries. It affords an excellent solvent for certain types of synthetic rubber because it dries rapidly. It is used as a starting material in the manufacture of trinitrotoluene.

The pathologic manifestations of exposure to toluene (toluol) are a matter of controversy. The conclusions reached by various authors are in decided variance with one another.

For the past several years I have had an opportunity to study the effects of exposure to various types of fumes in a large industrial plant. The observations found in this paper are drawn from experience encountered in the handling of employees exposed to toluene fumes.

Toluene poisoning is usually caused by absorption of toluene through the respiratory tract, the skin and the alimentary tract. The absorbed fumes exert a progressive depressant action on the central nervous system and the bone marrow. The action is that of a narcotic. Toluene is also a pronounced irritant to mucous membranes. A factor to be considered whenever it is

employed is individual susceptibility. Some persons will tolerate concentrations of toluene ranging up to 200 parts per million for six to eight hours daily with no demonstrable ill effects. Exposure to concentrations of toluene from 200 to 500 parts per million for six to eight hours will in most persons cause tiredness and lassitude. Concentrations over 500 parts per million for one to three hours are definitely dangerous and will cause symptoms attributable to depression of the central nervous system and the bone marrow.

Approximately 1 000 employees were exposed to the fumes of commercial toluene in concentrations varying between 50 and 1,500 parts per million for periods of one to three weeks. One hundred employees, or 10 per cent of the total number of employees exposed, showed symptoms severe enough to cause them to present themselves to the hospital for examination. Ten of these patients or 1 per cent of the total number of employees exposed, showed resultant blood changes. No fatalities occurred in the entire group of patients. The remainder of the exposed employees did not exhibit any symptoms attributable to the fumes. All employees working with toluene were kept under constant supervision, and all who presented any physical complaints were sent to the hospital for examination.

The exposed employees coming to the hospital were classified into groups by using the degree of exposure as a basis. The concentration of the toluene fumes at the job site was measured with a combustible gas indicator. The readings were taken shortly after any exposed person appeared at the hospital with symptoms. Three groups of patients were made: group 1, those patients who had been exposed to concentrations of toluene fumes up to 200 parts per million; group 2, those who had been exposed to concentrations of fumes from 200 to 500 parts per million; and group 3, those who had been exposed to concentrations of fumes over 500 parts per million.

Approximately 60 per cent of the patients fell into group 1. The chief complaints of this group were headache, lassitude and loss of appetite. Physical and laboratory examinations gave essentially negative results. Because the complaints and physical findings were not of a sufficient degree to be considered pathologically significant, the symptoms of this group of patients were considered to be due chiefly to psychogenic and other factors rather than to toluene fumes.

Group 2 constituted about 30 per cent of the total number. Their complaints were more numerous and more pronounced. Headache, nausea, bad taste in the mouth, anorexia, lassitude, slight but definite impairment of coordination and reaction time, and momentary loss of memory were the chief presenting symptoms. No significant physical or laboratory findings were noted.

Group 3 constituted about 10 per cent of the total number of patients. The chief complaints were nausea, headache, dizziness, anorexia, palpitation and extreme weakness. Loss of coordination was pronounced. Reaction time was definitely impaired. In several cases petechiae appeared under the skin.

In most of the cases all of the elements of the blood picture remained normal except the red cell count which usually dropped to about 2 500 000 per cubic millimeter. In 2 cases leukopenia developed with white cell counts of 2,500 to 3,000 per cubic millimeter. In these 2 cases all of the other blood elements were reduced. The red cell count was lowered and the platelet count was slightly decreased, the differential

count showed the polymorphonuclear cells to be decreased and the monocytes increased, reticulocytes were decreased. Biopsy of the bone marrow in these 2 cases showed partial destruction of the blood forming elements. A diagnosis of aplastic anemia was made in these 2 cases.

Treatment of the first group of patients consisted in observation and reassurance. Because of the lack of findings it was felt that exposure to fumes of toluene in concentrations under 200 parts per million was not especially hazardous. Repeated physical and laboratory examinations were made on these patients. If the symptoms persisted the patient was prohibited from working in fume departments.

Patients in group 2 were all considered to have potential aplastic anemia. Physical and laboratory examinations were done on these patients at frequent intervals. Multiple vitamin capsules and high vitamin, high caloric diets were prescribed. When the patients became symptom free they were permitted to return to work in a fume free department.

Patients in group 3 had serious poisoning. Fortunately they were few. All of them were immediately removed from the fumes. Most of them were unable to work at all. Some required hospitalization. A biopsy of sternal bone marrow was made for each one in this group. All whose bone marrow showed degeneration received whole blood transfusions at intervals regulated by the response. Usually the amount given at one transfusion was 250 cc of whole blood. One patient with aplastic anemia received three whole blood transfusions, and one received five whole blood transfusions. The response was good in both. Before being given a transfusion the patient was alkalinized with sodium or potassium citrate. Each patient in group 3 received 10 mg of liver intramuscularly daily, large daily oral doses of liver, iron, calcium, phosphorus, yellow bone marrow and multiple vitamins, 400 to 600 mg of ascorbic acid daily by mouth and a high vitamin, high caloric diet. Great care was taken to improve the patient's general hygiene. In the 2 cases of aplastic anemia absolute rest in bed was enforced and a constant watch was kept for secondary infection. In the other cases rest was an essential part of the treatment but absolute rest in bed was not insisted on.

After several weeks of rest, symptoms attributable to depression of the central nervous system began to clear up. Weakness was the most persistent symptom. Slight overexertion caused fatigue in one case of aplastic anemia several months after all other symptoms had disappeared.

Toluene may be assumed to be a dangerous chemical. Definite precautions should be taken whenever it is used. The following safeguards should be put into effect:

(a) The concentration of free fumes should never be more than 200 parts per million. The concentration should be ascertained frequently with a combustible gas indicator.

(b) Adequate ventilation must be installed to insure a fume concentration of less than 200 parts per million at any site where an employee might be working.

(c) New employees should be checked thoroughly before going to work in a department using toluene. Any evidence of blood dyscrasia or organic disease should be investigated and is usually sufficient cause to prevent that person from working in a fume department.

(d) Any person working with toluene who shows signs of illness should be seen by a physician. A com-

plete check-up should be made including a complete blood count. If the condition warrants, biopsy of the sternal bone marrow should be performed.

(c) Frequent adequate physical and laboratory examinations should be made on people working in toluene fumes. These should be made at least once a month where exposure is greater than 200 parts per million. The more frequent the examination, the less chance there is for poisoning to occur. Any change in physical status should be carefully investigated.

#### SUMMARY AND CONCLUSIONS

Of about 1 000 workmen exposed for from one to three weeks to toluene fumes varying in concentration from 50 to 1 500 parts per million, 100, or 10 per cent, showed symptoms attributable to toluene intoxication. Ten or 1 per cent showed blood changes. No deaths occurred. Treatment was symptomatic and included multiple whole blood transfusions, oral administration of liver, iron, calcium, phosphorus and yellow bone marrow and multiple vitamin therapy.

Toluene has a definite toxic effect on the human system. With concentrations over 200 parts per million symptoms attributable to intoxication of the central nervous system may occur, and with concentrations over 500 parts per million depression of the bone marrow may occur.

Adequate periodic examination of employees exposed to toluene fumes is valuable in the early discovery of cases of blood dyscrasia, and removal of the patients from the toxic environment and adequate therapy make it possible to return them to a normal state of health.

**French Medical Education**—To Antoine François Fourcroy belongs the honor of setting in motion the legislation which gave rise to present day French medical education. He himself had obtained his medical degree in 1780 with great difficulty because of poverty. The 6,000 livres necessary for the diploma had been contributed by friends of the celebrated anatomist Vicq d'Azyr, who boarded with young Fourcroy's family. Fourcroy had welcomed the Revolutionary movement and the reforms it promised, but he was averse to entering the wild arena of practical politics and at first refused to accept any office. In spite of his protests he was elected a member of the Convention—one of the few physicians in this body—and here he devoted himself almost entirely to questions concerning education. Convinced of the necessity of a supply of physicians, chiefly for the army, he consulted Prieur, the member of the Committee on Public Safety in charge of the teaching of sciences and arts, asking him to recommend some one capable of collaborating in mapping out a scheme of organization for medical education. The name of François Chaussier was suggested. Chaussier was not a Parisian but had been prominent in medical circles in the provincial city of Dijon, holding appointments there not only as Surgeon of the Prisons and Physician of the Hospitals but also as Professor of Chemistry, and giving courses in anatomy and legal medicine. Because he sympathized with the idea of the Jacobins regarding the centralization of all power in Paris, he proposed the establishment in that city of a single Central School of Health. Jacobin principles, however, had just passed into disfavor, and members of the Convention agreed that similar schools should be established at Montpellier and Strasbourg. Fourcroy concurred and the decree was so worded. It is curious to note that when the government came to publish the text of the decree it prefaced it by a copy of Chaussier's report advocating a single Central School of Health in Paris. A few footnotes were added to the effect that the recommendations contained in the report were applicable to three schools as well as to a single one—Olmsted, J. M. D., in *Essays in Biology*, Berkeley, University of California Press, 1943.

## THE CLINICAL SIGNIFICANCE OF THE PLASMA VITAMIN A LEVEL

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AND

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The chemical determination of vitamin A in the blood has been simplified so that it can be carried out in any clinical laboratory. Apart from the changes of the plasma vitamin A in nutritional vitamin A deficiency there are well defined variations of the plasma vitamin A content in many diseases. These variations, not related to nutritional deficiency, appear more interesting since secondary, conditioned<sup>1</sup> or endogenous<sup>2</sup> vitamin deficiencies (due to processes within the organism) are as significant in medical practice as primary or exogenous due to reduced nutritional intake.

Two questions arise: 1. What determines the plasma vitamin A level? 2. How may a knowledge of this level be useful to the clinician?

We attempt to answer these questions on the basis of information gained from the literature and from observations on 2,673 vitamin A determinations on 454 patients.

In a statistical evaluation a *t* value<sup>3</sup> of 2.5 or over was considered a significant difference.<sup>4</sup> Our studies have been restricted to adults. As to children and infants, we refer to the extensive studies of Clausen and McCoord<sup>5</sup> and May, Blackfan, McCreary and Allen.<sup>6</sup> Since the carotenoid level is determined in the vitamin A assay, it will also be discussed.

#### METHOD FOR VITAMIN A DETERMINATION

If we exclude the spectrophotometric method, which is not widely used, almost all determinations of vitamin A in blood have been carried out by using the Carr-Price reaction (i.e. the blue color which a chloroform solution of vitamin A develops when antimony trichloride is added). If 4 cc.<sup>7</sup> of plasma is used, the final blue color is strong enough to be read either in the photoelectric colorimeter<sup>8</sup> or compared visually with copper sulfate standards.<sup>9</sup> In our experience<sup>10</sup> the two

Statistical calculations and evaluation were done by Miss Elizabeth M. Adles.

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From the Hektoen Institute for Medical Research and the Department of Therapeutics of the Cook County Hospital and the Departments of Pathology and Internal Medicine, University of Illinois College of Medicine.

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3. *t* equals  $\frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$   $\bar{x}$  is mean of determined values.

$\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$  *s* is standard deviation of determined values, *n* is number of cases examined.

If *t* of 2.5 is taken as level of significance, the *P* equals 0.01.

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10. Popper, Hans, Steigmann, Frederick, Meyer, K. A., and Zein, S. Relation Between Hepatic and Plasma Concentrations of Vitamin A in Human Beings, *Arch. Int. Med.* **72**: 439 (Oct.) 1943.

methods<sup>11</sup> have checked satisfactorily with each other. The copper sulfate standards or photometer can be calibrated with crystalline vitamin A or with oil vitamin A concentrates. Crystalline vitamin A seems superior for calibration. It is, however, quickly oxidized. Recently well standardized vitamin A concentrates have become available which are superior for calibration because of the stability and low price of the product permitting thus repeated recalibrations.<sup>12</sup> The vitamin A values are recorded either in micrograms per hundred cubic centimeters of plasma as chemical value or in units as a biologic value depending on the response of vitamin A deficient animals. The conversion factor from micrograms to units varies with the biologic potency of the preparation, that of crystalline vitamin A alcohol being higher than that of vitamin A oil concentrates. The conversion factor of the standardized oil is according to the specification given 328. In the first phase of our studies the calibration was done with crystalline vitamin A but was rechecked with the standard oil. Because of the variability of the biologic assay, all values are recorded as micrograms.

Since carotene also reacts with antimony trichloride, most investigators made, in their final calculation, a deduction for the color due to carotene. However, since the carotene color develops much slower than that of vitamin A, this deduction is not quite accurate. Furthermore, it is doubtful that the color ascribed to carotene is entirely due to it and not to other carotenoids, especially in pathologic conditions. In our material, therefore, no deduction has been made for the carotenoid color, which may explain why our figures for vitamin A are somewhat higher than those reported by others. Levels below 4 micrograms were considered zero levels.

#### WHAT FACTORS VARY THE PLASMA VITAMIN A LEVEL?

1 *Nutritional Intake of Vitamin A*—Many months are required to decrease significantly the blood vitamin A level of normal adults by withdrawal of vitamin A from the food, whereas the carotene level begins to drop sooner.<sup>13</sup> Prolonged malnutrition reduces the vitamin A level,<sup>14</sup> among the poorer part of the population the blood level is usually lower than in the economically better stratum.<sup>15</sup> Not much is known as to the blood vitamin A level, in clinical nutritional avitaminosis A in deficient animals it is reduced.<sup>16</sup> In

individuals with signs of vitamin A deficiency the vitamin A level is not necessarily lowered.<sup>17</sup> On the other hand the intake of large doses of vitamin A increases the blood level temporarily.<sup>18</sup>

2 *Disturbances of Intestinal Absorption of Vitamin A*—In conditions associated with disturbances of intestinal absorption, low plasma vitamin A levels are common (celiac disease,<sup>19</sup> sprue,<sup>20</sup> colitis,<sup>21</sup> pyloric obstruction,<sup>22</sup> pancreatic fibrosis and congenital atresia of bile ducts,<sup>23</sup> intestinal obstruction,<sup>24</sup> severe pulmonary tuberculosis<sup>25</sup> and infantile eczema<sup>26</sup>). In these conditions, to which liver disease<sup>27</sup> may be added the response of the plasma vitamin A level to the intake of high doses of vitamin A (tolerance curve) is also inadequate.

3 *Increased Demand for Vitamin A*—An increased demand for vitamin A is still a question. The otherwise somewhat constant requirements are doubtlessly increased in pregnant and lactating women.<sup>28</sup> Whether the requirements of infants are higher than of adults is doubtful.<sup>29</sup> Increased demands have also been presumed in hyperthyroidism<sup>30</sup> and infections<sup>31</sup> and have been found in choledochocolonostomized rats.<sup>32</sup>

4 *Disturbed Interaction of Liver and Blood*—Normally the blood vitamin A level is maintained by the liver, which is its chief depot in the body.<sup>33</sup> In pathologic conditions this regulation may fail.<sup>34</sup> In pneumonia low blood levels have been found in patients whose liver at a later autopsy contained normal amounts of vitamin A.<sup>35</sup> In liver damage a similar discrepancy

17 Sie B L Untersuchungen über den Vitamin A Gehalt des Blutes von einigen Patienten mit Avitaminotischen Augensymptomen Arch f Augenh 110 610, 1937 Catel, W Klinische und tierexperimentelle Studien über die normale und pathologische Physiologie des A Vitamins Monatsschr f Kinderh 73 316 1938 de Haas, J H, and Meulemans O Vitamin A and Carotenoids in Blood Deficiencies in Children Suffering from Xerophthalmia, Lancet 1 1110 1938

18 Breese B B and McCoord A B Vitamin A Absorption in Catarrhal Jaundice J Pediat 16 139 1940 Popper, Steigmann and Zevin<sup>27</sup> Ralli Bauman and Roberts<sup>14</sup>

19 Wendt H Beiträge zur Kenntnis des Carotin und Vitamin A Stoffwechsels Klin Wchnschr 14 9 1935 May C D and McCreary J F The Absorption of Vitamin A in Celiac Disease J Pediat 18 200 1941 Breese and McCoord<sup>23</sup>

20 Adlersberg D and Sobotka, H Fat and Vitamin A Absorption in Sprue and Jejunoileitis Gastroenterology 1 357 1943

21 Page R C and Bercovitz Z The Absorption of Vitamin A in Chronic Ulcerative Colitis Am J Digest Dis 10 174 1943

22 Popper Hans Steigmann F, and Zevin S On the Variations of the Plasma Vitamin A Level After the Administration of Large Doses of Vitamin A in Liver Diseases J Clin Investigation 22 775 1943

23 Breese, B B Jr, and McCoord A B Vitamin A Absorption in Celiac Disease J Pediat 15 183 1939

24 Breese B B Jr Watkins Evelyn and McCoord Augusta B The Absorption of Vitamin A in Tuberculosis J A M A 119 3 (May 2) 1942

25 di Sant Agnese P A and Larkin V deP Vitamin A Absorption in Infantile Eczema Proc Soc Exper Biol & Med 52 343 1943

26 Booher, Lela E Vitamin A Requirements and Practical Recommendations for Vitamin A Intake J A M A 110 1920 (June 4) 1938

27 Lewis J M and Haig C Vitamin A Requirements in Infancy as Determined by Dark Adaptation J Pediat 15 812 1939 Lewis J M, and Bodansky O Minimum Vitamin A Requirements in Infants as Determined by Vitamin A Concentration in Blood Proc Soc Exper Biol & Med 52 265 1943

28 Wohl M G and Feldman J B Vitamin A Deficiency in Disease of the Thyroid Gland Its Detection by Dark Adaptation Endocrinology 24 389 1939 Thiele

29 Josephs H W Vitamin A and Total Lipid of the Serum in Pneumonia Am J Dis Child 65 712 (May) 1943

30 Greaves J D and Schmidt C L A Studies on the Vitamin A Requirements of the Rat Am J Physiol 116 4566 1936

31 McCoord Augusta B and Luce-Clausen Ethel M Storage of Vitamin A in Liver of Rat J Nutrition 7 557 (May) 1934 Lewis J M Bodansky Oscar Falk K G and McGuire G Vitamin A Requirements in the Rat The Relation of Vitamin A Intake to Growth and to Concentration of Vitamin A in the Blood Plasma Liver and Retina ibid 23 351 (April) 1942 Josephs H W Factors Influencing the Level of Vitamin A in the Blood of Rats Bull Johns Hopkins Hosp 71 253 1942

32 Nlund and With Popper, Steigmann Meyer and Zevin<sup>27</sup>

33 Lindqvist T Studien über das Vitamin A beim Menschen Acta med Scandinav 1938 supp 97 p 1

11 Kimble M S Photocolorimetric Determination of Vitamin A and Carotene in Human Plasma, J Lab & Clin Med 24 1055 1939 Josephs<sup>13</sup>

12 Ampules of standardized distilled concentrates in the natural ester form containing 61 per cent of vitamin A produced by Distillation Products Inc

13 Wald G, Brouha L, and Johnson R E Experimental Human Vitamin A Deficiency and the Ability to Perform Muscular Exercise Am J Physiol 137 551 1942 Brenner Sadie and Roberts Lydia J Effects of Vitamin A Depletion in Young Adults Arch Int Med 71 474 (April) 1943 Murrill Horton, Leberman and Newburgh<sup>16</sup>

14 Lewis, J M Bodansky Oscar and Haig Charles Level of Vitamin A in the Blood as an Index of Vitamin A Deficiency in Infants and in Children Am J Dis Child 62 1129 (Dec) 1941 May, Blackfan McCreary and Allen<sup>9</sup>

15 Wolff, L K Die chemische Bestimmung der Vitamine A und C in Blut Harn Organen und Lebensmitteln sowie ihre Bedeutung für die Ernährungsfrage Schweiz med Wchnschr 66 979 1936 Josephs H W Baber M, and Conn H Studies on Vitamin A Relation of Blood Level and Adaptation to Dim Light to Diet Bull Johns Hopkins Hosp 68 375 1941 Yarbrough M E and Dann W J Dark Adaptometer and Blood Vitamin A Measurements in a North Carolina Nutrition Survey J Nutrition 22 597 1941

16 Horton P B Murrill W A and Curtis A C Vitamin A and Carotene I The Determination of Vitamin A in the Blood and Liver as an Index of Vitamin A Nutrition of the Rat J Clin Investigation 20 387 1941 Brenner S Brookes M C H and Roberts Lydia J The Relation of Liver Stores to the Occurrence of Early Signs of Vitamin A Deficiency in the White Rat J Nutrition 23 409 1942 Lewis<sup>14</sup> Falk and McGuire<sup>31</sup> Josephs<sup>13</sup>

between liver depots and blood levels may occur<sup>10</sup> On the other hand an increased mobilization of vitamin A from the liver may take place under the influence of alcohol<sup>31</sup> or by sympathicoadrenal stimulation<sup>35</sup>

5 *Miscellaneous Factors*—Among the factors which influence the vitamin A metabolism, vitamin E<sup>36</sup> has come to the foreground As antioxidant in the intestine and also in the tissues, it counteracts the oxidative

## RESULTS

*Normal Plasma Vitamin A Levels*—As a result of the relation between the nutritional status and the plasma vitamin A level, economic conditions influence the latter The values of plasma vitamin A and carotenoid in normal subjects (doctors and nurses) agreed with those reported in the literature<sup>38</sup> The previously described sex difference in vitamin A and carotenoids

TABLE 1—Plasma Vitamin A and Carotenoid Levels and Vitamin A/Carotenoid Ratio in Normal Persons and in Hospital Controls

Diagnosis	Number of Cases	Plasma Vitamin A Level (in Micrograms per 100 Cc)			Plasma Carotenoid Level (in Micrograms per 100 Cc)			Vitamin A/ Carotenoid Ratio
		Maximum	Minimum	Mean	Maximum	Minimum	Mean	
Normals	27	82	29	46	150	42	81	0.64
Hospital controls								
Fractures	20	95	13	33	114	24	60	0.59
Hernias	8	44	20	34	110	5	46	1.32
Compensated (cardiac and arthritic)	37	75	9	35	135	12	57	0.76
Combined hospital controls	65	95	9	32	135	5	59	0.78

TABLE 2—Plasma Vitamin A and Carotenoid Levels and Vitamin A/Carotenoid ratio in Patients with Diseases of Biliary Tract or Liver with Statistical Comparison (*t* Value) to Hospital Controls

Diagnosis	Number of Cases	Plasma Vitamin A Level				Per Cent of Cases with Zero Vitamin A Level	Plasma Carotenoid Level				Mean Vitamin A/Carotenoid Ratio	t Value
		Micrograms per 100 Cc			t Value		Micrograms per 100 Cc					
		Maximum	Minimum	Mean			Maximum	Minimum	Mean			
Gallbladder disease	26	88	7.3	31	0.1	0	147	0	72	0.7	0.35	3.0
Incomplete biliary obstruction with out hepatitis	7	40	1.8	22	1.5	0	88	15	59	0.02	0.77	0.9
Incomplete biliary obstruction with hepatitis	7	15	0	2.7	10.0	71	161	18	69	0.5	0.08	6.0
Malignant complete biliary obstruction with hepatitis	16	20	0	4.6	11.0	53	225	5	82	1.2	0.23	3.8
Cirrhosis without jaundice	25	32	0	11	5.7	12	217	0	69	0.5	0.31	3.4
Decompensated cirrhosis with jaundice	35	16	0	3.1	13.0	64	166	0	61	0.2	0.04	6.8
Hepatitis in fully developed stage	17	10	0	2.5	14.0	65	94	9	51	0.5	0.07	5.2
Hepatitis in recovered stage	10	78	18	40	1.6	0	170	39	74	0.5	0.60	0.5

TABLE 3—Plasma Vitamin A and Carotenoid Levels and Vitamin A/Carotenoid Ratio in Patients with Various Diseases, with Statistical Comparison (*t* Value) to Hospital Controls

Diagnosis	Number of Cases	Plasma Vitamin A Level				Per Cent of Cases with Zero Vitamin A Level	Plasma Carotenoid Level				Mean Vitamin A/Carotenoid Ratio	t Value
		Micrograms per 100 Cc			t Value		Micrograms per 100 Cc			t Value		
		Maximum	Minimum	Mean			Maximum	Minimum	Mean			
Peptic ulcer and benign gastrointestinal diseases	40	101	9.2	27	0.8	0	117	0	53	0.6	0.72	0.2
Carcinoma of stomach	33	58	0	18	2.8	3	177	0	57	0.1	0.51	1.5
Anemias	15	44	0	17	2.4	7	87	0	38	1.5	0.63	0.5
Diabetes mellitus	12	53	0	27	0.5	8	300	18	98	1.0	0.51	1.1
Hyperthyroidism	5	61	17	35	0.1	0	90	29	57	0.06	0.60	0.5
Pneumonias	26	127	0	15	2.8	35	75	6	39	2.1	0.39	1.9
Infections	10	71	0	22	2.6	9	73	0	33	1.8	0.40	1.6
Severely sick patients	7	16	7.3	11	4.2	0	48	12	31	1.9	0.48	1.5
Renal diseases	20	193	13	82	2.2	0	255	0	101	1.4	1.16	1.0
Essential hypertension	19	78	18	38	0.6	0	111	21	57	0.1	0.78	0.03
Diseases with established vitamin A deficiency	3	0	0	0	16.5	100	18	0	7	11.0	0.00	7.3

destruction of vitamin A Furthermore, the lipid concentration of the blood has been considered important, since the lipids are probably the carriers of vitamin A<sup>37</sup>

34 Clausen, S. W., Baum, W. S., McCoord, A. B., Rydeen, J. O., and Breese, B. B. The Mobilization by Alcohols of Vitamin A from Its Stores in the Tissues, *J. Nutrition* 24: 1, 1942. Clausen, Breese, Baum, McCoord and Rydeen<sup>63</sup>

35 Young, G., and Wald, G. The Mobilization of Vitamin A by the Sympathico-Adrenal System, *Am. J. Physiol.* 131: 210, 1940. Thiele, W., and Guzikowski, P. Sympathisches Nervensystem und Vitamin A Haushalt, *Klin. Wchenschr.* 19: 345, 1940.

36 Davies, A. W., and Moore, T. Interaction of Vitamins A and E, *Nature*, London 147: 793, 1941. Hickman, K. C. D., Harris, P. L., and Woodside, M. R. Interrelationship of Vitamins A and E, *Nature*, London 150: 91, 1942.

37 Josephs, H. W. Studies on Vitamin A. Influence of Vitamin A on Serum Lipids of Normal and Deficient Rats. *Bull. Johns Hopkins Hosp.* 71: 265, 1942. Josephs (footnotes 9 and 29). Wendt<sup>43</sup>

was also apparent, in men the average vitamin A being 58 micrograms per hundred cubic centimeters of plasma and the carotenoids 74 micrograms with a vitamin A/carotene ratio of 0.78. In women the average vitamin A was 47 micrograms per hundred cubic centimeters of plasma and the carotenoids 85 micrograms, the ratio being 0.57.

To evaluate the significance of the plasma vitamin A levels of patients who suffer from various diseases in

38 Murrill, W. A., Horton, P. B., Leiberman, F., and Newburgh, L. H. Vitamin A and Carotene. Vitamin A and Carotene Metabolism in Diabetics and Normals. *J. Clin. Investigation* 20: 395, 1941. Kimble<sup>44</sup>. Abt, Aron, Bundesen, Delaney, Farmer, Greenbaum, Wenger, and White<sup>45</sup>. Abels, Gorham, Pack, and Rhoads<sup>46</sup>. Getz and Koerner<sup>47</sup>

a charity hospital and who are of a lower economic stratum we used, as controls, patients with hernia or fracture or those convalescing from a heart disease, since in them no changes in the vitamin A metabolism can reasonably be assumed (table 1). Owing to technical reasons, almost all our patients were male, the hospital controls therefore were also male patients.

**Physiologic Variations of the Plasma Vitamin A Level.**—In 5 cases plasma vitamin A and carotenoid levels were determined four times in twenty-four hours without significant variations, confirming previous reports<sup>39</sup>.

In 7 hospital controls without any signs of disturbed vitamin A metabolism the plasma vitamin A was determined daily for seven to eighteen days without any considerable changes being found as observed before.<sup>40</sup> The variations of the carotenoid level were much more pronounced (table 4).

**Vitamin A Level in Diseases of the Liver and Biliary Tract.**—In uncomplicated gallbladder disease (without jaundice or infection) plasma vitamin A and carotenoid levels were within the normal average (table 2). In incomplete extrahepatic biliary obstruction (due to stone or stricture) but without evidence of liver damage as seen from the results of liver function tests (oral hippuric acid test, cephalin-cholesterol flocculation, cholesterol/cholesterol ester ratio, quantitative urobilinogen

ment of the liver and spleen and slight disturbance of the liver function). These had an average plasma vitamin A of 18 micrograms per hundred cubic centimeters and carotenoid of 66 micrograms, the vitamin A/carotenoid ratio being 0.28.

TABLE 5—Statistical Comparison of Value of Plasma Vitamin A, Carotenoid and Vitamin A/Carotenoid Ratio in Different Liver Diseases

(See Table 2)

Comparison Between	Number of Cases	t Value Vitamin A	t Value Carotenoid	t Value Vitamin A/Carotenoid Ratio
Incomplete obstructive jaundice without hepatitis and	7	3.0	0.4	2.4
Incomplete obstructive jaundice with hepatitis	7			
Incomplete obstruction without hepatitis and	7	2.9	1.0	1.6
Complete obstructive jaundice with hepatitis	16			
Incomplete obstruction with hepatitis and	7	0.0	0.5	1.4
Complete obstructive jaundice with hepatitis	16			
Cirrhosis without jaundice and	25	2.7	0.5	2.9
Cirrhosis with jaundice	35			

TABLE 4—Variation of the Plasma Vitamin A and Carotenoid Levels in Hospital Controls in Serial Examinations

Length of Examination Period (Days)	Number of Determinations	Plasma Vitamin A Level (Micrograms per 100 Cc)			Plasma Carotenoid Level (Micrograms per 100 Cc)		
		Variation		Mean	Variation		Mean
		From	To		From	To	
13	9	19	27	23	51	114	97
12	11	10	15	12	48	51	50
15	9	29	39	34	60	1.6	80
10	9	34	53	43	42	54	49
14	12	28	39	34	90	126	105
18	10	49	61	55	87	96	90
7	4	24	29	27	93	105	101

excretion in urine and feces) the average plasma vitamin A level was somewhat but not significantly lower than normal, while the carotenoid level was increased. In similar types of cases but with evidence of secondary hepatitis and impairment of the liver function the plasma vitamin A level was considerably reduced and in a great number of cases zero levels were found. In patients with complete biliary obstruction due to a malignant tumor and associated with secondary hepatitis the plasma vitamin A level also was low. There was a significant statistical difference in the vitamin A (but not in the carotenoid) levels of the patients with incomplete biliary obstruction without hepatitis to those of patients with incomplete biliary obstruction with hepatitis as well as to those of patients with complete biliary obstruction with hepatitis. There was no statistically significant difference between plasma vitamin A levels of cases with incomplete and of patients with complete obstruction with hepatitis (table 5).

In comparison with the hospital controls patients with cirrhosis of the liver without jaundice showed a moderately decreased average plasma vitamin A level. This group comprised two types of patients:

1. Eight patients with arrested (compensated) cirrhosis whose only signs were cirrhotic habitus, enlarge-

ment of the liver and spleen and slight disturbance of the liver function. These had an average plasma vitamin A level of 11 micrograms per hundred cubic centimeters and carotenoid of 72, the ratio being 0.15.

In progressive cirrhosis with jaundice and hepatitis, an even more definite reduction in the average plasma vitamin A level was seen. The clinical or anatomic type of cirrhosis is less important than the degree of liver damage as determined from the liver function tests. Statistically the difference between cirrhosis with and without jaundice was significant (table 5).

TABLE 6—Variations of the Plasma Vitamin A Level During the Course of Liver Disease

Diagnosis	Number of Cases	Average Days of Observation	Average Number of Determinations	Average Plasma Vitamin A Level in Micrograms per 100 Cc		
				On Entrance to Hospital	During Highest Peak	When Leaving Hospital
Patients with return to normal	9	47	5	6	23	22
Patients reaching high levels (41-217 micrograms) in course of disease	12	87	10	21	73	51
Patients with fluctuation during observation (no complete recovery)	16	37	8	10	18	12
Patients with stationary zero levels	4	29	11	0	0	0
Patients with downhill course	1	24	10	12	12	0

In acute hepatitis at the height of the disease the plasma vitamin A level was very low. In patients with hepatitis who came under observation during the stage of recovery the average plasma vitamin A level was above normal.

In some cases with liver damage, plasma vitamin A levels of zero were found, the incidence paralleling the degree of liver damage. Zero plasma vitamin A levels

<sup>39</sup> Getz H. R. and Koerner T. A., Vitamin A and Ascorbic Acid in Pulmonary Tuberculosis. Determination in Plasma by the Photoelectric Colorimeter. *Am. J. M. Sc.* 202: 831, 1941. Max Blackfan, McCrea and Allen Lindquist.



were found in 53 to 71 per cent of the cases with hepatitis—whether they were primary or secondary because of incomplete or complete biliary obstruction and with progressive cirrhosis. The carotenoid levels did not show any significant variation from the normal and the statistically significant changes of the vitamin A/carotenoid ratio appeared when the vitamin A level was low. These changes were most accentuated in conditions with severe liver damage.

*Variations in the Plasma Vitamin A Level in the Course of the Disease*—Vitamin A determinations were made on 37 patients with liver disease in the course of the disease (table 6). Various types of curves of the plasma vitamin A level were obtained during the period of observation. In 9 cases a gradual increase of the plasma vitamin A level to approximately normal occurred synchronously with more or less complete recovery. In 12 recovered patients (the majority of them from acute hepatitides) the plasma vitamin A level rose to a high peak before it declined to the normal level. Of the patients who did not recover, 16 showed an irregularly fluctuating plasma vitamin A level and 4 had constantly zero levels throughout the entire period of observation. In the two latter groups were mostly patients with decompensated cirrhosis. One patient with complete malignant obstruction showed a constant decrease in the plasma vitamin A level.

*Plasma Vitamin A Levels in Various Clinical Conditions* (exclusive of biliary tract and liver disease)—The plasma vitamin A and carotenoids levels and the vitamin A/carotenoid ratio in patients with peptic ulcer was normal.<sup>33</sup> In carcinoma of the stomach, however, the plasma vitamin A level was lowered with statistical significance, the carotenoid level remaining unchanged (in agreement with previous observations<sup>40</sup>). In patients with anemia (with red cell count below 3 million) due to pernicious anemia, blood dyscrasias or

diabetic patients the average plasma vitamin A level was not significantly reduced. The variations between maximum and minimum, however, were great, in 1 patient even a zero level was encountered. The carotenoid levels were occasionally above normal, the average not deviating from the normal. Thus only some of our cases showed the behavior described in the American literature<sup>42</sup> (low plasma vitamin A

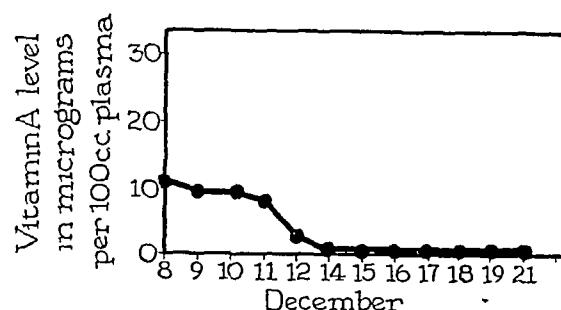


Chart 2—Plasma vitamin A level of a patient with carcinoma of the rectum in terminal stage

levels associated with increased carotenoid levels) whereas the others coincided with reports from abroad.<sup>43</sup> In hyperthyroidism no significant variations were noted in contrast to earlier reports.<sup>44</sup> In lobar pneumonias the plasma vitamin A levels were on the average low and in 38 per cent zero. Toxic patients showed very low or zero levels. The carotenoid level appeared reduced also, though not statistically significant. In other pyogenic infections a similar tendency was seen. In patients severely sick from various causes (not enumerated in this tabulation) the plasma vitamin A level was low and the carotenoid level reduced. In cases of nephritis or malignant nephrosclerosis with renal insufficiency the plasma vitamin A level was usually high, the average being almost three times that of the normal. However, since not all cases showed increased, some even reduced, values the increase reached only the borderline of statistical significance. The carotenoid levels also were somewhat higher than normal but likewise without statistical significance because of the wide range of the figures. In uncomplicated hypertension, however, no deviation from the normal was found, which is interesting in view of a recent discussion on a possible beneficial effect of large doses of vitamin A in hypertension.<sup>45</sup>

A woman with nontropical sprue and a young girl with nutritional vitamin A deficiency represent our cases of deficiency disease. Both showed plasma vitamin A levels of zero and extremely low carotenoids, the vitamin A/carotenoid ratio being changed accordingly.

*Changes in the Plasma Vitamin A Level in the Course of Various Diseases*—The alterations of the plasma vitamin A level in the course of disease were characteristic in patients who recovered or in those who had a downhill course. The changes during recovery were studied in 7 patients with pneumonia or infection and an average of eight determinations each were made

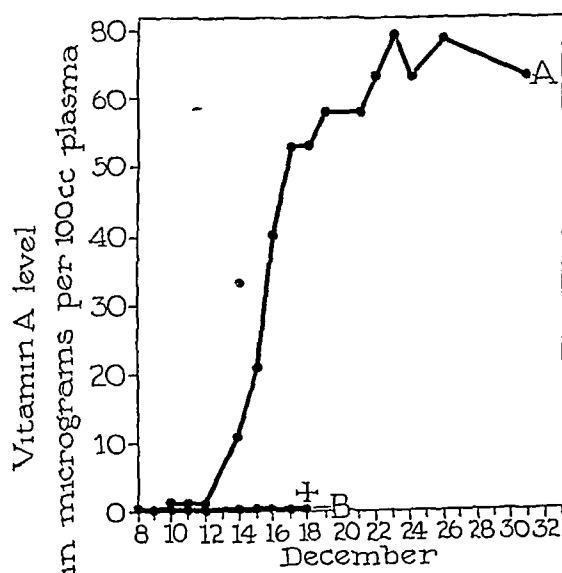


Chart 1—Plasma vitamin A levels of 2 patients with pneumonia. A, recovering; B, fatal outcome.

bleeding ulcer, the plasma vitamin A level was somewhat below normal (on the borderline of statistical significance) the carotenoid only slightly reduced.<sup>41</sup> In

40 Abels C A, Gorham A T, Pack G T, and Rhoads C P. Metabolic Studies in Patients with Cancer of the Gastrointestinal Tract I. Plasma Vitamin A Levels in Patients with Malignant Neoplastic Disease, Particularly of the Gastrointestinal Tract, *J Clin Investigation* 20: 749, 1941. Thiele and Scherff.<sup>41</sup>

41 Abt A F, Aron H C S, Bundesen H N, Delaney M A, Farmer C J, Greenebaum R S, Wenger O C, and White J L. Studies on Plasma Vitamin A II. Relationship of the Plasma Vitamin A to Pregnancy and Anemia in Syphilitic Patients, *Quart Bull, Northwestern Univ M School* 16: 245, 1942.

42 Stueck G H, Flaum Gerald, and Ralli Elaine P. Serum Carotene in Diabetic Patients, with Clinical Evidence of Carotenemia, as Determined by Photo Electric Colorimeter, *J A M A* 100: 343 (July 31) 1937. Ralli, Elaine P, Pariente, A C, Brandaleone Harold and Davidson Sidney. Effect of Carotene and Vitamin A on Patients with Diabetes Mellitus. Effect of Daily Administration of Carotene on the Blood Carotene of Normal and Diabetic Individuals, *ibid* 106: 1975 (June 6) 1936. Heymann, Walter. Carotenemia in Diabetes, *ibid* 106: 2050 (June 13) 1936.

43 Wendt H. Hypercholesterinemia und Vitamin A, *Deutsche med Wchnschr* 62: 1213, 1936. Lindqvist.<sup>44</sup> Thiele and Scherff.<sup>45</sup>

44 Clausen and McCoord. Wendt.<sup>45</sup> Thiele and Scherff.<sup>46</sup> Lindqvist.<sup>47</sup>

45 Wakerlin, G E, and Moss W G. Treatment of Experimental Renal Hypertension with Vitamin A Concentrates, *Proc Soc Exper Biol & Med* 53: 149, 1943.

within sixteen days, the plasma vitamin A level returned gradually to normal and in 2 patients values above normal (1 c 69 micrograms per hundred cubic centimeters) were found. Two patients with pneumonia showed persistently zero levels on ten and four daily determinations respectively; both patients died (chart 1). Three patients (2 with carcinoma and 1 with military tuberculosis) showed a decrease of the plasma vitamin A level during observation parallel with a general decline in their condition (chart 2).

#### COMMENT

The plasma vitamin A level is constant under physiologic conditions during the day and on consecutive days in controls on an average hospital diet. Changes of the plasma vitamin A level are therefore significant, their clinical implication depending on the underlying disease.

**Liver Disease**—A reduction of the plasma vitamin A level was described in acute hepatitis<sup>46</sup> and in cirrhosis,<sup>47</sup> in the latter as a crude index of the disease process. In our series the drop of the plasma vitamin A runs fairly parallel to the degree of liver damage. Low mean vitamin A levels and even zero levels were encountered in the diseases in which the degree of liver damage is advanced (secondary hepatitis due to biliary obstruction caused by stones or tumor decompensated cirrhosis with jaundice, or toxic hepatitis in the fully developed stage). The reduction of the plasma vitamin A is less conspicuous in cirrhosis without jaundice with distinct difference between progressive and arrested forms. In incomplete biliary obstruction without hepatitis the reduction of the plasma vitamin A level is moderate, whereas in simple gallbladder disease the level is normal. This, supported by a statistically significant difference between the groups of biliary obstruction with and without hepatitis and of cirrhosis with and without jaundice (the latter indicating superimposed hepatitis), points to reduction of the vitamin A level as a clinical sign of impaired liver function. The drop of the vitamin A level is not parallel to the degree of jaundice as seen from the difference between the relatively high plasma vitamin A level in obstructive jaundice without hepatitis, and the low level in cirrhosis often with slight icterus. A plot of individual vitamin A levels against the icterus index shows no relation: the low levels in patients with jaundice paralleling the degree of liver damage. The drop of the plasma vitamin A level may hence be of diagnostic and prognostic value in liver disease. The prognostic importance is shown by observations made for several weeks, in clinical recovery the plasma vitamin A level rises to normal or even higher than normal, whereas in a downhill course it progressively decreases. The determination of the plasma vitamin A level may thus serve as an additional aid in evaluating liver function, although the occasionally high levels in the recovery stage may be confusing.

What causes the low plasma vitamin A level in liver disease? The most obvious cause seems to be impairment of intestinal absorption of vitamin A<sup>48</sup> which

runs parallel to the extent of liver damage.<sup>49</sup> Intestinal absorption damage alone, however, does not explain the drop of the vitamin A level within a few days in acute hepatitis, since lack of vitamin A intake reduces the vitamin A level only after some months.<sup>13</sup> Therefore as other factors the inability of the liver to store vitamin A or increased demand for vitamin A should be considered. In both instances the liver depots should be depleted of vitamin A. This is the case in cirrhosis,<sup>49</sup> whereas in acute liver damage the liver is not always depleted but may show considerable vitamin A stores.<sup>50</sup> Liver biopsy specimens may show considerable amounts of vitamin A even if the blood is free of it.<sup>51</sup> The distribution of vitamin A in the liver, however as seen under the fluorescence microscope is materially changed.<sup>52</sup> The vitamin A fluorescence has shifted from its normal sites (fine lipid droplets on the edge of the liver cells and the Kupffer cells) to pathologic areas in the liver such as fat droplets of various size. From here vitamin A is less readily discharged and therefore less available for utilization.<sup>53</sup> Seemingly the normal liver maintains the vitamin A level of the blood and prevents its decrease (for a limited time) even if the nutritional supply is withheld. In liver damage this regulation fails because of the shift of vitamin A to pathologic sites. The hemeralopia<sup>54</sup> described in liver disease is thus the result of functional avitaminosis A developing despite non-depleted liver stores. In chronic liver disease both disturbed absorption and disturbed regulation lower the plasma vitamin A level. Since both factors are related to liver damage, the plasma vitamin A level may indicate the degree of liver damage.

We found no evident relation of the plasma carotenoid level to liver damage, although the liver carotene stores are reduced.<sup>55</sup> The average levels do not deviate especially from the norm. That the vitamin A/carotenoid ratio decreases significantly in liver disease seems more due to decrease of the vitamin A level than to impaired conversion of carotene to vitamin A as has been assumed.<sup>47</sup> Both the vitamin A and carotenoid levels depend on the efficiency of intestinal absorption, whereas the vitamin A level depends also on liver regulation. Our data emphasize the significance of the impaired regulation for the low plasma level in liver disease. However, the unspecificity of the carotenoid determination, as carried out with the colorimetric method, does not permit far reaching conclusions.

During recovery from acute hepatitis the vitamin A level rises not only to normal but temporarily even beyond it.<sup>56</sup> This compensatory hypervitaminemia in

49 Moore T. The Vitamin A Reserve of the Adult Human Being in Health and Disease. *Biochem J* 31: 155, 1937. Haig and Patek.<sup>47</sup> Ralli, Popper, Paley and Bauman.<sup>55</sup> Popper.<sup>53</sup> Breusch and Scalabrino.<sup>57</sup> Wolff.<sup>50</sup>

50 Wolff, L. K. On the Quantity of Vitamin A Present in the Human Liver, *Lancet* 2: 617, 1932. Ralli, Popper, Paley and Bauman.<sup>57</sup> Breusch and Scalabrino.<sup>57</sup>

51 Stewart J. D. and Rourke G. M. Vitamin A Content of Plasma and Hepatic Tissue Biopsied at Operation. Effects of Preoperative Therapy in Obstructive Jaundice. *Surgery* 11: 939, 1942. Popper, Steigmann, Meyer and Zevin.<sup>10</sup>

52 Meyer K. A. Steigmann, Frederick, Popper, Hans and Walters H. W. Influence of Hepatic Function on Metabolism of Vitamin A. *Arch Surg* 47: 26 (July) 1943. Popper, Steigmann, Meyer and Zevin.<sup>10</sup>

53 Popper, Hans, Steigmann, F. and Dymiewicz H. A. Distribution of Vitamin A in Experimental Liver Damage. *Proc Soc Exper Biol & Med* 50: 266, 1942.

54 Patek A. J. Jr. and Haig C. The Occurrence of Abnormal Dark Adaptation and Its Relation to Vitamin A Metabolism in Patients with Cirrhosis of the Liver. *J Clin Investigation* 18: 609, 1939. Wohl M. G. and Feldman J. B. The Occurrence of Avitaminosis A in Diseases of the Liver. *Am J Digest Dis* 8: 464, 1941. von Drigalski W. Kunz, H. and Schläpman K. Ueber das Vorkommen und Ausmass wirklichen Vitamin A Mangels. *Klin Wchnschr* 18: 875, 1939.

55 Ralli Elaine P., Popper, Emanuel, Paley, Karl and Bauman. Elated Subjects. Analysis of One Hundred and Sixteen Human Livers. *Arch Int Med* 68: 102 (July) 1942.

56 Clau, McCoord, P.

1. McCoord 19. Lundqvist 22.

46 Laseh F. Ueber den Vitamin A Spiegel im Blute bei Leber krankheiten. *Klin Wchnschr* 17: 1107, 1938. Clau and McCoord Lundqvist 22.

47 Haig C. and Patek, A. J. Jr. Vitamin A Deficiency in Lennec's Cirrhosis. The Relative Significance of the Plasma Vitamin A and Carotenoid Levels and the Dark Adaptation Time. *J Clin Investigation* 21: 309, 1942.

48 Ralli Elaine P., Bauman Eli and Roberts Leslie B. The Plasma Levels of Vitamin A After the Ingestion of Standard Doses. Studies in Normal Subjects and Patients with Cirrhosis of the Liver. *J Clin Investigation* 20: 709, 1941. Breese and McCoord 15.

convalescence may explain previous findings of a high vitamin A level in liver disease<sup>57</sup> Whether it is due to improved intestinal absorption coinciding with inability of the liver to store the increased amount<sup>58</sup> or to mobilization of the vitamin A from the pathologic sites during the recovery of the liver parenchyma will have to be decided. At any rate the hypervitaminemia is a prognostic sign of recovery.

**Infectious Disease**—Previous reports of low plasma vitamin A levels in patients with various infections<sup>59</sup> and with lobar pneumonia<sup>60</sup> were confirmed by our results. They do not indicate that fever is the only responsible factor.<sup>61</sup> The phenomenon is possibly caused by liver changes secondary to infection or especially lobar pneumonia, which interfere with the normal relation between blood and liver.<sup>62</sup> As in liver disease the vitamin A level rises in the recovery stage of pneumonia.<sup>63</sup> The prognostic value of the plasma vitamin A level, especially when repeatedly determined, is evident: a rise indicates improvement, constant zero levels point to a fatal outcome. In infections and pneumonia, as in liver disease, the vitamin A/carotenoid ratio does not indicate a disturbed conversion of carotene as the cause of the low vitamin A levels. In pneumonia the carotenoid level is also reduced, probably because of reduced food intake.

**Debilitating Diseases**—Low vitamin A levels are found not only in specific absorption impairment, liver damage or infections but also in other debilitating conditions characterized by general malaise and severe sickness.<sup>64</sup> In these the low plasma vitamin A levels are probably caused by a combination of impaired absorption and reduced nutrition and liver damage among other factors. Clinically the vitamin A level may be here of value to indicate the general condition.

**Renal Disease**—High plasma vitamin A levels in patients with renal disease seem peculiar but are reported also by others.<sup>65</sup> They are puzzling since, in contrast to normal persons, patients with kidney damage excrete vitamin A in the urine<sup>66</sup> and since the liver depots are low in vitamin A.<sup>67</sup> In renal disease, vitamin A is also found morphologically in the kidney parenchyma.<sup>68</sup> Furthermore, although impairment of the intestinal absorption of vitamin A might be expected in renal disease, we found in many instances a normal

or better than normal absorption.<sup>69</sup> This paradox behavior of vitamin A in kidney disease resembles that of cholesterol, the blood level of which is also increased despite its being excreted in the urine and deposited in the kidney. Further investigations on the intestinal absorption of lipids in kidney disease and on the influence of the renal tubules on the blood lipid concentration<sup>70</sup> are indicated.

Also during pregnancy and especially in its later stage, the plasma vitamin A level is low.<sup>71</sup> Recently the conditions in pregnancy have been thoroughly investigated.<sup>72</sup>

From this comment it is evident that low plasma vitamin A levels are found in a variety of diseases independent of the nutritional intake. In pneumonia or in acute hepatitis the plasma vitamin A level may drop in a matter of days. Avitaminemia, which could be considered as functional avitaminosis A,<sup>10</sup> may thus develop rapidly without any relation to a disturbed nutritional intake. Possibly a similar temporary functional avitaminosis A may occur, despite normal nutritional intake, in persons (for instance members of the armed forces) exposed to great exhaustion and extreme climatic conditions, which may likewise disturb the normal relation between liver and plasma vitamin A.

#### SUMMARY AND CONCLUSION

The clinical significance of the plasma vitamin A determination in diseases of the adult is discussed on the basis of statistically evaluated examinations and on perusal of the literature. Under physiologic conditions and with normal nutrition, the vitamin A level is constant at certain times of the day and on consecutive days. Aberrations of the plasma vitamin A level therefore, assume significance. In liver disease the plasma vitamin A level is sharply lowered often to zero. The reduction parallels the degree of liver damage and not the degree or type of jaundice. In the course of recovery the plasma vitamin A returns to normal or even high levels. The vitamin A determination may help, therefore, in the diagnosis and prognosis of liver disease. The reduction of the vitamin A level in liver disease is due partly to impaired intestinal absorption and partly to disturbed release of vitamin A from the liver, both in turn depending on the degree of liver damage. In infection the plasma vitamin A level is reduced, especially in lobar pneumonia, zero levels being found usually during the toxic stage of the disease. Repeated determinations of the vitamin A level are of prognostic value. The plasma vitamin A level is also lowered in various other conditions (e.g. anemia, gastrointestinal carcinoma), especially in severely sick patients. The reduction of the plasma vitamin A level in the latter renders it a nonspecific index of the general condition. In kidney disease the vitamin A level is often much increased. Hypovitaminemia A may rapidly develop and is in this country more commonly caused by processes within the body than by faulty nutrition.

57 Stepp, W., and Wendt, H. Einige Beobachtungen über das Verhalten von Carotin zu Vitamin A in menschlichen Blutserum, *Deutsches Arch. f. klin. Med.* **180** 640, 1937.

58 Clausen and McCoord<sup>5</sup> Breese and McCoord<sup>18</sup>

59 Schneider, E., and Weigand, H. Die krankhafte Vitamin A Ausscheidung im Harn, *Klin. Wchnschr.* **16** 441, 1937. Clausen S. W. Nutrition and Infection, *J. A. M. A.* **104** 793 (March 9) 1935. Clausen and McCoord<sup>5</sup> May, Blackfan, McCreary and Allen<sup>6</sup> Lindqvist<sup>33</sup> Getz and Koerner<sup>30</sup> Lewis, Bodinsky and Hug<sup>34</sup>

60 Theile, W., and Scherff, I. Der Serum Vitamin A Spiegel im Fieber, *Klin. Wchnschr.* **18** 1275, 1939. Lindqvist<sup>33</sup> Josephs<sup>29</sup>

61 Theile, W. Ueber die Vitamin Speicherung im Fieber, *Klin. Wchnschr.* **19** 325, 1940. Theile and Scherff<sup>60</sup>

62 Clausen, S. W. Breese, B. B. Baum, W. S. McCoord, A. B., and Rydeen, J. O. The Effect of Alcohol on the Vitamin A Content of Blood in Human Subjects, *Science* **93** 21, 1941. Lindqvist<sup>33</sup> Nylund and With<sup>70</sup> Josephs<sup>29</sup>

63 Theile and Scherff<sup>60</sup> Lindqvist<sup>33</sup> Clausen and McCoord<sup>5</sup>

64 Theile, W., and Scherff, I. Ueber die pathogenetische und diagnostische Bedeutung des Carotin und Vitamin A Spiegels im Serum, *Klin. Wchnschr.* **18** 1208 1939.

65 Hedberg, J., and Lindqvist, T. Untersuchungen über das Vitamin A bei chronischen Nephritiden, *Acta med. Scandinav.*, 1938, supp. 90, p. 231. Clausen and McCoord<sup>5</sup> Wendt<sup>43</sup>

66 Lawrie, N. R., Moore, T., and Rajagopal, K. R. The Excretion of Vitamin A in the Urine, *Biochem. J.* **35** 825 1941. Boller, R., Brunner, O., and Brodaty, E. Ueber die Ausscheidung von Vitamin A im Harn, *Wien. Arch. f. inn. Med.* **31** 1, 1937. Schneider, E., and Weigand, H. Vitamin A Verlust und sekundäre Hypovitaminosen, *Ztschr. f. klin. Med.* **132** 423, 1937. Hedberg and Lindqvist<sup>65</sup>

67 Breusch, F., and Scalabrino, R. Die quantitativen Verhältnisse der Leberlipide, *Ztschr. f. d. ges. exper. Med.* **94** 569, 1934. Wolff<sup>6</sup> Moore<sup>40</sup> Lindqvist<sup>33</sup>

68 Popper, Hans. Histologic Distribution of Vitamin A in Human Organs Under Normal and Under Pathologic Conditions *Arch. Path.* **31** 766 (June) 1941.

69 Popper, Hans, Steigmann, F., and Zevin, S. The Elevation of the Plasma Vitamin A Level in Renal Disease, to be published.

70 Heymann, W. Renal Hyperlipemia in Dogs, *Science* **96** 163 1942.

71 Wendt, H. Ueber den Carotin Vitamin A Stoffwechsel den menschlichen Fetus. Carotin und Vitamin A Bestimmungen im Schwangerschaftsblut in Placenten in Nabelschnurblut und in fetalen Lebern *Klin. Wchnschr.* **15** 222, 1936. Gaethgens, G. Bestimmungen von Carotin und Vitamin A in Schwangerschaftsblut, *ibid.* **16** 893, 1936. Alt.

72 Lund, C. J., and Kimble, M. S. Plasma Vitamin A and Carotene of the Newborn Infant. *Am. J. Obst.* **46** 207, 1943. Vitamin A During Pregnancy, Labor and the Puerperium *ibid.* **46** 486, 1943.

## Clinical Notes, Suggestions and New Instruments

### AMINOPHYLLINE DIATHESIS

GEORGE ADAMS MERRILL, M.D., BROOKLYN

During the past year the use of aminophylline intravenously in cases of cardiac failure and in bronchial asthma when epinephrine and other remedies are ineffectual has been frequently reported. That the results are often most satisfactory is true. That its use is also not without danger is also true as a recital of the following cases will demonstrate.

#### REPORT OF CASES

M. G., a man aged 52, whose previous history was irrelevant, was pronounced normal as the result of a hospital check-up, including an electrocardiogram, twelve months ago. At 2 p. m., while finishing luncheon, he was seized with severe precordial pain. The hotel physician on examining him made a diagnosis of acute coronary closure, and feeling that he was too ill for removal to a hospital, had him carried to a room, where he was put to bed. When I saw him, at 6 p. m., he was still in profound shock, the blood pressure was 100/50 and the heart sounds were faint, with the suggestion of a pericardial murmur. There were signs of beginning pulmonary edema. The usual treatment, including morphine and oxygen by the tent method, had been instituted. A 10 cc. vial containing 0.25 Gm. of aminophylline was aspirated into a syringe and the needle inserted into the antecubital vein. About 4 cc. had been slowly injected when an expression of pain came over the man's face, his arms were brought up across his chest, almost immediately his respirations stopped, and after a few fluttering sounds at the cardiac area his heart also ceased to beat.

C. N., a man aged 73, admitted to the King's County Hospital on Feb. 16, 1942, had had numerous attacks of bronchial asthma over a period of years. There was no history of dyspnea on effort, no skin edema or precordial distress. The admission diagnosis was status asthmaticus. The blood pressure was 200/90, the pulse rate 120, the heart sounds of poor quality, no murmurs were heard. The examination of the lungs showed the typical signs of bronchial asthma. A bedside x-ray examination showed bronchiectasis. Digitalization was started. Epinephrine 0.5 cc. gave relief at first and was repeated every four hours. After four doses it was no longer effectual. Enclosure in an oxygen tent gave no relief. Finally at 3 p. m. on February 17 0.25 Gm. of aminophylline dissolved in 10 cc. of 10 per cent dextrose was injected slowly into the antecubital vein by the resident physician. Within thirty seconds his respiration ceased and no heart sounds could be heard. Intracardiac epinephrine 1 cc. was used. The patient was pronounced dead at 3:05 p. m.

M. H., a man aged 70, admitted to the Caledonian Hospital with a history of acute cardiac decompensation, had never shown any sign of heart disease and had not consulted a doctor for years. A 2 meter x-ray plate showed a cor bovinum. An electrocardiogram disclosed left ventricular preponderance. Blood chemistry, blood count and urine examination were normal. The usual treatment for cardiac failure was instituted without improvement, as described in the preceding cases. The patient died almost immediately as before described.

#### COMMENT

I have seen syncope, cardiac palpitation and extreme dilatation of the pupils in a number of young patients suffering from status asthmaticus and treated with intravenous aminophylline. The symptoms were only temporary.

Since I wrote the foregoing, 2 other cases of sudden death after the use of intravenous aminophylline have been reported to me verbally by an intern who was "riding bus" at another Brooklyn hospital. The patients were treated at home on

ambulance calls. In each case bronchial asthma was diagnosed, aminophylline was administered as described, and death was immediate. No particulars are at hand on these cases.

#### CONCLUSIONS

While not condemning the use of aminophylline intravenously, I feel that it should be used only when other drugs have failed to give relief. Our hospital rule is that it may be ordered only by one of the attending staff or by the resident physician, that not more than 0.24 mg. may be used and that it be dissolved in 50 cc. of 5 per cent dextrose and given by the gravity method over a period of ten minutes, during which time the doctor should stand by.

The cause of death in these cases is unknown and will remain so until autopsies are obtained, which might clear up the question. The suddenness of the death resembles that seen when epinephrine hydrochloride has been given undiluted intravenously, in which case death has been due to ventricular fibrillation.

816 Ocean Avenue

### ACTINOMYCOSIS TREATED WITH SULFADIAZINE

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MEDICAL CORPS ARMY OF THE UNITED STATES  
and

LIEUTENANT DAVID TURNOFF  
MEDICAL CORPS ARMY OF THE UNITED STATES

Any agent that influences the course of actinomycosis favorably is worthy of note. The benefit achieved by sulfadiazine in a case under our care seemed so remarkable that we were moved to place it on record.

#### REPORT OF CASE

A Negro soldier aged 38 who had been inducted into the U. S. Army on Nov. 10, 1942, was transferred to the Moore General Hospital, Swannanoa, N. C., on Feb. 4, 1943 from a station hospital where he had been hospitalized from Dec. 24, 1942 to Jan. 26, 1943 and again from January 30 to February 4.

On admission to the Moore General Hospital he gave the history that in November 1941 he had developed a small lesion on the left side of his jaw. This lesion enlarged in a few days until a full blown abscess was present. The patient consulted

#### Blood Count, Sedimentation Rate and Sulfadiazine Level

Date	Red Blood Cells	Hemoglobin %	White Blood Cells	Poly morpho nuclears, %	Sedimentation Rate, Mm in 1 Hour	Blood Sulfadiazine Level, Mg per 100 Cc
2/5/43	4,610,000	95	6,850	72	23	
3/2/43	3,390,000	72	13,400	72		2.3
3/8/43	4,030,000	85	15,800	79		1.86
3/11/43	4,490,000	90	12,500	73		3.4
3/18/43	4,640,000	95	12,250	76		6.4
3/25/43	3,930,000	80	9,700	69		4.8
3/30/43	4,910,000	98	8,950	71		4.9
4/5/43	4,610,000	95	16,850	82	14	7.1
4/12/43	4,070,000	85	9,750	60	11	5.6
4/22/43	4,760,000	90	15,250	83	14	4
5/1/43	4,990,000	85	13,800	67	13	5.9
5/15/43					10	3.4
5/18/43	4,890,000	90	13,000	72	12	1.8
5/20/43	4,920,000	90	15,400	71		4.4
6/5/43	4,590,000	90	17,200	75		5.7
6/14/43	4,790,000	90	12,600	74	4	0

Treatment started Feb. 12, 1943 and discontinued June 10, 1943.

a dentist who felt that his teeth were responsible and therefore extracted all the teeth in the left lower jaw. This procedure did not seem to influence the abscess but soon it opened spontaneously and some sanguineous purulent material escaped.

Drainage continued for several weeks and finally healed with scar formation.

Shortly afterward the same process recurred in the adjacent healthy skin. An abscess gradually formed, ruptured and drained, finally healing with the formation of a scar. This chain of events occurred over and over again continuing until his last hospital admission when he complained of diffuse involvement of the skin of the anterior half of his neck extending on to his chin and jaws.

Both admissions to the station hospital occurred because of the spontaneous rupture of an abscess such as described. In both instances the lesions healed in the pattern outlined.

In his past history he had suffered only with measles and mumps in childhood. He had complained of "stomach trouble" and "nerves" for many years. He stated that he had not had any serious illnesses, operations or injuries.

Prior to induction into the Army he worked at odd jobs. He said that he had not been engaged in any work about a farm, garden, stable or tanning factory. He also did not have the habit of chewing on straw. The patient had lived exclusively in Brooklyn since 1925.

The patient was 68 inches (173 cm) tall and weighed 142 pounds (64 Kg). The skin on both cheeks was involved by a disease process continuously with the skin of the anterior neck extending down roughly to the level of the larynx and laterally to the mandibular ramus. The area described was altered by various sized abscesses ranging up to 3 cm in diameter. Interspersed were multiple small sinuses which delivered a dirty yellow pus to the surface. The intervening skin appeared unhealthy, doughy and heavily scarred. The lesions were tender to palpation.



Fig. 1—Appearance before treatment with sulfadiazine

The diagnosis was easily established by the laboratory finding of ray fungi (*Actinomyces hominis*) on direct smear and culture. Two independent examinations confirmed this observation.

On admission the blood count revealed 4,610,000 red blood cells and 6,850 white blood cells per cubic millimeter. The hemoglobin was estimated to be 95 per cent. A Schilling count of 100 white cells was normal. The initial urine examined was light yellow, slightly cloudy and neutral in reaction with a

specific gravity of 1.027. No sugar was present but a faint trace of albumin was reported. On microscopy 5 to 7 red blood cells and 1 to 3 white blood cells per high power field were noted. The sedimentation rate was 23 mm in 60 minutes.

With the diagnosis of actinomycosis established, the patient was given sulfadiazine by mouth in 1 Gm doses every four



Fig. 2—After treatment with sulfadiazine

hours. About one week later the quantity was cut to 1 Gm four times a day. This dosage was maintained for the duration of the treatment. Thus he received 500 Gm of sulfadiazine continuously administered over one hundred and twenty consecutive days beginning Feb. 12, 1943.

It was fully two weeks before any noticeable improvement in the lesions could be observed. As a matter of fact cessation of the drug was therefore considered. However in the ensuing weeks the lesions melted away. Not only did the abscesses disappear but the scars actually dissolved, leaving the skin practically in a normal condition.

The administration of the drug apparently had no ill effects. The patient maintained his appetite and weight. The urine, blood and sulfadiazine levels were checked at frequent intervals. The course of the blood count, sedimentation rate and sulfadiazine can be observed in the accompanying table. The highest blood sulfadiazine level was 71 mg per hundred cubic centimeters. No anemia resulted, but a mild leukocytosis occurred reaching as high as 16,850 white blood cells with 82 per cent polymorphonuclear leukocytes. The urine which contained a trace of albumin, 5 to 7 red blood cells and 1 to 3 white blood cells per high power field on admission, became entirely normal during the administration of the drug although on several occasions the urine contained some sulfadiazine crystals.

The patient received no other medication or treatment. He was given a regular diet without benefit of iron, liver or vitamins.

#### COMMENT

When it was established that the patient had actinomycosis the question arose as to what form of therapy should be instituted. Since there had occurred in the recent literature encouraging reports on the use of sulfanilamide and sulpryri-

dine<sup>1</sup> in this condition, it seemed a natural sequence to use the most recent available sulfonamide, namely sulfadiazine.

While organizing the records of this case for reporting, there appeared in the literature<sup>2</sup> the first recorded cases of actinomycosis to be treated with sulfadiazine. This article, by Lyons and his co-workers is based on an experience with 5 cases of actinomycosis in all of which surgical treatment was supplemented by sulfonamide. The first patient received sulfathiazole and sulfanilamide. The others were given sulfadiazine. All were benefited by the treatment. Emphasized were the need for long continued drug therapy and the ever present danger of recurrences.

There can be little doubt that in our case sulfadiazine was the critical influence, resulting in a clinical remission of symptoms. There had been progressive involvement of the skin for over a year until sulfadiazine abruptly terminated the disease. Nevertheless we are fully aware that 1 case proves nothing. Furthermore it is to be noted that it was the cervicofacial type of actinomycosis which as Morton<sup>3</sup> indicates "is the most common and gives by far the best prognosis." The abdominal cases show a much greater mortality, and the thoracic cases have by far the poorest prognosis, the mortality approaching 100 per cent.

Another query raised is that the sulfonamides remove secondarily invading bacteria allowing the natural defenses to combat the fungi more effectively. In our case the laboratory obtained pure cultures of the ray fungus from the discharging lesions. Nevertheless this question is still unsettled.

One other feature of this case appears worthy of mention. A moderate dose of sulfadiazine was administered daily for four months and at no time was any untoward effect observed on the kidneys, the blood or the health in general.

## Council on Pharmacy and Chemistry

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT  
ALSTIN E SMITH M.D. Secretary

### USE OF AMPHETAMINE SULFATE IN CONTROL OF OBESITY

Amphetamine sulfate has been accepted for inclusion in New and Nonofficial Remedies with well defined uses such as the treatment of narcolepsy and certain depressions accompanying psychopathic conditions. The Council has frequently warned against the promiscuous use of such active agents, at the same time recognizing their value.

As a result of recent articles appearing in a well known lay publication as well as in some scientific journals, the Council's office has been receiving inquiries concerning the use of amphetamine sulfate in the control of obesity. This office has been further informed that mixtures (not accepted by the Council for New and Nonofficial Remedies) containing amphetamine sulfate are being exploited for use in obtaining weight reduction. The arguments for such use of the drug were considered by the Council, and the conclusion was reached that whatever effectiveness the drug might have might possibly be due to

undesirable properties. In view of the dangerous effects which might come from the exploitation of this drug for use in obesity the Council, for the information of physicians, desires to go on record as disapproving general recognition of claims for such use of amphetamine sulfate. The Council will follow closely the use of amphetamine sulfate in the treatment of obesity and will make available another statement if there should appear sufficient information to justify such action.

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONTRIBUTING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN F. SMITH M.D., Secretary

### ALLERGENIC PREPARATIONS (See New and Nonofficial Remedies, 1943, p. 1)

The following preparations have been accepted:

SHARP & DOHME, INC., PHILADELPHIA

Lyovac Pollen Extracts-Mulford

The following lyovac pollen extracts-Mulford are supplied in complete treatment packages of four vacule ampul-vials containing the lyophilized extract, and four ampuls, each containing 2 cc of sterile distilled water with 0.35 per cent phenol as preservative, also in supplementary treatment packages of one vacule ampul-vial containing the lyophilized extract, and one ampul containing 2 cc of sterile distilled water with 0.35 per cent phenol as preservative. After restoration of the lyophilized extract to the fluid state each of the four vacule ampul-vials in the complete treatment package contains 2 cc of pollen extract solution providing respectively, 400, 4,000, 20,000 and 20,000 pollen units per cubic centimeter. Similarly the single vacule ampul-vial in the supplementary treatment package contains 2 cc of pollen extract solution providing 20,000 pollen units per cubic centimeter.

Timothy Lyovac Pollen Extracts Grass Mixture (timothy, June grass, orchard grass, sweet vernal grass and red top 20 per cent each) Lyovac Pollen Extract Ragweed (high ragweed and low ragweed 50 per cent each) Lyovac Pollen Extract

Matured pollens are thoroughly dried, separated from extraneous material and defatted by ether extraction. The defatted pollen is extracted for twenty-four hours at a temperature of 5°C with a buffered saline solution containing dibasic sodium phosphate and acid potassium phosphate and adjusted to a pH of 7.4. The extracts are sterilized by candle filtration and standardized on the basis of their protein nitrogen content. When adjusted to the desired strength the pollen extracts are filled into vacule ampul-vials and processed therein. By means of the lyophilic process the freshly prepared extracts are rapidly frozen at sub-zero temperatures, dehydrated under vacuum and preserved under vacuum in the market container. The extracts are standardized on the basis of their protein nitrogen content and their potency is expressed in terms of the pollen unit which is equivalent to 0.000005 mg. of protein nitrogen.

### THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1943, p. 590)

The following dosage forms have been accepted:

WALKER VITAMIN PRODUCTS, INC., MOUNT VERNON, N. Y.

Solution Thiamine Hydrochloride 15 cc and 60 cc bottles 100 international units vitamin B<sub>1</sub> per drop

Tablets Thiamine Hydrochloride 1 mg., 3 mg., 5 mg. and 10 mg.

### ERYTHRITYL TETRANITRATE TABLETS (See New and Nonofficial Remedies, 1943, p. 306)

The following dosage form has been accepted:

BURROUGHS WELLCOME & CO., INC., NEW YORK

Tablet Erythrityl Tetranitrate 16 mg., 32 mg. and 65 mg.

### DEHYDROCHOLIC ACID (See New and Nonofficial Remedies 1943, p. 322)

The following dosage form has been accepted:

BURROUGHS WELLCOME & CO., INC., NEW YORK

Tablet Dehydrocholic Acid 0.243 Gm.

### OLEOVITAMIN A (See New and Nonofficial Remedies, 1943, p. 587)

The following product has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Vitamin A Capsules Each capsule contains 25,000 U.S.P. units of vitamin A derived from natural fish liver oils.

1 Reports on sulfonamide therapy in actinomycosis.  
Walker Oliver Sulfanilamide in the Treatment of Actinomycosis  
Lancet 1 1219 (May 28) 1938  
Miller Edwin M. and Fell Egbert H. Sulfanilamide Therapy in Actinomycosis J. A. M. A. 112 731 (Feb. 25) 1939  
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2 Lyons Champ Owen Cora R. and Avers William B. Sulfonamide Therapy in Actinomycotic Infections Surgery 14 99 (July) 1943

3 Morton H. S. Actinomycosis Canad. M. A. J. 42 231 (March) 1940



# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 25, 1943

## MEDICAL ASPECTS OF JUVENILE DELINQUENCY

The term "juvenile delinquency" is applied somewhat loosely to cover both indictable offenses and serious deviations from the moral code by boys and girls under the age of legal maturity. The broadness of this definition is evidence of the unscientific approach to this problem that frequently characterizes public discussion.

Juvenile delinquency, constantly present in modern society, is greatly exacerbated under the influence of wartime conditions. In New York City there was a downward trend from 1930 to 1940, since that time, even before our active entry into the war, a steady and disturbing rise in frequency has occurred.<sup>1</sup> A parallel development has appeared throughout the country. During the first twelve months of the war, for example, the number of indictable offenses increased 41 per cent in children under 14, 22 per cent in the 14 to 17 age group, 5 per cent in the 17 to 21 age group, there was an actual drop in the incidence of crime in persons above the age of 21.<sup>2</sup>

The medical profession is deeply concerned not only in the general effects of delinquency on society but also in the causative relationship of physical and mental disease in many instances. Furthermore, the anti-social behavior of these minors frequently leads to further medical problems, such as venereal disease and illegitimate pregnancy. There should be a sharp differentiation between the cases of delinquency that result from definite physical or mental disease or deficiency and those that occur in ostensibly normal juveniles. The latter group appears to constitute the larger proportion (possibly around 55 per cent)<sup>3</sup> of the cases involved, the causes here must be sought in such

nonmedical factors as broken homes, adolescent restlessness, defiance of authority, high wartime pay, bad housing and lack of recreational facilities. Major responsibility for prevention of delinquency in this group rests with society in general and with educators, parents, the courts and the social services, the increase is evidence of the deficiencies of society and of these agencies in meeting the problem.

Physicians may aid in determining beforehand when possible the juvenile whose mental and physical condition shows exceptional liability toward delinquency and in separating such physical and mental invalids from normal children after the initial delinquency. A high proportion of children in this group are either definitely psychopathic or feebleminded. In others the cause may be assigned to such organic conditions as epilepsy or brain injury following infections such as encephalitis, meningitis or poliomyelitis. Even this selection, however, is not enough. As every physician knows, the treatment of these different conditions varies. The feebleminded cannot be placed with the psychopathic. Only the experienced physician, therefore, is in a position to do this sorting and to prescribe proper measures of physical and social prophylaxis.

Hysterical broadsides because of the increase in juvenile delinquency at present are unwarranted. Certainly in its medical aspects (and doubtless in its social aspects as well) the problem should be subjected to careful scientific scrutiny and analysis. The solutions proposed must rest also on sound scientific and practical grounds. Most important is identification at the earliest possible moment of those children who have mental or physical defects likely to lead to delinquent behavior, once this has been done, careful preventive measures must be undertaken so that these unfortunates may be integrated into society to the maximum of their potentialities and with the least possible harm to themselves or other persons. The medical consequences of delinquency, principally venereal disease and illegitimacy, must be recognized as symptoms of the underlying social pathology for which prevention is most important.

## ISOTOPIC STUDIES AND PROTEIN METABOLISM

In recent years many metabolic studies have been carried out with isotopically labeled amino acids. The heavy isotope of carbon, of hydrogen and of nitrogen as well as the radioactive isotope of sulfur have been useful as markers of particular amino acids. These isotopic "tags" serve, figuratively speaking, as little red lanterns that permit the tracing of their bearers in the animal body. At the same time the markers do not alter the chemical reactivity of a compound containing them, for they are isotopes of the atoms which they replace. Isotopic studies have permitted the elucidation of many obscure details of particular phases of

<sup>1</sup> Winsor, Max. Psychology of Preadolescent Children in Wartime. V. Delinquency in Wartime, *Am J Orthopsychiatry* 13: 510 (July) 1943.

<sup>2</sup> Pritchard, Rosemary, and Rosenzweig, Saul. The Effects of War Stress on Childhood and Youth, *J Abnormal & Social Psychology* 37: 329 (July) 1942.

<sup>3</sup> Breguet, Rene. Preliminary Survey of 1,000 Case Histories of Inmates of the Elmira Reformatory, *N Times*, June 1938.

protein metabolism and have, moreover, forced a revision of the old concept of the rather static condition of body protein

Investigations with marked amino acids have proved to be extremely useful in the identification of the precursors of certain physiologically active compounds. Thus it has been demonstrated that aminoacetic acid (glycine), arginine and methionine may act as the precursors of creatine in the animal body.<sup>1</sup> The contribution of arginine serves to form the amidine part of the creatine molecule, and aminoacetic acid together with the methyl group of methionine serves to form the sarcosine part. These studies, which involve the labeling and the subsequent tracing in the organism of different groups in amino acids, give a definite answer to a question on the solution of which investigators have worked for decades.

Another special phase of protein metabolism to which the isotopic technic has been applied concerns the apparent conversion of administered amino acids to carbohydrate in experimental animals. This problem has long been perplexing to investigators. It was recognized that the administration of certain amino acids resulted in the deposition of an equivalent amount of glycogen in the liver of the animal. Similarly the feeding of some amino acids to an animal rendered "diabetic" by phlorhizin was known to effect the excretion in the urine of an equivalent amount of excess sugar. The heretofore unanswerable question was, however, whether the so-called glucogenic amino acids were directly converted to carbohydrate or whether they spared some metabolite (perhaps an amino acid derived from tissue protein) which subsequently was converted to carbohydrate. Long sought information has been provided by a recent study<sup>2</sup> in which aminoacetic acid containing heavy carbon was administered to fasted mice whose liver glycogen was subsequently analyzed for the carbon isotope. In these experiments the hepatic glycogen was found to contain only a small excess of the isotopic "tag," and the rise in liver glycogen was far more than could be accounted for by the conversion of labeled aminoacetic acid to glycogen. Indeed, only one of the "tagged" carboxyl carbon atoms of the administered aminoacetic acid was to be found for every four or five molecules of dextrose in the glycogen. Comparable results have been obtained in experiments with phlorhizinized animals, the extra dextrose excreted in the urine after administration of "tagged" alanine being found to contain little excess isotope.<sup>3</sup> The

experimental data from the studies here mentioned indicate that the bulk of formed carbohydrate originated not by direct conversion of the administered amino acid but rather by the conversion of some metabolite which was in some way spared by the administered compound.

There are many other problems relating to the metabolism of protein and amino acids that have been profitably studied with the aid of isotopically marked amino acids. Perhaps the most striking contribution of these investigations is the definite proof which they afford of the dynamic state of body protein.<sup>4</sup> The classic theory of the more or less static state of body protein—protein synthesis in the adult animal being restricted largely to replacing losses due to the "wear and tear" of metabolism—is no longer tenable. In experiments in which the fate in the organism of orally administered "tagged" amino acids was studied the late Dr. Schoenheimer and his colleagues observed that some of the nitrogen of the administered substances was transferred *in vivo* and could be subsequently identified in the different amino acids of the body proteins.

Moreover, a considerable amount of an administered amino acid was found to be rapidly incorporated as such by tissue protein. Data obtained by Schoenheimer and his co-workers in this connection indicate that there is a continual opening and closing of the peptide linkages. Most tissue proteins are apparently constantly undergoing synthesis and degradation, as envisioned some years ago by Borsook and Keighley.<sup>5</sup> In the liver, for example, more than half of the protein seemingly may be broken down and resynthesized in ten days,<sup>6</sup> a truly remarkable phenomenon. Schoenheimer<sup>4</sup> has pointed out that in life the degradative reactions are balanced by synthetic reactions. The regenerative processes involving an increase in free energy must, in general, be coupled with another reaction such as that of oxidation. After death, when the oxidative systems fail, syntheses cease and the unbalanced degradative processes lead to collapse of structural protein elements.

One can expect more contributions to our knowledge of the metabolism of proteins as well as of lipids, of carbohydrates and of minerals as more investigators become familiar with the technic of isotopic studies and as the required experimental apparatus becomes more generally available. Isotopically labeled compounds are almost indispensable for the study of some phases of metabolism. The employment of these comparatively new research tools in attacks on many important problems will without doubt continue to be rigorously prosecuted.

1 Bloch, Konrad and Schoenheimer, Rudolf. The Biological Precursors of Creatine. *J. Biol. Chem.* **138**, 167 (March) 1941. du Vigneaud, Vincent, Chandler, J. P., Cohn, Mildred and Brown, G. B. The Transfer of the Methyl Group from Methionine to Choline and Creatine. *ibid.* **134**, 787 (July) 1940.  
2 Olsen, N. S., Hemingway, Allan and Vier, A. O. The Metabolism of Glycine. I. Studies with the Stable Isotope of Carbon. *J. Biol. Chem.* **148**, 611 (June) 1943.  
3 Gunn, Samuel and Wilson, D. W. The Intermediary Metabolism of Alanine. *C. S. Federation Proceedings* **1**, 114 (March) 1942.

4 Schoenheimer, Rudolf. The Dynamic State of Body Constituents. Harvard University Press, Cambridge, Mass. 1942.

5 Borsook, Henry and Keighley, G. L. The Continuing Metabolism of Nitrogen in Animals. *Proc. Roy. Soc. London, series B* **118**, 488 (Nov. 1) 1935.

6 Compare Borsook, Henry and Dubnoff, J. W. The Metabolism of Proteins and Amino Acids. *Ann. Rev. Biochem.* **12**, 183 1943.

## EMERGENCY MATERNITY AND INFANT CARE FOR DEPENDENTS OF SERVICE MEN

In the Organization Section in this issue of THE JOURNAL, page 1125, appears a statement prepared by the Children's Bureau of the Department of Labor describing a Conference on Emergency Maternity and Infant Care called by the Bureau at Washington, D. C., December 10 and 11. This conference was assembled in response to a resolution by the American Academy of Pediatrics<sup>1</sup> calling for a conference in which representatives of the medical profession, the hospitals and the service men would meet with the Children's Bureau to discuss the program. The recognition of such official representatives of leading medical organizations is a new principle for this government agency.

The chief issue raised by the medical representatives was whether the program should be a service program with payment by the government direct to physicians and hospitals rendering service or whether as called for by the House of Delegates of the American Medical Association,<sup>2</sup> it should be a program of cash allotments to wives of service men permitting them to make their own arrangements for care for themselves and their infants. The cash allotment plan was opposed by the representatives of the War Department Dependency Board, the Navy Bureau of Personnel, the Navy Relief Society, the Army Emergency Relief and others on the ground that the wives of service men are in many instances young and inexperienced and would be incapable of managing medical care and hospitalization for themselves. The Children's Bureau took the position that the matter was settled for them by an opinion that it was the intent of the Congress that the Bureau shall administer a service program and not one of cash allotment.

After they had presented the action of the House of Delegates of the American Medical Association to the conference—previously presented to the Children's Bureau at meetings of the Advisory Committee—and had been overruled, the representatives of the American Medical Association stated to the conference that they would continue to participate in the deliberations in a spirit of cooperation. This was in accord with the action of the House of Delegates as expressed in the first paragraph of its resolution<sup>2</sup> in which purposes and objectives of the program were introduced on behalf of the medical profession.

The chief of the Children's Bureau stated that this program was never presented as anything but an emergency program and "in the future when the people of the United States again have more leisure to consider domestic policies all of those in this room and everybody else concerned will certainly have full liberty to review the experience under this program and under

any other program and draw such conclusions as they see fit." Physicians, who have clearly stated their opposition to federalization of medicine and other bureaucratic developments, will, of course, see that the wives and infants of men in the armed services receive the medical care which they require, under the EMIC program or otherwise.

## Current Comment

### PATULIN FOR THE COMMON COLD

Recent reports from London<sup>1</sup> describe work with a preparation called "patulin" for the common cold. This substance is a metabolic product of *penicillium patulum* and has now been identified as anhydro-3-hydroxy-methylene-tetrahydro- $\gamma$ -pyrone-2-carboxylic acid. After an extensive description of the chemistry of this substance, clinical experiences with it in cases of the common cold are reported by Gye and by Hopkins. Nearly 100 patients and 85 controls were involved. One of the patients showing dramatic improvement was Gye himself. A high proportion of the persons treated seemed to show recovery in a much more rapid and complete fashion than would have been expected without treatment. From this small sample the statistician Major Greenwood deduced that the results in the treated group would have been most unlikely to occur from pure chance alone. In the *Lancet* a week after publication of these reports appeared a communication from three investigators,<sup>2</sup> headed by Stuart-Harris, which briefly records the results of giving patulin to 100 patients with the common cold and of not treating 100 alternate persons. The proportion of cases which showed clinical improvement was substantially the same in the two groups, the writers conclude that patulin had no demonstrable effect on the course of this series of colds as compared with the natural evolution of the disease. Pending the outcome of further studies, it would be unwise to view this new form of treatment of colds with too much optimism.

### SIXTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

The sixth Annual Congress on Industrial Health will take place on Feb. 15 and 16, 1944 at the Palmer House in Chicago. Those who expect to attend are urged to make travel and hotel reservations at their earliest convenience. These sessions follow directly after those of the Annual Congress on Medical Education and Licensure. The deans of medical schools and others interested in medical education may find it possible to attend the sessions on industrial health, a special effort will be made to induce them to do so. Official representatives of medical societies and allied organizations can attend both congresses this year without extra travel. One of the great obstacles to the growth

1 American Academy of Pediatrics, Board of Governors, unpublished report.

2 American Medical Association, House of Delegates, Report of Reference Committee on Legislation and Public Relations, J. A. M. A. 122:621 (June 26) 1943.

1 Raistrick, Harold. Patulin in the Common Cold. Collaborative Research on a Derivative of *Penicillium Patulum* Baimier. *Lancet* 2:625 (Nov. 20) 1943.

2 Stuart-Harris, C. H., Francis, A. E., and Stanfield, J. M. Patulin in the Common Cold, *Lancet* 2:684 (Nov. 27) 1943.

of industrial medical service has been the slow development of public interest in the health and economic benefits which the physician can bring to the industrial organization. The Congress on Industrial Health, therefore, will attempt to attract greater interest from management and labor. Prominent representatives of these groups will be asked to participate. Interest in the physical welfare of the working population must be maintained even after the stimulus of wartime production is over. This element in postwar planning must be encouraged. The sessions of the sixth Annual Congress on Industrial Health will attempt to bring this relationship into proper focus. The congress will also emphasize the importance of physical restoration, retraining and reemployment of the disabled, an issue which is certain to be a source of medical preoccupation for some years to come. Industrial health is gradually assuming greater and greater importance as an avenue for the distribution of medical service. Every physician and medical organization should recognize the trend so that the movement may be guided along dependable scientific and educational lines.

#### ATHEROSCLEROSIS A PRIMARY DISEASE OF THE INTIMA

Hirsch and Weinhouse<sup>1</sup> summarize an instructive review of the present knowledge of the role of lipids in human atherosclerosis with the statement that the chemical, physical and morphologic processes in the aging of arteries seems to be independent of atherosclerosis, which is "primarily a disease of the intima" consequent to lipid deposits. The chemical identity of the simple lipids in the atherosclerotic intima, in the blood plasma and in the normal intima is cited as substantial evidence in support of the conclusion that in human atherosclerosis plasma lipids are deposited in the intima and give rise to grave structural changes. In the rabbit<sup>2</sup> and in the chick<sup>3</sup> atherosclerosis can be produced by experimental hyperlipemia, but in the human adult atherosclerosis may develop without obvious quantitative or qualitative abnormalities in the blood lipids, hence Hirsch and Weinhouse postulate that here deposition of lipids in the intima is dependent on local factors the nature of which is not yet understood. According to their view phagocytosis does not play an important part in the intimal deposition of lipids in human atherosclerosis. "The evolution of the lesions from the simple fatty deposits to calcified atheromatous ulcers occurs because of several processes, among which are phagocytosis, physical and chemical effects on the tissues by the lipids or their decomposition products, disturbances in the nutrition of the tissues, admixture of blood, and reactions of the tissues against the lipids deposited." Such, in brief, is the conception of human atherosclerosis presented by Hirsch and Weinhouse on the basis of their review of the role of intimal deposits of lipids in this disease.

<sup>1</sup> Hirsch S F and Weinhouse Sidney. The Role of the Lipids in Atherosclerosis. *Physiol Rev* 29: 185 (July) 1943.

<sup>2</sup> Jeary Timothy. The Genesis of Atherosclerosis. *Arch Path* 32: 507 (Oct) 1941.

<sup>3</sup> Dauber D V and Katz E N. Experimental Cholesterol Atherosclerosis in an Omnivorous Animal the Chick. *Arch Path* 34: 937 (Dec) 1942.

The old view that atherosclerosis is the result of primary lesions in the media followed by secondary changes in the intima is reversed and lipid deposition in the intima put forward as the primary lesion. The old view became more or less invalidated by the production of experimental atherosclerosis by hyperlipemia, but the new view does not assume that hyperlipemia is a necessary factor in adult human atherosclerosis, although it, of course, may favor its development. The new view has heuristic value in that it will lead to studies of "the interactions and interconversions of the lipids in the blood and tissues" and to renewed study of the applicability of the results of experiments on the production of atherosclerosis in animals to the human disease.

#### LIBERTY SHIP NAMED FOR SIR FREDERICK BANTING

On December 20 the U S Merchant Marine Liberty Ship *Sir Frederick Banting* was launched at the Bethlehem Fairfield Shipyard in Baltimore. Banting, who died in an airplane crash in 1941, was internationally known for his medical research, especially for his studies on diabetes. The naming of this ship can be interpreted as an expression of gratitude and appreciation to Banting as well as a tribute to Canada his native land. The launching was attended by President H J Cody of the University of Toronto, by Dr C H Best by the Canadian ambassador, Laughton McCarthy, by two additional members of the University of Toronto faculty and by several prominent physicians from the United States. In the absence of Dr James R Paullin, President of the AMERICAN MEDICAL ASSOCIATION, a short speech of dedication was given by Dr J R Williams of Rochester, N Y. Lady Beatrice, Dr Banting's widow, christened the ship. The medical profession of the United States will join in the acclaim of this richly deserved honor.

#### CONGRESS PROVIDES FUNDS FOR RELOCATION OF CIVILIAN PHYSICIANS

Congressional action has been completed on a supplemental appropriation bill, H R 3598, which authorizes \$200,000 for use by the United States Public Health Service in providing, at the request of local communities, medical and dental services in critical areas. Such services will be provided through the medium of contracts with civilian physicians and dentists who agree to practice for not less than one year in the new locality. A monthly allowance of \$250, it is contemplated, will be paid the physician or dentist for three months plus moving expenses. The local community requesting such services will be required to assume 25 per cent of the relocation allowance and moving expenses, and the relocated physician or dentist must comply with the licensure laws of the state to which he removes. This bill has now been submitted to the President. The President had initially requested \$1,000,000 to supply these services. The proposal that the Public Health Service be authorized to assign medical officers to critical areas failed to receive congressional sanction.

# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## ARMY

### NEARLY FIVE HUNDRED MEDICAL AND DENTAL OFFICERS GIVEN COURSE AT THE UNIVERSITY OF PENNSYLVANIA

During the past year the University of Pennsylvania, Philadelphia, has given a series of thirty-two courses to nearly five hundred medical and dental officers of the Army, at the request of the Surgeon General of the United States Army. The courses were offered under the administrative supervision of the Graduate School of Medicine of the university, of which Dr. Robin C. Buerki is dean.

In order to conduct these courses a group of 124 faculty members was formed from Hahnemann Medical College, Jefferson Medical College, the School of Medicine of Temple University and the Graduate School of Medicine, the School of Medicine and the Evans Dental Institute of the University of Pennsylvania. To this group were added the surgeons of the hospitals of these medical schools, as well as the Lankenau Methodist, Oncologic, Pennsylvania, Philadelphia General, Presbyterian and Samaritan Hospitals, and the Evans Dental Institute.

The fundamentals of basic surgery, surgery of the extremities and of the thorax, plastic and maxillofacial surgery, together with anesthesiology, bacteriology and clinical pathology were covered in the courses. Most were of six weeks duration, but twelve weeks was devoted to anesthesiology and clinical pathology. All officers spent their first two weeks in the study of basic and fundamental surgery and the last four weeks in one of the special fields to which they had been assigned by the Surgeon General.

### PROMOTIONS FOR ARMY NURSES

Increased grades have been allotted to positions now held by members of the Army Nurse Corps, which will permit promotions for about one third of the approximately 33,000 members of the corps. Recommendations for promotions will be made by chief nurses and commanding officers. Authorization for the promotions is effective immediately. Formerly, in a hospital unit which required one hundred nurses only one captain and seven first lieutenants were authorized. The new plan will authorize a lieutenant colonel, a major, three captains and thirty-one first lieutenants for the same organization. The position held by a nurse in charge of a hospital with a minimum capacity of 3,000 beds will be such as to carry the relative rank of lieutenant colonel, at a hospital of 750 bed capacity the relative rank of major, and that of 500 beds but less than 750 the relative rank of captain. Regardless of capacity of the hospital, the nurse in charge will have the relative rank of lieutenant colonel if the hospital has enrolled in addition to the authorized nurse strength, twenty-five or more nurses studying in one or more specified courses. Directors of the Army Nurse Corps in major theaters of operations will have the relative rank of lieutenant colonel, in minor theaters of operations and defense commands the relative rank of major. The designation of a theater as major or minor allotment of nurses is made on the basis of its medical requirements. The relative rank of captain for dietitians and physical therapy aides in charge of departments in 3,000 bed hospitals or in hospitals conducting courses for students is covered by the authorization.

### ELEVENTH CLASS OF AVIATION PHYSIOLOGISTS

Graduation exercises at the School of Aviation Medicine, Randolph Field, Texas, for the eleventh class of Aviation Physiologists was held on October 16. Brig Gen. Eugen G. Remartz, U. S. Army, is commandant of the school. The course in aviation physiology is of five weeks' duration. Among those graduating were the following officers of the medical corps:

Capt. Carroll L. Conley, Baltimore  
1st Lieut. John W. Bricker, Cleveland  
1st Lieut. Bernard Gomberg, Chicago  
1st Lieut. Oscar D. Ratnoff, Boston  
1st Lieut. Jack C. Shrader, Indianapolis  
1st Lieut. Oscar Sugar, Chicago

In addition there was one graduate of the Medical Corps of the Argentine army, 1st Lieut. Raul Marti, Buenos Aires, Argentina.

### LIEUT. ROY F. DENT JR. AWARDED LEGION OF MERIT

Lieut. Roy F. Dent Jr. was awarded the Legion of Merit for "exceptionally meritorious conduct in the performance of outstanding services in North Africa during the period Dec. 26, 1942 to May 7, 1943. In addition to performing his normal assigned duties in a superior manner, Lieutenant Dent assembled and installed all of the x-ray equipment in his hospital and adapted this equipment to operate on electric current available locally. Later he adapted, adjusted and corrected the installation of all equipment within the Mediterranean base section. Thus he made possible the use of valuable and much needed equipment which otherwise would have remained idle. Also Lieutenant Dent by his ingenuity and technical skill improvised helpful mechanical equipment and kept in repair and operation many items of electrical equipment which have been of material assistance in the operation of the hospital. By his resourcefulness, technical knowledge and untiring efforts he has greatly facilitated and expedited treatment and recovery of the sick and wounded." Dr. Dent graduated from Northwestern University School of Medicine, Chicago, in 1942 and entered the service in March 1942.

### RIGID TRAINING TO PREPARE NURSES FOR DUTY IN COMBAT AREAS

The War Department announced recently that the four week basic training courses for nurses after their entry into the Army Nurse Corps will include digging foxholes, marching with full packs and learning the approved Army technique for crawling over battle terrain. Col. Florence Blanchfield, superintendent of the Army Nurse Corps, in emphasizing the importance of the basic training program of the corps, said that army nurses must know not only how to care for others but also how to take care of themselves. The course is designed to orient the newly commissioned army nurse and to give a general background of information concerning the Army and its organization, and in particular the organization and function of the Medical Department and the Army Nurse Corps. Self protection from enemy shelling and bombardment is essential particularly to the army nurse serving overseas near front lines.

er in the rear or evacuation areas. Teaching self protection, however, is not the only purpose of the basic training. Newly commissioned nurses are taught the principles and methods of medical field service and army nursing in order that they may perform efficiently those duties to which they may be assigned.

The basic training program given at nurse training centers in each of the Army's nine service commands in the United States includes training in individual defense against chemical attack and against air, parachute and mechanized attack. The army nurse learns how to use a gas mask, how to dig a foxhole quickly, how to conceal herself by camouflage and how to advance under a barrage of enemy shell fire. Instruction also includes training in sanitation and control of disease, fly and mosquito control, food inspection and mess sanitation, field water supplies and purification, waste disposal, first aid, care and management of mental patients, treatment of chemical casualties and other medical phases of army life.

### PRISONERS OF THE JAPANESE

Capt. Leo Schneider of Portland, Ore., recently sent word to his wife saying that he was uninjured and in good health and has been a prisoner of the Japanese since the fall of the Philippines. Captain Schneider graduated from the University of Oregon Medical School in 1935 and entered the service in January 1941.

Capt. John A. Marsico, formerly of Lorain, Ohio, recently sent word to his wife that he was captured by the Japanese on

May 7, 1942 and is now interned at Osaka as a doctor in a Japanese prison camp. Dr. Marsico graduated from the Ohio State University College of Medicine, Columbus, in 1930 and entered the service on Aug. 1, 1940.

Word has recently been received that Major John W. Raulston, who was stationed at Fort Stotsenburg, Philippine Islands, just prior to the war, has been missing since the fall of Batavia and is a prisoner of war by the Japanese. Dr. Raulston graduated from the University of Tennessee College of Medicine, Memphis, in 1930. He has been in the service since July 1, 1936, at which time he was commissioned a first lieutenant in the regular army of the United States.

### ARMY PERSONALS

According to the *Army and Navy Journal* of September 25, command headquarters at Randolph Field, Texas, has announced the appointment of Col. Ernest I. Harrison, M. C., as surgeon for the A. A. F. Central Flying Training Command at Randolph Field.

Dr. Margaret M. Ross of Rumford, R. I., was the first woman doctor in Rhode Island to join the armed forces. She was sworn in as a captain in the U. S. Medical Corps in October and subsequently assigned to the Post Hospital at Fort Des Moines, Iowa, and is now eligible for duty on any war front. Dr. Ross graduated from Tufts College Medical School, Boston, in 1922.

## NAVY

### TUBERCULOSIS SURVEY

The Bureau of Medicine and Surgery, Washington, D. C., announced on November 29 that the Navy has now adopted a new rapid and reliable method of giving x-ray examinations to all recruits for the purpose of discovering and weeding out those with tuberculous symptoms. Under the new system of photofluorographs using 35 mm. motion picture film an average of 240 pictures an hour can be made at a cost of 1 cent per person. When a tuberculous condition is suspected, the person is recalled for further diagnostic examination, including a standard 14 by 17 inch x-ray film. This new method of screening persons permits speedy examinations with a low rate of error. As many as 3,200 cases have been done in one day and 41,989 examinations a month.

As a result of the facts demonstrated by this survey, as well as the Navy's general experience with the 35 mm. fluorograph for chest films, it is felt that this system is inexpensive, reliable and accurate for the purpose of mass tuberculosis checks. Use of the miniature negatives reduces the necessary filing space for health records to a hundred and twenty-fifth that required under old methods; it lessens the chance that tuberculosis will spread within the naval service; it provides a proved method by which similar inexpensive preventive surveys can be made among the civilian population and it gives patients with tuberculosis a chance to overcome the disease by discovering its presence in the early stages. Work is still needed to perfect the photofluorographic process so that the size of the image will be increased without increasing the size of the film frame.

### REAR ADMIRAL LUTHER SHELDON JR. OBSERVES MEDICAL FACILITIES

Rear Admiral Luther Sheldon Jr., assistant chief of the Bureau of Medicine and Surgery, recently returned to Washington after a four months tour of observation of medical facilities in the United Kingdom, North Africa, Sicily, West Africa, Brazil and the West Indies. Dr. Sheldon said he was satisfied with the adequacy and function of the medical installations which he visited and that he was greatly impressed by the high morale existing in the naval medical personnel, almost all of whom expressed a desire to remain at their posts until the job is finished. Existing medical facilities, and those which are now in the process of completion, will be entirely adequate to meet any contingency, he said.

### LIEUT. COMDR. SAMUEL A. ISQUITH AWARDED LEGION OF MERIT

The Legion of Merit was awarded to Lieut. Comdr. Samuel A. Isquith, formerly of Brooklyn, for outstanding services as a medical officer aboard the heavy cruiser *Vincennes*, sunk in an engagement with Japanese forces in the Solomons area in August 1942. The award was accompanied by a letter from Frank Knox, Secretary of the Navy, which said in part that Dr. Isquith, "surmounting all the obstacles presented by battle conditions, tirelessly devoted himself to providing the injured with skilled medical care, remaining at his dressing station until the sinking ship had been almost completely abandoned. Without respite from his exhausting task he continued administering to the wounded on a life raft in the open sea, aboard a rescuing destroyer and later on a transport, until ordered to rest by his commanding officer." Dr. Isquith graduated from the Long Island College of Medicine, Brooklyn, in 1921, and entered the service in February 1942.

### RETIRED PHYSICIAN NOW TESTS GYRO COMPASSES

A retired physician, who served as a major in the Army Medical Corps in World War I, is now taking the pulses and reading the clinical charts of delicate direction-finding machines for the Navy. He is Dr. James V. W. Boyd of Springfield, Mass., who retired from medical practice ten years ago. Employed at the Packing Machine Company which manufactures gyro compasses, Dr. Boyd takes the vital readings as gyro compasses are put through their final tests. Dr. Boyd graduated from Columbia University College of Physicians and Surgeons, New York, in 1894.

### SECTION OF SANITARY ENGINEERING

The Bureau of Medicine and Surgery, Washington, D. C., recently announced that a Sanitary Engineering Section has been authorized in the Division of Preventive Medicine. The functions of this new section shall be to advise on the design, construction, operation and maintenance of water supplies, water treatment plants, sewerage systems, sewage treatment plants, general waste disposal and collateral facilities as well as the engineering phases of insect and rodent control. These functions are to be performed from the perspective of preventive medicine and public health.



## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

### HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan 1, 1944 or later

(Continuation of list in THE JOURNAL, December 18, p 1055)

#### CONNECTICUT

Hartford Municipal Hospitals, Hartford Capacity, 349, admissions, 4,153 Mr William J Ryan, Superintendent (5 interns)

#### INDIANA

Indiana University Medical Center, Indianapolis Capacity, 643, admissions, 9,706 Mr J B Howe Martin, Administrator (5 assistant residents, 1 resident—obstetrics, orthopedics, pathology, cardiology)

#### KANSAS

University of Kansas Hospitals, Kansas City Capacity, 350, admissions, 6,599 Dr J Harvey Jennett, Medical Director (resident—radiology, 4 F applicant, March)

#### MARYLAND

Mercy Hospital, Baltimore Capacity 338, admissions, 7,569 Sister M Celeste, Superintendent (2 interns, 1 resident)

#### MISSOURI

St Louis City Hospital, St Louis Capacity, 1,127, admissions, 15,013 Dr Leo J Wade, Medical Director (resident—pathology)

#### NEW JERSEY

Newark Memorial Hospital, Newark Capacity, 165, admissions, 2,896 Miss Catherine Guenther, R N, Superintendent (2 interns, 1 resident—mixed)  
Saint Joseph Hospital, Paterson Capacity, 468, admissions, 9,773 Sister Anna Rita, R N, Superintendent (8 interns)

#### NEW YORK

State Institute for the Study of Malignant Diseases, Buffalo Capacity, 107, admissions, 2,063 Dr Burton T Simpson, Medical Director (resident—malignant diseases)  
Sydenham Hospital, New York Capacity, 205, admissions, 4,260 Mr Emil Greenberg, Executive Director (2 vacancies)  
New York Hospital—Westchester Division, White Plains Capacity, 350, admissions, 361 Dr Clarence O Cheney, Medical Director (3 residents—psychiatry)

#### PENNSYLVANIA

Mercy Hospital, Altoona Capacity, 180, admissions, 3,867 Mother Mary Otilia, Superintendent (3 interns)

#### VIRGINIA

Hospital of St Vincent de Paul, Norfolk Capacity, 250, admissions, 8,271 Sister Inez, R N, Superintendent (3 interns)

#### WASHINGTON

King County Hospital, Unit No 1 (Harborview), Seattle Capacity, 505, admissions, 12,659 Dr W W Schwabland, Acting Medical Superintendent (assistant resident)

#### WISCONSIN

Wisconsin State Sanatorium, Statesan Capacity, 241, admissions, 131 Dr Richard H Schmidt Jr, Medical Superintendent (resident—tuberculosis)

## MISCELLANEOUS

### PUBLIC HEALTH UNDER HITLER

According to *Le Petit Marseillais* of September 14 the quota of insulin for the month of September has been reduced by three fifths as compared with that for the month of August

The Chief Public Health Directorate has ordered the inoculation against typhus of all persons engaged in the struggle against this disease, according to *Zora* of September 19 The entire people will not be inoculated against typhus because it is very hard to obtain serum The directorate, has, however, ordered a delousing campaign in all regions threatened by the disease before the winter sets in

According to *Dagens Nyheter* of October 10 the Germans have demanded at least 200 Norwegian nurses for hospital service in Germany or other occupied territories In some cases they have promised to consider the request of the nurses to serve in Germany itself It is supposed that the increased air offensive against Germany has caused this demand

According to DNB of October 12, during the past few days the reich leader of pharmacists, SA-Gruppenfuhrer Schmierer, was able to celebrate his tenth anniversary as leader of the German pharmacists' profession During this important period he was able to merge German pharmacists into a firm and uniform professional community, to tackle a great many questions of the profession with exemplary energy, to solve them and to give the members of his profession a thorough knowledge of the wealth of ideas of national socialism It is chiefly due to him and to the devotion of all those who have a part to play in the supply of medicaments that the civilian population is still able, in the fifth year of the war, to obtain the medicinal products it requires

Currentul of October 3 states that the Ministry of Labor, Health and Social Services has been authorized to send the pathologist Dr Al (?Birule) as delegate to the International Medical Commission of Inquiry appointed to investigate the murders committed at Vinitsa in the Ukraine

NPD, October 20, reported that, besides the hospitals for foreign workers in the reich which are attended by camp doctors, sick bays are now being established where foreigners who are billeted in private homes are taken care of On the whole, foreign doctors and dentists and women assistants give treatment to their compatriots Specialists are consulted in cases of serious illness

DPT, Stockholm, October 19, stated that the Germans apparently intend to make Denmark a convalescent home for homeless Germans from the industrial districts An extensive immigration of German civilians is therefore expected during the coming winter The Germans have already bought large villas and other buildings which have been converted into homes for German women and children, but of late they have simply been requisitioning a great number of Danish schools and premises for German soldiers or German families who have been rendered homeless by bombing Several Danish factories have already received orders from such places As Danish blanket firms have been ordered to deliver blankets, a blanket factory at Odense was seriously damaged recently by sabotage Several timber firms, for instance one large firm at Naestved, and the contractors Nicolaisen and Nielsen at Copenhagen south harbor, have been ordered to supply wooden barracks from the beginning of September Homeless evacuated Germans are supplied with furniture which has been confiscated from Jews who have been arrested

According to the October 12 (Vienna edition) of the *Volksbeobachter* in opening the discussion meeting of the German Society for Internal Medicine the reich health leader, Conti, said that Germany was free from epidemics in this war as never before Not only was this due to preventive measures but it is also the fruit of the work of our scientists, practitioners and all doctors Even the attacks of the Anglo-American terror bombers on German towns have not increased the danger of epidemics We can fortunately state this despite the activity of enemy propaganda, which asserts that typhoid and cholera have appeared in Hamburg The standard of health of the German people in the fifth year of war is even better than during the autumn of 1942

# ORGANIZATION SECTION

## OFFICIAL NOTES

### THE 1944 CHICAGO SESSION

#### The Scientific Exhibit

The Committee on Scientific Exhibit of the Board of Trustees has authorized three special exhibits which will be presented under the guidance of special exhibit committees.

The special exhibit on fractures will be continued as in former years, showing how to make and store plaster of paris bandages, fractures of the lower end of the radius fractures of the ankle and emergency treatment of fractures for transportation. The committee consists of Dr Kellogg Speed Chicago chairman, Dr Frank D Dickson Kansas City and Dr Walter F Lee, Philadelphia.

The special exhibit on burns will include both industrial and military phases of the problem. The committee is composed of Dr Stanley J Seeger Texarkana chairman, Capt Ernest W Brown, Bureau of Medicine and Surgery, United States Navy, and Capt Joseph E Hamilton Walter Reed General Hospital United States Army.

The special exhibit on anti infective agents will include penicillin, sulfonamides and other new anti infective drugs. Dr

Chester S Keefer, Boston, and Dr Austin E Smith, Chicago, will be in charge of the exhibit.

The sixteen sections of the Scientific Assembly will arrange groups of exhibits as usual. Applications for space should be made to the Director, Scientific Exhibit, American Medical Association 535 North Dearborn Street, Chicago 10.

### DR F H ARESTAD APPOINTED ASSISTANT SECRETARY OF COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The Council on Medical Education and Hospitals announces that Dr Fritof H Arestad has been appointed to the position of Assistant Secretary.

Dr Arestad, who has been on the Council staff for thirteen years, will be concerned mainly with all hospital activities of the Council including the registry of hospitals, formerly under the direction of Mr Homer F Sanger, as well as with internships, residencies and fellowships.

## CONFERENCE ON EMERGENCY MATERNITY AND INFANT WELFARE

The Children's Bureau of the United States Department of Labor, in response to a resolution adopted by the Executive Board of the American Academy of Pediatrics, called a conference on the emergency maternity and infant care program for the wives and infants of enlisted men in the armed forces in Washington on Dec 10 and 11 1943. The resolution of the Academy of Pediatrics proposed a conference of official representatives of the service men together with official representatives of the professions actually rendering the service. There were present representatives designated by the American Medical Association American Hospital Association, U S Public Health Service American Association of Obstetricians Gynecologists and Abdominal Surgeons, American Academy of Pediatrics, American Gynecological Society American Pediatric Society, Committee of Physicians for the Improvement of Medical Care, Association of State and Territorial Health Officers, War Department Navy Department, Army Emergency Relief, Navy Relief Society American Red Cross American Legion and the Washington representatives of five national women's organizations that have supported the legislation. The Children's Bureau also invited the medical and public health members of the Children's Bureau Advisory Committee on Maternal and Child Health Services. Dr Martha M Eliot associate chief of the Children's Bureau served as chairman of the conference.

The first day of the conference was given over to a full discussion by the official delegates of the various organizations of the purpose of the emergency maternity and infant care program as provided for in the acts of Congress and the policies under which the program is being administered by the Children's Bureau.

Miss Lenroot in response to inquiries as to whether the Children's Bureau regarded the program as an emergency program or one that would be continued after the war stated that since the appropriations made by the Congress for emergency maternity and infant care were national defense items the Secretary of Labor in her regulations governing allotments of these funds had specified that the term emergency refers to the period of the present war and six months following its termination. Miss Lenroot stated further that this program has never been presented to Congress to the Bureau of the Budget or to any one else by the officials of the Chil-

dren's Bureau as anything but an emergency program, 'emergency' meaning the usual definition of the war period and six months following the termination of the war.

In addition, Miss Lenroot stated "The Children's Bureau for many years has been concerned, as you know, with the extension and improvement of services for mothers and children. In that effort we have had a very wide degree of cooperation from the medical profession, partly through the activity that has been developed through the Children's Bureau and the State health agencies and partly through the other forces that have been set in motion over a long period of years. There has been a remarkable reduction in maternal mortality and a very fine reduction in infant mortality. The Children's Bureau was not satisfied with the status quo before the war. We could not be satisfied while approximately 10 per cent of the mothers in this country were delivered by untrained practitioners and while accepted standards of maternity care and infant care were by no means generally applied. Therefore, of course we are concerned about how we may go forward in the period following the war in efforts to improve the status of maternal and child health in this country."

"However," Miss Lenroot said, "I want to make it clear that this emergency maternity and infant care program was developed in response to need and was in no way a part of any master plan or strategy. It was developed very simply as a measure to meet war need as a result of the experience in the State of Washington and other places and of the evidence of need that was coming to us."

In the future, when the people of the United States again have more leisure to consider domestic policies, all of us in this room and everybody else concerned will certainly have full liberty to review the experience under this program and under any other program and draw such conclusions as they see fit. Those conclusions will differ for people of all shades of opinion as to public responsibility for medical care will be cooperating in the program. All will have the privilege of reviewing what happened under this program. All of us will have the privilege of free citizens in the United States to form whatever judgments as to the future may seem wise.

The question as to whether the program should be changed from one of payments for medical hospital and nursing care to one of cash grants to the wives of enlisted men was discussed.

fully by representatives of the medical profession and by representatives of the Army, the Navy and the various organizations concerned with dependents of service men. The position of the American Medical Association as being in favor of cash grants was stated by its official representatives. The present policy of Congress in providing for medical, hospital and nursing care instead of cash grants was supported in discussion by the representatives of the service men and by various organizations concerned with the welfare of the wives and infants of the enlisted men and by some of the medical and public health members of the conference. Since the Children's Bureau has no jurisdiction in this matter but must administer the program in accordance with the act of Congress and provide care rather than cash grants, the issue was not acted upon by the conference.

On the second day, therefore, attention was turned to the policies adopted by the Children's Bureau in the administration of the program. A detailed statement of proposed policies was presented to the conference for discussion. The conference made many recommendations which the officials of the Children's Bureau stated would be given full consideration in the revisions now being made of these policies. After full discussion of the question as to whether physicians should be permitted to charge fees in addition to payments made by the state health agencies for services rendered under the program, the conference agreed without dissent that "supplementary payment to the physician by the patient for services authorized should not be allowed."

It will be of interest to physicians that the conference also concurred in the following policies relating to administration of the program:

The hospital, if hospital care is requested, agrees to accept payment only from the state health agency for services rendered under the program and will provide at least ten days care following delivery if accommodations are available and the patient wishes to remain in the hospital.

The hospital will provide special accommodations or services as indicated by the patient's medical condition in return for the per diem payment made by the state health agency.

The wife of an enlisted man may have free choice under the program of all types of available facilities and services including private practitioners, clinics, hospitals and other health facilities that meet the standards established under a state plan for each type of service or facility.

The cost of medical services in a clinic and/or hospital, including maintenance and salaries, where such medical service is provided by staff physicians (such as interns, resident staff and attending physicians employed by or appointed to the staff of clinic or hospital) must be included in the calculation of the cost per clinic visit and the "ward-cost-per-patient-day" (as outlined by the Children's Bureau in the memorandum of Sept. 1, 1943).

Individuals accepted for care under the program will be routinely referred to local public health agencies for the provision of whatever public health nursing services can be made available.

Arrangements will be made to utilize community facilities including appropriate social and health agencies to meet needs other than those provided for under the emergency maternity and infant care program for wives and infants of enlisted men.

There was also discussion with respect to methods of payment and the scope of the service included under the plan. The discussion brought out that it is the intent of Congress that there shall be no financial investigations for eligibility for care under the program. The program provides for complete maternity care and for the consultation of specialists and other special services in accordance with the medical need of the wife or infant.

The revised policies will be distributed to the state health agencies and published in full in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.

At the close of the meeting the following resolution offered by a representative of the Academy of Pediatrics was adopted:

WHEREAS, The free expression of opinion during this conference from official representatives of all interested agencies has been of the greatest value in securing a better understanding and cooperation of those interested in the health and welfare of the wives and infants of the members of our armed forces, and

WHEREAS, The Children's Bureau, a governmental agency, has wisely acceded to the request of the Academy of Pediatrics to call this initial conference with the official representatives of the professions actually rendering service under the E M I C plan and to consider the problems arising from the application of this plan, be it

Resolved, That it is the sense of this assembly, in view of the extraordinary benefits which have accrued by a meeting of those representing many thousands of servicemen, health professional and lay organizations that future governmental conferences, national, state and local, involving medical services, be similarly composed of the official representatives of professions rendering these services and of the groups receiving them and thereby create in the public interest mutual confidence, cooperation and good will between governmental and medical agencies.

## MEDICAL LEGISLATION

### MEDICAL BILLS IN CONGRESS

*Changes in Status*—S 763 has been approved by the President, amending the Selective Training and Service Act of 1940. It directs the President, among other things, to appoint a commission of five qualified physicians, three of whom shall be civilian physicians not employed by the government, to examine the physical, mental and moral qualification requirements for admission to the armed forces and recommend to the President any changes which it believes can be made without impairing the efficiency of the armed services. The Director of Selective Service, it is contemplated, will cause to be reexamined those men, including those previously discharged from the armed services because of physical disability, who may qualify under any new standards established. This law, too, provides that no individuals shall be called for induction because of their occupations, or by occupational groups, or by groups in any plant or institution, except pursuant to a requisition by the land or naval forces for persons in needed medical professional and specialist categories. H R 2976 has passed the House, providing that during the present war and for six months thereafter the Superintendent and all other members of the Navy Nurse Corps entitled under existing laws to relative rank shall have and be designated by the rank which corresponds to the relative rank originally provided by law for such superintendent and members. This bill has also been favorably reported without

amendment by the Senate Committee on Naval Affairs. H R 3598 has passed the House and Senate, providing supplemental appropriations for the fiscal year ending June 30, 1944. The sum of \$200,000 is provided for the relocation of civilian physicians and dentists. H J Res 208 has been passed by the House, authorizing additional appropriations for the supplying and distribution of farm labor. Medical services may be supplied recruited farm laborers.

*Bills Introduced*—S 1574, introduced by Senator Lodge, Massachusetts, proposes to amend the Pay Readjustment Act of 1942 so as to permit service in the Medical Reserve Corps to be counted for pay purposes. H R 3704, introduced by Representative Rivers, South Carolina, provides pay and allowances for temporary members of the Coast Guard Reserve during periods of disability resulting from injuries sustained or disease contracted in active service during the present war. H R 3806, introduced by Representative Peterson, Florida, would authorize the President to appoint as commissioned officers in the Medical Corps of the Army and Navy, on the respective recommendation of the Surgeon General of the Army or Navy, morticians who are regularly licensed to practice in such in any state or in the District of Columbia. The Surgeon General of the Army and Navy will be authorized jointly and severally to prescribe regulations to govern the recommendations of such morticians for commissions.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY STOPPING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

### ALABAMA

**New Director of Industrial Hygiene**—Dr George A Shipman, Atlanta, industrial hygiene physician, Georgia Department of Public Health, has been appointed director of the bureau of industrial hygiene of the Alabama Department of Public Health. Dr Edwin H Place, Montgomery, director of the Alabama unit, will take over the activities of Dr Shipman in the Georgia department.

**Physician Sentenced on Murder Charge**—Dr James Howard Blue, Bessemer, was found guilty by a jury of murder in the second degree and sentenced to fifty years' imprisonment, newspapers reported November 17. Attorneys for the defense announced that motion for a new trial would be filed. At the physician's first trial last September a mistrial was declared. Dr Blue was charged with the shooting of his wife, May 23.

**Changes in Health Officers**—Dr Lowell L Stokes, Okmulgee, Okla., U S Public Health Service, has been named in charge of the Lauderdale County Health Unit. The position has been vacant since Dr Julius E Dunn, Anniston, resigned almost a year ago to become health officer of Etowah and Calhoun counties (THE JOURNAL, January 16, p 202).—Dr Jesse P Chapman, Selma, has been reappointed chairman of the state executive committee of the Women's Field Army of the American Society for the Control of Cancer.—Dr George E Newton has resigned as health officer of Autauga and Chilton counties to enter private practice in Prattville.

### CALIFORNIA

**Personal**—Dr William McDowell Hammon, assistant professor of epidemiology, George Williams Hooper Foundation, and Herbert G Johnstone, Ph.D., assistant professor of bacteriology at the University of California Medical School, San Francisco, are studying tropical medicine in Central America through the cooperation of the Office of Inter-American Affairs and of the surgeon general of the army.—Dr Edwin B Godfrey, El Centro, has resigned as health officer of Imperial County.

**Governor Appoints Committee on Food and Nutrition**—Governor Earl Warren recently appointed the following members to a statewide committee on food and nutrition: Anthony J Lorenz, California Fruit Growers Exchange, Los Angeles, chairman, Flora Rose, Sc.D., Berkeley, W D Hader, San Francisco, Ray B Wiser, California State Farm Bureau, Berkeley, Dr Langley Porter, San Francisco, Sidney Hoedemaker, Los Angeles, C J Haggerty, Los Angeles, R M Hagen, Los Angeles, and Miss A R Jewel, Napa.

**Physicians Needed**—The Los Angeles County Civil Service Commission announces a nationwide search for qualified applicants for the positions of assistant chief, emergency medical service, paying \$384 to \$450 a month and resident physician, M.D. (orthopedic surgery) and resident physician (pathology) paying \$158 a month. Applicants for any of these positions must not be over 55 years of age. Full information and applications may be obtained from the office of the commission room 102, Hall of Records, Los Angeles 12. The last day for filing of applications for the positions is January 5. A position for nurse anesthetist paying \$242 to \$286.40 a month is also available.

### ILLINOIS

**Personal**—Dr Thomas A Jones, Zeigler has been appointed superintendent of the general hospital and head of the medical department of the Southern Illinois Penitentiary at Menard.—Dr Bettv A Nilsson, formerly physician in charge of the Lutheran Hospital at Rajahmundry India, and head physician, was to leave Rockford in November to return to supervise the institution again. Dr Virgil E Zigler has been in charge of the institution since Dr Nilsson left in 1940 for a furlough in the United States. Both physicians are with the American United Lutheran Mission.—Drs Fred C

Hamilton and John Archibald Brown were honored at a meeting of the Kankakee County Medical Society November 9 and presented with fifty year certificates and lapel pins testifying to their completion of fifty years in the practice of medicine.

### Chicago

**Second Hamburger Lecture**—Della W Bronk, Sc.D., Johnson professor of biophysics and director of the Lldridge Reeves Johnson Foundation for Medical Physics, University of Pennsylvania School of Medicine, Philadelphia, will deliver the second Walter Wile Hamburger Memorial Lecture, January 28, under the auspices of the Institute of Medicine of Chicago. The lecture is made possible by a special fund established by the board of governors of the institute in honor of Dr Hamburger. Dr Bronk will discuss aviation medicine.

**Dr Slight to Head Mental Examinations for Prospective Draftees**—Dr David Slight, president of the Illinois Society for Mental Hygiene, on December 13 was named to supervise the new program of mental examinations for prospective draftees in Illinois. Under the plan, medical field agents are to be named for each local board under supervision of Dr Slight. Their job will be to gather medical, social and educational histories of each registrant who is to be ordered to report for induction, with a view toward weeding out mental or nervous incompetents before they get into training.

**Technical Russian**—A course in elementary Russian with special emphasis on the terminology of chemistry, biochemistry, physics and related fields will be offered by the University College of Northwestern University on the Chicago campus next semester. The time for one section has been tentatively set for Tuesday, 8-10 p.m. Additional sections will be offered at other times if there is sufficient demand. The course will include only the necessary minimum of grammar. Exercises in reading and vocabulary building will be based on selected technical material. Supplementary material will be provided for independent exercise in the field of the student's special interest. Prof J G Tolpin, editor of the Survey of Foreign Petroleum Literature, Universal Oil Products Company, is the instructor. He is a graduate of the University of Kiev and has received the master's degree in chemical engineering from Columbia University. He has had wide experience in teaching, research, translating and writing on technical subjects. Further information about the course may be obtained from the University College of Northwestern University.

**Graduate Course on Industrial Hygiene**—A postgraduate course in industrial medicine and hygiene will be presented under the auspices of the committee on industrial hygiene of the state medical society and the Chicago Medical Society, January 4-March 28, under the direction of the division of industrial hygiene of the state department of public health and the University of Illinois College of Medicine. The class will be limited to forty physicians and the fee will be \$25, registrations to close December 27. Lectures will include:

Dr Joseph H Chivers How Does the Industrial Medical Department Operate?

Dr Clarence O Sappington and Mr Frank Peregrine, Medicolegal Aspects of Industrial Medical Practice

Drs Milton H Kronenberg and Adolph Hartung The Pneumonococcoses—The Dusty Trades

Dr Robert A Kehoe Cincinnati Industrial Toxicology and Poisonings—Lead and the Heavy Metals

Dr James H Sterner, Rochester N Y, Industrial Toxicology and Poisonings—Fumes Gases and Vapors

Dr Robert W Keeton Medical Problems in Industry

Dr Louis Schwartz Bethesda Md Industrial Dermatoses

Dr George E Wakerlin Industrial Medical Aspects of Fatigue Noise Humidity Temperature Extremes and Abnormal Pressures

John J Bloomfield Bethesda Protecting the Place of Employment

Dr Frederick Slobe Essentials in Emergency Treatment

Dr Harold A Vonachen Peoria Ill, Other Industrial Medical and Surgical Considerations

On Tuesday, March 28, Dr Clarence D Selby, Detroit, will address the dinner session on "Responsibility of the Physician in Industrial Practice."

### INDIANA

**Medical Society Gives Award to Radio Station**—The Oberlin Award, granted annually by the Lake County Medical Society in recognition of outstanding "uncompensated contributions to the health of the people of Lake County" was received December 9 by radio station WIND of Gary at a dinner meeting held at the Woodmar Country Club in Hammond. A silver plaque was presented to Ralph L Atlas, president of the company which operates the station. Members of its staff were introduced. In his citation accompanying presentation of the plaque, Dr Herbert W Detrick Hammond, president of the society, declared that for the past five years the station has made its facilities available to the medical

society for the broadcast of information and appeals necessary to the promotion and maintenance of the public health in Lake County communities. The award is the highest recognition the society can confer on an individual or institution, granted only in those years when a truly significant contribution to the public health has been made. The award was established to honor the memory of the late Dr Thomas W Oberlin, a charter member of the medical society and a leader in Lake County medical affairs for forty-three years. Dr and Mrs Oberlin were killed in an auto accident in 1941.

### MINNESOTA

**Physical Therapy Course Changed**—The twelve month course for physical therapy technicians at the University of Minnesota, Minneapolis, which started its first summer session in June, will be changed so that matriculation will take place the spring quarter on March 27. Registration for the spring quarter will be on March 24-25. The course will continue as a twelve month program.

**Actions of State Medical Board**—On September 15 Judge Oscar R Knutson of the district court for the fourteenth judicial district issued a bench warrant at Roseau for the arrest of Knute H Luross, an unlicensed chiropractor, who had been ordered to appear before the court to answer for alleged contempt of court. The defendant has a long record of violating the healing laws of Minnesota, according to the state board of medical examiners. In April 1942, after an investigation by the state board of chiropractic examiners, an order was issued permanently restraining him from practicing healing in the state, including the practice of chiropractic, until he received a certificate of registration in the basic sciences. In August 1943 he was again found to be illegally practicing healing at Roseau. The matter was again investigated by the state board of chiropractic examiners and the defendant was ordered to appear before court on September 15, the contempt charge being based on the alleged violation of the court's injunction in April. Any one having knowledge of the whereabouts of Luross is asked to notify the Minnesota State Board of Medical Examiners.—On November 5 Bernice L Murdock, proprietress of the Murdock Pharmacy, Minneapolis, paid a fine of \$200 in the district court of Hennepin County, following her plea of guilty to a charge of selling paregoric without a medical prescription. Testimony disclosed that the defendant had made ten sales of paregoric to one person between August 27 and October 20, the sales totaling 52 ounces. There was no prescription authorizing any of the sales.

### NEW JERSEY

**Three Infant Deaths in Diarrhea Epidemic**—Three deaths were reported on December 4 as a result of an epidemic of neonatal diarrhea at the Hackensack Hospital, Hackensack. In a statement to the press Mr L Van D Chandler, health officer of the city, stated that the disease might have some connection with an outbreak of diarrhea in adults which had reached considerable proportions in northern New Jersey.

### NORTH CAROLINA

**Antinoise Ordinance**—The Charlotte City Council has adopted a new antinoise ordinance, providing a number of new prohibitions with a number of previous regulations to cover noise offenses.

**Public Health Officers**—Dr. Ballard Norwood Jr, Oxford, was chosen president-elect of the North Carolina Public Health Association at its annual meeting in Raleigh October 25 and Dr William P Richardson, Chapel Hill, was installed as president. Mary Batchelor, Raleigh, is secretary-treasurer.

**Personal**—Dr Everett O Jeffreys, formerly of Philadelphia, has been appointed assistant professor of neurosurgery at the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem.—Dr Lester A Crowell Jr, Lincolnton, was elected president of the Board of Medical Examiners of the State of North Carolina at its meeting recently.—Dr James O Nolan, Kannapolis, has been appointed a member of the North Carolina State Board of Health, succeeding C C Fordham Jr, Ph G, Greensboro, who is now an officer in the Navy. Other appointments include that of Dr Hiram L Large, Rocky Mount.—Dr Jesse W Wilcox, Wilmington, has been appointed health officer of Moore County, succeeding Dr Benjamin M Drake, Carthage, who resigned to accept a similar position in Alamance County.—Dr Roy H McDowell has resigned as clinic supervisor of the Durham Health Department to return to private practice.

### OKLAHOMA

**Personal**—Dr Mabel M E Hart has resigned as director of health for the Tulsa public school system after twelve years' service in the position.—Dr Victor C Tisdal has been elected mayor of Elk City. He also served in this capacity in 1939, when he filled an unexpired term.—Dr Phillip G Joseph, Oklahoma City, has been named director of the Creek County Health Unit, succeeding Dr Leland F Shryock, Oklahoma City.—Dr William Albert Cook, Tulsa, recently donated his entire personal library to the medical library of the Tulsa County Medical Society.

**Physician Named for Hall of Fame**—Dr Oscar C Newman, Shattuck, was inducted into the Hall of Fame at the Oklahoma Historical Society, November 16, and honored during the annual banquet of the Oklahoma Memorial Association. Dr Newman is a pioneer physician of Oklahoma, first locating in Grand, Day County, in 1900, the same year of his graduation at the University of the South Medical Department, Sewanee, Tenn. In 1907 he moved to Shattuck, where he is still practicing and where he established the Newman Clinic. He has three sons who are physicians associated with him in the clinic. Dr Newman also graduated at the Medical Department of the University of Cincinnati in 1906.

### PENNSYLVANIA

**Hospital News**—On November 23 ground was broken for an addition to the dispensary building at the George F Geisinger Memorial Hospital, Danville. The ground floor will house a meeting room with a capacity of 75 to 100 persons. It will be available to any medical, nursing or other hospital group for assembly purposes. The first floor will accommodate an expanded surgical outpatient department, and the second floor will contain a complete suite for the urologic department.

### Philadelphia

**First Center for Study of Physical Medicine**—The first center for the scientific study and development of physical medicine as a branch of medical practice has been established by the National Foundation for Infantile Paralysis in the Graduate School of Medicine of the University of Pennsylvania. The foundation has given a grant of \$150,000 for a five year period from Jan 1, 1944 to Dec 31, 1948. According to an announcement, Mr Basil O'Connor, president of the foundation, stated that this is but the first step in a program which should afford a scientific basis for physical therapy and lead to the establishment of a more desirable teaching program. The Center for Research and Instruction in Physical Medicine will include a center for development of physical medicine as a scientific part of the practice of medicine, a training center for medical leaders and teachers in this branch of medicine and a school for training technical workers under the guidance of such professional and scientific leadership, such a school to be only incidental to and dependent on the first two purposes. The departments of anatomy, physiology, pathology and other basic sciences of the University of Pennsylvania will cooperate in this proposed program. The general direction will be assigned to Dr Robin C Buerki, dean of the Graduate School of Medicine. Since it was first organized, the foundation has been continuously concerned with physical medicine in the treatment of infantile paralysis. It has spent during the past six years over \$350,000 to educate and train physical therapy technicians. An additional \$364,000 has been granted to laboratories and universities to study many problems in physiology and medicine having a close connection with the practice of physical therapy, but never before has it been possible to combine in one place both medical research and teaching in this special field.

### TEXAS

**Dr Sulkin Named Director of New Virus Laboratory**—Simon Edward Sulkin, Ph D instructor in bacteriology and immunology, Washington University School of Medicine, St Louis, has been placed in charge of the virus research laboratory now being organized at the medical school of the Southwestern Medical Foundation, Dallas.

**University News**—Recent additions to the faculty at Baylor University College of Medicine, Houston, include Drs Charles M Aves, professor of clinical surgery (honorary), Thomas H Compere, associate professor of anesthesia, William W Coulter, associate professor of pathology, and Otis P Flynt, associate professor of clinical urology, all of Houston.

## WEST VIRGINIA

**Society Opposes Prepaid Medical Plan**—The Cabell County Medical Society, at a special meeting in Huntington December 14, defeated by a margin of but two votes a proposal that the society sponsor a prepaid medical-surgical plan for the county, to be administered by the local hospital service plan association. The vote was taken after the medical service features had been stricken from the proposed contract, which was fashioned after the basic contract approved for use of component societies by a committee composed of members of the fact finding and planning committee of the state medical association. If the objectionable features of the contract can be eliminated, the plan might possibly be resubmitted some time after the first of the year. The county medical society unanimously recommended that a full time county and city health unit be set up in Huntington and that all the health activities of Cabell County be integrated. At the present time a part time unit is functioning in the city.

## GENERAL

**Neuro-Psychiatric Institute Changes Name**—The Neuro Psychiatric Institute of the Hartford Retreat, Hartford, Conn., announces that it will henceforth be known as the Institute of Living. The institute is located at 200 Retreat Avenue, Hartford 2, with offices at 459 Marlborough Street, Boston 15, and 610 Park Avenue, New York 21.

**Board of Ophthalmology Moves Executive Office**—Effective January 1 the executive office of the American Board of Ophthalmology will move to P O Box 1940, Portland 2, Maine. Officers for 1944 are Dr. John Green, St. Louis, chairman, Dr. Frederick C. Cordes, San Francisco, vice chairman, Dr. S. Judd Beach, Portland, secretary-treasurer, and Dr. Theodore L. Terry, Boston, assistant secretary. The 1944 examinations will be held in New York June 3-4 and Chicago October 5-7.

**Labor Unions Urge Cooperation with Health Departments**—A resolution was adopted by the American Federation of Labor at its meeting in Boston recently calling to the attention of affiliated unions the fact that local public health departments are prepared to give blood and other tests without charge to the individual and that members of organized labor are encouraged to make proper use of these health protection and promoting facilities. In California a resolution was passed requiring blood tests as a requisite for becoming a member of the American Federation of Labor.

**Executive Director Named for Cancer Society**—J. Louis Neff, East Williston, Long Island, N. Y., has been appointed executive director of the American Society for the Control of Cancer. The position is a newly created one and will function independently from that held by Clarence C. Little, Sc.D., managing director. The new appointment will be effective January 1. Mr. Neff has been executive secretary of the Nassau County Medical Society since 1923. He has also been secretary of the Nassau County Cancer Committee, which he helped organize, since 1928. He is a fellow of the American Public Health Association.

**Southern Chapter of Chest Physicians Organized**—The Southern Chapter of the American College of Chest Physicians was organized at the Hotel Gibson, Cincinnati, November 18 with Dr. Paul H. Ringer, Asheville, N. C., as president. Other officers in the group include Drs. Alvis E. Greer, Houston, Texas, and Carl C. Aven, Atlanta, Ga., vice presidents and Dr. Benjamin L. Brock, Waverly Hills, Ky., secretary-treasurer. Speakers at the organization meeting included Drs. J. Winthrop Peabody, Washington, D. C., president of the college, and Dr. Everts A. Graham, St. Louis.

**Shipments of Penicillin**—A bulletin from the Air Cargo Department of United Air Lines calls attention to the extreme advisability of having penicillin shipments sent via air express, with priority, in order to insure the fastest possible delivery. C. P. Graddick, director of United's Air Cargo Department, reports that certain critically needed penicillin shipments have, in the past, been delayed through an apparent lack of understanding on the part of physicians and shippers alike regarding the necessity of establishing priorities for such shipments. He is urging all shippers of the drug to obtain such priorities by calling the nearest regional priorities office of the Army Air Transport Command and stating the urgency of the case. In cases in which penicillin (or any other medicinal product) may mean the difference between life and death such priorities will be granted. Mr. Graddick has been advised.

**Allergy Groups Merge**—The Society for the Study of Asthma and Allied Conditions and the American Association for the Study of Allergy were merged on December 4 to form the American Academy of Allergy. Members in the two parent organizations will become members of the academy. Officers are Drs. Robert Chobot, New York, president, Oscar Swineford Jr., Charlottesville, Va., vice president, Karl D. Igley, Toledo, Ohio, treasurer, and William C. Sprun, New York, secretary. Members of the executive committee are Drs. Harry L. Alexander, St. Louis, Matthew Walzer, Brooklyn, N. Y., Milton B. Cohen, Cleveland, Robert A. Cooke, New York, and Samuel M. Femberg, Chicago. According to Dr. Sprun, such a merger has been planned for a number of years and was made possible since the two parent organizations were possessed of identical aims and ideals and the membership of the two societies was largely interlocking.

**The Academy of Orthopedics**—The twelfth annual meeting of the American Academy of Orthopedic Surgeons will be held at the Palmer House, Chicago, January 22-26, under the presidency of Dr. Marius N. Smith-Petersen, Boston. The following program has been announced:

- Dr. Lenox D. Baker, Durham, N. C., Acute Osteomyelitis with Staphylococcal Septicemia  
Major Champ Lyons, M. C. A. U. S., Penicillin in the Treatment of Septic Gunshot Wounds  
Dr. Arthur G. Davis, Jr., P. A., Nonunions of the Tibia  
Dr. Carroll Glenn Barber, Cleveland, Amputation of the Leg with Induced Synostosis of the Distal Ends of Tibia and Fibula  
Dr. John Albert Key, St. Louis, Amputation for Chronic Osteomyelitis  
Major Hugh M. B. A. Smith, Jr., and Capt. Seymour Scholtz, M. C., A. U. S., Intravenous Morphine  
Col. Walter Bruer, M. C. A. U. S., The Diagnostic Value of Synovial Fluid Examinations  
Dr. Chas. Ray Murray, New York, The Detailed Operative Technique for Open Reduction and Internal Fixation of Long Bone Fractures  
Capt. Camille M. Shirr, (MC) U. S. Navy, The Use of the Studer Apparatus in Fresh Fractures  
Dr. Robert W. Johnson, Jr., Baltimore, The Application of Haynes's Skeletal Fracture Apparatus to Special Orthopedic Problems  
Comdr. Robert Mazet, Jr. (MC) U. S. Naval Reserve, Half Pin Fixation of Fresh and Old Fractures  
Dr. Gerald G. Gill, Oakland, Calif., The Cause of Severe Shortening of the Leg Following Tuberculosis of the Hip in Children: Arrest of Growth from Premature Central Closure of the Epiphyseal Cartilages About the Knee  
Comdr. Joseph S. Barr, (MC) U. S. Naval Reserve, Medical Audio-visual Education in the Navy  
Drs. LeRoy C. Abbott, Frederic C. Bost, Carl E. Anderson, and John B. Saunders, San Francisco, Injuries to the Ligaments of the Knee Joint  
Dr. Allen F. Voshell, Baltimore, Subtibial Collateral Ligament Bursitis: Report of Cases  
Lieut. Col. Theodore Campbell Thompson, M. C., A. U. S., Quadricepsplasty to Improve Knee Function  
Dr. Ralph K. Ghormley, Rochester, Minn., Pedicle Grafts to Deep Skin Defects of the Foot and Ankle  
Dr. Henry Relson McCarroll, St. Louis, Immediate Application of Free Tull Thickness Graft for Traumatic Amputation of the Finger  
Dr. Oscar L. Miller, Charlotte, N. C., Orthopedic Surgery in South America  
Dr. Eben J. Carey, Milwaukee, The Effect of Poliomyelitis on the Nerve Endings in Skeletal Muscle  
Dr. Marion Beckett Howarth, New York, Calcification of Supraspinatus Tendon  
Dr. Julius S. Nevasser, Washington, D. C., A Study of the Pathological Findings in Periarthritis of the Shoulder  
Lieut. Comdr. Merrill C. Mensor and Lieut. Frank H. Smith, (MC), U. S. Naval Reserve, Fractures of the Pacific Combat Area  
Dr. Robert V. Funsten, Charlottesville, Va., Analysis of Healing and Healing Time in 250 Cases of Fractures in the Shifts of the Tibia and Femur

## Government Services

## Urge New Agency on Child Welfare

The establishment of a small federal agency to serve as a clearing house on the subject of juvenile delinquency was suggested at the Senate's subcommittee on wartime health education, December 1, by Richard A. Chappell, chief of probation of the Administrative Office of the United States Courts. Mr. Chappell recommended that the unit should be made up of representatives of several federal departments now concerned with child welfare, such as the Children's Bureau, Public Health Service, Bureau of Prisons, Federal Bureau of Investigation and Federal Probation Service. Michael J. Scott, St. Louis, secretary of the Juvenile Court Judges of America, said that in St. Louis 90 per cent of delinquency arose from "some broken home condition." Dr. Arnold L. Gesell, director of the clinic of child development, Yale University, New Haven, Conn., stated that in the recent six months Connecticut had had a 30 per cent overall increase in juvenile delinquency over the same period last year, and advocated inducting those boys and girls into civic service on a basis of long range planning "with federal affirmation, not with federal funds."



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Nov. 13, 1943

#### Wound Shock and Its Treatment

The Army Medical Department *Bulletin* has issued a supplement on the wounded from El Alamein, containing important observations on wound shock and its treatment. The standard of work in transfusion and surgical services was of a high order even under conditions of great strain during the first forty-eight hours, when units were overwhelmed with casualties. The majority of the wounded at the field ambulance or casualty clearing station were in good condition, including many who had untreated severe wounds and some who had lain for many hours. The occasion was one of the first on which blood and blood substitutes were used on a large scale for resuscitation of battle casualties at the most advanced medical units. The results left no doubt that early transfusion on the battlefield is by far the most important surgical advance of this war. So far as could be seen, the report states, there were no grounds for fears that blood was expended on men without hope of recovery or on those who would have recovered equally well with hot drinks. Some units showed commendable zeal in finding volunteer donors among walking wounded to augment their supplies of blood.

Early operation for penetrating wounds of the abdomen and for emergencies with an immediate threat to life was provided at field surgical units which were attached to field ambulances. This provision was justified by a gratifying reduction in the mortality of abdominal wounds. The experience favored the view that the major cause of wound shock is hemorrhage to the exterior, into body tissue spaces or into body cavities. But there were indications that this was not the only factor. This experience confirmed the teaching that the sooner blood volume was restored the better. The transfusion should be at least equal to the quantity of blood lost. In profound shock, fast transfusion is required. The question of the risks of overloading the heart by fast or large transfusions has often been raised. In shock due to uncomplicated hemorrhage there seems to be no danger in giving plenty of blood quickly. But transfusions were useless in shock from injury to the brain or spinal cord. Rapid transfusions were dangerous in the presence of pulmonary complications, of which fat embolism and blast injuries were the most frequent. Large transfusions were harmful when circulatory failure was due to bacterial infection.

#### The Polish Faculty of Medicine at Edinburgh University

The only existing scientific institution with university standing which a great European nation has maintained is the Polish School of Medicine in the University of Edinburgh. It is unique in the fact that never before has any state set up its own university with its own professors lecturing to its own students in their native tongue on foreign soil as part of a foreign university. After the collapse of France in June 1940 many Polish medical officers escaped to this country and collected in one of the Polish army camps in Scotland. Among them were several professors, lecturers and specialists of high standing whose knowledge and experience could not be used in the early stages of the reorganization of the Polish army on British soil. Lieut. Col. F. A. E. Crew, commanding the Scottish Military Hospital, was one of the first to realize the

needs of Poland, and in October 1940 initiated the scheme which led to the creation of the Polish Faculty of Medicine within the University of Edinburgh.

Prof. Antoni Jurasz, dean of the Polish Medical School, has stated in a press interview that the Poles in Britain were eager to welcome any scheme which would ensure close collaboration of the universities and scientific worlds of the two countries after the war. There has been an increasing response from the Poles here to the establishment of the medical school. The total for the current year was 200 students, and the total number of doctors graduated from the Polish Medical School is 53. The training of undergraduates and newly qualified doctors is carried on in the Paderewski Hospital, which is devoted entirely to the care of Poles in Britain. This hospital was established mainly through the foresight of an American, Mrs. Charlotte Hoffman Kellogg, president of the Paderewski Testimonial Fund, which has provided equipment and individual help to needy students from the Middle East. The doctors at the hospital are all Polish, the heads of the departments being professors or lecturers at the university. There are at present 116 beds, of which two thirds are for medical and the remainder for surgical cases.

### BOLIVIA

(From Our Regular Correspondent)

La Paz, Nov. 1, 1943

#### Public Health in Bolivia

Newly published is an interesting booklet with statistics and information concerning public health in Bolivia. The author of the bulletin, the first of its kind in this country, is Sir H. E. Navarro, statistics department chief of the Bolivian Health Ministry. The first part of the booklet contains statistics on morbidity and death. Most interesting is the high number of fatalities caused by tuberculosis of the respiratory tract (number 13 of the *International Nomenclature*), for example, the incidence indicated in the district of Tarija, an essentially agricultural department in the south is as high as 24 per cent, however, in the district of Potosí a mining center, the rate is 16.88 per cent. The morbidity rate for malaria is variable—from 0.47 per cent (District of La Paz) to 49.8 per cent (Tarija District).

The statistics indicate that there are 471 medical doctors in Bolivia (not including about 80 foreign doctors), 40 per cent of whom reside in the La Paz district. There are 141 dentists in the whole republic, which has about 3,600,000 inhabitants. The total budget of the Health Ministry was about \$1,570,000 in 1942 and something less in 1943.

In its second part the booklet presents statements by various Bolivian physicians. An interesting statement on "Epidemiological Information" by Dr. Corsino Barrera B., epidemiologic department chief, shows that an investigation of 915 nonselected people by Kahn and Wassermann tests revealed 52.9 per cent to be positive. He indicates too that "Deney's Index" for leprosy in the Beni District, where the bulk of Bolivia's rubber is produced, is 350 out of every 10,000 inhabitants. There is not yet any leprosarium in the district. The booklet also includes information presented by the Rockefeller Foundation, in charge of suppressing yellow fever and malaria. About 38,000 people were vaccinated against yellow fever during 1942, a greater number are still waiting.

Another of the cooperating doctors indicates that the infant mortality is higher than in any other country. There are not yet any exact statistical data on this subject. (La Paz cemetery estimates it at about 60 per cent.)

The present booklet is the first attempt at all round Bolivian health statistics, and only one who knows the difficulties of collecting thorough information in Bolivia, especially from the rural districts, can fully appreciate the work involved in this project.

### South American Miners' Health

Few people in the United States know much about health conditions in the high altitudes of the South American Cordilleras and especially in the mines situated there. The following statistics show something of living and health conditions among miners working in altitudes above 13,000 feet, particularly in Bolivia.

The workers are nearly all of the Indian race, most of them are working only temporarily in mines, spending about four months a year on their "farms" at about the same altitudes. There they usually live in a single room, 9 by 9 feet, together with their family and often with their domestic animals such as pigs, sheep and guinea pigs. There are not even the rudiments of sanitary conditions: epidemics, especially of typhus and smallpox, are frequent. Because of the peculiar character of this people little trustworthy information can be obtained from them. They also have a strong aversion to cleaning either their bodies or their houses and to disinfecting and delousing clothes. Identical findings on this subject were reported by the Bolivian epidemiologist Eduardo Mariscal in 1942. During

TABLE 1—Age of Minors

Age	Percentage of Group
14 years	10.3
to 15 years	16.1
to 16 years	17.2
to 17 years	20.1
to 18 years	36.3

some months of the year, the Indian leaves his "farm" to work in an ore mine. There he is forced into sanitary housing, consisting of two big, decent rooms (bedroom and kitchen), and he gets plenty of cheap food (milk, sugar, flour, rice, fresh meat, vegetables) and decent clothes, all quite unobtainable in his pueblos. But in spite of the adequate dwellings provided he and his numerous family, including father, children, wife, brothers and often animals, usually live and cook in only one, always closed room—just as they do in their own homes—in order to "spare" the other room!

The men working in the mines usually complain after a few months that they enlisted for work "absolutely healthy" but that their health has suffered on the job—to get the relatively small, but by Indian standards large, indemnifications. The following health statistics refer to a tin mine of medium size situated about 15,000 feet above sea level, in a bad climate even for conditions in the Andes (high prevailing wind, average temperature, 38 F). Hygienic conditions enforced by the proprietor are satisfactory, and precautions such as helmets and dust masks are provided.

These statistics are based on medical certificates obtained when the men were enlisting for work during the period 1937-1943. They cover 3,414 nonselected Indian workers, with special consideration of the influence of mine work on health. Therefore results for people who were enlisted in mines for the first time are given apart from veterans. Also a separate classification is provided for minors of less than 18 years of age (we are forced to believe the age statements of the subjects themselves on account of the lack of birth registration figures). Minors form about 20.6 per cent of the whole group investi-

The average age of adult workers when enlisting is 26.5 years. There are plenty of "beginners" of 40 to 50 years of age. The reason for this is the increased attraction of higher wages during the war. Veterans among the workers had spent an average of two to three years in mine work.

Table 2 shows a comparison of the stages of fitness at the time of enlistment for work.

TABLE 2—Stages of Fitness

	Men		Women		Minors	
	Beginners	Veterans	Beginners	Veterans	Beginners	Veterans
Number examined	552	1,770	228	151	477	226
Entirely fit %	25.8	17.2	77.8	25.2	71.6	51.8
Partially fit %	41.1	21.3	20.9	22.0	16.6	24.3
Unfit %	33.1	55.5	36.4	51.0	8.8	23.0

The relatively high number of "unfits" among beginners who never before worked in mines is noteworthy. This fact may be attributed to the bad living conditions in their homes and to the inveterate use of "coca."

Table 3 shows the diseases found among miners enlisting for work. We find silicosis due to tin ore dust in first place (about 20 per cent, a relatively low index), then other diseases of the respiratory tract, heart disease and so on.

In the table, silicosis includes only manifest silicosis, and the actual number may be estimated as about 10 per cent higher because of concealed or undetected cases due to the lack of X-ray equipment.

The incidence of dental caries is of special interest. Among those more than 20 years old, about 95 per cent show untreated caries.

The stated incidence of infectious diseases previous to enlisting for work was as follows: smallpox, 6.47 per cent, typhus, 3.93 per cent. Figures for malaria are not available, but I estimate that about 8 per cent have had malaria. The average count of red blood cells is 6,400,000, and the average hemoglobin content is estimated at 87.57 per cent, although these figures are the result of a relatively small number of tests. As to syphilis, the official Bolivian public health statistics indi-

TABLE 3—Diseases of Miners Enlisting for Work

	Men		Women		Minors	
	Beginners	Veterans	Beginners	Veterans	Beginners	Veterans
Silicosis %		21.6		20.0		
Other respiratory tract diseases %	39.9	45.5	40.4	38.6	11.3	39.4
Heart disease %	9.1	13.0	14.5	9.2	1.7	4.0
Varicose veins %	10.8	13.1	1.3	5.3		
Hernia %	1.7	6.9			0.4	
Bright's disease %	1.2	3.9	4.8	0.8		
Arthritis %	2.1	1.4	0.9			
Eye diseases %	1.9	8.2	14.0	12.2		8.9

cate an index of 52.9 per cent positive (C. Barrera B. *Informacion Epidemiologica*, 1942). Health conditions in big mining centers nearer to towns are slightly better, but the figures quoted will come close to an all Bolivian mining average. Improved health conditions would do more to increase the output of war essential tin and tungsten ore than financial or technical investments. Unfortunately, however, there is little hope for quick improvement on account of lack of financial means. The actual American help now being provided may be looked on only as a small beginning.

## Deaths

**John Harvey Kellogg** ♂ Battle Creek, Mich, widely known as a health evangelist and director of the Battle Creek Sanitarium, died of pneumonia at his home on December 14, aged 91. Following his graduation from Bellevue Hospital Medical College, New York, in 1875, Dr Kellogg took up the practice of medicine in Battle Creek. In 1876 he became superintendent and surgeon of the sanatorium then known as the Health Reform Institute. In that position he devoted much of his time to research. He is credited with the invention of much improved apparatus and of instruments for medical and surgical purposes, and also with modifications of many commonly used cereals. Thus it is usually believed that the early cereal products of the General Foods Corporation, developed by Mr Post, and of the W K Kellogg Company resulted directly from the experiments in this direction of Dr John Harvey Kellogg. In connection with his conduct of the sanatorium, he devoted much attention to the use of physical therapy, he made many interesting innovations in the devices used for this purpose, including particularly the so-called electric light bath and the sinusoidal current.

His numerous writings and lectures on health and hygiene attracted wide attention. He was a member of the Michigan State Board of Health from 1878 to 1890 and from 1912 to 1916. He was a fellow of the American Association for the Advancement of Science, American College of Surgeons, Royal Society of Medicine, England, and the National Geographic Society. He was a member of the American Public Health Association and a corresponding member of the Societe d'hygiene de France. As an adjunct to the Battle Creek Sanitarium, he founded and became president emeritus of the Battle Creek College, also founder and president of the Race Betterment Foundation and founder and medical director of the Miami-Battle Creek Sanitarium, Miami Springs, Fla.

Following his marriage, he and his wife provided funds for the education of many boys and girls, rearing over forty children and legally adopting several of them.

He was awarded the honorary LL.D. by Olivet (Mich) College and by the Lincoln Memorial University.

In the course of his career, Dr Kellogg held rigidly to a number of concepts, some of which did not meet with general medical approval. These include, among others, vegetarianism, the extensive use of grains, fruits and vegetables in the diet, rigid opposition to tobacco and alcohol, outdoor sleeping, drinking of acidophilus milk and yogurt, specialized types of seating devices and systems of exercise. He placed special stress on multiple daily actions of the bowel. Notwithstanding, in the conduct of the sanatorium he utilized the advances of modern medical science and emphasized the importance of continuous progress. He was widely known to many men of eminence as a health evangelist capable of inspiring good health habits conducive to longevity.

**Serge Androp**, Talmage, Calif, Bennett Medical College, Chicago, 1913, Medical Field Service School, Carlisle, Pa, in 1923 and, the School of Aviation Medicine, Mitchel Field, Long Island, 1925, member of the Medical and Chirurgical Faculty of Maryland, American Psychiatric Association, Military Order of the World War and the Reserve Officers Association of the United States, specialist certified by the American Board of Psychiatry and Neurology, Inc, received the Victory Medal and two bronze stars for heroism during World War I, colonel in the medical reserve corps of the U S Army not on active duty, formerly assistant in neuropathology at the Johns Hopkins University School of Medicine, Baltimore, and assistant clinical professor of psychiatry at the Marquette University School of Medicine, Milwaukee, served on the staffs of the Johns Hopkins Hospital, Baltimore, Spring Grove Hospital, Catonsville, Md, Ohio Hospital for Epileptics, Gallipolis, Milwaukee County Hospital for Mental Diseases, Wauwatosa, and the Mendocino State Hospital, in 1935 awarded first prize by the Eugenics Research Association for original research on the "probability of commitment for a mental disorder of any kind, based on the individual's family history", died suddenly, November 8, aged 54, of heart disease following pneumonia.

**Verne Carlton Hunt** ♂ Los Angeles, Rush Medical College, Chicago, 1913, clinical professor of surgery at the University of Southern California School of Medicine, at one time assistant professor of surgery, University of Minnesota Graduate School, Minneapolis-Rochester, fellow in surgery at the Mayo Foundation and head of a section in the division of surgery at the Mayo Clinic, member of the founders group of

the American Board of Surgery, member of the American Surgical Association, Pacific Coast Surgical Association and the American Urological Association, served as vice president and treasurer of the Western Surgical Association, fellow of the American College of Surgeons, member of the executive committee and surgical staff, St Vincent's Hospital, shot December 13, aged 55.

**Oliver Deveta Hamlin** ♂ Oakland, Calif, Cooper Medical College, San Francisco, 1894, member of the House of Delegates of the American Medical Association in 1905, 1909, 1911, 1912, 1916 and 1926, past president of the California Medical Association and the Alameda County Medical Association, a founder, formerly a member of the board of governors and life member of the American College of Surgeons, formerly professor of clinical surgery at the Oakland College of Medicine and Surgery, past president of the board of health of Oakland, for many years chief surgeon of the emergency service of the Alameda County Hospitals, served on the staffs of the Providence and Samuel Merritt hospitals, division surgeon for the Southern Pacific Company, died October 11, aged 73.

**Edward Sewall Abbott**, Bridgton, Maine, the Hahnemann Medical College and Hospital, Chicago, 1885, member of the Maine Medical Association and the New England Obstetrical and Gynecological Society, past president of the Cumberland County Medical Association and the Oxford County Medical Society, served as health officer of the town, formerly president of the Bridgton National Bank and director of the Bridgton Savings Bank, for many years president of the Bridgton Library Association, in 1935 was presented with the fifty year service medal by the Maine Medical Association, president of the Northern Cumberland Memorial Hospital, died October 12, aged 80.

**Walter Scott Stewart** ♂ Wilkes-Barre, Pa, University of Pennsylvania Department of Medicine, Philadelphia, 1883, member of the House of Delegates of the American Medical Association in 1922, fellow of the American College of Surgeons, veteran of the Spanish-American War, president of the local board of health, chairman of the board of directors of the Kirby Memorial Health Center, member of the board of directors of the Wilkes-Barre General Hospital and on the medical and surgical staff, surgeon for the Lehigh Valley Railroad, Pennsylvania Railroad and the Kingston Coal Company, died October 23, aged 86, of lobar pneumonia.

**Walter Franklin Harriman** ♂ Sioux City, Iowa, University of Pennsylvania School of Medicine, Philadelphia, 1924, diplomate of the National Board of Medical Examiners, fellow of the American College of Surgeons, formerly clinical assistant in surgery at the Temple University School of Medicine, Philadelphia, served during World War I, first lieutenant, medical reserve corps, U S Army, not on active duty, on the staffs of the Methodist Hospital, Lutheran Hospital, St Vincent's Hospital and St Joseph Mercy Hospital, where he died October 11, aged 45, of coronary thrombosis.

**Sidney J Anderson**, Midway, Ky, University of Louisville Medical Department, 1891, member of the Kentucky State Medical Association, served during World War I, died in the Veterans Administration Facility, Lexington, October 21, aged 75, of cerebral hemorrhage.

**Varney Andrews**, Floydada, Texas, College of Physicians and Surgeons, Baltimore, 1889, for many years health officer of Floyd County, member of the school board for fourteen years, examining physician and a member of the draft board during World War I, died in a Plainview hospital September 6, aged 79.

**R M Bachtel**, Ravenswood, W Va, Starling Medical College, Columbus, 1895, died in Spencer October 22, aged 74, of cardiovascular hypertension.

**John William Bair** ♂ Homestead, Pa, Medical Department of the Western University of Pennsylvania, Pittsburgh, 1895, on the staff of the Homestead Hospital, died in the Mercy Hospital, Pittsburgh, October 21, aged 74, of uremia.

**Max Bakst** ♂ Brooklyn, Long Island College Hospital, Brooklyn, 1911, member of the American Academy of Ophthalmology and Otolaryngology, specialist certified by the American Board of Otolaryngology, associate otolaryngologist at the Beth Moses Hospital, died November 10, aged 57.

**Robert Samuel Barr**, South Miami, Fla, Detroit Homeopathic College, 1911, died in the James M Jackson Memorial Hospital, Miami, October 21, aged 69, of coronary thrombosis.

**Frank Jefferson Blodgett**, New York, University of Vermont College of Medicine, Burlington, 1881, member of the Medical Society of the State of New York, at one time

clinical assistant in the rural department, Columbia University College of Physicians and Surgeons, served on the staffs of the Manhattan Eye, Ear and Throat Hospital, the New York Eye and Ear Infirmary and the New York Polyclinic Medical School and Hospital, died October 30, aged 86, of cerebral hemorrhage

Jacob Harry Boss, Tulsa, Okla., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901, veteran of the Spanish-American War, formerly coroner of Cherokee County, Kan., died in the Veterans Administration Facility, Muskogee, October 11, aged 72, of coronary arteriosclerotic heart disease

Daniel Webster Boyd, Tylertown, Miss. (licensed in Mississippi, year unknown), died October 12, aged 80, of chronic myocarditis and bronchopneumonia

John Herriott Boyd @ Bervertown, Pa., University of Pittsburgh School of Medicine, 1931, died October 28, aged 40, of an overdose of chloroform, self administered

John Colville Bradner @ Middletown N Y, New York Homeopathic Medical College and Hospital, New York, 1907, served as a captain in the 369th Infantry, 93d Division, American Expeditionary Forces and was awarded the Croix de Guerre, consultant on the staff of the Horton Hospital, where he died October 13, aged 61

Charles Nelson Brannin @ Hagerstown, Md., Baltimore Medical College, 1897, for many years medical examiner for the Western Maryland Railway Company, served during World War I, died October 29, aged 67, of acute pulmonary edema

Samuel Brister, Philadelphia, Baltimore University School of Medicine, 1899, served in France while in the medical corps of the U S Army during World War I, died October 15, aged 71

George M Bristow, Princeton, Mo., College of Physicians and Surgeons, Keokuk, Iowa, 1877, Louisville (Ky.) Medical College, 1881, member of the Missouri State Medical Association, organizer and first president of the Mercer County Medical Society, a position he held for many years, member of the state legislature from 1920 to 1924, died October 30, aged 88, of pneumonia

F Marion Brock Roopville, Ga., University of Georgia Medical Department, Augusta, 1889, died November 1, aged 79

Archie Ackers Brown, Carroll, Ohio, Starling-Ohio Medical College, Columbus, 1909, member of the Ohio State Medical Association, died in the Grant Hospital, Columbus, October 28, aged 55

Walter Thomas Brown @ Wallis, Texas, Louisville (Ky.) Medical College, 1889, died in the Hermann Hospital, Houston, October 18, aged 76

Albert Frank Burgis, New Orleans, Tulane University of Louisiana School of Medicine, New Orleans, 1918, served during World War I, died October 22, aged 47, of cerebral hemorrhage

Theodore Burr, Jamaica, N Y, University of the City of New York Medical Department, New York, 1895, died November 2, aged 81, of cerebral thrombosis and arteriosclerotic heart disease

Edward James Callahan, Schuylerville, N Y, Albany Medical College, 1914, member of the Medical Society of the State of New York, past president of the Saratoga County Medical Society, health officer and member of the board of education of Schuylerville, served overseas during World War I, died in the Albany Hospital November 8, aged 51, of congestive heart disease

James Watkins Calloway, Montgomery, Ala., Vanderbilt University School of Medicine, Nashville, Tenn., 1882, University of Nashville Medical Department, 1883, died in a local hospital October 29, aged 85

Daniel Alson Campbell, Boonville, Ind., Kentucky University Medical Department, Louisville, 1904, member of the Selective Service Board of Warrick County, major, medical reserve corps, U S Army, not on active duty, served during World War I, formerly a member of the county welfare board and trustee of Boon Township, died October 2, aged 72 of coronary occlusion

Henry W Case, Chicago the Hahnemann Medical College and Hospital, Chicago, 1891, died November 5, aged 77, of angina pectoris

Eugene S Clark, Bellingham, Wash., Minnesota Hospital College, Minneapolis, 1887, formerly associated with the U S

Public Health Service, died October 22, aged 85, of cerebral hemorrhage

John Wesley Conrad, Port Carbon, Pa., Medical Surgical College of Philadelphia, 1916, member of the Medical Society of the State of Pennsylvania, medical examiner for local draft board number 6, served in France during World War I, for many years on the staff of the Good Samaritan Hospital, Pottsville, died November 3, aged 52, of angina pectoris

Morgan Joseph Cramer Long Island City, N Y, Medical Department of the Western University of Pennsylvania, Pittsburgh, 1896, served on the staffs of the New York City Hospital, Welfare Island, and the New York Polyclinic Medical School and Hospital, died November 4, aged 71, of pulmonary edema

Edgar F Crowther, Yazoo City, Miss., Louisville (Ky.) Medical College, 1882, died October 20, aged 85

Thomas Nelson Davey @ Bryonne, N J, Trinity Medical College, Toronto, Ont., Canada, 1900, died in the Bryonne Hospital November 7, aged 76, of coronary thrombosis

James A De Moss, Thayer, Kan., St Louis College of Physicians and Surgeons, 1882, also a minister, died in Chanute October 12, aged 84

Leonard Albert Dessar, New York, Medical College of Indiana, Indianapolis, 1884, died October 4, aged 79

Robert H Dunnington, Daytona Beach, Fla., Eclectic Medical Institute, Cincinnati, 1874, American Medical College, St Louis, 1877, died September 14, aged 83

Carrie Hitchcock Edwards, San Diego, Calif., Michigan College of Medicine and Surgery, Detroit, 1898, died October 17, aged 73, of left ventricular failure, coronary thrombosis and arteriosclerosis

Adolph G Enderle, St Louis, Missouri Medical College, St Louis, 1891, died October 20, aged 79

Walter Eugene Estabrook, Somerville, Tenn., University of Tennessee College of Medicine, Memphis, 1914, served during World War I, died October 13, aged 55

George Foster Fiske @ Chicago, Yale College Medical Department, New Haven, Conn., 1883, member of the American Academy of Ophthalmology and Otolaryngology and the American Otological Society, Inc., fellow of the American College of Surgeons, specialist certified by the American Board of Otolaryngology, on the staff of the Henrotin Hospital, where he died October 18, aged 83, of heart disease

Reuben Fred Frost, Huntington, Ind., College of Physicians and Surgeons, Baltimore, 1882, member of the Indiana State Medical Association, for many years secretary of the city board of health, on the staff of the Huntington County Hospital, died November 2, aged 87, of senility

Charles Robertson Gannaway, Kings Park, N Y, Northwestern University Medical School, Chicago, 1904, at one time engaged in Near East Relief work, senior assistant physician at the Kings Park State Hospital, where he died November 5, aged 69, of coronary thrombosis

Andrew J Goodwin @ Bradley, Ill., Illinois Medical College, Chicago, 1907, village health officer, president of the Bradley State and Savings Bank, local physician for the Illinois Central Railroad, on the staff of St Mary's Hospital, Kankakee, where he died October 11, aged 64, of cerebral hemorrhage

Harold Woodworth Graber, Chicago, Northwestern University Medical School, Chicago, 1926, served during World War I, assistant chief surgeon, Rock Island Railroad, died in the Veterans Administration Facility, Hines, October 17, aged 51, of heart disease and cerebral hemorrhage

Amos Graves Sr, San Antonio, Texas, University of Pennsylvania Department of Medicine, Philadelphia, 1892, on the staffs of the Medical Arts Hospital and the Santa Rosa Hospital, where he died October 12, aged 73, of carcinoma of the tongue

H P Guthrie, Springfield Mo., Barnes Medical College, St Louis, 1898, died October 11, aged 75

George Edward Hamilton, Orrick, Mo., Northwestern Medical College St Joseph, 1887, also a druggist, died in the Excelsior Springs Sanitarium and Hospital, Excelsior Springs, November 10, aged 83, of heart disease

Lorne Edward Hastings @ Philadelphia, Jefferson Medical College of Philadelphia, 1911, also a pharmacist, formerly acting professor of materia medica and pharmacology at the Emory University School of Medicine, Atlanta, and professor

of physiology and pharmacology at the Southern Methodist University Medical Department, Dallas, Texas, served during World War I, died November 6, aged 64

**James Edward Heap**, St Marys, Ohio, Medical College of Ohio, Cincinnati, 1905, member of the Ohio State Medical Association, for many years health officer, served on the staff of the Lima Memorial Hospital, Lima, died October 8, aged 62, of heart disease

**Stephen A Hemmi**, Chicago, Bennett College of Eclectic Medicine and Surgery, Chicago, 1884, Rush Medical College, Chicago, 1894, member of the Illinois State Medical Society, formerly on the staff of the Evangelical Deaconess Hospital, died October 27, aged 85, of arteriosclerosis

**Norris Rathbun Higgins**, Orange, N J, Yale University School of Medicine, New Haven, Conn, 1941, diplomate of the National Board of Medical Examiners, on the courtesy staff of the Orange Memorial Hospital, where he died October 20, aged 28, of pneumonia

**Columbus C Hill**, Galesburg, Ill, Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1901, died in St Mary's Hospital October 18, aged 71, of myocarditis

**Allen G Thurman Hipps**, Asheville, N C, Jefferson Medical College of Philadelphia, 1916, served during World War I, a member of the draft board of appeals of Western North Carolina, a physician for the State Highway commission, died in a local hospital October 31, aged 52

**Ralph Hogshead** Ⓢ Mammoth, W Va, Loyola University School of Medicine, Chicago, 1918, at one time secretary of the Fayette County Medical Society, formerly councilor of the Sixth District Medical Society, served during World War I, examining physician for local draft board number 3, Montgomery, physician for the Kanawha and Hocking Coal and Coke Company, died in the Charleston General Hospital, Charleston, October 9, aged 54 of acute dilatation of the heart with pulmonary edema



LIEUT CLAUDE R HUFFMAN  
(MC), U S A R, 1911-1943

**Walter Robert Holladay**, Meridian, Miss, Tulane University of Louisiana School of Medicine, New Orleans, 1919, member of the Mississippi State Medical Association, served during World War I, on the staff of Riley's Hospital, where he died October 20 aged 48, of tuberculosis

**Griffin W Holland**, Eastville, Va, University of Virginia Department of Medicine, Charlottesville, 1896, member of the Medical Society of Virginia, formerly associated with the U S Public Health Service in Memphis, Tenn, chairman of the board of health, councilor of the First District Medical Society, director of the Eastville Bank, died October 23, aged 69, of cerebral hemorrhage, arteriosclerosis and hypertension

**William Harold Holland** Ⓢ Lakewood, Ohio, University of Texas School of Medicine, Galveston, 1912, accidentally shot by a hunter while hunting deer in Beauchene, Que, Canada, October 21, aged 60

**Oliver Hopkinson**, Merion Station, Pa, University of Pennsylvania Department of Medicine, Philadelphia, 1883, for many years on the staff of the Lying-In Hospital, Philadelphia, died October 9, aged 85, of coronary thrombosis

**Felix A Hughes**, Okolona, Ark, University of Arkansas School of Medicine, Little Rock, 1905, died October 8, aged 68

**Henry Eugene Irish** Ⓢ Chicago, University of Illinois College of Medicine, Chicago, 1901, professor of pediatrics emeritus at his alma mater, specialist certified by the American Board of Pediatrics, Inc, member of the American Acad-

emy of Pediatrics, served as attending pediatrician at the University and Cook County hospitals, died December 9, aged 66, of coronary thrombosis

**Charles F Isaacs**, Chicago, Northwestern University Medical School, Chicago, 1904, died October 27, aged 66, of coronary thrombosis

**Thourston George Jorgenson**, Chicago, Chicago Medical School, 1922, died November 6, aged 53, of chronic myocarditis, arteriosclerosis and acute nephritis

**James Oscar Latta**, Clay Center, Neb, Lincoln Medical College of Cotner University, 1902, member of the Nebraska State Medical Association, past secretary of the Clay County Medical Society, served as mayor and member of the city council, at one time a member of the state commission for the insane, president of the chamber of commerce, died October 6, aged 66

**Fairfield Mortimore**, New York, Eclectic Medical College of the City of New York, 1878, died in St Luke's Hospital September 30, aged 90, of heart disease

**Clinton Francis Rife**, Naperville, Ill, Rush Medical College, Chicago, 1894, formerly a medical missionary, died November 22, aged 76

**George Francis Scheib**, Champaign, Ill, College of Physicians and Surgeons of Chicago, School of Medicine of the

University of Illinois, 1899, member of the Illinois State Medical Society, for many years physician for the Chicago, Milwaukee and St Paul Railroad, died in the Mercy Hospital, Urbana, November 2, aged 76

**Thomas James Sheehy**, Tomah, Wis, Bennett Medical College, Chicago, 1912, member of the State Medical Society of Wisconsin, past president of the Wisconsin State Board of Medical Examiners, served during World War I, member of the board of education, died in the Columbia Hospital, Milwaukee, October 13, aged 55, of acute myocarditis and coronary occlusion



LIEUT KURT B KIEL  
M R C, U S Army, 1913-1943

**Warren Finley West**, Waxahachie Texas, Jefferson Medical College of Philadelphia, 1886 member of the State Medical Association of Texas and the Texas Public Health Association, served as health officer of Ellis County for twenty-eight years, died in a Dallas hospital September 28, aged 86, of myocardial failure

#### KILLED IN ACTION

**Claude Raymond Huffman**, Knoxville, Tenn, University of Tennessee College of Medicine Memphis, 1936, member of the Tennessee State Medical Association, lieutenant, medical corps, U S Naval Reserve, commissioned a lieutenant (jg), U S Naval Reserve, on June 14, 1941, died in the south Pacific combat area, October 5, aged 32, of shrapnel wounds of the chest and a gunshot wound

**Kurt Benjamin Klee**, Indianapolis, Indiana University School of Medicine, Indianapolis, 1940, commissioned a first lieutenant in the medical reserve corps, U S Army, on Sept 19, 1941, began extended active duty on April 10, 1942 and assigned to the Aviation Cadet Board in Boston, served with the paratrooper division, decorated posthumously with the medal of the Purple Heart, killed in action in the North African area July 10, aged 30

## Correspondence

### "HOME MADE" PENICILLIN

To the Editor—Since July 1941 the Northern Regional Research Laboratory, which is one of four regional research laboratories operated by the Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. Department of Agriculture, has been extensively engaged in research on the production of penicillin. This work has been broad in scope, including the isolation of many new penicillin producing organisms, spore selection to secure higher producing strains, improvement of the culture mediums and isolation and purification of the penicillin itself.

During recent weeks a number of scientific articles and press releases have appeared indicating that the production of penicillin preparations suitable for external use is a comparatively simple matter that can be undertaken in laboratories possessing only limited facilities, or even in the kitchen. The work thus reported, in some cases, may constitute noteworthy contributions to the field of penicillin therapy, and it is not our wish to minimize in any way the possible importance of these investigations. We do, however, feel that the time has come when a word of caution should be given. Statements to the effect that *Penicillium notatum* is the green or blue-green mold found on bread, cheese or other foods are quite misleading, if, in fact, not actually dangerous. This species does often occur on these products, but so does a great variety of other blue-green molds. In the genus *Penicillium* there are literally scores of blue-green species which can be distinguished from *Penicillium notatum* and its allies only by painstaking laboratory cultivation and microscopic examination. This fact is illustrated by our work of recent months. We have made a concentrated effort to isolate as many strains as possible of *Penicillium notatum*, *Penicillium chrysogenum* and other closely related species and have examined hundreds of samples of molded foods, fruits, soils and other possible sources of material. We consider it a conservative estimate that not one out of fifty of the blue-green molds encountered belonged to the *Penicillium notatum* group. Not more than one out of one hundred represented the species *Penicillium notatum* itself, and only a limited number of these produced appreciable yields of penicillin.

The metabolic products of only a few of the other blue-green species or molds have been adequately studied, and it is entirely possible that among them exist some species or strains that are capable of producing, in considerable quantity, substances as toxic to animals as to certain pathogens which infect them. A number of blue green molds such as *Penicillium citrinum*, *Penicillium spinulosum*, *Penicillium puberulum*, *Penicillium aurantio virens*, *Aspergillus clavatus*, *Aspergillus fumigatus* and *Gliocladium fimbriatum*, are already known to produce bactericidal substances, some of which are quite toxic when injected into laboratory animals. One therefore should be extremely careful in the selection and maintenance of cultures for use in the production of penicillin.

Contamination of *Penicillium notatum* cultures with other blue green species or with pathogenic organisms is also a matter of serious concern. This is emphasized by the fact that in certain recent cases experienced workers have started with a good penicillin producing culture and subsequently found this to have become contaminated or even replaced by an entirely

different species or strain. In the hands of inexperienced workers or in laboratories with inadequate facilities, this possibility is multiplied manyfold. If a contaminating organism should produce some material toxic to man, the dangers involved might be very considerable. In the present state of our knowledge of the metabolic products of the blue green *Penicillia* and *Aspergilli* as a whole, the indiscriminate selection of newly isolated cultures for penicillin production should not even be considered until their correct identity is established.

Owing to the pressure of other work, the staff of this laboratory is not in a position to check the correctness of all cultures which may be used in this type of experimentation. We have, however, deposited with the American Type Culture Collection, 3900 Reservoir Road, Washington, D. C., cultures of the two strains of *Penicillium notatum* which are being used almost universally in industry for the production of penicillin, and these are available on request for a nominal charge.

Another possibility which must be considered when using these crude forms of penicillin is that the patient may conceivably become sensitized to mold protein, which is inevitably present in such preparations. The danger of this would be particularly great when these protein containing solutions are applied to an extensive burned area. Commercial preparations of penicillin are protein free and have been thoroughly tested for bactericidal activity, pyrogens, toxicity and sterility.

In summary, we feel that there is inherent danger in the proposed practice of using "home made" penicillin, for the reasons outlined.

KENNETH B. RAPER, PH.D.

ROBERT D. COCHILL, PH.D.

Peoria, Ill.

Senior Microbiologist and Chief, respectively, Fermentation Division, Northern Regional Research Laboratory

### ESSENTIAL HYPERTENSION

To the Editor—The editorial comment on the etiology of hypertension (*THE JOURNAL*, November 20, p. 772) discusses—and, because of its important etiologic and therapeutic implications, perhaps too briefly—a study which proposes to demonstrate that essential hypertension is of vasomotor origin. The authors (Gregory, Raymond, Lindley, E. L., and Levine, *Harry Teras Rep Biol & Med* 1:167 [No. 2] 1943) seem to base their study on the following considerations:

1 Essential hypertension is the result of arteriolar vasoconstriction.

2 This vasoconstriction is either humoral or neurogenic in origin.

3 Spinal anesthesia decreases blood pressure greatly in hypertensive subjects. In normal subjects "there was a slight fall in the blood pressure of several patients during spinal anesthesia." However "the blood pressures in the group with normal pressures remained essentially the same during the period of spinal anesthesia" (p. 180).

4 It is concluded that the hypotensive effect of spinal anesthesia is due to release of the abnormal arteriolar vasoconstriction.

5 Since the hypotension develops rapidly after induction of the anesthesia it is also concluded that the release of vasoconstriction is not due to interference with a humoral renal pressor system and that the demonstration has been made that the vasoconstriction is neurogenic.



The first two propositions are matters of general agreement. The third we can accept only with reservation. The hypertensive's arterial pressure has a good deal farther to fall than has that of the normotensive. But, comparing the hypotensive effect of high spinal anesthesia (tenth dorsal) in normal subjects and in our hypertensives (as shown in the table) we observe that proportionately to the control level of arterial pressure the hypotensive effects in the two groups are very similar. The distinction between the effect of anesthesia in normotensive and in hypertensive subjects is therefore qualitative only. It is not, as the authors seem to imply, a distinction of kind.

With this in mind, one proceeds to proposition 4 with greater reservation. The complex circulatory effects of spinal anesthesia in normotensive and hypertensive subjects have recently been reviewed by Page (*Anesth & Analg* 22:196 [July-Aug] 1943) and need not detain us here. In one study (Smith,

Arterial pressure is at best a secondary and as we have seen, sometimes nonrevealing expression of arteriolar constriction. But study of the arterioles themselves would seem more likely to provide information on the origin of hypertension. Fortunately, methods are available by which arteriolar reactions of the renal vascular bed, carrying as it does about one fourth of the cardiac output, can be studied. Thus, it has been shown that the activity of the renal vasopressor system (renin, renin substrate, angiotonin) is associated with renal vasoconstriction which develops in both the afferent and the efferent glomerular arterioles. A similar renal vascular status in most patients suffering from arterial hypertension leads naturally to the view that the renal pressor system operates in this disease. Many other evidences supplement this view (Page, *I H Bull New York Acad Med* 19:461 [July] 1943). The absence of such vasoconstriction in many other hypertensive patients suggested (Proc Central Soc Clin Res 15:72 [Nov] 1942) that factors other than the renal vasopressor system, presumably vasomotor, maintain the elevated arterial pressures found in the latter patients. An objective means of distinction between etiologically separate types of arterial hypertension may thus have been provided.

However, in individual cases some of the data overlapped between the groups. We have therefore used high spinal anesthesia as a means of functional renal denervation, having in mind the hypothesis that we might thus abolish the renal vasoconstriction which originates in vasomotor impulses while leaving unchanged that due to humoral pressor agents. The results of this study were described by Page (*Anesth & Analg*) and recently reported in more detail (Page, I H, Taylor, R D, Corcoran, A C, and Mueller, L B. *Proc Central Soc Clin Res* 16:13 [Nov] 1943).

Analysis of the data was complicated by the changes in arterial pressure, common to normal people, so-called "neurogenic" hypertensives and, in less degree, "essential" hypertensives. A means of differentiating the arteriolar responses was provided by calculations of renal arteriolar resistance (Lampert, *J Clin Investigation* 22:461 [May] 1943). The results are summarized in the table. Briefly, subjects with "neurogenic" hypertension exhibited renal arteriolar vasodilatation when renal vasoconstrictor pathways were interrupted by spinal anesthesia; such decreased arteriolar resistance did not develop in equal degree in patients whose hypertension seemed of renal humoral origin.

Much more must be done before it can be claimed with complete certainty that essential hypertension is in certain cases, vasomotor in origin. Thus, while discounting the evidence presented by Gregory, Lindley and Levine, we agree with the general thesis that in some hypertensives the disease is probably neurogenic. But in so doing, although proceeding by objective methods, we advance only a little further in certainty than does the general practitioner who has the hunch that the nervous system is overactive in certain hypertensives and proceeds to give them sedatives. We therefore hark back to an earlier impression (Corcoran, A C, and Page, I H. *Arterial Hypertension*. THE JOURNAL Feb 22 1941 p 690) that "the clinical picture and course of each case of hypertension is probably a composite of the degree and kind of renal, endocrine and nervous participation." In particular, we do not agree that arterial hypotension due to spinal anesthesia in

Effect of Spinal Anesthesia on Renal Function of Normal Persons and of Patients with Two Types of Arterial Hypertension

	Mean Arterial Pressure, HD/TmD, per Cent of Change	per Cent of Change	Afferent Renal Resis tance, per Cent of Change	Efferent Renal Resis tance, per Cent of Change	Total Renal Resis tance, per Cent of Change
Normal subjects					
Smith et al (Lampert)					
Mean	-17		-70	-0.2	-32
"Neurogenic" patients (7)					
Mean	-24	+18	-57	-28	-48
Essential hypertensives (4)					
Mean	-1	-5	+5	-4	+3

Summary of observations on the etiologic distinction of types of arterial hypertension in man by spinal anesthesia. The observations noted as "normal subjects" are obtained from Lampert's (*J Clin Investigation* 20:535 [Sept] 1941) recalculation of data obtained by Smith, Roventine, Goldring, Chasis and Ranges (*ibid* 18:319 [May] 1939). The numerals in the first column indicate the number of patients in each group. The functional distinction in arteriolar response to spinal anesthesia is shown by the mean differences in each of observations made during the first twenty-five minutes of anesthesia from control levels.

H W, Roventine, L A, Goldring, William, Chasis, Herbert, and Ranges, H A. *J Clin Investigation* 18:319 [May] 1939). cogent evidence is presented for the view that such vasodilatation as may develop is largely postarteriolar (capillaries, venules, veins) and not arteriolar. Indeed, such evidence as Gregory, Lindley and Levine present on this point, namely the depression of urea clearance (p 184) during anesthesia in hypertensives and the rise of blood pressure during vomiting, suggests that some mechanism other than arteriolar vasodilatation must account for the hypotension. The persistent pressor effect of epinephrine which they observed during the hypotension is hardly evidence of the "functional integrity of the peripheral vasoconstrictor apparatus" (p 195), for it seems likely that the pressor effects of this drug are, in this circumstance, the result of its cardiac and venopressor activities and that its net arteriolar effect is in fact dilator (Smith and others).

One cannot therefore accept the proposition that a decrease of arterial pressure in hypertensives subjected to spinal anesthesia is the result of arteriolar vasodilatation. And, in view of this, the rate of fall and rise of pressure in such subjects is not germane to the discussion.

patients with established and severe hypertensive arteriolar disease testifies to vasomotor origin of their condition. As a matter of fact, it is exactly such patients who consistently show evidences of humoral renal participation. It is only those in whom organic arteriolar disease is absent or minimal who consistently show evidences of vasomotor origin.

A. C. CORCORAN, M.D., Indianapolis

### ECG FOR ELECTROCARDIOGRAM

To the Editor—The word "electrocardiogram" and its abbreviation "ECG" have surely become sufficiently familiar to English speaking readers to make it unnecessary, improper and even at the present time highly objectionable to see the German abbreviation "EKG" appearing frequently in English speaking medical journals. In the journal of which I am editor, we hope to avoid this error. If it could be kept out of all American Medical Association journals this turn of the tide would soon spread to other American medical journals.

E. B. KRUMBHAR, M.D., Philadelphia

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, Dec. 18, page 1076.

#### BOARDS OF MEDICAL EXAMINERS

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- CONNECTICUT \* Medical Written Hartford March 14-15 Endorsement New Haven, March 28 Sec. to the Board Dr. Creighton Barker, 258 Church St., New Haven Homeopathic Derby March 13-14 Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven
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- MONTANA Helena April 3-5 Sec., Dr. O. G. Klein First National Bank Bldg. Helena
- NEVADA Endorsement Carson City Feb. 7 Sec., Dr. G. H. Ross 215 N. Carson St. Carson City
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- NEW YORK Albany, New York, Buffalo and Syracuse Jan. 24-27 Sec., Dr. R. R. Hannon Education Bldg. Albany
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- OREGON \* Portland, Jan. 26-29 Exec. Sec. Miss L. M. Conlee, 608 Irving Bldg. Portland
- PENNSYLVANIA Philadelphia and Pittsburgh, Jan. 4-6, Bedside Jan. 18 Act. Sec. Bureau of Professional Licensing Department of Public Instruction, Mrs. Marguerite G. Steiner, 358 Education Bldg. Harrisburg
- SOUTH DAKOTA \* Pierre Jan. 18-19 Dir. Medical Licensure, State Board of Health Dr. Gilbert Cottam, Pierre
- TENNESSEE \* Memphis and Nashville, Dec. 20-22 Sec., Dr. H. W. Qualls 130 Madison Ave., Memphis
- UTAH Examination Salt Lake City Dec. 28-30 Asst. Dir., Department of Registration Miss Rena R. Loomis, 324 State Capitol Bldg. Salt Lake City
- WASHINGTON \* Seattle Jan. 10-12 Dir., Department of Licenses Mr. Thomas A. Swartz, Olympia
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\* Basic Science Certificate required

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## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Workmen's Compensation Acts** **Cancer Allegedly Resulting from Trauma**—While bowling in 1933 the workman injured the ligaments of his left knee. Shortly thereafter he "bumped" his left knee when his foot slipped off the running board of a car. Apparently some condition developed that prevented him from working for a few years. In October 1934 he consulted Dr. Wirka in a neighboring state and it was discovered that he had "a giant celled benign tumor at the head of the tibia" of the left leg, and the tumor was excised. From that time on he was examined two or three times yearly. In 1937 Dr. Wirka permitted him to return to work. In the course of his employment, Jan. 1, 1941, he slipped and fell on his left knee. He could not rise and was picked up by fellow workmen, who rubbed his knee. He rested a short while and worked at less arduous tasks for the remainder of the work day. According to the workman, the knee turned black and blue within ten or fifteen minutes after the fall and continued to be sore and swollen for four or five months, although the next day in reporting the accident to his employer the workman stated that he did not need a physician. He continued to work until May 1941, when he quit work for a few weeks to take treatments from a chiropractor. He visited Dr. Wirka in

came to a close following correction of these faults. A second epidemic of diarrhea of the newborn consisting of 21 mild, non-fatal cases occurred in the same hospital in July 1942. Illness was limited almost exclusively to breast fed infants. Opportunity for transmission of infection was afforded by probable contamination of a common vessel of 4 per cent boric acid used to cleanse the breasts. The epidemic came to a close after correction of this fault. The etiologic agent was not determined, but it is present in the intestinal and possibly the oral discharges of sick infants. The occasional introduction of the disease into a nursery, probably from an inapparent adult source, is difficult to prevent. Prevention and control depend on laboratory controlled methods of sterilizing nipples and formula, good nursing technic, prompt recognition, reporting and isolation of cases, and immediate epidemiologic investigation.

### Am J Roentgenol & Rad Therapy, Springfield, Ill 50 433-574 (Oct) 1943

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- Acute Pneumonitis W G Scott and H L Jones Jr —p 444
- \*Chronic Cor Pulmonale L G Rigler and P Hallock —p 453
- Technic for Locating and Identifying Pericardial and Intracardiac Calcifications M C Sosman —p 461
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- \*Pulmonary Metastasis and Pneumonitis Following Radiation Therapy for Cancer of Breast F P Pendergrass and G White —p 491
- \*Frequency, Clinical Course and Treatment of Metastases from Cancer of Breast J R Freid and H Goldberg —p 499
- Effect of Irradiation on Composition and Vascularity of Growing Rat Bones C L Hinkel —p 516
- Unusual Case of Pulmonary Osteoarthropathy in Dog E G Wissing and L Weisz —p 527
- Relation of Focal Spot to Field Distribution Lillian E Jacobson —p 530

**Chronic Cor Pulmonale**—Rigler and Hallock define "cor pulmonale" as enlargement of the right side of the heart, with or without failure, initiated by increased resistance to blood flow within the lesser circulation as a result of pulmonary disease. The diagnosis of cor pulmonale presents many difficulties. To obtain definite objective evidence, recourse must be had to electrocardiography and roentgen examination, the latter being the most valuable. Enlargement of the right heart and failure is a comparatively frequent and important cause of death in chronic tuberculosis, in bronchial asthma, in emphysemas and in silicosis. It is the usual cause of death in pulmonary arteriosclerosis. Every case of chronic lung disease should be examined with this in mind. The characteristic enlargement of the pulmonary artery and the right ventricle can be demonstrated by roentgenoscopic and roentgenographic study in all positions. The roentgen findings are the most important means of establishing the presence of right heart enlargement before failure has supervened and are most helpful in the differential diagnosis.

**Pulmonary Metastasis and Pneumonitis Following Radiation Therapy**—Pendergrass and White attempted to determine whether radiation given prior to the formation of metastases will influence the type of shadow that the subsequent metastatic lesions will produce, and whether infiltrative metastases of the lung from cancer of the breast can be differentiated from chronic radiation pneumonitis. They studied 54 cases of cancer of the breast with three types of pulmonary metastases, the nodular, the infiltrative and the pleural. The roentgen appearance of the nodular type is that of varying sized, discrete, circumscribed, dense areas distributed throughout the parenchyma. The infiltrative type is characterized by closely spaced, coarse, linear shadows starting in the hilar region and progressing toward the periphery of the lung in a fan shaped fashion. The pleural type is seen as dense nodules or thickened localized areas on either the parietal or the visceral pleura or on both. Pleural effusion may obscure the nodules. In order to demonstrate the nodules it is necessary to withdraw the fluid and introduce air into the pleural cavity before making the roentgenograms. Large amounts of premetastatic irradiation to the lung fields are associated with the infiltrative type of metastases, while the nodular type usually occurs where little or no radiation has been given. The pleural type of metastases appears equally after all degrees of irradiation. Radiation

pneumonitis presented elevation of the dome of the diaphragm on the affected side, retraction of the mediastinal structures, contracted hemithorax and changes in the lung fields. In 3 cases with pneumonitis following irradiation they have observed emphysematous bleb formation on the affected side. The authors agree with Warren and Gates that the term radiation pneumonitis is preferable to that of pleuropneumonitis. The roentgen manifestations of radiation pneumonitis are in many instances similar to those found in infiltrative metastases from cancer of the breast. In many instances differentiation is impossible.

**Metastases from Cancer of Breast**—Freid and Goldberg present a study of patients with cancer of the breast who died while in the Radiotherapeutic and Surgical Services of the Montefiore Hospital for Chronic Diseases, New York City. In diffuse cutaneous lesions treatment is frequently fruitless. If the localized infiltrations are confined to a small area, radiotherapy is preferable to surgery. The authors used roentgen therapy generated at low or medium voltage. Skeletal metastases were observed in 81 out of 168 cases (48 per cent). Most skeletal metastases were multiple and were rarely preceded by metastases in other tissues. The following bones, among others, were involved in the order mentioned: pelvis, spine, femur, ribs, skull, humerus, scapula and clavicle. Irradiation of skeletal metastases produced results ranging from partial palliation of pain to permanent control of individual lesions. The authors found pulmonary pleural and mediastinal metastases in 47 per cent of 168 cases at Montefiore Hospital with only partial post-mortem confirmation. In a group of 131 postmortems on patients with cancer of the breast who died in Montefiore Hospital 89 per cent presented these types of metastases. There is no agreement as to beneficial effects of radiotherapy in the treatment of pulmonary metastases from mammary cancer. Regarding metastases to the central nervous system the authors say that treatment in advanced lesions is usually palliative. Patients with metastases who have not reached the menopause should receive roentgen castration. It is debatable whether such patients without metastases should be so treated.

### Annals of Internal Medicine, Lancaster, Pa

19 567-706 (Oct) 1943

- Some New Approaches to Physiology of Thyroid J H Meins —p 567
- \*Radio Phosphorus—An Agent for Satisfactory Treatment of Polycythemia and Its Associated Manifestations Report of Case of Polycythemia Secondary Possibly to Banti's Syndrome L A Erf and H W Jones —p 587
- \*Treatment of Meningococcus Carriers with Sulfadiazine F S Cheever B B Breese and H C Upham —p 602
- Hepatic Damage Associated with Sulfonamide Therapy in Infants and Children I Morphologic Pathology Maud L Menten and Marie A Andersch —p 609
- Id II Changes in Liver Function Test During Sulfonamide Therapy Marie A Andersch —p 622
- \*Value of Examination of Gastric Contents for Tubercle Bacilli J A Foley and J B Andosca —p 629
- Embolism and Thrombosis of Popliteal Artery—Diagnosis and Treatment J C Doane —p 634
- Changes of Water Tolerance Test in Hepatic Disease D Adlersberg and C L Fox Jr —p 642
- On Importance of Malaria as Cause of False Positive Serologic Reactions T R Dawber —p 651
- Thrombosis and Embolism of Abdominal Aorta I Greenfield —p 656

**Radio Phosphorus in Polycythemia**—Erf and Jones reported clinical and hematologic improvement in 6 cases of polycythemia following administration of radio phosphorus. The patients were maintained in clinical and hematologic remissions for nearly two years. Four of the 6 required no additional radio phosphorus, 1 was given one intravenous injection and another two courses of three injections each of radio phosphorus. The authors report 11 new cases of polycythemia in which radio phosphorus was used. All had received other forms of treatment previous to radio phosphorus, such as roentgen radiation, ultraviolet irradiation to the skin or to autotransfused blood, solution of potassium arsenite, phenylhydrazine and venesection, but none gave satisfactory remissions. The radioactive phosphorus solutions were given intravenously. The total dosage varied between 7 and 11 millicuries. The first significant hematologic responses occurred from sixty to one hundred days after the first injection. The patients gained weight, developed unusually good appetites and had clinical and hemato

logic remissions. The authors conclude that at the present radio phosphorus is the most convenient and satisfactory therapeutic agent for the treatment of polycythemia and its associated manifestations.

**Treatment of Meningococcus Carriers with Sulfadiazine**—Cheever and his associates report an outbreak of meningococcal infections which had occurred in a large naval construction training center during the winter of 1942-1943. Cases of meningitis and of uncomplicated septicemia were observed, in over 90 per cent of these a type I meningococcus proved to be the causative organism. The response to sulfadiazine therapy was gratifying, the mortality rate remained in the neighborhood of 5 per cent. A carrier rate determination on a representative sample of the camp's population gave a total incidence of 57.6 per cent. Men from a barrack known to have a high carrier rate were divided into two equal groups. These men lived worked and messed together. On the first day nasopharyngeal cultures were taken on all men, those in the first group were given 3 Gm of sulfadiazine in divided doses on the first day and similarly 3 Gm on the second and 2 Gm on the third day, each man receiving a total of 8 Gm in seventy-two hours. The second group, serving as a control, was left untreated. On the fourth day cultures were made again on both groups, and urine specimens obtained from men who had received the drug. On the seventh day another nasopharyngeal culture was taken on each man. All of 161 carriers given 8 Gm of sulfadiazine had become negative by the fourth day. After an additional three days during which they received no further treatment 160, or 99.51 per cent, remained negative. The control group receiving no treatment showed a statistically significant increase in the total carrier rate during the first seventy-two hours, and during the second seventy-two hours a slight decrease. Sulfadiazine is apparently fully as effective as other members of the sulfonamide group in the treatment of meningococcus carriers.

**Tubercle Bacilli in Gastric Contents**—Foley and Andosca report that out of 639 cases with negative sputum 187, or 29.2 per cent, were found to be positive by gastric lavage, 32 nontuberculous subjects employed as controls were all negative. Guinea pig inoculation of gastric contents gives a higher percentage of positive results than direct microscopy. Gastric lavage is an aid not only in establishing the diagnosis of pulmonary tuberculosis but also in its differential diagnosis, treatment and prognosis. It is an accurate gauge of the infectiousness of a patient and helps to determine his relationship to society.

## Archives of Otolaryngology, Chicago

38 309 412 (Oct) 1943

- Effects of Nasal Inhalers on Erectile Tissues of Nose Quantitative Studies D B Butler and A C Ivy—p 309
- Osteoma of Frontal Sinus Report of Case W H Johnston—p 318
- Local Treatment of Acute Rhinitis with Sulfathiazole E Ebert—p 324
- Fluid in Middle Ear L Shahinian—p 328
- Atresia of External Auditory Canal L Cohen and S L Fox—p 338
- Use of Curare to Facilitate Endoscopy Preliminary Report S C Cullen and A J Trapasso—p 347
- Percussion Note of Maxillary Sinus W Hewson—p 350
- Effect of Extrinsic Laryngeal Muscles on Voice Production R R Sokolowsky—p 355
- \*Treatment of Certain Forms of Deafness by Means of Benzyl Cinnamate Preliminary Report J Jacobson—p 365
- Audiometric Effects of Voluntary Contraction of Tensor Tympani Muscles H D Smith—p 369
- Paranasal Sinuses S Salinger—p 373

**Benzyl Cinnamate for Certain Forms of Deafness**—Jacobson noted in the course of treatment with benzyl cinnamate of corneal opacities in 2 patients with interstitial keratitis and deafness a regression of the corneal lesions and improvement in hearing. He next treated 45 patients with deafness who had failed to respond to the classic method of treatment. Each patient received one intramuscular injection of 0.33 to 1 cc of a 32 per cent solution of benzyl cinnamate for a period of twelve days. He was then allowed a period of rest of ten to fifteen days. Thereafter the injections were resumed, and after the third series of injections the patient was given one month's rest. The same cycle may be repeated after an interval of about two months. A follow up of 32 patients revealed that 17 stated

that their hearing had improved, of the 24 who complained also of tinnitus, 2 reported its disappearance, 7 stated that it had diminished, while 15 observed no change. Dizziness which had accompanied the deafness in 9 of the 32 patients disappeared in 3 and diminished in 5.

## Archives of Surgery, Chicago

47 319 418 (Oct) 1943

- Caution Against Too Liberal Use of Citrated Blood in Transfusions J Brunner and F A Graham—p 319
- Effects of Morphine in Experimental Shock Due to Hemorrhage A Blacklock—p 326
- Arterial Blood Supply of Breast Revised Anatomic Data Relating to Reconstructive Surgery J W Malinac—p 329
- Adventitious Bursae R M Buck J R McDonald and R A Ghormley—p 344
- Effect of Sulfathiazole Administered Orally and Sulfanilamide Implanted Locally on Contaminated Wounds Experimental Study J W Lord Jr A H Blackmore and P I Steffen—p 352
- Hemangioma of Synovial Membrane of Knee Joint Cured by Synovectomy P H Harmon—p 359
- Spontaneous Closure of Arteriovenous Fistula Report of Case R F Barber and J I Madden—p 364
- Role of Chemical Laboratory in Diagnosis of Neoplastic Diseases of Bone Helen Quincy Woodward—p 368

**Sulfathiazole Administered Orally and Sulfanilamide Locally**—During a study of a method of bridging a gap in a severed femoral artery in dogs, Lord and his collaborators accumulated data concerning the value of sulfanilamide implanted locally and of sulfathiazole administered orally. The right femoral artery was exposed in 20 animals under unsterile conditions, the incision being 10 cm in length. The artery was isolated for 2 cm and divided between transfusion ligatures. Twenty-four hours later the animal was again anesthetized and after preliminary irrigation of the femoral wound on the right side with saline solution a 10 to 12 cm segment of the left femoral vein was removed under aseptic conditions. The vein was set aside, care being taken to keep it sterile, and the femoral wound on the right side was excised. The wound was irrigated with 250 cc of saline solution. The two tube non-suture technic was then carried out, vitallium tubes 3 mm in outside diameter being inserted into the segment of the left femoral vein. The wound was closed. After seven days all wounds were opened and the anastomoses examined to determine blood flow. The anastomosis was resected and examined for thrombosis. In 10 animals the Carrel suture technic was substituted for the anastomosis of the segment of vein to the cut ends of the right femoral artery. A second variation was that the wounds were studied for fourteen days instead of seven. Into alternate wounds of all 30 dogs 15 Gm of powdered sulfanilamide was sprinkled at the time of the arterial anastomosis. To 10 of the 20 dogs for which the two tube technic was used 1 Gm of sulfathiazole was administered orally twice daily. To all 10 of the dogs for which the suture technic was used 1 Gm of sulfathiazole was administered similarly. Therapy with sulfathiazole was begun at the time of the unsterile division of the femoral artery. In the undebried wound local implantation of sulfanilamide was of little value. In the debried wound sulfanilamide applied locally was of value in the healing and in the success of the anastomosis. Sulfathiazole administered orally was slightly more efficacious than sulfanilamide implanted locally. The most satisfactory healing of wounds and the greatest number of successful anastomoses resulted from the combined use of sulfathiazole orally and sulfanilamide locally when careful debridement was done.

## Florida Medical Association Journal, Jacksonville

30 89-132 (Sept) 1943

- Medical Stewardship in War and Peace C W Roberts—p 103
- Appendicitis Results of Surgical Treatment Under Varying Conditions at Duval County Hospital J B Stewart—p 110
- Emergency Medical Management in Great Britain A J Logie—p 113

30 133-172 (Oct) 1943

- The Doctor in the War Effort S W French—p 145
- Preliminary Study in Use of Continuous Caudal Anesthesia J R Graves—p 148
- Aqueous Vanadium Tetrachloride and Its Possible Use in Syphilology R S J Copold and C B Pollard—p 150

## Journal Industrial Hygiene & Toxicology, Baltimore

25 323-380 (Oct) 1943

- Physiologic Response of Animals to Cyclohexane, Methylcyclohexane and Certain Derivatives of These Compounds II Inhalation J F Treon, W E Clutchfield Jr and K V Kitzmiller—p 323
- \*Determination of Monomeric Styrene in Air V K Rowe, G J Atchison, E N Luce and E M Adams—p 348
- Determination of Oxides of Nitrogen in Air J Cholak and R R McNary—p 354
- Nitrite Field Method for Determination of Oxides of Nitrogen F A Patty and G M Pettit—p 361
- Acute Toxicity of Vapors of Certain Solvents Containing Appreciable Amounts of Benzene and Toluene J L Svirbejs, R C Dunn and W F von Oettingen—p 366
- Effects of Repeated Exposures of Rats to Vapors of Monoalkyl Ethylene Glycol Ethers H W Werner, C Z Nawrocki, J L Mitchell, J W Miller and W F von Oettingen—p 374

**Determination of Monomeric Styrene in Air**—Rowe and his associates point out that the increased production of monomeric styrene for the manufacture of Buna S rubber, together with its growing use in other fields, has placed more and more men in contact with this material. Extensive laboratory work on animals has led to the proposed maximum allowable concentration of 2 mg per liter (approximately 400 parts per million) for repeated eight hour exposures. Chemically monomeric styrene is vinyl benzene. Several physical methods for the analysis of air for monomeric styrene vapor are possible. The apparatus and methods described by the authors have been used and found to be satisfactory for the trapping of monomeric styrene vapor from the air in preparation for the determination by the infra-red, ultraviolet or nitration method. The ultraviolet method for the determination of monomeric styrene is applicable in the presence of benzene, ethylbenzene, toluene, butadiene and vinyl cyanide. The infra-red method is applicable in the presence of benzene and ethylbenzene, but the presence of other impurities limits its use. The nitration method is most suitable for the majority of laboratories. The monomer is nitrated in a carbon tetrachloride solution, the acid layer extracted and diluted to volume with water, and the yellow color developed is measured with a suitable colorimeter.

## Journal of Pediatrics, St Louis

23 371-496 (Oct) 1943

- Blood Sucking Vectors of Encephalitis Experimental Transmission of St Louis Encephalitis to White Swiss Mice by American Dog Tick, *Dermacentor Variabilis* Say R J Blattner and Florence M Heys—p 371
- Experimental Investigation of Measles G Rake—p 376
- Early Radiologic Recognition of Mitral Valve Disease B S Epstein—p 381
- Effect of Illness and Other Factors on Appearance Pattern of Skeletal Epiphyses L W Sontag and Janet Lipford—p 391
- Case of Vitamin D Deficiency Associated with Cirrhosis of Liver and Dyscrasia of Calcium and Phosphorus Metabolism H F Fraser—p 410
- Studies in Hormone Therapy I Evaluation of Growth Hormone Treatment A A Strauss and C H Watson—p 421
- \*Protection of Infant Against Diphtheria During First Year of Life Following Active Immunization of Pregnant Mother J Liebling and H E Schmitz—p 430
- Evaluation of Blood and Urinary Thiouamide Determinations in Vitamin B<sub>1</sub> Subnutrition R A Benson, C M Witzberger and L B Slobody—p 437
- Comparative Effects of Ammoniated Mercury, Sulfathiazole and Soap and Water on Surface Bacteria of Newborn Infant W R MacLaren—p 446
- \*Treatment of Cryptorchism Report on Treatment in Thirty Eight Cases with Chorionic and Pituitary Gonadotropin and Testosterone F E Harding—p 451
- Peptic Ulcers in Infancy and Childhood Postmortem Studies of 8 Cases, 1 Case of Possible Poisoning by Rhubarb Miriam C Benner—p 463

**Protection of Infant Against Diphtheria by Immunization of Mother**—Studies on the occurrence of diphtheria antitoxin in the blood of pregnant mother and infant were presented by Liebling and Schmitz in previous articles. In this paper they present additional observations on nonimmunized and actively immunized mothers and relate what effect such immunization had on the infant during the first year of life. They conclude that active immunization of the pregnant mother results in an increased placental transfer of passive immune

bodies to the offspring. The increase in passive immune bodies to the offspring is prolonged sufficiently to increase the protection during the first year of life. Schick tests on pregnant mothers immune to diphtheria acted as secondary antigenic stimuli, causing increased antitoxin formation. This was sufficient to prolong the passive immunity in the offspring of this group of mothers. Schick tests on infants immune to diphtheria did not increase their antitoxin titers. The decline of passive immune bodies in the offspring is two to five times greater than the decline of active immune bodies in the respective mothers.

**Treatment of Cryptorchism**—Harding reports observations on 38 cases of cryptorchism which were treated with chorionic and pituitary gonadotropin and with testosterone. Cryptorchism without mechanical obstruction may be corrected with endocrine therapy. The testes descended in 76 per cent of the patients in this series. With endocrine treatment obstruction can be diagnosed early so that necessary surgery can be performed not later than the prepuberty period, thus preventing the atrophy which occurs in the testis allowed to go through puberty undescended. Certain mental and physical conditions make it advisable to treat some of these boys at a younger age. When descent does not follow treatment, orchiopexy must be used to prevent sterility, hypogonadism, complications and possibly malignancy. Operation should be facilitated by treatment that lengthens the spermatic cord and enlarges the scrotum and testis. There was no harm to the testes regardless of the age at which the boy was treated.

## Minnesota Medicine, St Paul

26 849-936 (Oct) 1943

- Recent Advances in Our Knowledge of Coronary Sclerosis and Its Bearing on Clinical Management of Patients A R Barnes—p 863
- Hypertension Heart G Fahr—p 867
- Psychosomatic Aspects of Hypertension Review of Literature W H Hengstler—p 870
- Medical Management of Early Cases of Hypertension S G Sax—p 874
- General Care of the Aged J F Norman—p 876
- Nutritional Management of the Aged E L Tuohy—p 881
- Surgical Treatment of the Aged O T Clagett—p 884
- Studies on Diagnosis and Treatment of Epidemic and Experimental Poliomyelitis with Poliomyelitis Antistreptococcic Serum Summary of Results E C Rosenow—p 890

## New England Journal of Medicine, Boston

229 605-638 (Oct 14) 1943

- Global Malaria J S Simmons—p 605
- Newer Concepts of Gonorrhea S N Vose—p 610
- \*Suprlevator Abscess E A Gaston and L O Warren—p 613
- Intravenous Use of Lysatocide C J H Nicholson—p 619
- Treatment of Sinusitis R L Goodale—p 622

229 639-666 (Oct 21) 1943

- Wartime Responsibilities of United States Public Health Service W F Draper—p 639
- Effect of Sulfanilamide Powder on Healing of Sterile and Infected Wounds with Special Reference to Tensile Strength and Ascorbic Acid Content in Scar C M Jones, M K Birtlett, Anna E Ryan and Gladys D Drumme—p 642
- Rhinoscleroma Report of Case E Kellert—p 647
- Prolonged Ureteral Obstruction with Recovery Following Administration of Sulfadiazine and Sulfathiazole S J Sugar—p 651
- Pancreatic Insufficiency and Celiac Syndrome S Farber—p 653

**Suprlevator Abscess**—According to Gaston and Warren, infections occurring about the rectum and anus are classified as infralelevator or suprlevator according to their anatomic relation to the pelvic diaphragm. Infralelevator infections are relatively frequent and their surgical treatment is well understood. Suprlevator abscess is a rare disease. It seems logical to assume that such infection usually arises in the mucocutaneous line and is carried by lymphatic drainage to the suprlevator space. The clinical picture is essentially one of prolonged sepsis associated with a perirectal mass and, eventually, with pelvic pain and low intestinal obstruction. Male patients frequently present symptoms of obstruction of the bladder neck of greater or lesser severity. The diagnosis is not difficult if the condition is kept in mind. Treatment consists in adequate surgical drainage. Preliminary sigmoidostomy is occasionally indicated in cases seen late in the disease or in the presence of fistula.

## New York State Journal of Medicine, New York

43 1791-1902 (Oct 1) 1943

- Extent of Syphilis Problem at Beginning of World War II R A Vonderlehr and Edith J Usilton—p 1825  
Venereal Diseases News Problem I A Shifrin—p 1829  
Venereal Disease Control as Applied to Army W Bisher—p 1832  
Clinical Types of Coronary Insufficiency and Their Recognition R I Levy—p 1836  
Principles Underlying Operative Approach to Treatment of Myocardial Infarction C S Beck—p 1841  
Diagnosis of Pancreatic Disease J H Pratt—p 1847  
Surgical Therapy for Patent Ductus Arteriosus R I Cross—p 1856

**Surgical Therapy for Patent Ductus Arteriosus**—Gross states that closure of the ductus arteriosus has now been performed on 50 patients varying in age from 11 months to 37 years. There were only 2 deaths. The results of the operation were beneficial. Patients who were previously backward in their physical development had a subsequent gain in weight. Those who had varying degrees of cardiac disability or limitation of their physical activities have spontaneously undertaken more physical exertion after operation and had disappearance of their cardiac symptoms. In the early part of the series some persons were left with a minimal fistula. The large opening was reduced to a very small one but was not completely shut off. This failure of the method to produce absolute closure in some instances has now made it advantageous to resort to the more difficult but ideal operation of complete division of the ductus. This has been successfully accomplished nine times without complication and without mortality.

## Pennsylvania Medical Journal, Harrisburg

47 1-96 (Oct) 1943

- Surgical Principles of Rhinoplasty L Felderman—p 13  
Outline of Plan and Work of Division of Cancer Control of Pennsylvania Department of Health S P Reimann—p 21  
Percussion Sign in Coronary Disease A S Gabor—p 25  
Viruses, Fungi, Protozoa and Insects: Preliminary Report with Review of Literature A E Taft—p 26  
Soft Tissue Injury Coincident with Fractures H R Owen and W H Erb—p 33  
Atypical Scabies: Diagnosis by Scrape and Smear Method R Friedman—p 39  
Postoperative Wound Infections in Small Hospital C H Smith—p 42  
Nutrition Today: Application to Clinical Practice of Laboratory Methods for Determining Nutritional Status Pauline Beery Mack—p 44  
Protein Metabolism R H McCoy—p 49

## Public Health Reports, Washington, D C

58 1497-1532 (Oct 8) 1943

- \*Study of Outbreak of Food Poisoning in Hospital in Galveston, Texas L L Lumsden, C A Nau and F M Stead—p 1497  
Harborage of *Rattus Rattus Alexandrinus* B K Milmore—p 1507  
American Q Fever: Occurrence of *Rickettsia Diaporica* in *Amblyomma Americanum* in Eastern Texas R R Parker and G M Kohls—p 1510

58 1533-1572 (Oct 15) 1943

- Automatic Control of Exposure in Photofluorography R H Morgan—p 1533  
Successful Treatment of Granulocytopenia and Leukopenia in Rats with Crystalline Folic Acid F S Daft and W H Seibrell—p 1542  
War and Distribution of Physicians G St J Perrott and B M Davis—p 1545  
Frequency and Duration of Disabilities Causing Absence from Work Among Employees of Public Utility 1938-1942 W M Gafaer—p 1554

**Outbreak of Food Poisoning in a Hospital**—Lumsden and his associates report an outbreak of food poisoning in a large general hospital with 390 patients and 610 personnel having meals regularly in the hospital. About 22 per cent of the patients and over 50 per cent of the personnel were attacked. The clinical manifestations in general were very similar, with nausea, vomiting, abdominal cramps and purging predominant. The outbreak was widely distributed among the patients and personnel but was confined to those who ate chicken prepared in one common kitchen and served on July 6, 1943 at the noon-day meal. The hygienic and sanitary conditions under which the foods in the implicated meal were prepared, stored and distributed were found to be unsatisfactory. Chicken salad was

the sole medium of conveyance. The causative agent was a bacterial toxin produced by *Staphylococcus aureus* of the specifically enterotoxin forming type. The introduction of *Staphylococcus aureus* on or into the chicken may have been by human hands, dropping perspiration, floating droplets from the nose or throat of some of the food handlers in the kitchen, by flies, roaches, mice, or other vermin, or through air currents. Most probably it was introduced by human hands. The chicken probably became contaminated with the staphylococci during the process of handling and exposure of the meat in the kitchen. There was a tremendous multiplication of the infecting organisms in the meat during storage in the refrigerator and during the several hours that the meat was being made up into salad in the high temperature of the kitchen. The detection of the staphylococci in the bones from which the meat for the salad was removed eliminates the mayonnaise dressing, the eggs and the celery used in the salad as being together or separately a factor in the causation of the outbreak. The temperature of the refrigerator room in which the large mass of hot chicken was placed for storage was not maintained at a sufficiently low degree.

## Surgery, Gynecology and Obstetrics, Chicago

77 449-556 (Nov) 1943

- Value of Vaginal Smear in Diagnosis of Uterine Cancer J V Meigs, Ruth M Graham, M Fremont Smith, I Kapnick and R W Rawson—p 449  
Surgical Treatment of Acquired Aneurysm and Arteriovenous Fistula of Peripheral Vessels: Reviews of 67 Cases J deJ Pemberton and B M Black—p 462  
New Test for Pancreatic Function II: Experimental Observations II L Popper, W H Olson and H Necheles—p 471  
Studies on Therapy of Hemorrhagic Shock II: Effects of Iso Osmotic and of Concentrated Serum and Plasma in Dehydrated Dogs S O Levinson, Martha Janota, R E Weston and H Necheles—p 475  
Wound Healing: Experimental and Statistical Study V Bacteriology and Pathology in Relation to Suture Material S A Localio, W Casale and J W Hinton—p 481  
Horizontal Pin Fixation for Fractures of Mandible Using Pin Guide D T Pincock—p 493  
Protruded Intervertebral Disks J G Love and M N Walsh—p 497  
\*Coagulum Contact Method of Skin Grafting as Applied to Human Grafts M E Sano—p 510  
Umbilical Hernia in Bad Risk Patient W A White Jr—p 514  
Half Ring Splint for Fractures of Femur and Tibia and for Other Disabilities of Lower Extremity C S Young—p 518  
Reconstruction of Breast Deformities H May—p 523  
Use of Fascial Sutures in Inguinal Hernia C C Burton—p 530  
Living Fascial Sutures in Repair of Inguinal Hernia W J Ryan—p 535  
Pregnancy in Monkey After Removal of Fetus G van Wageningen and W H Newton—p 539  
Pyogenic Sepsis: Survey of 255 Cases H Neuhof and A H Aufses—p 544  
Manual Removal of Placenta I D Odell and W T Hovis—p 553

**Coagulum Contact Method of Skin Grafting**—Sano directs attention to a new method of skin grafting. Five cc of patient's blood is drawn into a 10 cc syringe containing 1 mg of heparin dissolved in 1 cc of Tyrode's solution. The blood is centrifuged and the plasma transferred to a small 5 cc test tube. One and five-tenths cc of Tyrode's solution is added to the remaining red cells and buffy coat (white cells) or to the buffy coat alone if it is convenient to separate it from the erythrocytes. If the buffy coat has not been separated from the red cells, the mixture must be centrifuged and the supernatant fluid removed to another sterile tube. If the buffy coat alone is used, centrifugation is not necessary. The fluid is referred to as "cell extract." The coagulum contact method can be used for thin split grafts or full thickness grafts. The graft is turned upside down on a sterile piece of gauze. With a camel's hair brush the under side of the graft is moistened lightly with the cell extract. With another brush the plasma is painted on the recipient area. The graft is quickly fitted into the recipient area. The edges are adjusted, and slight pressure with the forceps is applied to the graft to assure good contact. It adheres within a few minutes. A single strip of boric acid gauze is lightly placed over the graft to protect it from infection and drying. No other dressings are applied, no stitches are needed. The author presents 10 cases in which this method was used.



## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Medical Journal, London

2 381-410 (Sept 25) 1943

- \*Methods of Artificial Respiration D G Cordier—p 381  
 Management of Acute Pleural Empyema P R Allison—p 383  
 Ear, Nose and Throat Casualties in General Hospital in Middle East  
 E G Collins—p 386  
 Low Spinal Anesthesia During Labor in Cases of Cardiac Failure  
 H Burton—p 389  
 Effect of Diet on Concentration of Cholesterol in Blood and Bile Nancy  
 Gough—p 390

2 411-442 (Oct 2) 1943

- Prospect in Therapeutics H Dale—p 411  
 Cutaneous and Conjunctival Diphtheria Series of Cases H C M  
 Williams—p 416  
 Acute Myeloid Leukemia B L Della Vida and M C  
 Connell—p 417  
 Dietary Factor in Reproduction and Lactation M B Richards—p 418  
 Metallic Internal Fixation of Fractures in Air Crew Cases A Vere  
 Hodge—p 419  
 Medical Service and Social Change Some Reflections and Convictions  
 Dawson of Penn—p 429

**Artificial Respiration**—All methods of artificial respiration must (1) give sufficient pulmonary ventilation, (2) stimulate the heart and circulation to help respiratory exchanges and transport of oxygen to tissues and (3) be harmless, easy of execution and rapid in attaining results. The physiologic efficiency of the methods can be tested by (1) determining the pulmonary ventilation and respiratory exchange, (2) radioscopic and radiographic control, (3) finding the manometric values of cardiac pressures during inspiration and expiration and (4) controlling blood movement in the circulatory system. All experimenters agree that Silvester's method introduces in the respiratory tract of the apparently dead subject the biggest volume of air. However, determination of ventilation is only one criterion in judging the efficiency. The choice of the method depends also on the causes of asphyxia. In Eve's method the patient lies on a rocking stretcher, the weight of the abdominal contents pushes the diaphragm alternately up and down. Eve believed that this movement of the diaphragm was sufficient to ensure pulmonary ventilation of normal value. Eve's rocking method has great practical advantages, but the experimental criteria employed to study its physiologic efficiency seems insufficient to prove its superiority over other methods of artificial respiration.

2 443-472 (Oct 9) 1943

- \*Infectious Mononucleosis, with an Account of Epidemic in an Emergency  
 Medical Service Hospital I P A Halcrow, L M Owen and N O  
 Rodger—p 443  
 New Approach to Treatment of Early Syphilis by Intensive Therapy  
 T R L Jones and F G Maitland—p 448  
 Assessment of Level of Nutrition Revised Procedure for Estimation  
 of Aneurin in Urine by Thiochrome Test Y L Wang and L J  
 Harris—p 451  
 Local Oral Medication with Sulfanilamide in Lozenge Form P Garson  
 —p 452  
 Hypochromic Anemia in Adolescent Males M L Thomson—p 454

**Infectious Mononucleosis**—Halcrow and his associates point out that Paul and Bunnell discovered in 1932 that the serum of patients with infectious mononucleosis contains an antibody which agglutinates sheep's red cells in high dilution and so did much to establish it as a separate entity. The disease may vary in severity from symptoms so mild as to pass unrecognized to an acute illness with severe sore throat, glandular enlargement and pyrexia, followed by a long period of debility and frequent exacerbations. The clinical manifestations are protean, and diagnosis on clinical grounds alone may be almost impossible, examination of a blood smear and a Paul-Bunnell test, however, will confirm the diagnosis. The authors observed in an Emergency Medical Service Hospital in August 1942 an epidemic of infectious mononucleosis presenting some unusual features. It was apparently widespread in surrounding districts. The unusual features in this epidemic were (a) a high percentage of infected persons in the adult population,

(b) the occurrence of cases with hematologic and serologic findings and no clinical manifestations and (c) the fact that blood and serologic changes may precede clinical manifestations. The treatment was symptomatic. Two anginous patients were given sulfapyridine, but no favorable response was obtained. As the granulocytes are reduced in infectious mononucleosis and many show toxic changes, it is not surprising that sulfonamides do not give good results.

## Lancet, London

2 401-432 (Oct 2) 1943

- Medicine and Community Task of Statesmanship Speech to British  
 Medical Association Dawson of Penn—p 401  
 \*Pathology of Acute Hepatitis Aspiration Biopsy Studies of Epidemic,  
 Arsenotherapy and Serum Jaundice J H Dible, J McMichael and  
 S P V Sherlock—p 402  
 Burns Treated with Viacutan Special Reference to Face and Hands  
 F Pick and D Barton—p 408  
 \*Thrombocytopenic Purpura H Evans and K M A Perry—p 410  
 Two Complications with Trichloroethylene Anesthesia M W Gold  
 Schmidt—p 414

**Aspiration Biopsy in Acute Hepatitis**—Dible and his associates performed biopsies on the livers of 14 patients with epidemic hepatitis, of 35 with jaundice resulting from arsenotherapy, of some with hepatitis resulting from the inoculation of mumps convalescent serum and of 2 in whom jaundice followed serum transfusion. The technique they used was essentially like that described by Iversen and Roholm of Denmark in 1939. They illustrate degrees of liver damage by reference to typical cases. The inflammatory lesions may be diffuse, zonal or mixed. Jaundice persisting over two weeks is more likely to be due to a zonal lesion. Diffuse hepatitis usually heals completely and rapidly. When the disease runs a longer course some residual fibrosis in the portal zones may still be present after apparent clinical cure. The authors found no evidence that there is a form of jaundice due to duodenal catarrh and obstruction of the common bile duct by mucus. The process of development of acute and subacute necrosis and cirrhosis was followed. Histologic criteria were not found for the differentiation of the lesions resulting from epidemic hepatitis, arsenotherapy and serum inoculations.

**Thrombocytopenic Purpura**—Evans and Perry studied 75 cases of thrombocytopenic purpura at the London hospital between 1927 and 1938. Thirty of the patients were of the prepuberal age. These were equally divided between the sexes, 10 of them recovered spontaneously, splenectomy was successful in 5 males and unsuccessful in 4 females, and the mortality during the period of observation was 16 per cent. Of the 45 patients who were affected after puberty, 38 were women. Only 1 female made a spontaneous recovery, splenectomy was successful in 2 males and in 7 out of 13 females, and the mortality during the period of observation was 40 per cent. Half of the deaths were due to subdural hemorrhage. In the whole series splenectomy was successful in 7 out of 7 males and in 7 out of 17 females, there were 3 operative deaths, splenectomy may be a life saving measure and is sometimes advisable in the hope of preventing subdural hemorrhage. One patient showed a striking improvement during pregnancy. Thromboticosis was associated with the purpura in 4 cases.

## Medical Journal of Australia, Sydney

2 201-220 (Sept 11) 1943

- \*Congenital Defects in Infants Following Infectious Diseases During  
 Pregnancy with Special Reference to Relationship Between German  
 Measles and Cataract, Deafmutism Heart Disease and Microcephaly,  
 and to Period of Pregnancy in which Occurrence of Rubella is Fol-  
 lowed by Congenital Abnormalities C Swan A J Foster, B  
 Moore Helen Mayo and G H B Black—p 201  
 Lagrange Operation for Glaucoma E T Smith—p 211  
 Outbreak of Food Poisoning Due to *Staphylococcus* W J Scott and  
 D F Stewart—p 211

**Congenital Defects in Infants Following Infectious Diseases During Pregnancy**—Swan and his associates point out that Gregg in 1941 reported 78 cases of congenital cataract. With few exceptions the mothers of these infants had suffered during the early stages of pregnancy from an exanthematous disease diagnosed as rubella (German measles). Many of the

babies were of small size ill nourished and often difficult to feed. In 44 of them a congenital lesion of the heart was detected. The cataracts were of the dense nuclear type, they were bilateral in 62 and unilateral in the remainder. In 11 of the 16 monocular patients the affected eye was microphthalmic. The authors decided to investigate this problem in South Australia. A circular letter embodying the main facts of Gregg's paper and inviting cooperation in the investigation was sent to all medical practitioners in the state. When children, whether suffering from congenital abnormalities or not had been born of mothers who had suffered from acute exanthems during pregnancy, it was asked that the questionnaire be filled in. When ever practicable, permission was requested to interview the mother with regard to her illness during pregnancy and to submit the baby to examination. Of 61 infants examined 31 were found to have congenital defects. The mothers of 49 infants had suffered during pregnancy from rubella, 4 had no knowledge of any exanthem during this time. 9 contracted measles during pregnancy and 2 suffered from mumps. In the cases of rubella during pregnancy 31 of the infants born subsequently exhibited congenital defects. The abnormalities included cataract, deafmutism, heart disease, microcephaly and mental retardation. With two exceptions all of the 31 mothers with congenitally defective children had contracted rubella within the first three months of pregnancy. Four cases of congenital cataract are described, in some instances associated with other defects, the mothers denied all knowledge of an exanthem during pregnancy. No congenitally defective babies were born subsequent to the occurrence of measles in pregnancy. Congenital corneal opacity appeared following mumps in pregnancy.

### Medicina, Buenos Aires

#### 3 387-518 (July) 1943 Partial Index

- \*Electrocardiograms in 30 Cases of Wounds of Heart and of Pericardium. L. Herve and A. Forero Sarabia—p. 387.  
Hydatidosis and Pulmonary Tuberculosis. M. M. Brea—p. 424.

**Electrocardiograms in Wounds of Heart and of Pericardium.**—Herve and Forero Sarabia studied electrocardiographic changes of 30 persons who were operated on for wounds of the heart or the pericardium. The electrocardiographic alterations which appear in the course of the first two weeks after a surgical operation are similar to those seen in acute pericarditis. They are caused by pericarditis or a hemopericardium which is always present in these cases. The electrocardiographic changes which depend on the myocardial lesion, namely inversion of the  $T_1$ ,  $T$  and  $T_2$  waves in wounds of the left ventricle and of the  $T$ ,  $T_2$  and sometimes  $T_4$  waves in wounds of the right ventricle, appear after subsidence of pericardial inflammation. An early diagnosis of the site of the wound in the heart is possible (1) before the development of pericarditis if hemopericardium does not exist and (2) when the bundle of His is injured which is a rare occurrence. Signs of localization of wounds are more frequent, more accentuated and of longer duration in the case of wounds of the left ventricle than when the wound is in the right ventricle. Transient changes of the P wave of the type of those observed in pericarditis in the ventricular complex are frequently observed in auricular wounds. The little certainty that exists in localizing exactly the myocardial lesion during the operation is the probable cause of the occasional discrepancy between the clinical data and the electrocardiogram. The latter has no prognostic value in wounds of the heart and of the pericardium.

### Medicina Española, Valencia

#### 6 623-752 (June) 1943 Partial Index

- \*Lymphogranulomatous Appendicitis. Case. F. Martin Lagos—p. 623.  
Arterial Blood Pressure in Hyperfunction and Hypofunction of Adrenals. M. Schachter—p. 659.

**Lymphogranulomatous Appendicitis.**—According to Martin Lagos lymphogranulomatous appendicitis is extremely rare. The case reported is the third in the medical literature. The author's patient complained of recurrent abdominal attacks, loss of weight, lack of appetite and rheumatic pains. He also gave a history of a chancre and inguinal adenopathy four years previously. These lesions disappeared spontaneously. The Wassermann test was negative. The removed appendix was

entirely sclerotic. The cecum and ileum were normal. The abdominal incision developed repeated infections. The Frei test was positive. Repeated administration of sulfamidide failed to control the infection. Roentgen therapy was effective in controlling the infection. Sulfamidide or lymphogranulomatous antigen is indicated in the early stage of adenopathy in cases in which the Frei test is positive. The test is also indicated in recurrent infection of the appendectomy wound. A positive test in such cases is an indication for roentgen therapy.

### Archiv für klinische Chirurgie, Berlin

#### 203 159-342 (June 15) 1942

- Experiences with Surgical Therapy of Rectal Cancer. 407 Cases Observed Between 1926 and 1940. R. von Oppolzer and J. Nitsche—p. 159.  
Comparison of Simple Methods for Testing Circulation Before Surgical Interventions. I. Zeus—p. 206.  
Blood Sugar and Circulation. Comparative Studies in Artificially Increased Intracranial Pressure. H. Bierhaus—p. 231.  
\*Experimental Investigations on Causes of Centrogenic Hypertension in Intracranial Increase in Pressure. H. Bierhaus—p. 257.  
Arch. Fractures of Second Cervical Vertebra. I. Jimeno Vidal—p. 291.  
Traumatic Intracranial Hemorrhages. I. Jaeger—p. 304.  
Significance of Spina Bifida Occulta for Hereditary Anlage to Labio-maxillopalatine Cleft. C. H. Schroder and H. J. Hillenbrand—p. 328.

**Surgical Therapy of Rectal Cancer.**—Von Oppolzer and Nitsche report 407 cases of rectal cancer that were seen at the First Surgical Clinic of Vienna during the years 1926 to 1940. Radical operation was carried out in 51.3 per cent of the cases and colostomy in 30.2 per cent. Operation was not done in 17.1 per cent. Grouping the patients according to 5 year periods reveals increasing frequency of radical operations in recent years. In every age group about the same percentage of patients could be subjected to radical operation. The location of the tumor had no influence on the incidence of radical operation. The 209 radical operations included 105 sacral extirpations, 63 sacral resections, 37 combined operations and 4 abdominal resections. The mortality of all radical operations amounted to 19.5 per cent with the sacral methods it was 13 per cent and with the combined methods 45 per cent. Sacral extirpation had a mortality of 17 per cent and sacral resection one of 6.3 per cent. The mortality rates decreased as time advanced. During the last five years the total mortality of radical operations was 11.2 per cent and no fatality resulted in 36 sacral resections, the mortality of the combined operations was 20 per cent. Peritonitis, phlegmon and sepsis, pneumonia and metastases were the chief causes of death after radical operation. Metastases were already present and caused death in 20 per cent of the patients subjected to radical operation. The lower the tumor was located, the higher was the incidence of recurrences. After five years there were practically no recurrences. Young patients are more subject to recurrences than older patients. Examination of the lymph nodes of the resected specimen is of great importance for the prognosis. The survival of patients who underwent radical surgery was 33 per cent at the end of three years, 19 per cent at the end of five years and 16 per cent at the end of ten years. With regard to all operations the survival was 20 per cent at the end of three and 12 per cent at the end of five years. Colostomy, which was done in 30 per cent of the cases, had a mortality of 20 per cent, and only 2.3 per cent survived at the end of three years.

**Hypertension During Intracranial Pressure Increase.**—Bierhaus states that intracranial traumatic hemorrhage causes in addition to the local irritation changes in peripheral parts of the organism. Effects on the respiration and the circulation are of the greatest importance. The author studied these changes in dogs utilizing the sphygmographic method of Frank and Broemser. The effect of trepanation and of increased intracranial pressure was thus determined. The centrogenic hypertension which develops subsequent to intracranial pressure is mild at first but later becomes more pronounced. This hypertension is caused by a great increase in the elastic resistance at the termination of the arterial system, while at the same time there is a decrease in the beat and minute volumes and the pulse frequency. Thus there is not only a peripheral resistance hypertension but also an elasticity hypertension. Not only the vagus but also the vasomotor center is irritated. In a second experiment the action of various pressure increases in

The cranium was ascertained. A noticeable failure of the circulation was evident at the beginning of a third experiment, but following intramuscular injection of synephrin tartrate there was an increase in blood pressure. In subsequent experiments the vagus was cut on both sides, then the vagus and the sympathetic were cut and finally all nervous influences were eliminated. Studies were also made on the action of vasopressin, acetylcholine and epinephrine. The author concludes that in the presence of an intracranial increase in pressure there results not only an irritation of the sympathetic centers but also a flooding out of vasopressin into the blood stream. A peripheral resistance hypertension and an elasticity hypertension are produced in this manner.

### Munchener medizinische Wochenschrift, Munich

89 415-436 (May 8) 1942 Partial Index

Use of Electric Current in Diagnosis and Therapy of Paralysis of Muscle. O. von Schwerin—p. 415

\*Problems of Diphtheria with Special Reference to Active Immunization. K. W. Claiberg—p. 418

New Method of Testing of Supercidity Drugs. R. Müller, K. Edelmann and K. Kuhn—p. 423

Diagnostic Considerations with Regard to Extravasation into Knee Joint. W. Beyer—p. 426

**Diphtheria Problem**—Claiberg's experiences with 817 carriers of diphtheria bacteria revealed that 72 days was the average carrier period of bacillus of gravis type, 86 days for bacillus of intermediate type and 19 days for the bacillus of mitis type. Statistics show that with regard to incidence and mortality the relation of individuals actively immunized to those not immunized is as 1 to 47 and as 1 to 86 respectively. Therefore mass immunization on a large scale is warranted in threatened areas. The obligatory active immunization of all children who are to be sent to recreation centers or to other countries is required by the decree of the board of health. In Berlin, general active immunization of all school children from 6 to 14 years of age is under way. The new immunization serums are built up with toxoid.

### Wiener klinische Wochenschrift, Vienna

55 261-280 (April 3) 1942 Partial Index

Cancer of Larynx. H. Marschik—p. 261

Arterialization of Blood as Therapy. E. Hamberger—p. 268

Biochemistry of Bile in Different Stages of Age. D. Kotlovsky—p. 269

\*Pathogenesis and Corpus Luteum Treatment of Essential Thrombopenia. R. Stöger—p. 270

**Corpus Luteum Treatment of Essential Thrombopenia**—Stöger believes that the bleeding tendency in purpura hemorrhagica may be caused by functional disturbance of the capillary system and by latent insufficiency of bone marrow involving particularly the blood platelets. The spleen may be responsible for both. A definite bleeding tendency exists at the time of menstruation, which may be due to corpus luteum hormone deficiency or to ovarian dysfunction in young girls and to the absence of corpus luteum hormone in women at the menopause. Two tablets of 10 mg proluton C (a compound closely related to progesterone) were given orally three times a day in three cases of essential thrombopenia, one of them a case of recurrence six weeks after a splenectomy. Hemorrhages became less severe or were temporarily arrested in all cases. Increase in blood platelets could be demonstrated in only one case.

### Zentralblatt für Chirurgie, Leipzig

69 849-896 (May 23) 1942 Partial Index

Snapping of Tendons of Anserinus Tract or of Its Individual Tendons (Sartorius, Gracilis, Semitendinosus). C. Henschen—p. 850

\*Cure of Erysipelas by Azosulfamide. W. Tonndorf—p. 857

\*Gas Gangrene and Its Treatment During Present War. V. Tüchel and J. Curcumei—p. 861

Diathermy Knife in Treatment of Gas Edema. B. Toth—p. 864

\*Spontaneous Hypoglycemia. W. Beckert and E. Wachs—p. 870

**Azosulfamide for Erysipelas**—Tonndorf's observations were made at an otorhinolaryngologic clinic, so that with few exceptions the erysipelas involved the head. His experience with azosulfamide dates back to 1936 and covers 125 cases, of

which 122 healed promptly. The daily dose was two tablets three times daily for adults, while children received one half of this. It was found advisable to continue the medication for some time after the fever had subsided, because relapses were occasionally seen when the medication was broken off early. The azosulfamide at present is given for ten days, although the fever generally subsides in two days. The fall in temperature is accompanied by improvement in the general condition. The 3 patients with erysipelas who were not benefited by the azosulfamide received the drug previously. The effect of azosulfamide on erysipelas is so prompt that a differential diagnosis can be based on it. If the temperature does not fall promptly, the presence of other processes such as thrombophlebitis, mastoiditis, deep abscesses or phlegmons must be suspected.

**Treatment of Gas Gangrene**—Tüchel and Curcumei encountered 20 cases of gas gangrene among 2,500 wounded (0.8 per cent). During the first world war the incidence was 2 per cent. Thorough surgical treatment of the wounds (wide opening, excision of all suspected tissue, removal of foreign bodies), rapid transport to base surgical hospitals, the use of antiseptics and intravenous antigangrenous serotherapy are mainly to be credited for the reduced incidence. The authors place particular emphasis on the intravenous administration of antigangrenous serum. They now administer it exclusively by the intravenous route, after the treatment of the wound. With this treatment amputation was necessary in only 7 of the 20 cases. The serum was injected in doses of 50 cc twice daily. These injections were continued for five days. Injection was performed as slowly as possible, patients in shock were first given intramuscular injection of 1 mg of epinephrine. The serum injections were not followed by cardiac disturbances or by intensification of the shock. In 1 instance serum disease developed on the seventh day, but without serious results. The intravenous serotherapy of gas gangrene is a valuable addition to the surgical treatment and will reduce not only the mortality but also amputations.

**Spontaneous Hypoglycemia**—Beckert and Wachs show that primary spontaneous hypoglycemia or hyperinsulinism may be produced by pancreatic disorders such as adenoma (rarely carcinoma) of the islands of Langerhans, an increase in these islands or pancreatitis or pancreatic necrosis. Secondary spontaneous hypoglycemia results from hypofunction of such endocrine organs as the adrenals, the thyroid or the anterior pituitary or from pluriglandular insufficiency. It also occurs in connection with disorders of the stomach, duodenum, liver, biliary passages and the brain, in progressive muscular atrophy and in focal sepsis. It may be brought on by irregular meals, one-sided diet, hunger, glycogen storage disease and the like. All these disorders cause either increased production of insulin or deficient counter regulation and thus produce a disturbance in the carbohydrate metabolism. The exact diagnosis of spontaneous hypoglycemia requires various functional tests such as repeated determinations of the fasting blood sugar, blood sugar curves over a whole day with ordinary diet and a diet free from carbohydrates, eventually combined with work tests, blood sugar determinations following alimentary dextrose tolerance tests, injection of epinephrine and of insulin, also examination of the endocrine function of the pancreas. The differential diagnosis of primary and secondary spontaneous hypoglycemia may be difficult. The history, the general status and the existing disorders (endocrine and gastrointestinal) must be considered. Primary spontaneous hypoglycemia is usually severe and has a tendency to exacerbation, whereas secondary hypoglycemia causes only mild, sympathetic disturbances. The tolerance tests serve further clarification, but they may fail occasionally. The authors present an illustrative case of primary spontaneous hypoglycemia that was brought on by adenoma of the island cells. The treatment of hypoglycemia is at first symptomatic, consisting of a diet high in carbohydrate and fat content, but the underlying cause must be determined and treated. Primary hypoglycemia may require surgical treatment. In case of solitary adenoma of the pancreas, complete cure is possible by operation.

## Book Notices

**Peripheral Vascular Diseases (Angiology)** By Saul S. Samuels, M.D. Consulting Vascular Surgeon, Long Beach Hospital, Long Beach, New York. Oxford Medical Outline Series. Cloth. Price \$2. 1p. 51. New York, London & Toronto: Oxford University Press, 1943.

The author offers a brief outline of peripheral vascular diseases, divided into nineteen chapters. Each chapter is followed by a representative list of references. There are no illustrations, although the anatomy of the peripheral vessels and the anatomy of the autonomic nervous system could have been greatly elucidated by a few simple line drawings. The anatomy of the vascular tree is a purely descriptive enumeration of branches without any attempt to establish patterns of collateral circulation in the case when the main pathways are obstructed. The autonomic nervous system also receives a simple enumeration, a diagram would be very useful. The author does not regard the histamine flare, the saline wheal, the intermittent hyperemia, suction and pressure, and sympathetic denervation as being of much value. Papaverine is a 'theoretical vasodilator', deep venous thrombosis of the lower leg is not mentioned as a clinical entity. Paravertebral sympathetic block as a diagnostic and therapeutic measure is not described. It is difficult to see for whom this outline is written for the medical student it is too subjective and incomplete, for the general practitioner it does not give enough detail for the specialist there is here and there a pithy aphorism which reflects the vast clinical experience of the author hidden under the dogmatic statements of the outline. The physical makeup of the handy volume is excellent.

**The Dispensatory of the United States of America** By Horatio C. Wood, Jr. M.D. Ph.M. Professor of Therapeutics in the University of Pennsylvania. Philadelphia and Arthur Osol Ph.D. M.S. Ph.D. Professor of Analytical and Physical Chemistry and Director of the Chemical Laboratories in the Philadelphia College of Pharmacy and Science, assisted by Heber W. Youngken Ph.M. Ph.D. Sc.D. Professor of Pharmacognosy and Biology in the Massachusetts College of Pharmacy, Boston and Louis Gershenfeld B.Sc. Ph.M. D.Sc. Professor of Bacteriology and Hygiene and Director of the Laboratories of Bacteriology and Clinical Chemistry in the Philadelphia College of Pharmacy and Science. Based on the Twelfth Revision of The United States Pharmacopoeia. The National Formulary Seventh Edition and the British Pharmacopoeia 1932 and its Addenda. Twenty Third edition. Cloth. Price \$15. Pp. 1881. Philadelphia, London & Montreal: J. B. Lippincott Company, 1943.

A review of the twenty-third edition of the Dispensatory of the United States of America should be preceded by congratulations to the editors. Long known and widely used for the mass of information which it contains, this book has been available for a hundred and ten years through twenty-three editions, the first being published in 1833. Seven years have elapsed since the twenty-second edition was issued, and many changes have occurred in our knowledge of drugs. The twenty-third edition takes full cognizance of these changes. While the general plan remains the same, the contents include new articles on the glycosides, alkaloids, sterids, amino acids and surface acting agents and revisions to recognize U.S.P. XII (up to Feb. 1, 1943), National Formulary VII (up to Feb. 1, 1943), British Pharmacopoeia and its five addenda, and New and Non-official Remedies. Many other revisions have been made, and it is not surprising to note that the index includes more than thirty thousand entries. The contents are divided into an explanatory introduction, list of abbreviations, descriptions of drugs recognized by the United States Pharmacopoeia, the Pharmacopoeia of Great Britain and the National Formulary, descriptions of drugs not recognized in these official compendiums, descriptions of processes, reagents, solutions and tables of the United States Pharmacopoeia and the National Formulary, and general index. No description of this book is necessary for those acquainted with its pages, an adequate description is impossible in a review for those who do not possess this familiarity. It seems sufficient to say that the twenty-third edition of the Dispensatory provides an up to date encyclopedic source of information which is not available elsewhere between the covers of one book. It is essential to most libraries of those interested in drugs a valuable addition to any library if the owner wishes an authentic work of reference.

**Contemporary Psychopathology. A Source Book.** Edited by Sylvan S. Tomkins, Ph.D. Instructor in Psychology, Harvard University, Cambridge. With an Introduction by Henry A. Murray, M.D. Ph.D. Director of the Harvard Psychological Clinic. Cloth. Price \$5. Pp. 600, with illustrations. Cambridge: Harvard University Press, 1943.

This book represents a successful and valuable compilation of contemporary studies in psychopathology. Contributions to the literature by fifty-four different authors are printed in full with out comment. The reader is free to form his own judgments. Material is presented relative to problems of childhood, psychoneuroses, schizophrenic psychoses, psychosomatic medicine and experimental psychopathology. It is evident that careful thought was given to the choice of each paper included. The editor has wisely chosen those contributions which stress the dynamic approach to problems of human behavior. While there are many more excellent contributions in the literature to all the fields covered the editor had to choose those which he considered representative. It might have been advisable to include a recommended list for further reference either at the end of each chapter or as an index, but this is a minor criticism. Although as the editor states, 'This volume is designed for courses in abnormal psychology, it is unreservedly recommended to all students of psychology and psychiatry. As a reference book it is unequalled.'

**Nurses Handbook of Obstetrics** By Louise Zabriskie, B.S. Director Maternity Consultation Service, New York City and Nicholson J. Eastman, M.D. Professor of Obstetrics in Johns Hopkins University, Baltimore. Seventh edition. Cloth. Price \$12. Pp. 714 with 376 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1943.

The present book is a distinct advance over the previous editions. In place of the fourteen men and women who contributed sections in the last edition, Eastman is the sole co-author except for the chapter of the history of obstetrics. In recent years the trend in the preparation of textbooks for nurses has been for the collaboration of a physician and a nurse and the great value of such teamwork is manifest in this book, for Eastman has done his part admirably. The book has been almost completely rewritten, reillustrated and reset. Many of the useless data contained in the sixth edition have been omitted. The information presented is highly practical, and emphasis has been laid on public health nursing in obstetrics. The illustrations are abundant and highly instructive. At the end of each chapter is a small but select list of books and articles for suggested reading. Throughout the book are helpful 'self-evaluation tests.' The publishers have done their part well. The book is much more compact than the last edition, and the type and illustrations are clear. All in all the book is a valuable asset for nurses and it should be widely used.

**Bases para la organización de un hospital general.** Por los doctores Isidro L. Fariñas, Jefe del Servicio central de rayos X del Hospital nacional. General Calixto García, Alfredo Antonelli, Profesor titular de tuberculosis de la Facultad de medicina de la Universidad de la Habana y Victor Santamarina, Instructor de la Cátedra de patología y clínica infantiles de la Facultad de medicina de la Habana. Paper. Pp. 333. Habana: Cultural S. A. 1943.

This book is a well organized outline of the fundamentals of hospital organization based on the minimum requirements and standards recommended by the American College of Surgeons and by the Council on Medical Education and Hospitals of the American Medical Association. The fifteen sections include the organization of the administrative and medical staffs, board of directors, hospital personnel, dietetic department and library and give the main lines for the routine work of the medical, surgical and pathologic divisions and laboratories.

**A List of Schools of Nursing Meeting Minimum Requirements Set by Law and Board Rules in the Various States and Territories.** Compiled by Department of Studies, National League of Nursing Education. Correct to January 1, 1943. Paper. Price \$2.25. Pp. 36. New York, 1943.

This 1943 list gives information similar to that of previous years. In addition, it gives the average daily number of patients and shows also the increased enrolment in schools of nursing. The list serves as a useful handbook for the type of information about schools of nursing that lends itself to statistical reporting. It contains the names of 1,297 schools of nursing in the United States and 11 in Hawaii and Puerto Rico that were approved by the various state and district boards of nurse examiners on Jan. 1, 1943.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### REPEATED INTESTINAL INTUSSUSCEPTION

**To the Editor**—Have you any knowledge of any form of postoperative treatment which has proved of value in preventing recurrence of intestinal intussusception? A 29 months old boy has had three attacks of intussusception, at 13 months, 21 months and 28 months. Each attack necessitated laparotomy and reduction. No abnormalities or anomalies of the bowel were found. Fear that there may be further attacks leads me to make this inquiry.

M D, New Jersey

**ANSWER**—Because of the rarity of the condition and the fact that no abnormalities and anomalies were found, operation in this case is inadvisable, especially as intussusception tends to become extinct as age progresses. In general most authors feel that any type of operation to prevent a future intussusception is inadvisable because 1 Although 80 per cent of the intussusceptions are in the region of the ileocecal valve, there is no assurance that future intussusception will occur in that region rather than in other parts of the bowel. 2 All operations which have been devised for this condition entail a suturing of the large bowel to the parietal peritoneum or to the ileum, and it is thought that this suturing of the large bowel definitely predisposes to infection. 3 The condition is so rare that it is better to run the risk of recurrence rather than the danger of possible infection. As no operation is known at present which will definitely prevent a recurrence of intestinal intussusception surgery is contraindicated.

### FRESH HEMORRHAGE FROM BOWEL AFTER TONSILLECTOMY

**To the Editor**—A boy aged 16 had his tonsils removed locally under 2 per cent procaine hydrochloride with no preoperative medication. Postoperative bleeding was minimal and stopped completely within thirty minutes after operation. The patient was allowed to go home in another hour. About four hours postoperatively he began losing bright red blood from the bowel, no cause could be found. I am at a complete loss to explain this other than as a coincidental phenomenon. There is a history, however, of the boy's having packed cascara bark in a dusty warehouse the day preceding the operation, however, he suffered no immediate ill effects from this contact. I should like an opinion as to the possible relation of the bleeding to the operation and also the contact with cascara bark.

M D, Oregon

**ANSWER**—It is impossible to give a categorical answer to this query, but it can be reasonably certain that the loss of bright red blood from the bowel was not due to post-tonsillectomy bleeding, for, as stated, the bleeding stopped completely within thirty minutes, and as this was a local tonsillectomy with normal pharyngeal and laryngeal reflexes it is not likely that the patient swallowed any blood. Let us assume, however, that the patient might have bled a little from one or both tonsillar fossae and in the reclining position in bed swallowed some blood. This blood would have to pass through the stomach and intestine and would appear definitely altered in the stool, that is it could not be bright red because of the numerous chemical changes.

The inquirer also tells us that "no cause could be found" when the patient began passing bright red blood from the bowel four hours postoperatively, so that one is at a loss to explain the passing of bright red blood by bowel.

The contact with cascara bark would have no relation to the bleeding by bowel, for the bark would have to be ingested to induce purgation and intestinal action.

A complete proctologic survey should be made to rule out fissures, internal hemorrhoids, ulceration and kindred structural changes as well as to make a painstaking recheck of the history of any symptoms of dysfunction of the sigmoid, rectum and anus.

If these studies should fail to locate a lesion, the patient should be watched and thoroughly examined at the first moment that bleeding by bowel is reported, for, as is well known, a patient may bleed from the bowel but the proctologist may not be able to locate the source of the bleeding after the latter has stopped, just as the rhinologist often is unable to locate the source of nasal bleeding after the epistaxis has been controlled or has spontaneously ceased.

### DETERMINATION OF BLOOD pH

**To the Editor**—It would assist me greatly if I knew the best method and commercial apparatus for the determination of blood pH. The textbooks in biochemistry teach me that the blood pH can be determined by expired air, urine and blood. I should prefer a respiratory method as a matter of convenience. However, I would sacrifice any objection for reliability. Any information and direction to literature will be of tremendous help.

Richard J. Wehs, M D, Louisville, Ky

**ANSWER**—A reliable method for estimating the plasma pH is the colorimetric procedure of G. E. Cullen (*J Biol Chem* 52:507 [June] 1922).

**Principle**—Whole blood is oxalated and centrifuged under oil. The plasma is added to isotonic solution of sodium chloride containing the phenol red indicator and compared with standards of known pH values.

**Reagents**—1 Sodium chloride 0.9 per cent in water.

2 Phenol red solution 0.03 per cent in water. To 0.030 Gm of phenol red in a glass mortar add 0.86 cc of hundredth normal sodium hydroxide and distilled water. Grind until dissolved. Dilute to 100 cc with distilled water.

3 Phosphate buffer solutions of known pH values.

(a) Fifth molar dihydrogen potassium phosphate. Use the highest reagent grade and dry at 110–115°C to constant weight. Dissolve 27.232 Gm of the dry salt in good distilled water and dilute to 1,000 cc.

(b) Fifth molar sodium hydroxide. Take 200 cc of accurately standardized carbonate free N-NaOH and dilute to 1,000 cc with recently boiled water.

Make the following dilutions in 200 cc volumetric flasks. Use recently boiled water for the dilutions.

pH	M/5 KH <sub>2</sub> PO <sub>4</sub> Cc	M/5 NaOH Cc	Dilute to Cc
6.8	50	23.60	200
7.0	50	29.54	200
7.2	50	34.90	200
7.4	50	39.34	200
7.6	50	42.74	200

4 Hundredth normal sodium hydroxide.

**Procedure**—The blood is drawn under liquid petrolatum and oxalated. It is transferred to a small centrifuge tube with a layer of liquid petrolatum over the blood sufficient to fill the tube. Stopper with a one hole rubber stopper in such manner that no air remains in the tube and that the excess oil being replaced by the stopper is forced out through the hole in the stopper. Then stopper the hole in the stopper with a tightly fitting glass rod. Centrifuge until a good separation of the corpuscles has been accomplished.

Select Pyrex test tubes of the same diameter (15–16 mm inside) and color. Measure 20 cc quantities of the standard buffers of pH values 7.0, 7.2 and 7.4 into separate tubes, add liquid petrolatum to prevent absorption of carbon dioxide and 7 drops of the 0.03 per cent phenol red. Mix each well with a fine stirring rod. These are standards to be compared with the unknowns in a comparator block.

Prepare the unknowns as follows. To 100 cc of a freshly prepared 0.9 per cent sodium chloride solution in a 100 cc cylinder add liquid petrolatum to make a ¼–½ inch layer. Add 35 drops of the 0.03 per cent phenol red solution and then very cautiously hundredth normal sodium hydroxide until the color corresponds to the pH 7.4 standard. Stir with a fine glass rod. Transfer 20 cc to one of the test tubes and cover with liquid petrolatum. To this deliver under the oil 1 cc of the blood plasma and mix with the fine glass rod. This is tube C.

To a fourth tube (D) transfer 20 cc of the 0.9 per cent sodium chloride solution plus liquid petrolatum but no phenol red. To this also add 1 cc of the blood plasma in the same way. Stir well with a fine glass rod.

For comparison in the comparator place the standard tube in front of tube D and tube C in front of a tube containing 20 cc of 0.9 per cent sodium chloride plus liquid petrolatum. Compare with different standards until the best match is found.

Note the temperature and pH. To correct for the temperature effect calculate (0.42–0.01 t), where t is the temperature in degrees C. In case the temperature is below 38°C subtract the value (0.42–0.01 t) from the observed pH to obtain it for 38°C.

### CARCINOGENS AND EXPERIMENTAL CARCINOMA

**To the Editor**—About how long does it take to induce papillomas by daily application of benzene to the skin of a rabbit? How may carcinoma be produced in the guinea pig and mouse?

M D, Ohio

**ANSWER**—Careful compilation of the relative carcinogenic activity of various carcinogens by Hartwell in 1941 does not give any instance of papillomas induced in rabbits by benzene. Carcinoma may be induced in the mouse by a variety of substances. Those most frequently used are 3,4-benzpyrene, 20



methylcholanthrene and 12,5,6 dibenzanthracene. The shortest period after application of the carcinogen to the appearance of the tumor is about sixty days. Usually a considerably longer time is required.

Carcinoma in the guinea pig is more difficult to induce. Goulds reports 1 case following injection of thorium dioxide in the nipple region. It may also prove that estradiol will be active in producing carcinoma, according to Lipschütz.

The review of the field of carcinogens published by J. I. Hartwell, National Cancer Institute, Bethesda, Md., is recommended for detailed information.

## DERMATITIS OF HANDS IN DITTO MACHINE OPERATORS

*To the Editor*—After sixteen months of employment a stenographer who also operates a ditto machine developed a subacute dermatitis of the palms, sides of the fingers and flexor surfaces of the wrists all approximately two months ago. The eruption is blotchy or in some instances consists of small vesicles. It itches severely. Besides handling carbon paper she used a liquid supplied by the Ditto Company, Chicago, to remove stains from the fingers. She states that soaps will not remove the stains. The thought suggests itself that this liquid may be the contact factor causing her dermatitis. I should appreciate any help you may be able to supply as to the likelihood of this suspicion being true and if possible suggest a substitute for removing these stains from the fingers.

H. C. Miller, M.D., Racine, Wis.

*ANSWER*—Dermatitis of the hands among ditto machine operators is not of infrequent occurrence. If it is occupational the carbon paper is not the usual cause.

In an investigation of an outbreak of dermatitis among office workers (Schwartz, Louis and Sulzberger, Marion B. *Dermatitis Among a Group of Office Workers Found Not to Be of Occupational Origin* *Pub. Health Rep.* 52:1441 [Oct. 15] 1937) patch tests were performed on 54 persons with carbon papers of various compositions without obtaining any positive reactions. The cause of the dermatitis, if occupational, in most such cases is the cleanser used to remove the indelible dyes from the skin.

While the composition of the particular ditto remover which is mentioned is not available, such dye removers usually consist of a soap or a vanishing cream base containing a solvent such as carbolic or carbon tetrachloride. Dermatitis may well be caused by the frequent use of such a dye remover, especially if the skin is naturally thin and dry. Not only does such a dye remover tend to remove the indelible dye from the epidermis, but it also tends to remove the fatty secretions of the skin.

Many cases of dermatitis caused by ditto remover cannot be proved by patch tests because in performing the patch test only a small amount of the remover is used whereas under actual working conditions the skin is exposed to much greater amounts.

The indelible inks used on ditto machines consist of such dyes as methyl violet, crystal violet, various oils and solvents. In rare instances sensitivity may be present to one or more of these ingredients.

A method suggested for the removal of indelible ink stains from the skin is to immerse the hands in a 1:1000 solution of potassium permanganate for a minute followed by washing the hands in a 5 per cent solution of sodium bisulfite. This is to be followed by washing with soap and water to remove all traces of the reagents. In cases in which such treatment has a deleterious action on the skin it should be followed by the use of a simple emollient cream such as equal parts of wool fat and cold cream.

## ANESTHESIA FOR OPERATIONS ABOUT HEAD

*To the Editor*—I am seeking information regarding the hazards of using pentothal sodium for operations about the head and neck, most particularly septic surgery, as for example sublingual abscess. Are there any contraindications to the use of pentothal in such cases? If so, what would be the anesthetic of choice?

First Lieutenant M. C. A. U. S.

*ANSWER*—Pentothal sodium is used for minor operations about the head and neck. However, it is not particularly suitable for prolonged operations unless it is combined with local anesthesia or unless an intratracheal tube has been inserted before operation has begun. For septic conditions such as sublingual abscess, peritonsillar abscess or phlegmon of the neck, pentothal sodium is not the anesthetic agent of choice. The contraindication to its use is that some pus or foreign material may gravitate to the throat and cause laryngospasm. This spasm is sometimes so severe and so prolonged that a fatal outcome is threatened. It has been suggested by Capt. George Bradasch, M. C. A. U. S., that preliminary tracheotomy be done in these cases if pentothal is to be used.

Few persons will submit to the opening of an abscess without some anesthesia, but the hazard is so great that the following

precaution should be followed if general anesthesia is to be used. The patient's head should be lowered so that the contents of the abscess will not obstruct the air passages as it drains.

Nitrous oxide and oxygen, administered by a nasal inhaler only to the point of analgesia, seems to give the safest general anesthesia for the persons here under consideration.

## PROBABLE PERNICIOUS ANEMIA WITH NEURAL SYMPTOMS

*To the Editor*—A man aged 53 complained of numbness and tingling in both hands and feet for the past three to six weeks. Inquiry revealed that he had had some difficulty in walking chiefly from ataxia which was most noticeable in the dark or when walking up or down stairs. Examination revealed hyperactive deep reflexes, bilateral positive Babinski reflex (dorsiflexion), positive Romberg sign, absent vibration sense and some difficulty in the heel toe and finger to nose tests. It was later learned that the paresthesia actually had been present in the lower extremities up to the knees and in almost the entire upper extremities with some evidence of this in the upper chest and lower abdomen. A diagnosis of subacute combined degeneration of the spinal cord was made. There was no evidence of primary pernicious anemia in the blood which showed a red blood cell count of 4,300,000 and hemoglobin of 80 per cent with a normal smear. He has received four injections of 500 mg. of thiamine and 40 units of a preparation containing anti-pernicious anemia principle twice weekly and then a similar amount every two weeks. There has been definite subjective improvement in that practically all his paresthesia and ataxia has disappeared. I am at a loss as to the future treatment. I intend to give him 2 cc. of the anti-pernicious anemia preparation twice a month intramuscularly. This treatment apparently should be given indefinitely, but how is one to judge the amount required in the absence of any hematologic abnormality? At the present time he has practically no complaints referable to his nervous system. There have never been any gastrointestinal complaints or feeling of weakness or dyspnea. There is no evidence of icterus in the skin or in the blood findings. The only relevant past history is that of a cholecystectomy in 1926 and pneumonia in 1942 for which he was treated with some sulfonamide drug.

M. D. Rochester, N. Y.

*ANSWER*—The typical neural changes with improvement after parenteral liver therapy would seem sufficient to make a diagnosis of pernicious anemia. Further support would be given to the diagnosis by the finding of gastric anacidity following histamine stimulation. It is known that, in pernicious anemia, neural symptoms may appear before there is evidence of anemia.

The great majority of patients with pernicious anemia can be maintained in complete remission by the injection of 15 units of liver extract at intervals of two weeks. By close questioning for the recurrence of paresthesias and by a careful neurologic examination every three months it should be possible to detect progress of the cord disease before any permanent harm is done. If progression occurs, the dose of liver extract can be increased accordingly.

## DYSENTERY FROM BALANTIDIUM COLI

*To the Editor*—For the last two months I have had under hospital care 2 brothers aged 3 and 5 whose chief complaint is a severe chronic diarrhea. Repeated fresh stool examinations have revealed large amounts of *Balantidium coli* and no *Giardia lamblia* nor *Amoeba histolytica*. Under a high protein, high caloric diet and iron by mouth their general condition which was poor on admission has greatly improved. However the diarrhea persists there being eight to ten liquid, foul, abundant and bloody stools per day without tenesmus. They have had chenopodium on three occasions and two courses of carbarsone 0.1 Gm. daily without any improvement in the diarrhea or diminution in the amount of *Balantidium coli* in the stools. I will appreciate information concerning treatment of this condition.

A. J. Mejia, M.D., Central Aguirre, Puerto Rico.

*ANSWER*—The treatment of balantidial dysentery is notoriously unsatisfactory. Carbarsone, acetarsone, thymol and oil of chenopodium are among the drugs which have on occasion been successfully used. Strong (Stutt's Diagnosis, Prevention and Treatment of Tropical Diseases, Philadelphia, Blakiston Company, 1943, p. 452) lists the following measures for which some merit has been claimed:

1. Enemas of organic compounds of silver, such as strong protein silver.

2. Oil of chenopodium enemas. In 12 cases in Siam 15 cc. of oil of chenopodium in 150 cc. of olive oil effectively cleared the bowel of balantidia, but 1 patient developed chenopodium poisoning when the enema was repeated within twenty-four hours.

3. One patient responded to enemas of methylene blue 1:3,000.

4. E. Silva of Brazil treated 10 patients resistant to chemotherapy but who responded symptomatically and who lost the balantidia following a regimen of 350 cc. of milk every six hours. The refractory patient subsequently responded to a proprietary preparation of acetarsone (a drug with high toxicity).



It may of course be desirable to make certain that the persisting symptoms are balantidial in causation. Sigmoidoscopy to rule out the presence of amebic ulcerations is therefore suggested.

### COMPLICATIONS OF FECAL FISTULA

**To the Editor**—On July 20, 1943 a 50 year old white man presented a strangulated hernia in the right groin of nine hours' duration. A soft irreducible mass had been present for four or five years. Three soft stools were passed after strangulation. There were mild nausea and slight epigastric discomfort. His past history included pneumonia. The patient was muscular and healthy looking with a florid face, perforated nasal septum, dark reddening of the pharynx, carious teeth, swollen gums, a soft flat abdomen, enlarged subcutaneous inguinal rings and a rounded mass 2 cm in diameter occupying the region of the right femoral ring. This was almost hard and was not tender. It was immovable. Under field block and local infiltration of procaine and epinephrine solution the hernia was exposed. Opening the sac freed a small amount of brownish red fluid without odor. A small knuckle of bowel was caught tightly in the femoral ring. It was necessary to divide the lower part of the inguinal ligament. The proximal and distal limbs of the bowel were drawn downward through the enlarged femoral ring. A blackened area was found which on one side extended to the mesenteric attachment. An enterostomy was performed in both limbs through sound bowel, and a loop approximately 12 cm in length was left in the open wound. The surfaces were sprinkled with sulfanilamide. On the first few days the patient had colicky epigastric pain. On the third postoperative day the exteriorized bowel was removed with a cautery. Fecal drainage through the fistula was free. At times the bowels were constipated and the patient complained of epigastric pain. Excoriation of the skin about the fistula soon became a serious problem. On September 9 the patient was encouraged to walk. On stepping into the tub he suddenly felt "blind" and became conscious of sharp pains in his heart and was breathless. He appeared pale and frightened, he was breathing deeply and the blood pressure was 92/70. He soon began spitting up a small amount of blood not accompanied by sputum, and the next day there was severe pain in the left lower chest. This was also associated with elevation of temperature. He continued to spit up small quantities of blood. He was extremely apprehensive. Diagnosis of pulmonary infarct was made. Diminished breath sounds and rales became apparent over the painful area. Fever and rapid pulse continued for several days, together with leukocytosis. On September 20 an acute thrombophlebitis developed in the left lower extremity, with a great deal of pain. On the following day the first four lumbar sympathetic ganglions were injected with procaine. This was soon followed by relief from pain and rapid decrease in swelling. Arterial pulsation in the foot disappeared with the onset of the thrombophlebitis, and the dorsalis pedis pulsation gradually reappeared. A bronchial pneumonia which developed over the left lower chest rapidly cleared up under the influence of sulfathiazole. Severe mental depression ensued, which is now improving. The patient finds the pain from skin excoriation almost unbearable. Zinc oxide ointment seems to give more relief than any other measure tried. The sedimentation time on September 28 was 20 minutes to 18 mm and on October 27 it was 50 minutes to 18 mm. He has been practically fever free for four weeks. Anastomosis of the bowel in the near future is being contemplated in order to lessen the chances of further complications. Is heparin indicated in this case? If so, will you suggest the dosage, method of administration and sources of the drug. Any further suggestions in this case will be greatly appreciated.

Alex S. Moffett, M.D., Banner Elk, N.C.

**ANSWER**—If the patient is now ambulatory, heparin need not be considered. When the fistula is being closed, heparin may be given as a prophylactic measure, 5 cc every four hours during the day by the intravenous route. This is kept up for three to four days. The purpose is to prevent further thrombosis and embolism. For the excoriated skin, many measures have been advocated, most of which are really effective only before the irritation starts. Covering the skin adjacent to the fistula with yeast is helpful. A yeast cake is made up with batter and applied over the skin. When it dries and cracks it is removed and a fresh yeast batter is applied (Mead, C. H. *Minnesota Med* 16 450 [June] 1933). A 5 per cent tannic acid ointment has also been recommended (Potter, E. B. *Ann Surg* 95 700 [May] 1932). Diversion of the fecal current into the bowel is of course the desirable solution.

### NUTRIENTS IN FRUIT JUICES AND IN RESIDUE AFTER PASSAGE THROUGH JUICER

**To the Editor**—Patients have frequently sought my advice concerning fruit and vegetable juices. I recently saw one of these electric vegetable juicers demonstrated and was surprised at the amount of residual pulp. I wonder if this pulp does not retain the major part of minerals and vitamins, so that the vegetable juice is more or less a watery dilution with juice aroma. Does it not seem more advisable to eat the whole vegetable, either raw or cooked, unless special dietary requirements stipulate vegetable juices?

M.D., Wisconsin

**ANSWER**—A small study has been made on the ascorbic acid, carotene, calcium and phosphorus content of vegetable juices extracted with a hand turned juicer. Extracted thus, it was found that much of the nutrients remained in the vegetables, yet, weight for weight, vegetable and juice were about equal in value.

### BRONCHIECTASIS

**To the Editor**—I should appreciate information on the treatment of an atypical type of bronchiectasis involving the lower lobe of the left lung. The patient lives 100 miles north of Mobile, Ala. Would a conservative treatment of high altitude be of any great benefit, say on the plains of Texas or New Mexico? This patient at times expectorates blood following coughing and is exhausted. There is no elevation of temperature. He is more or less a mouth breather. He is a cooperative patient, and I do not want to subject him to an operation unless it is necessary.

W. E. Allen, M.D., Sweet Water, Ala.

**ANSWER**—An occasional patient with bronchiectasis will be benefited by residence in a dry, equable climate. Improvement is so uncertain and unlikely that patients should always be advised to try the new climate before making any permanent change of residence. At the present time unilateral bronchiectasis can be treated so safely and successfully by lobectomy that any patient having more than minimal symptoms from the disease should be advised to have the operation. The mortality from the operation is not more than 2 per cent.

### INFECTIOUS MONONUCLEOSIS AND PREGNANCY

**To the Editor**—A woman has shown the symptoms and signs of mononucleosis for the past eleven months. The blood picture has been characteristic and she has repeatedly shown a positive agglutination with a titer of 1:126. She wishes to become pregnant. Her general health is good. Will you please tell me what to advise her?

Alexander R. Freeman, M.D., Albany, Ga.

**ANSWER**—It is exceedingly unusual for infectious mononucleosis to remain active for eleven months. Some of the symptoms of this disease, such as glandular enlargement, splenomegaly and hematologic changes, may persist for months or even years after recovery. An agglutination titer of 1:126 may be encountered in normal persons. Only agglutination titers of 1:160 or higher can be taken as significant evidence of active infectious mononucleosis. It is probable, therefore, that the active stage of infectious mononucleosis has already subsided in this patient. At any rate, when this condition is mild and uncomplicated it has no special effect on pregnancy, and prevention of the latter is not necessary.

### SPINAL FLUID IN SUN STROKE

**To the Editor**—What are the usual findings on examination of the spinal fluid and the average neurologic findings in (1) heat stroke and (2) heat exhaustion? What variation may one expect from first hour to twenty-four hours?

Captain, M.C., A.U.S.

**ANSWER**—There have been few observations on the spinal fluid in cases of sun stroke. Steinhauser's critical review in 1910 quotes only Dopfer as finding an increase of cells, suggesting a meningitis. Fleck and Huckel found a pressure of 280 mm of water and a bloody, yellow fluid in a case of heat stroke. Straus states that the pressure is usually elevated and that polymorphonuclear cells are found in the fluid in early stages, later lymphocytes.

#### References

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- Dopfer. *Le liquide céphalo rachidien dans le coup de chaleur*, *Bull et mem Soc med d hop de Paris* 20 1396 1903.
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### EPINEPHRINE AND CUTANEOUS SENSITIVITY TO ALLERGENS

**To the Editor**—The answer to the query entitled "Possible Effects of Epinephrine and Ephedrine on Cutaneous Tests with Allergic Substances" in the Oct 23, 1943 issue requires comment. The following statement is based on experience with this. When a new patient appears in a severe asthmatic attack, relief is first attempted with epinephrine. The attack is usually ameliorated within one-half hour, when the pollen tests are performed. Furthermore, many of these patients have been taking ephedrine and epinephrine up till the day of their visit. Notwithstanding this, the cutaneous reaction of a patient with pollinosis to the pollens is definitely positive. A small number of patients with pollinosis will not react to the cutaneous test regardless of method or concentration of antigen. I am now working with other allergens to determine whether these drugs influence the cutaneous reaction within certain times of their administration. However since the inquirer asks about hay fever, I do not regard it as necessary to defer the pollen tests because of the use of epinephrine and ephedrine as a cutaneous reactive pollinosis patient will definitely be positive. It is unnecessary to have a patient suffer at least twenty-four hours to ascertain a pollen diagnosis.

David L. Engelsher, M.D., New York

# JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT, SEPTEMBER-DECEMBER 1943

Titles have been listed or abstracts made of important articles in the following journals in the Current Literature Department of THE JOURNAL during the past four months. Any of the journals, except those starred will be lent by THE JOURNAL to subscribers in continental United States and Canada and to members of the American Medical Association for a period not exceeding three days. Three journals may be borrowed at a time. No journals are available prior to 1933. Requests for periodicals should be addressed to the Library of the American Medical Association and should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Thus most of these journals are accessible to the general practitioner.

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| American Heart Journal St Louis  | Clinical Medical Journal  |
| American Journal of Clinical Pathology Baltimore   | Curt's Hospital Reports London  |
| American Journal of Digestive Diseases Fort Wayne Ind  | Hawaii Medical Journal Honolulu                                       |
| *American Journal of Diseases of Children A M A Chicago  | Helvetica medica acta Basel   |
| American Journal of Hygiene Baltimore  | Helvetica Physiologica et Pharmacologica Acta Basel                   |
| American Journal of the Medical Sciences Philadelphia  | Illinois Medical Journal Chicago                                      |
| American Journal of Obstetrics and Gynecology St Louis   | Journal of Allergy St Louis   |
| American Journal of Ophthalmology Cincinnati   | Journal of the Arkansas Medical Society Fort Smith                    |
| American Journal of Orthopsychiatry New York   | Journal of Aviation Medicine St Paul                                  |
| American Journal of Pathology Ann Arbor Mich   | Journal of Bone and Joint Surgery Boston                              |
| American Journal of Physiology Baltimore   | Journal of Clinical Endocrinology Springfield Ill                     |
| American Journal of Psychiatry New York  | Journal of Clinical Investigation Boston                              |
| American Journal of Public Health New York   | Journal of Endocrinology London                                       |
| American Journal of Roentgenol and Radium Therapy Springfield Ill                                    | Journal of Experimental Medicine New York                             |
| American Journal of Surgery New York   | Journal of the Florida Medical Association Jacksonville               |
| American Journal of Syphilis Conner and Venereal Diseases St Louis                                   | Journal of Immunology Baltimore                                       |
| American Journal of Tropical Medicine Baltimore  | Journal of the Indiana State Medical Association Indianapolis         |
| American Review of Tuberculosis New York   | Journal of Industrial Hygiene and Toxicology Baltimore                |
| Anales de la Cátedra de patología y clínica de la tuberculosis Buenos Aires                          | Journal of Infectious Diseases Chicago                                |
| Anesthesiology New York  | Journal of the Iowa State Medical Society Des Moines                  |
| Annals of Internal Medicine Lancaster Pa   | Journal of the Kansas Medical Society Topeka                          |
| Annals of Otolaryngology and Rhinology St Louis  | Journal of Laboratory and Clinical Medicine St Louis                  |
| Annals of Rheumatic Diseases London  | Journal Lancet Minneapolis  |
| Annals of Surgery Philadelphia   | Journal of the Maine Medical Association Portland                     |
| Archiv für Gewerbepathologie und Gewerbehygiene Berlin   | Journal of the Medical Association of the State of Alabama Montgomery |
| Archiv für Kinderheilkunde Stuttgart   | Journal of the Medical Association of Georgia Atlanta                 |
| Archiv für klinische Chirurgie Berlin  | Journal of the Medical Society of New Jersey Trenton                  |
| *Archives of Dermatology and Syphilology A M A Chicago   | Journal of Mental Science London                                      |
| Archives of Disease in Childhood London  | Journal of the Michigan State Medical Society Lansing                 |
| *Archives of Internal Medicine A M A Chicago   | Journal of the Missouri State Medical Association St Louis            |
| *Archives of Neurology and Psychiatry A M A Chicago  | Journal of the Mount Sinai Hospital New York                          |
| *Archives of Ophthalmology A M A Chicago   | Journal of the National Cancer Institute Washington D C               |
| *Archives of Otolaryngology A M A Chicago  | Journal National Malaria Society Tallahassee Fla                      |
| *Archives of Pathology A M A Chicago   | Journal of Nervous and Mental Disease New York                        |
| Archives of Physical Therapy Chicago   | Journal of Neurology and Psychiatry London                            |
| *Archives of Surgery A M A Chicago   | Journal of Neuropathology and Experimental Neurology Baltimore        |
| Archivos argentinos de enfermedades del aparato digestivo y de la nutrición Buenos Aires             | Journal of Neurophysiology Springfield Ill                            |
| Archivos argentinos de pediatría Buenos Aires  | Journal of Nutrition Philadelphia                                     |
| Archivos latino americanos de cardiología y hematología Mexico D F                                   | Journal of Obstetrics and Gynaecology of British Empire Manchester    |
| Archivos de Oftalmología de Buenos Aires   | Journal of the Oklahoma State Medical Association Oklahoma City       |
| Australian Journal of Experimental Biology and Medical Science Adelaide                              | Journal of Pathology and Bacteriology Edinburgh                       |
| Boletín de la Asociación médica de Puerto Rico Santurce  | Journal of Pediatrics St Louis  |
| Boletín del Instituto de medicina experimental para el estudio y tratamiento del cáncer Buenos Aires | Journal of Pharmacology and Experimental Therapeutics Baltimore       |
| Brain London   | Journal of Physiology Cambridge                                       |
| British Journal of Anesthesia Manchester   | Journal of Royal Army Medical Corps London                            |
| British Journal of Children's Diseases Horking England   | Journal of Royal Naval Medical Service London                         |
| British Journal of Dermatology and Syphilis London   | Journal of the South Carolina Medical Association Florence            |
| British Journal of Experimental Pathology London   | Journal of the Tennessee State Medical Association Nashville          |
| British Journal of Ophthalmology London  | Journal of Thoracic Surgery St Louis                                  |
| British Journal of Radiology London  | Journal of Urology Baltimore  |
| British Journal of Surgery Bristol   | Kentucky Medical Journal Bowling Green                                |
| British Journal of Urology London  | Klinische Wochenschrift Berlin  |
| British Medical Journal London   | Lancet London   |
| Bulletin of the Johns Hopkins Hospital Baltimore   | Medical Annals of the District of Columbia Washington                 |
| Bulletin of the New York Academy of Medicine New York  | Medical Journal of Australia Sydney                                   |
| Bulletin of the U S Army Medical Department Washington D C   | Medicina Buenos Aires   |
| California and Western Medicine San Francisco  | Medicina Madrid   |
| Canadian Journal of Public Health Toronto  | Medicina Mexico D F   |
| Canadian Medical Association Journal Montreal  | Medicina española Valencia  |
| Cancer Research Baltimore  | Medicine Baltimore  |
| Connecticut State Medical Journal Hartford   | Medizinische Klinik Berlin  |
| Delaware State Medical Journal Wilmington  | Military Surgeon Washington D C                                       |
| Der deutsche Militärarzt Berlin  | Minnesota Medicine St Paul  |
| Deutsche medizinische Wochenschrift Leipzig  | Münchener medizinische Wochenschrift Munich                           |
| Deutsche Zeitschrift für Chirurgie Berlin  | Nebraska State Medical Journal Lincoln                                |
| Diseases of Chest Chicago  | New England Journal of Medicine Boston                                |
| Edinburgh Medical Journal  | New Orleans Medical and Surgical Journal                              |
| Endocrinology Springfield Ill  | New York State Journal of Medicine New York                           |
| Experimental Medicine and Surgery Brooklyn   | New Zealand Medical Journal Wellington                                |
| Gastroenterology Baltimore   | North Carolina Medical Journal Winston Salem                          |
|  | Northwest Medicine Seattle  |
|  | Ohio State Medical Journal Columbus                                   |

\*Cannot be lent

Ophthalmologia Ibero Americana	Buenos Aires	Rocky Mountain Medical Journal	Denver
Pennsylvania Medical Journal	Harrisburg	Schweizerische medizinische Wochenschrift	Basel
Physiological Reviews	Baltimore	Semana medica	Buenos Aires
Prensa Medica Argentina	Buenos Aires	South African Medical Journal	Cape Town
Proceedings of Royal Society of Medicine	London	Southern Medical Journal	Birmingham Ala
Psychosomatic Medicine	Baltimore	Southwestern Medicine	Phoenix Ariz
Public Health Reports	Washington D C	Surgery	St Louis
Puerto Rico Journal of Public Health & Tropical Medicine	San Juan	Surgery Gynecology and Obstetrics	Chicago
Quarterly Journal of Medicine	Oxford	Texas State Journal of Medicine	Fort Worth
Radiology	Syracuse N Y	United States Naval Medical Bulletin	Washington, D C
Review of Gastroenterology	New York	Virginia Medical Monthly	Richmond
Revista de la Asociación Médica Argentina	Buenos Aires	*War Medicine	A M A Chicago
Revista Brasileira de Oto-Rino-Laringologia	São Paulo	Western Journal of Surgery	Obstetrics and Gynecology Portland, Ore
Revista Chilena de Pediatría	Santiago	West Virginia Medical Journal	Charleston
Revista clinica española	Madrid	Wiener Klinische Wochenschrift	Vienna
Revista de la Facultad de Medicina	Bogota	Wisconsin Medical Journal	Madison
Revista médica de Chile	Santiago	Yale Journal of Biology and Medicine	New Haven
Revista Médica de Rosario	Rosario	Zentralblatt für Bakteriologie	Jena
Rhode Island Medical Journal	Providence	Zentralblatt für Chirurgie	Leipzig

## SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation, "E," Editorial, "C," Correspondence, "OS," Organization Section, "ab," abstracts, the star (\*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word with the following exceptions: "Book Notices," "Deaths," "Medicolegal Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." State board examinations are entered under the general heading State Board Reports, and not under the names of the individual states. Matter pertaining to the Association is indexed under "American Medical Association." The name of the author in brackets follows the subject entry.

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Dist—District  
Hosp—Hospital  
Internat—International  
M—Medical  
Med—Medicine  
Nat—National  
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